

**TRADITIONAL AND CYBERBULLYING AMONG UNIVERSITY
STUDENTS: ROLE OF APPRAISAL, SELF-EFFICACY AND
COPING STRATEGIES**



By

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NATIONAL INSTITUTE OF PSYCHOLOGY

Centre of Excellence

Quaid-i-Azam University Islamabad

2020

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SADIA MUSHARRAF

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2020

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By

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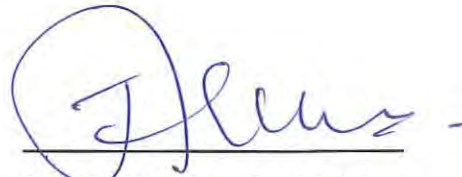


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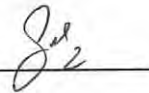
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No part of this thesis has been submitted anywhere else for any other degree. This thesis is submitted to the DAU (Name of Department of the University) Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Field of (Subject Name) Department of National Institute of Psychology University of: Quaid-i-Azam University, Islamabad

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Abstract

Bullying is a global public health issue that occurs in different forms. Over the last two decades, research has included a new form of bullying called cyberbullying, which has become more prevalent with the proliferation of modern communication technologies and the increasing rate of Internet penetration. Research on traditional bullying and cyberbullying at university campuses is sparse, and most of the existing research has been conducted in western countries. This study examined the prevalence of traditional and cyberbullying among university students, the overlap of cyberbullying with traditional bullying, and the incremental impacts of cyberbullying victimization over and above traditional bullying victimization. Additionally, the role of cognitive appraisals, coping strategies, general self-efficacy, and ICT self-efficacy are investigated by employing the Transactional Model of Stress and Coping (TMSC) to understand the negative impacts of cyber victimization on the mental health and mental well-being of university students. Three independent studies were conducted to achieve the objectives. Study I was a qualitative investigation that explored cyberbullying victimization in 93 Pakistani university students using semi-structured interviews. The terms perceived by Pakistani university students as most appropriate to label cyberbullying scenarios were examined. Additionally, thematic analysis explored the nature of their experiences of cyber victimization along with coping responses, causes and socio-cultural impacts in order to fully understand this phenomenon in Pakistani context. Findings revealed that Pakistani students preferred the terms cyber harassment or cybercrime to cyberbullying. They reported a range of experiences in cyberspace and provided rich descriptions of these experiences. Findings illuminate causes and impacts of cyberbullying victimization with a focus on the cultural context. In study II the Cyberbullying and Cyber

Victimization Scales were developed to investigate the experiences of cyberbullying and victimization among university students. Exploratory Factor Analyses (N = 508) supported the uni-factorial structure for the Cyberbullying and Cyber Victimization Scales. Furthermore, the psychometric properties of the various measures (which were used in study III-main study) were assessed in a sample (N = 508) of Pakistani university students. More specifically, evidence of the content validity, factorial validity, and reliability of the measures helped to determine the suitability of the scales that were originally developed in western context, or previously used only in the primary or secondary school context. In Study III (main study) factor structures of the newly developed Cyberbullying and Cyber Victimization Scales were confirmed on a sample (N = 1314) Pakistani university students. Additionally sufficient evidence of internal consistency reliability and convergent validity demonstrated these scales as valid and reliable measures for the assessment of cyberbullying/cyber victimization. Further analyses were conducted to investigate the prevalence of cyberbullying/victimization. The results indicated that there was a higher proportion of cyber-victims (27.5%), cyber-bullies (7.20%) and mixed cyber victim-bullies (26.20%) in comparison to traditional victims (18%), traditional bullies (3.30%), and mixed traditional victim-bullies (14.10%). With reference to gender, more female students were identified as cyber-victims (35.82%) in comparison to male students (15.33%). In contrast, a higher number of male students were found to be cyber-bullies (13.46%) and mixed cyber victim-bullies (31.59%) in comparison to female students (2.95%) and (22.46%) respectively. Concerning overlap, 5.9% of the sample was identified as both traditional and cyber-victims, 0.8% as both traditional and cyber-bullies and 9.5% were involved as mixed traditional and cyber

victim-bullies. Findings demonstrated that after controlling for demographics, confounding variables and traditional bullying/victimization, only cyber victimization significantly positively predicted symptoms of depression, anxiety, and stress over and above traditional bullying/victimization. Finally, the conceptual model of the study was tested using Mplus Version 8. Findings indicated that experiences of cyber victimization are associated with the threat and centrality appraisals (per TMSC) which in turn lead to more depression, anxiety and stress symptoms. Additionally, appraisal of cyber victimization as a challenge leads to greater use of problem-focused coping strategies, such as technical coping and assertiveness coping, and decreases the use of helplessness/self-blame and active ignoring coping. In contrast, appraisal of cyber victimization as a threat increases the use of helplessness/self-blame coping. Further, resources appraisal in response to cyber victimization leads to high use of technical coping and distal advice and decreased the use of helplessness/self-blame and active ignoring coping. Findings demonstrated that students with a higher level of general self-efficacy tend to appraise cyber victimization as challenge more than those who have a low level of general self-efficacy. Furthermore, students high on ICT self-efficacy used more technical coping in response to cyber victimization. Taken together, findings supported TMSC as a useful framework to understand the negative impacts of cyber victimization on the mental health and mental well-being of students. Findings also provided insight to counselors, mental health professionals, and policymakers to adopt an integrated approach to protecting university students from cyberbullying victimization and its negative impacts on mental health. More specifically, developing interventions to ensure a safe environment and promote mental health should include building the

capacity of students through the enhanced use of positive cognitive appraisals and effective coping strategies. Prevention programs might incorporate hands-on practice as well as demonstrations to enhance ICT self-efficacy with a special focus on teaching online safety and security-related skills.

Chapter I**INTRODUCTION**

Bullying is a global public health issue; a considerable amount of literature on school bullying has confirmed its negative impacts on the mental health and well-being of both perpetrators and victims (Hawker & Boulton, 2000b; Sourander, Helstelä, Helenius, & Piha, 2000; Zwierzyńska, Wolke, & Lereya, 2013). The detrimental effects extend to witnesses or bystanders as well.

Bullying is a subset of aggression that can be distinguished by the criteria of repetition, and imbalance of power (Olweus, 1999). It can occur in different forms such as physical behaviors (e.g. kicking, hitting, pinching or hair pulling), verbal behaviors (e.g. name-calling, insults, threats, intimidation, or racist remarks), and social or relational (e.g. spreading rumors, social exclusion) (Monks & Smith, 2006; Smith, 2014). Over the last two decades, research focus included the new form of bullying, which is enacted through electronic means and called cyberbullying.

This is more noticeable in the last decade with the proliferation of modern communication technologies and the increasing rate of the mobile phone, smartphone and Internet penetration (Smith, Sundaram, Spears, et al., 2018). Although the Internet and digital technologies have afforded us enormous benefits and opportunities (Baldasare, Bauman, Goldman, & Robie, 2012; Spears et al., 2013) digital access also brought new dangers, risks, and harm (Livingstone & Smith, 2014; Mishna, McLuckie, & Saini, 2009). One such danger is cyberbullying that is carried out using digital technologies through emails, websites, text messages, chats, various Social Networking Sites (SNS)

such as Facebook, Twitter, Instagram, Snapchat, WhatsApp, YouTube, Skype, game servers, other social media platforms, blogs, video sharing websites, and many more (Cassidy, Faucher, & Jackson, 2018). Generally, cyberbullying behaviors include threatening or derogatory texts, posting harmful or unwanted videos or images, sextortion or revenge pornography, stealing online identities or creating fake accounts, spreading nasty gossips or rumors, and posting profane or offensive comments. It can also include online harassment, cyber incivility, online aggression, and cyber-mobbing (Betts, 2016; Chisholm, 2014; Willard, 2006).

The phenomenon of cyberbullying has been increasingly investigated among primary, middle and secondary school students across the world and a great deal of research has emerged to investigate the nature, conceptualization, measurement, forms, prevalence, contributing factors, determinants, negative consequences, coping skills, solutions, and interventions (Smith & Steffgen, 2013; Völlink, Dehue, McGuckin, & Jacobs, 2016).

However, contemporary empirical evidence suggests that a substantial amount of bullying and cyberbullying occurs at university campuses, and this context is a less explored area of research (Cassidy et al., 2018; Cowie & Myers, 2016; Jenaro, Flores, & Frías, 2018; Watts, Wagner, Velasquez, & Behrens, 2017). Most of the research is atheoretical, and inconsistent findings exist concerning prevalence, gender differences, the differential impacts, and comparison of associated harms of traditional and cyber victimization (Jenaro et al., 2018; Tennant, Demaray, Coyle, & Malecki, 2015; Watts et al., 2017).

Involvement in cyberbullying/victimization is associated with a wide range of negative psychosocial impacts not only for adolescents but also for adults (Faucher, Jackson, & Cassidy, 2014; Mitchell et al., 2018; Schenk & Fremouw, 2012). The media highlighted several sensational incidents in which university students have been so ruthlessly tormented that it led them made the unfortunate decision to commit suicide (Schwartz, 2010). The university context is a growing hub of digital activity and technology is persistently becoming the vehicle of interaction and communication. With the significant growth in the penetration of social media, digital technologies, and the constantly evolving trends in the use of cyberspace, the number of mechanisms to carry out online aggressive behaviors has also increased allowing for new opportunities, venues, and more nefarious ways to bully others online (Betts, 2016).

Despite this, very small body of research exists examining cyberbullying among university students. The majority of research on traditional and cyberbullying/victimization has been conducted in western countries and a few studies from non-western regions revealed significant cross-cultural differences concerning nature of bullying and cyberbullying, on the basis of methodological issues, societal and cultural values, educational systems, and linguistic issues (Smith, Kwak, & Toda, 2016; Smith, Sundaram, Sandhu, et al., 2018).

The research in Pakistan on bullying and cyberbullying is in its infancy in comparison to other countries. Although technological development is relatively recent, Pakistani society is highly influenced by the rising rate of the adoption of modern technologies, increasing penetration of the Internet, fast-changing digital landscape, and social media use (AlphaPro, 2018). Therefore, it's not surprising that several dreadful

stories have become headlines regarding online harassment and cyber victimization ("FIA Cyber Crime Wing," 2018; "Rape, Blackmailing," 2018) including the suicide of a female university student in Pakistan (Musharraf & Lewis, 2018). Concerns have been raised by researchers, mental health professionals, educational practitioners and social organizers who advocate to address this serious issue, take preventive measures to reduce cyberbullying and highlight the need to provide a safe environment to students in higher education that foster a culture of respect and accountability (Digital Rights Foundation, 2018; Musharraf & Lewis, 2016).

Investigating the prevalence and nature of cyberbullying/victimization from the Pakistani perspective is essential, particularly because notable differences exist between Pakistani and western societies. Further, cyberbullying/victimization is a relatively new phenomenon and theoretical development is in its infancy. Therefore, employing existing theoretical frameworks in the field of bullying/victimization will help to inform evidence-based preventive measures. Moreover, a deeper understanding of the role of crucial factors such as appraisals and coping strategies can guide efforts to counter cyberbullying and deal with its negative impacts.

The present research is an attempt to extend these efforts by examining the prevalence of traditional and cyberbullying among university students, gender differences concerning prevalence, and the incremental impacts of cyberbullying victimization over and above traditional bullying victimization. Additionally, the focus is given to investigate the role of cognitive appraisals and coping strategies by employing the Transactional Model of Stress and Coping (TMSC) with reference to the impact of cyber victimization on mental health and mental well-being of university students.

History of Bullying Research

Bullying is considered a serious concern, worldwide, not only for those individuals involved but also for the wider community. However, empirical inquiry in this field actually began within the late 1970s.

Smith (2014) organized the history of bullying research concisely into four waves: First, its origin in Scandinavia, from the 1970s to 1988, primarily with the work of Dan Olweus, comprised of assessment and intervention procedures. Second, 1989 to mid-1990s expansion of this research tradition to many other regions of the world. Third, the development of well-established international research on bullying from 1990s to 2004 that led to extensive publications as well as efforts for anti-bullying programs. The fourth phase has been the emergence of cyberbullying, with the recent technological advancement and rapid growth of modern communication tools.

Research on bullying originated with the concept of peer-to-peer bullying in school children in Scandinavian countries. Peter-Paul-Heinemann was one of the first authors to write on the phenomenon of bullying (Heinemann, 1973), and ‘mobbing’ was the original Norwegian term in the scholarly publications to label this behavior (Olweus, 1993). This term was originally used to describe a fight among birds in which a group of birds collectively attack an individual targeted bird. This term was applied to describe the collective aggression of school children against an individual child. However, Olweus later recognized that one-on-one bullying was actually more prevalent in comparison to group versus the individual. Subsequently, the English term ‘bullying’ became more common in English language literature.

This phenomenon gained much attention after a wave of suicides committed by those who were victimized. Three adolescents committed suicide in Norway in 1983 and these tragic events were attributed to the experience of bullying victimization. This led to the launch of the first national movement against bullying in Norway (Olweus & Limber, 2010). Similarly, public concern about bullying in Japan was sparked in 1986 by the suicide of a school boy. His suicide was also stated to be caused by severe bullying by his classmate (Morita, Haruo, Kumiko, & Mitsuru, 1999).

Because of these lethal events, the scientific community became aware of the adverse impacts of bullying and the significance of implementing intervention programs to deal with this phenomenon. In the 1980s; Olweus developed a self-report measure for the assessment of bullying and also created a bullying prevention and intervention program (1983-85). The evaluation report of this intervention program showed the reduction in bullying up to 50% that encouraged and inspired researchers for further research (Olweus & Limber, 2010).

Research on bullying flourished around 1989; journal articles and scholarly books began to appear and research on this phenomenon was now conducted in countries beyond Scandinavia. These ideas were disseminated to various other regions, bringing together global research into one international enterprise. As a methodological innovation, a few studies started to employ a peer-nomination technique instead of self-report assessments. During the 1990s, researchers started to investigate this phenomenon in the UK (Whitney & Smith, 1993; Rivers & Smith, 1994) and also contributed to differentiating different nature of bullying. In this period, an important conceptual advancement was the expansion of the bullying construct with the inclusion of the

relational and indirect form of bullying such as spreading a rumor or social exclusion. In the 1990s, studies on bullying appeared from different geographical regions including Australia (Rigby & Slee, 1991), UK (Farrington, 1993), and Spain (Ortega, 1997). Following the Norwegian campaign, a few anti-bullying intervention campaigns were also started in other countries, for example, in England (Smith & Sharp, 1994) and Flanders (Stevens & Van Oost, 1995).

Another important methodological advancement in this period was to examine bullying as a complex psychosocial interaction among students. This was done by taking into consideration, different participant's roles in bullying such as victims, bullies (perpetrators) and bystanders (outsiders, assistants, reinforces or defenders) (Salmivalli, Lagerspetz, Björkqvist, Österman, & Kaukiainen, 1996).

Although work on bullying had become more international before, the 2000s was a decade, in which more cross-cultural understanding about the phenomenon was promoted, with several large-scale cross-national comparisons. For example, research undertaken by Smith, Cowie, Olafsson, and Liefhoghe (2002) compared different terms used to label bullying behaviors in 13 different languages. In another study, Due et al. (2005) investigated the associations between bullying and physical and psychological symptoms among adolescents in 28 countries. The number of intervention-based publications also increased during this time period.

The proliferation of studies continued in the first decade of the 21st century and findings of systematic reviews of longitudinal studies highlighted that school bullying is

not only school-based issue but also has negative impacts on the long-term psychosocial development of the students (Ttofi, Farrington, Lösel, & Loeber, 2011a).

The emergence of cyberbullying. The term “cyberbullying” started to appear in print as early as 1995 (Bauman, 2011). However, the widespread use of the term was observed in academic research with the creation of a website (www.cyberbullying.ca) by Bill Belsey (2004), who investigated this phenomenon in Canada (Bauman & Bellmore, 2015). Very soon thereafter, media reports and studies on cyberbullying started to be published (Beran & Li, 2005; Ybarra & Mitchell, 2004a, 2004b). Similar to traditional bullying, a few tragic and well documented cases of suicide proved to be a catalyst to attract the attention of society and communication media towards cyberbullying (Betts, 2016). The term “cyberbully suicide” or “cyberbullicide” was used in literature to describe cases of suicides that were found to be caused by cyberbullying (Hinduja & Patchin, 2008).

Following this, the proliferation of scientific literature yielded a rapid increase in the number of studies published on cyberbullying, as four articles were identified before 2005, 42 from 2006 to 2010. Later in 2011, 30 scholarly articles on cyberbullying were published so this figure rose to 72 (Zych, Ortega-Ruiz, & Del Rey, 2015). Recently, a Google Scholar search with the term “cyberbullying” yielded a total number of about 61,700 results on 31 January 2020. This influx of research on the topic highlights the growing concerns of the academic community about cyberbullying.

The initial efforts to explore cyberbullying mainly based on the traditional definition of bullying. In his forward to “Cyberbullying across the globe,” Peter K.

Smith, described that research on cyberbullying has challenged and revitalized the bullying research program by adding new dimensions concerning conceptual and methodological innovations and bringing together contributions of researchers from different disciplines such as Education, Sociology, Psychology, Media, Communication and Legal studies to investigate this phenomenon (Smith, 2016).

Definitional characteristics of Bullying

Despite general agreement among researchers that bullying is a significant and common problem, one of the most challenging and controversial issues is the achievement of definitional consensus (Sanders & Phye, 2004). Constructing a definition of bullying, that not only adequately captures essential elements of bullying but also at the same time, incorporates numerous ways in which aggression can occur is a formidable task (Smorti, Menesini, & Smith, 2003). We can find different views on bullying in the scientific literature. The first technical definition used by most researchers and academician on school violence and bullying was proposed by Dan Olweus as “aggressive, intentional acts carried out by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself” (p. 48) (Olweus, 1978,1993). This definition proved most influential and was subsequently modified and expanded by other researchers to highlight the various features of bullying, such as the existence of power imbalance. Another brief definition provided by Smith and Sharp (1994) is “systematic abuse of power.” In his review, Smith (2016) concluded that despite an ongoing debate, there has been some consensus among researchers concerning three essential criteria to define bullying such as (1) intention to harm, (2) repetition, and (3) imbalance of power.

Intention to harm. Theoretically, intention to harm is a crucial aspect of bullying that differentiates it from unintentional or accidental harm (Anderson & Bushman, 2002; Migliaccio, 2015). Terms such as “deliberate,” “intentional” or “willful” have been used to represent the “intention to harm” in most widely used definitions of bullying (Olweus, 1993; Salmivalli & Nieminen, 2002). Thus, to be categorized as bullying, the specific act of aggression must be willfully, purposefully or deliberately done by the perpetrator. There are difficulties too concerning measurement of this aspect. For example, it assumes substantial honesty and self-awareness on the part of the perpetrator when self-report measures are used. Besides this, it usually based on the subjective judgment and this judgment can be different on the part of the perpetrator, victim and the observer (Goldsmid & Howie, 2014). This judgment can be elusive; sometimes, a victim who experiences aggression at their home may over-attribute the intent to harm by others (Pornari & Wood, 2010). The victim can be paranoid who reports being attacked, even in the absence of an actual attack (Juvonen, Nishina, & Graham, 2001). On the contrary, the perpetrator often blames the victim for provoking and initiating negative interaction (Pornari & Wood, 2010).

Repetition. Repetition appears as an important and easily identifiable criterion of bullying. A wide range of definitions indicate that the specific action must be repeated for the consideration of bullying (see for example, Baldry & Farrington, 2004; Olweus, 1993; Salmivalli & Nieminen, 2002). This aspect of bullying differentiates it from any single act of aggression and indicates that bullying not only leads to immediate harm and distress but also may contain the threat of further attack (Randa & Wilcox, 2012). However, there is not full consensus among researchers concerning repetition as an

essential criterion (Smith, del Barrio, & Tokunaga, 2012). To support this, researchers point out the Olweus bullying questionnaire, in which, after providing the examples of acts or behaviors, it is stated that “these actions are often repeated.” This indicates that repetition is not an essential criterion (Smith et al., 2012).

In addition, there is no general agreement concerning the frequency of the occurrence of behavior required to fulfill this criterion (Cowie, Naylor, Rivers, Smith, & Pereira, 2002). Therefore, a few researchers suggest that it is important to conceptualize the victimization and bullying as a continuum instead of imposing specific frequency cut offs (Marsh, Parada, Craven, & Finger, 2004). It is complicated to decide whether a specific behavior is “just once.” Smith et al. (2012) illustrates this with an example, such as a threatening statement, “I am going to kill you!” even said once, could be considered as a continuing threat. Moreover, the “repetition” and “intent to harm” criteria are interlinked to some extent. Repetition of an aggressive or harmful behavior is a clear indication that harm is intentional on the part of the perpetrator (Smith et al., 2012).

Power Imbalance. This is most commonly invoked criterion of bullying, based on the notion of illegitimate use of power by the bully over the victim. There are many characteristics of the perpetrator that can contribute to actual or perceived power over the victim, for example, physical strength, popularity, social competence, confidence, extraversion, quick wit, socioeconomic status, sex, age, ethnicity, and race (Olweus, 1978,1999); Rigby & Slee, 1993; Slee & Rigby, 1993; Smith & Brain, 2000). Furthermore, this criterion also distinguishes bullying from hostile aggression or other forms of violence (Connell & Farrington, 1996; Salmivalli & Nieminen, 2002; Smith & Brain, 2000). In spite of this, some researchers have criticized the inclusion of this

criterion by stating that, often, victims of bullying fail to report the power discrepancy (Connell & Farrington, 1996; Goldsmid & Howie, 2014).

Defining Cyberbullying

In spite of the influx of studies, a consensus among researchers has not been achieved over definitional aspects of cyberbullying. This lack of agreement is due to the relative “newness” of this phenomenon in comparison to the traditional form of bullying (Law & Fung, 2013). A brief definition by Willard (2006) is “sending or posting harmful or cruel text or images using the Internet or other digital communication devices.” Further, all the three essential defining features of traditional bullying (i.e. intent to harm, repetition, and power imbalance) have been applied to cyber context by using a theory-driven approach. Thus cyberbullying is defined by Smith et al. (2008) as “...aggressive intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself.”

There is a debate among researchers that whether the two phenomena, traditional and cyberbullying, are similar or different (Antoniadou & Kokkinos, 2015). Researchers such as Olweus and Limber (2018) indicated cyberbullying as an extension of traditional bullying, while, others argued that cyberbullying is a separate, different and unique phenomenon and it should not be confounded with traditional bullying in order to fully explore its intricacies (Dooley, Pyżalski, & Cross, 2009; Pieschl, Kuhlmann, & Porsch, 2015).

Cyberbullying as an extension of traditional bullying

A basic consideration in support of the extension of traditional bullying criteria to cyberbullying is the co-occurrence of these two phenomena (Beran & Li, 2005). A considerable amount of literature showed a high degree of overlap concerning the involvement of students in traditional bullying and cyberbullying (Hinduja & Patchin, 2012; Olweus, 2012b; Salmivalli & Pöyhönen, 2012; Smith et al., 2008). Regardless of the methodological issues (such as definition employed, time frame, and the measurement instrument used), such high degree of overlap led to the researchers to argue whether two phenomena are one phenomenon or two distinct concepts. A common factor was found for traditional and cyberbullying on the basis of findings from large-scale studies in Norway and U.S.A (Olweus, 2012b). Likewise, another study (Bauman & Newman, 2013) showed that survey items were not distinguished by factor analysis on the basis of the type (i.e. traditional bullying victimization or cyberbullying victimization), but, on the basis of the nature of the particular bullying incident (such as using offensive language, general harassment or using explicit sexual images).

In contrast to this, not all findings support these notions. Some other studies suggested that cyberbullying can occur “in isolation” and some students do not perpetrate in traditional context or face to face but they do in cyberspace (Hinduja & Patchin, 2008). Similarly, not all pupils involved in cyberbullying have previous participation in traditional bullying (Hemphill et al., 2012). A longitudinal study by Low & Espelage (2013) indicated significantly less overlap between these two phenomena in comparison to simple bivariate analyses revealed by several studies.

Another consideration in support of the similarity of traditional and cyberbullying is that both forms share the common risk factors. For example, Hase, Goldberg, Smith, Stuck, and Campain (2015) found that both phenomena were independently associated with negative psychological outcomes. Likewise, both types of bullying were found to be associated with substance abuse, delinquent behavior (Litwiler & Brausch, 2013), negative physical, psychological and academic consequences (Kowalski & Limber, 2013).

Owing to these arguments about the two phenomena, it is a very obvious step to transfer the defining criteria of traditional bullying to cyberbullying (Smith, Del Barrio, & Tokunaga, 2013). However, concerns have been raised by the researchers about the transfer of conventional defining criteria from traditional bullying to cyberbullying (Bauman & Bellmore, 2015; Pieschl, Porsch, Kahl, & Klockenbusch, 2013; Smith et al., 2008).

Intention to harm' with reference to cyberbullying. The “intention to harm,” emerged as an important criterion in existing studies on cyberbullying (Menesini, Nocentini, et al., 2012), but it has been asserted that a victim’s judgment of the cyberbullying incident might be ambiguous (Nocentini et al., 2010). To interpret the “intention to harm” correctly by the victim in cyberspace is very difficult because of the absence of social cues (Berger, 2013). For example, a victim often cannot observe the body gestures or facial expressions, which further help to distinguish between friendly teasing, joke, intimidation or harassment (Pieschl et al., 2013). Consequently, cyber victims may misinterpret a message or an online post intended as fun, while on the contrary, cyberbullies may not be aware of the emotional reactions such as feeling of hurt

of the victims due to the lack of social or physical cues (DeHue, Bolman, & Völlink, 2008; Raskauskas & Stoltz, 2007). A study by Law, Shapka, Hymel, Olson, and Waterhouse (2012) provided empirical support to this. Findings of this study revealed that 95% of those involved in cyberbullying perpetration reported that their intention was just to make fun instead of causing harm to others.

Repetition' with reference to cyberbullying. The characteristic of repetition is more critical with reference to cyberbullying in comparison to traditional bullying. A single nasty text message, mean comment on social media, compromising picture or video can often “go viral” and reach a massive audience rapidly (Patchin & Hinduja, 2015). Thus a single act can cause fear, distress, and repeated humiliation of the victim (Dooley et al., 2009; Menesini & Nocentini, 2009). Consequently, this criterion is considered subsidiary by the researchers and not always included in the definition and measurement of cyberbullying (Antoniadou & Kokkinos, 2015; Smith et al., 2013).

Power imbalance' with reference to cyberbullying. The “imbalance of power” is the key characteristic in traditional bullying and is very clear in terms of superior physical or social characteristics of the bully over the victim (Olweus, 1993; Rigby & Slee, 1993). However, with reference to cyberbullying, it may be conceptualized differently. Taking cyberspace into consideration, it is still arguable what the ‘power’ constitutes and how it is manifested. Patchin and Hinduja (2006) indicated that power can be associated with higher computer literacy or superior ICT skills. It can be displayed in several ways, for example, posting hurtful comments, sending inflammatory messages, banishing someone out of the bulletin board or controlling topics for discussions (Shariff & Gouin, 2006).

On the contrary, Dooley et al. (2009) argued that setting up a fake account on a social networking site or posting compromising photos online requires very basic skills. On the other hand, complex forms of cyberbullying acts, for example, transforming, modifying and manipulating pictures and videos demand more advanced skills (Smith et al., 2008). Previous research showed that students with superior technological skills were more likely to perform deviant behaviors using a mobile phone and the Internet (Vandebosch & Van Cleemput, 2008). Similarly, another study revealed that students who were involved in cyberbullying rated themselves higher on Internet expertise than those who were not involved in cyberbullying (Ybarra & Mitchell, 2004a).

Some other researchers suggest that the perpetrator can easily conceal his or her identity in the virtual domain and this capability of the perpetrator contributes to power over the victim (Ybarra & Mitchell, 2004b). Further, Smith et al. (2013) explain that if the victim is unaware of the identity of the bully, then, it's hard for him or her to respond effectively. Consequently, it can give the victim a feeling of powerlessness. On the other hand, Dooley et al. (2009) argued that cyberbullying is not confined to any geographical limitation like traditional bullying. Therefore, ICT (Information and Communication Technology) based interactions can be received or disseminated at any time round-the-clock and the victim experiences powerless in response to not having any control over the acts of the perpetrator. Conversely, in this situation, power is not manifested as the perpetrator's characteristic but constituted in a situational relationship (Bruner, 1990; Smith et al., 2013).

Another aspect of power indicated by Menesini, Nocentini, and Palladino (2016) is that victim feels powerlessness due to the associated psychological threats and social

impacts. Because cyberbullying acts often happen online in the public domain, negative effects can be amplified by the repeated public exposure, constant availability of the harmful content online, increasing visualization, likes and comments on the content. Thus, it leads to the feeling that the “victim cannot defend himself.”

Unique features of Cyberbullying

Nonetheless, cyberbullying has its unique aspects. Cross, and Smith (2011) summarized these characteristics to clearly distinguish it from traditional bullying. First, cyberbullying demands a certain level of ICT competence. Indeed, it's simple to send harmful text messages or emails, complex forms of cyberbullying such as stealing one's identity requires comparatively more than basic skills. Second, it occurs in the digital environment; therefore, bullies can disguise or conceal their identities during electronic conversations. Third, the perpetrator cannot observe the immediate emotional effects on the victim that increases moral disengagement and reduces the guilt feelings (Hymel, Rocke-Henderson, & Bonanno, 2005). Fourth, the role of the witness is more complex in cyberbullying than traditional bullying, because it comprises a much larger group due to the global nature of ICT technologies (Ferreira, Simão, Ferreira, Souza, & Francisco, 2016). Fifth, a motivational factor considered to be involved in traditional bullying is to acquire the status by exhibiting power over others in front of viewers. The cyber context does not confer this power on the perpetrator unless the perpetrator uses more public digital places such as SNS, chat rooms or posting harmful material publically. Sixth, online content (cyberbullying posts) can easily go viral with rapid dissemination to a broad audience, consequently lead to more humiliation (Kernaghan & Elwood, 2013). Seventh, no geographical limits exist in cyberspace and perpetrator can access the victim

at any moment or at any place (Sugarman & Willoughby, 2013), while in traditional bullying perpetrator has access to the victim primarily on school premises. Betts (2016) indicated that norms and rules of social interactions in the digital world are less confined and perpetrators often express their negative feelings more openly without any censorship because of online disinhibition effect (Suler, 2004).

Cyberspace specific criteria of cyberbullying

Some researchers suggest that due to clear differences in the traditional and cyber context and the unique nature of cyberbullying, it is important to incorporate additional cyber-specific criteria to adequately represent and define cyberbullying (Nocentini et al., 2010).

Anonymity. The certain features of digital technology make it easy for the perpetrator to remain anonymous. A study found that 59.5% of the students revealed that; it would be easy to say something online that is difficult to say in person (Arıcak et al., 2008). Betts (2016) indicates several reasons why the anonymity of the perpetrator can contribute to cyberbullying. (1) The perpetrator feels more power over the victim by hiding his or her identity; (2) the perpetrator feels less fear of being caught and punished and consequently, this may encourage the perpetrator to engage in more severe forms of acts (Beale & Hall, 2007); (3) the anonymity of perpetrator may increase the intensity of fear, threat, and confusion in the victim (Anderson & Sturm, 2007).

Moreover, Barlett (2015) suggests that the perception of anonymity can arise because physical proofs of cyberbullying are often missing in the cyber context. For example, if cyberbullying occurs through SNS such as SnapChat, messages are visible for

a brief period of time unless the victim has already captured the image of it before it becomes invisible from the chat history.

Research on university students has shown that anonymity influences the decision of bystanders' about whether they should intervene or not intervene after witnessing a cyberbullying situation (Gahagan, Vaterlaus, & Frost, 2016). A wider audience is available in cyberspace, therefore, each witness considers it's not their responsibility and someone else will intervene to support the victim or stop the cyberbullying.

Although considerable association exists between the level of anonymity and the frequency of cyberbullying (Barlett, 2015), users are often not truly anonymous in cyberspace. Though they can create fake profiles and perform masquerade attacks, it is noteworthy that Internet service providers have capabilities to track, monitor and record users' activities (Betts, 2016).

Nevertheless, the anonymity features of cyber-space have been much highlighted by researchers to set cyberbullying apart from traditional bullying (Brewer & Kerslake, 2015; Huang & Chou, 2013; Watts et al., 2017). It has been argued that perpetrators of traditional bullying may also use some kind of anonymity while spreading rumors (Smith et al., 2013). Besides this, the anonymity characteristic may be of greater importance when cyberbullying occurs in the public domain (such as websites, Facebook groups) instead of in private, and it can be more difficult to stop when the perpetrator is unknown (Slonje, Smith, & Frisén, 2017). Moreover, Nocentini et al. (2010) suggest that although anonymity can enhance to the severity of the experiences of cyber victimization, it should not be an essential defining characteristic of cyberbullying.

Publicity. Publicity has often invoked as a relevant criterion of cyberbullying (Pieschl et al., 2015). Publicity in comparison to private interactions describes the involvement of larger audiences by pictures or videos posted online or distributed through SNS. Research revealed that students perceived publicity as an important characteristic to consider the specific incident as cyberbullying (Nocentini et al., 2010). Furthermore, Sticca and Perren (2013) indicated that students perceived public incidents of cyberbullying as more distressing than private. The aspect of publicity is important to understand the motive of the perpetrator who takes the advantage of a global audience to increase the impact of cyberbullying over the victim (Betts, 2016; Long, 2008).

Media. An important consideration has been given to the media through which cyberbullying occurs. Initial research on this phenomenon (Patchin & Hinduja, 2006) indicated several types of digital media used to cyberbully others, such as e-mail accounts, instant messengers, chat rooms, bulletin boards, newsgroups (on the Internet) and text messaging and calls (on mobile phones).

A growing number of definitions of cyberbullying provided by researchers reveal how modern communication technologies and social networking developed gradually over the last 15 years and how cyberbullying behaviors evolved with the advancement and expansion of modern communication technologies. For instance, capabilities of cellular telephones have evolved at an exponential rate from simple devices originally designed to communicate through text messages and calls to “smartphones” using 4 G wireless technology and capable of performing a wide range of functions of computers (Betts, 2016). In addition, other handheld devices and digital tools including travel-tabs have also become more common since 2003, when the cyberbullying term started to

appear in scientific literature. Moreover, variety of media through which cyberbullying can be enacted has also gone through explosive growth with the progress of the Internet and modern communication tools.

In view of this advancement, a few researchers suggest that, instead of examining cyberbullying, broadly, across all kinds of media, it should be investigated separately with reference to specific media (Calvete, Orue, Estévez, Villardón, & Padilla, 2010). For example, Ybarra, Boyd, Korchmaros, and Oppenheim (2012) measured cyberbullying actions separately, examining online bullying, phone bullying, and traditional bullying (at school, home, and other places). In contrast to this, researchers such as Smith et al. (2013) have raised concerns regarding operationalization of cyberbullying with reference to focus on particular media. They argued that the advent of smartphones with increasing capabilities rendered the distinction between Internet and mobile phone bullying obsolete. Furthermore, the trend concerning the popularity of various media is constantly changing as a fashion shifts with the availability of new social media tools and electronic devices (Betts, 2016; Slonje et al., 2013). Together, these arguments have led to the researchers to assert that a more holistic and integrated approach is required to understand cyberbullying. Consequently, it has been proposed to take into account the aspects of hostile and harmful aggressive behaviors, and individual experiences as constituents of cyberbullying that can occur through any electronic device without any specificity (Rivers, 2013; Tokunaga, 2010).

Behaviors. The knowledge of the broad range of aggressive behaviors that bullies perform in cyberspace provides a clear understanding of the typological conceptualization of the phenomenon (Aoyama & Talbert, 2009). Researchers provided

various typologies to describe these behaviors. For example, Willard (2007) identified seven types of behaviors to fully understand the complexities of this phenomenon.

(1) Flaming: The exchange of heated, offensive, insulting or threatening arguments during online fights between two individuals or groups. It usually occurs on public forums such as chat rooms, Facebook groups, discussion boards etc.

(2) Harassment: Sending repeatedly offensive, abusive or threatening messages to a specific individual over a sustained period of time. It usually occurs privately such as sending text messages, emails etc., but, it can also occur in a public setting.

(3) Denigration: Sending or posting harmful, untrue content, gossip or rumors to damage someone's reputation on social networks. The victim is not often the main intended recipient of the harmful content posted by the perpetrator, because perpetrator wants to access the large audience, particularly, including the victim's social network. A typical example of denigration is to post altered pictures (photoshopped onto pornographic images) of the target on the Internet.

(4) Impersonation: It occurs when perpetrator breaks into someone's account and posts content online pretending to be that user. Impersonation is carried out with the goal to portray a bad image of the target in front of others. It may occur through target's social network profile, email account, web page, etc. Youth often share their account's password as the indication of deep friendship but after breakups, it may be used to gain access by the perpetrator (ex-friend) to the target's account. However, sophisticated hackers may access passwords through other ways such as Wi-Fi traffic monitoring attacks, or systematic guessing to crack passwords.

(5) Outing and Trickery: Outing is posting someone's private information, pictures or videos online, while, Trickery is using tactics to gain the trust of the target and trick the target into disclosing confidential and personal information that can be used later maliciously. Thus, these two forms of cyberbullying are interlinked and work in tandem.

(6) Social Exclusion: Deliberately leaving out the target from an online group and indicating that his or her presence is not welcomed, removing the target from the buddy list, discussion groups or blocking the target from conversations.

(7) Cyberstalking: It refers to the acts through which perpetrator repeatedly sends offensive and harmful messages. Cyberstalking can be the real threat to the safety and well-being of the target. Though there are blurred lines between harassment and cyberstalking, the point of clear demarcation is that to constitute as cyberstalking, the perpetrator's act must be repeated and the target experience fears and distress because of repeated threats.

In addition, the research findings of Spears, Slee, Owens, and Johnson (2009) led them to classify incidents as covert or overt cyberbullying. Covert cyberbullying was suggested as social, indirect, or relational, i.e. rumors, excluding someone, while overt cyberbullying refers to intentionally using technology to cause harm to others such as deliberately taking compromising photos and posting them to cause harm.

Further, on the basis of the classification (Willard, 2007), Nocentini et al. (2010) proposed four types of behaviors by examining the nature of the aggressive acts.

- (1) Written/Verbal: It refers to the written or verbal form of aggressive acts such as text messages, phone calls, instant messaging, chats, social networking communities, emails, blogs, and websites.
- (2) Visual: It includes visual forms of aggressive acts such as sharing or posting compromising photos and videos via mobile phone and the Internet.
- (3) Impersonation: This form of bullying is carried out by stealing and using other person's account and identity.
- (4) Exclusion: It refers to deliberately excluding someone from an online community or group.

In addition, Langos (2012) classified direct and indirect nature of cyberbullying. Direct nature indicates attacks carried out directly towards victims such as emailing privately or sending messages via chat. Contrary to this, indirect cyberbullying occurs when the harmful content is posted to more public cyberspaces such as public forums, websites or SNS.

Chisholm (2014) provided a more broad classification of cyberbullying behaviors such as catfishing (involving people in romantic or emotional relationships by using fake identities); cheating (blocking entryways in massive multiplayer online games and forming roving gangs); disseminating and sending derogatory insults, threatening or humiliating messages or pictures; flaming (argumentative exchange and online fights); impersonating others; online slamming (online harassment by the participation of bystanders; ratting (monitoring, controlling and operating maliciously other's devices such as computer, cell phone, and webcam); relational aggression (spreading rumors, creating fake social network accounts and use them for malicious acts); sexting (sending

or posting embarrassing or sexually suggestive images/pictures); shock trolling (posting anger-provoking content or writing offensive posts); stalking others online.

Some of the behaviors described in this classification overlap with those previously described in the literature. Further, the inclusion of some new behaviors has been made, particularly, those behaviors that emerged with the advancement of the Internet and social media. Besides this, some other behaviors such as controlling the target's computer and webcam have overlapped with cybercrimes (Tzezana, 2016).

Nonetheless, a variety of behaviors have been considered indicative of cyberbullying perpetration by researchers, Betts (2016) argued that to define and conceptualize cyberbullying, it is essential to examine how students perceive this issue. This approach can be helpful for two reasons. First, social media and digital technologies are constantly evolving and educational practitioners and researchers may not be fully aware of how students engage with technology. Second, in order to develop the psychometrically sound measures for the assessment of cyberbullying, it is essential to take into account the students' perspective and to ensure that measuring devices accurately reflect behaviors that students experience or engage in.

Student's perception regarding the conceptualization of cyberbullying.

Several studies have been conducted to explore how students perceive cyberbullying. For example, Nocentini et al. (2010) carried out focus group discussions with adolescents recruited from Germany, Italy, and Spain. Students' accounts revealed that to determine whether a specific behavior constitutes cyberbullying, students consider whether the act is carried out to inflict harm and the effects of that act on the victim and whether this act

is repeated by the perpetrator. Findings of another study showed that students perceive power imbalance as an important aspect of cyberbullying and the power imbalance is linked with the feeling of helplessness that is evoked (Spears et al., 2009). Additionally, it is imperative to consider that cultural aspects can influence how student conceptualize and define cyberbullying. Existing research has indicated the use of different words to describe bullying and cyberbullying in different languages and some languages do not have an exact word to describe bullying (Nocentini et al., 2010; Smith & Monks, 2008). In addition, Pieschl et al. (2015) stated that when students are asked to conceptualize or define cyberbullying, they generally relied on their previous knowledge (the information taught them at schools about cyberbullying). With reference to university students, it may be possible that their understanding of cyberbullying also reflects what is communicated through news channels and other media sources. Therefore, when exploring a participant-driven definition, it is imperative that researchers should be aware of sources as well as the information students have gained about this phenomenon (Betts, 2016; Pieschl et al., 2015).

Overall, there seems to be clear agreement on the two defining characteristics of cyberbullying such as “intention to harm” and the “power imbalance” (Menesini et al., 2016; Smith et al., 2013). However, the fuzzy nature of the construct in “power imbalance” is still open, and may be assessed with reference to superior ICT knowledge (Patchin & Hinduja, 2006), anonymity (Vandebosch & Van Cleemput, 2008), the feeling of helplessness in victim in response to cyberbullying (Menesini et al., 2016), low self-esteem or lacking confidence, social status, and large number of friends (Smith et al., 2013). Furthermore, the “repetition” characteristic and some cyber-specific aspects i.e.

“anonymity” and “publicity” should not be considered as essential criteria, but considering them as subsidiary criteria is helpful because they add information with reference to the perceived severity of cyberbullying (Menesini et al., 2016; Peter & Petermann, 2018; Smith et al., 2013). Investigating cyberbullying with reference to media and behaviors led us to attain a better insight of what students in reality experience; in other words, adopting a person-centered rather than data-centered approach. Further, independent of any conceptualization of cyberbullying that researchers adopt, it is important to know how the specific population perceive and experience cyberbullying particularly within specific cultural context (Betts, 2016).

Measuring Cyberbullying in the broader context of Bullying

Olweus (2012b) argued that the prevalence figures of cyberbullying reported by sensational media reports and researchers are generally exaggerated. Such higher prevalence can be contributed to methodological issues regarding measurement, such as studying cyberbullying “in isolation.” He stressed that the cyberbullying roles are fully immersed in the larger context of traditional bullying. Thus, cyberbullying has not caused a huge increase in new victims and perpetrators in addition to those already involved in traditional bullying. He cautioned to study cyberbullying in the larger context of bullying. Likewise, investigation of the related harms of cyberbullying should not be considered without taking into account the co-occurring harms of traditional bullying. Afterward Olweus’ paper, a growing number of studies examined traditional and cyberbullying phenomena together and considered the value of meaningful comparisons of behaviors across traditional and cyber context. Although research indicated a consistent overlap between traditional and cyberbullying, the figures for this overlap are not consistent and

vary across studies ranging from 50% to 97% (Brown, Demaray, Tennant, & Jenkins, 2017; Hinduja & Patchin, 2012; Olweus, 2012b; Smith et al., 2008; Ybarra & Mitchell, 2004a).

The large variation in the overlap figures is generally attributed to utilizing different conceptualizations, measurement instruments, and time frames across the various studies. Another reason for this varied level of overlap can be the developmental differences. Much research that has examined traditional and cyberbullying together has been conducted on school students, and there is a dire need to examine this overlap on relatively older populations such as university students. School children often have restricted access to technology as well as parental and school staff monitoring. On the other hand, university students generally have wide unmonitored access to online spaces and usually formal norms of in person interactions and the perception of accountability in traditional contexts molden them to bully others in offline context in comparison to online.

Law et al. (2012) raised concerns about how participants respond to questions of traditional and cyberbullying and whether it is possible to measure cyberbullying by employing the similar nature of questions employed to measure face-to-face or traditional bullying. He conducted a series of two studies (Law et al., 2012) to investigate this issue. Findings of their first study indicated that participants distinguished items with reference to traditional bullying i.e. physical, verbal, and social bullying in terms of participant role such as bully and victim but they did not differentiate victimization or perpetration in terms of specific roles for cyberbullying. Further, findings of their second study indicated that participants did not distinguish online interactions concerning participant roles

(victim, bully, and bystanders), though, they differentiated in terms of methods used for specific behavior (posting embarrassing photos vs. sending mean messages).

Overall, these studies highlight the unique and complex nature of cyberbullying. Therefore, the measurement of both traditional and cyberbullying constructs separately but in a way that systematic and meaningful comparison can be made would add to gain a deeper understanding of cyberbullying in a broader context of traditional bullying. For example, one way to do this is to use equivalent definitional criteria and measurement approaches when investigating potential links and involvement in traditional and cyberbullying (Thomas, Connor, & Scott, 2015). Further, measuring traditional and cyberbullying simultaneously allows the comparison not only of the associated harm of involvement in both traditional and cyberbullying but also to examine the unique impact of the harm of only traditional or cyberbullying.

Bullying in the university context: A neglected area of research

A substantial amount of research exists on bullying in different contexts, such as in preschools, schools, residential care facilities, homes, prisons, and the workplace (Monks & Coyne, 2011). However, bullying in the university context is less explored area of research (Coleyshaw, 2010; Meriläinen, Puhakka, & Sinkkonen, 2015). There are only a few studies that exist on bullying in the universities, although it is evident that bullying occurs during all developmental phases of human life ranging from childhood to elder hood (see Monks & Coyne, 2011).

Research indicated that some continuity exists between bullying at the school level and bullying at the institutions of higher education such as at the university. For

example, a survey on Finnish university students demonstrated that 51% of those students who had bullied their university mates had also bullied their schoolmates and 41% of those who experienced victimization during university education had previously been victimized in schools (Pörhölä, 2016). Similar findings were reported by another large-scale study on Finnish university students. However, in this study, school to university, the continuity of bullying was found particularly more common among male students (Lappalainen, Meriläinen, Puhakka, & Sinkkonen, 2011). Likewise, Bauman and Newman (2013) found a similar pattern of the continuum by examining 709 university students in the USA. Findings revealed 3.7% of the students reported that they have experienced victimization at least occasionally at the university. Further, 84.6% of those students who were victimized at the university also reported experiences of victimization in junior high school; 80.8% had experienced victimization in high school and 73% had been subject to victimization at both junior and high school. With reference to gender, findings revealed that the stability in experiencing victimization from junior to high school and then to university was more consistent in male students (100%) in comparison to female students (64.7%).

There is growing evidence concerning stability in the participant roles as bully and victim from school context to higher education and even moving to the workplace. For example, a retrospective study carried out in the USA indicated a significant positive association between being a child, adolescent and adult bully (Chapell, Hasselman, Kitchin, & Lomon, 2006). Similarly, a study conducted in Canada by Curwen, McNichol, and Sharpe (2011) found that the majority of the perpetrators at the university had a prior involvement in bullying perpetration at school. In addition, another retrospective study

examined the sample of British working adults and indicated a clear association between being victimized at school and being victimized at workplace (Smith, Singer, Hoel, & Cooper, 2003).

In view of this continuum, bullying is often attributed to individualistic factors associated with the personalities of bullies and victims and considered as an individualistic pathology (Coyne, Seigne, & Randall, 2000). However, Coleyshaw (2010) argued that considering bullying something different from a pathological or individualistic issue would demand a change and revision in the environmental as well as social practices and structures within institutions. This would be an exigent issue with consequences of blame and accountability upon administrators and governments. Thus, politically, it is safer to pathologize bullying considering it an individualized issue instead of the institutional issue.

Further, to identify the potential avoidance of bullying in higher academic institutions, Coleyshaw (2010) asserts that research on bullying in the higher education context is generally viewed as problematic and counterproductive in terms of new recruitments of students and marketing demands. Conversely, investigation of bullying in the workplace setting considered as a remedy to deal with the negative impacts such as absenteeism and decrease in productivity. Likewise, with reference to expansion of research in the school context, Smith et al. (1999) indicates that the dual force evoked by both; bullying research and the media focus generated a public concern and subsequently governmental responses concerning funding and interventions. Thus, there is a clear lack of inquiry concerning bullying in the university context in comparison to bullying literature in other contexts such as school bullying and workplace bullying.

Research on Bullying at universities

It is often assumed that bullying occurs only when people are at school, and that as they get older, they naturally grow out of these kinds of behaviors. Additionally, the university context is different from school, and the new environment enables students to experience realignment of personal values and beliefs, personal re-evaluation, and perhaps bring a transformation in their personalities. However, research indicated that bullying does occur at university campuses.

Findings of a large-scale survey at a Finnish university in a sample of 2,805 students indicated that 5% students reported being victimized at the university (Lappalainen et al., 2011). Further, findings of a study by Chapell et al. (2004) in the USA indicated 18.5% of 1,025 undergraduate students experienced victimization once or twice and 5% experienced it occasionally at college, while 13.4% reported that they have bullied their college fellows once or twice and 3.2% indicated bullying others at college occasionally. In the same vein, findings of a study (Curwen et al., 2011) conducted in Canada examined a sample of 37 male and 159 female undergraduates who had been involved in bullying at least once to their fellow students since coming to university. Findings indicated that majority of those involved in bullying at university had prior involvement in bullying at school. However, the incidence of bullying at university was lower in comparison to at school. In view of this, Curwen et al. (2011) states that lower incidence of the traditional nature of bullying in the university may be due to fewer potential opportunities to perpetrate at university in comparison to school. Additionally, a majority of the university students adhere to social values that may be more strongly

opposed to give harm to others. However, they assert, though the incidence is low, bullies continue accessing their targets even at university campuses, particularly those peers who are more vulnerable to victimization and remain passive due to embarrassment and are less likely to retaliate. Moreover, it is possible that university students are more involved in relational forms of bullying such as cyberbullying.

Cowie and Myers (2016) examined various studies of medical and nursing students and reported that bullying is more prevalent among medical and nursing students than the average. Conversely, AlMulhim et al. (2018) conducted a study on university students in Saudi Arabia to compare bullying among medical and non-medical students. Findings revealed that prevalence of being bullied was higher among non-medical students than medical students (58% vs. 44% respectively).

Rashid (2016) investigated the research students' experience of getting victimized in a small scale qualitative study. Students' narratives indicated that PhD students are also subject to verbal and emotional bullying at university campuses. Furthermore, Giovazolias and Malikiosi-Loizos (2016) examined bullying among Greek university students. Findings revealed 6.3% of 464 students reported being bullied and the most frequently occurring forms of bullying were exclusion, rumour spreading and verbal bullying. In the university context, students are generally moving towards age 18 or above and most qualify as an adult. Therefore, sexual bullying is more prevalent in universities in comparison to schools (Luca, 2016).

Cyberbullying among university students

Bullying has emerged in the form of cyberbullying with the proliferation of digital technologies and is considered more detrimental than traditional bullying. The university context is a growing hub of digital activity. Generally, the academic structure of the university is organized by colleges and there may be departments or schools within colleges (Bauman, 2017). Universities students are “the always-connected generation” nowadays and technology is integrated with all aspects of their lives (Bull, 2010; Kentworthy, Brand, & Bartrum, 2012). Almost all of them have access to the World wide Web and they frequently use a wide variety of digital venues such as SNS, blogs, wikis, web-conferencing, and other internet resources. They have access to a variety of media tools such as smartphones, tablet computers, e-book readers, MP3s, and other devices and applications (Kentworthy et al., 2012).

Research studies indicated that cyberbullying increases with age (Butler, Kift, & Campbell, 2009; Kiriakidis & Kavoura, 2010), and with reference to the adult population, cyberbullying behaviors among university students are often associated with sexuality, intimate partner violence, or politics (Kota, Schoohs, Benson, & Moreno, 2014; Lindsay, Booth, Messing, & Thaller, 2016). In view of all this, there is a well-established need to investigate cyberbullying at university campuses.

Prevalence of cyberbullying among university students. Finn (2004) conducted the first survey in the USA to investigate online harassment among 339 undergraduate students in a university. Findings indicated 10% to 15% had experienced harassment by instant messaging and repeated emails. Research on cyberbullying among university

students was not ubiquitous until the dreadful incident occurred in 2010. An 18-years-old university student in the USA, Tyler Clementi committed suicide. His act was attributed to an incident in which he was spied on using a webcam by his roommate during a same-sex intimate encounter in his room. He took his own life after finding out that the video of the incident had been posted online and viewed by many others (Schwartz, 2010).

Table 1 provides a brief chronological review of existing quantitative studies concerning prevalence rates of cyberbullying among university students associated with various participants roles such as cyber victims, cyber bullies and mixed victim-bullies. However, not all studies investigated the prevalence rate concerning all participants' roles; a majority of them focused on only cyber victimization.

To draw comparisons concerning prevalence reported in various studies, the details of the year, country where a specific research was carried out, sample size and the prevalence rates have been provided.

Table 1*Comparisons concerning prevalence reported in various studies*

Researchers	Year of study	Country	Sample	Vict. (%)	Bul. (%)	Vict/Bul (%)
Englander	2008	USA	283	8	3	
Arıcak	2009	Turkey	695	36.7		17.7
Dilmac	2009	Turkey	666	53		
Hoff and Mitchell	2009	USA	351	56		
MacDonald and Roberts-Pittman	2010	USA	439	21.9	8.6	
Kraft and Wang	2010	USA	471	10		
Akbulut and Eristi	2011	Turkey	254	81		
Turan and colleagues	2011	Turkey	579	60		
Walker and colleagues	2011	USA	120	11		
Molluzzo and Lawler	2012	USA	110	9	3.6	
Schenk and Fremouw	2012	USA	799	8.6		
Wensley and Campbell	2012	Australia	528	11.6	3.8	
Alhabash and colleagues	2013	USA	365	17.8	9.6	
Schenk, Fremouw, and Keelan	2013	USA	799		7.5	2.4
Smith and Yoon	2013	USA	276	10		
Tomşa, Jenaro, Campbell, and Neacşu	2013	Bulgaria	92	8.7	2.2	
Xiao and Wong	2013	Hong Kong	288	71.9	60.4	51.7
Brack and Caltabiano	2014	Australia	164	10	11	62
Crosslin and Crosslin	2014	USA	286	32	16	
Faucher and colleagues	2014	Canada	1733	55		
Kokkinos and colleagues	2014	Greece	430	11	14	33
Paullet and Pinchot	2014	USA	168	9		
Washington	2014	USA	140	12		
Zalaquett and Chatters	2014	USA	613	19		
Cunningham et al.	2015	Canada	1004	5.7	4.5	4.9
Elipe and colleagues	2015	Spain	636	54		
Francisco and colleagues	2015	Portugal	519	27.9	8	
Selkie, Kota, Chan, and Moreno	2015	USA	265	17	3	7.2
Slovak, Crabbs, and Stryffeler	2015	USA	282	21.5	20	
Whittaker and Kowalski study 1	2015	USA	244	18.2	12	
Whittaker and Kowalski study 2	2015	USA	197	22	14	
Wozencroft, Campbell, Orel, Kimpton, and Leong	2015	Australia	282	14.5	7.9	
Caravaca-Sanchez et al.	2016	Spain	543	52.7		
Gahagan et al.	2016	USA	197	18.9		
Gibb and Devereux	2016	USA	338	68.9	33.7	
Kokkinos, Baltzidis, and Xynogala	2016	Greece	258		32.7	
Ballard and Welch	2017	USA	151	52	35	
Varghese and Pistole	2017	USA	338	15.1	8	
Yubero, Navarro, Elche, Larrañaga, and Ovejero	2017	Spain	243	9.8		
Balakrishnan	2018	Malaysia	1158	18.6	8	15.2

Continued.....

Researchers	Year of study	Country	Sample	Vict. (%)	Bul. (%)	Vict/Bul (%)
Blaya, Kaur, Sandhu, and Sundaram (cross cultural study)	2018	India	904	15.2	2.1	20.9
Phizacklea and Sargisson	2018	France	451	12.4	8.4	10
Sam and colleagues	2018	New Zealand	312	94.9	82	
Webber and Ovedovitz	2018	Ghana	476	93.3		
Martínez-Monteagudo and colleagues	2018	USA	187	4.3	7.5	
	2019	Spain	1282	18.6	19.4	

Note. Vict = Cyber Victims; Bul = Cyber Bullies; Vict/Bul = Mixed Cyber Victim-bullies

As Table 1 illustrates, the prevalence figures range from 4.3% to 94.9% for experiencing cyberbullying as a victim, and 2.2% to 82% for involvement in cyberbullying as the bully. The prevalence figures for mixed victim/bully role in cyberbullying range from 2.4% to 62%. These figures demonstrate a clear variation in the prevalence rates of those experiencing cyber victimization, perpetration of cyberbullying, and mixed cyber victimization and cyberbullying.

These figures reflect disparate views with reference to the magnitude of cyberbullying. For instance, as shown in table 1, some of the higher figures in the prevalence rate (see Akbulut & Eristi, 2011; Sam et al., 2018; Xiao & Wong, 2013) support the notion that cyberbullying is rising rapidly and has become a serious global issue that is prevalent not only among teens and adolescents but also among young adults (Aoyama & Talbert, 2010). On the other hand, some of the low prevalence figures of cyber victimization (e.g. Cunningham et al., 2015; Englander, 2008; Schenk & Fremouw, 2012; Tomša et al., 2013; Webber & Ovedovitz, 2018) support Olweus's (2012b) proposition that in reality it is characterized by low incidence and due to absorbing the traditional bullying roles, it has become an exaggerated phenomenon.

However, there are some important factors that must be considered when interpreting the real estimate concerning the prevalence of cyberbullying (Betts, 2016; Menesini et al., 2016).

Conceptual, methodological and measurement issues. The prevalence rate is likely to be influenced by the variation in the conceptualization and defining characteristics of cyberbullying. Studies differ concerning the inclusion of consistent criteria to define cyberbullying in the operational definitions to measure cyberbullying (Jenaro et al., 2018; Menesini et al., 2016; Smith et al., 2013). Besides the variation in the conceptual and operational definitions, there are several measurement issues that may impact the prevalence rate. For instance, whether cyberbullying was being measured using single item approach (such as Aricak et al., 2008; Dilmac, 2009; Molluzzo & Lawler, 2012) or multiple-item approach (Schenk & Fremouw, 2012; Xiao & Wong, 2013). The former approach refers to asking a global question to respondents such as, whether they have experienced cyberbullying or they have been involved in cyberbullying others. On the contrary, the latter approach (multiple-item) asks respondents to rate different behaviors associated with cyberbullying. Generally, multiple-item measurement is considered more accurate, valid, and reliable in comparison to a single item (Nunnally, 1978). With reference to cyberbullying, Gradinger, Strohmeier, and Spiel (2010) indicated that a single item global measure may lead to underestimation of the reports of cyberbullying, while, a multiple-item approach has been considered more objective for providing an accurate estimate of the prevalence (Dehue, 2013), and more relevant for the comprehensive and detailed assessment regarding frequency of various forms of cyberbullying (Menesini et al., 2016).

Further, regardless of using a global item or mult-item approach, the variation has also been contributed to using different time parameters across various studies. The time parameter over which one is asked to report cyberbullying range through, at university or at present time (i.e., Kraft & Wang, 2010; Schenk et al., 2013; Walker et al., 2011), over the past two months (i.e., MartiNez-Monteagudo et al., 2019), over the past six months (i.e., Sam et al., 2018; Zacchilli & Valerio, 2011), over the past year (i.e., Blaya et al., 2018), over the lifetime (i.e., Akbulut & Eristi, 2011; Francisco et al., 2015), or without any specific time duration (i.e., Kokkinos et al., 2014). Existing research on adolescents support for how the variation in the time frame can impact the prevalence rates. In other words, the longer time frame can provide higher estimates in the prevalence in comparison to shorter time frames (Gomez-Garibello, Shariff, McConnell, & Talwar, 2012).

Moreover, in order to interpret prevalence rates, it is important to consider the cut-off criteria that have been used in various studies. To categorize cyberbullying behaviors, researchers often classify individuals by implementing particular cut-off scores criteria with reference to specific roles such as cyber victims, cyber bullies or mixed victim-bullies. Findings of a study by Gradinger and colleagues (2010) indicated a clear variation in the prevalence rates when lenient versus strict cut-off criteria were used.

Aligned to the cut off scores, the prevalence rates vary according to whether participants were asked to report cyberbullying/victimization experiences using all media without any distinction or with reference to using a particular media or venue. For example, the majority of the studies (such as Dilmac, 2009; Kokkinos et al., 2014; Washington, 2014; Wensley & Campbell, 2012) measured cyberbullying broadly without

using any reference to particular media. On the other hand, some studies investigated cyberbullying particularly on social media (Whittaker & Kowalski, 2015), social networking sites (Gahagan et al., 2016), and more specifically, on Facebook (Kokkinos et al., 2016), Twitter (Chatzakou et al., 2017) and Massively Multiplayer Online Games (Varghese & Pistole, 2017).

It is also important to note whether cyberbullying/victimization was measured in isolation or along with traditional bullying victimization (such as Caravaca-Sanchez et al., 2016; Wensley & Campbell, 2012). It has been argued that measuring cyberbullying in isolation lead to higher estimates in prevalence (Olweus, 2012b; Olweus & Limber, 2018).

Likewise, social desirability is a crucial factor that may cause under-reporting of or over-reporting of cyberbullying and consequently influence the prevalence rate. Prior research indicated a significant association of cyberbullying with social desirability (Doane, Kelley, Chiang, & Padilla, 2013). University students generally consider cyberbullying a socially undesirable behavior, thus may under-report such acts to create a favorable impression (Akbulut & Eristi, 2011; Betts, 2016). Existing research indicated a significant association of cyberbullying and cyber victimization with the scores on social desirability (Doane et al., 2013). Likewise, Sugarman and Hotaling (1997) indicated that individuals who present themselves in a socially desirable light may under-report their severe aggression and overreport their minor aggression. Another study demonstrated that female students who exhibit higher levels of social desirability were less likely to report being the perpetrator or victim of aggression (Bell & Naugle, 2007).

Overall, the issues discussed in the above section provide an indication of how researchers should be cautious while comparing the prevalence rates of cyberbullying reported in various studies which used different definitions, measurement devices, and methodologies. Further, there are various factors related to the use of technology and demographic characteristics of the sample that can affect the prevalence rate of cyberbullying/victimization.

Use of technology. Researchers assert that ICT usage, frequency, and the way technology is used have an impact on the prevalence rate of cyberbullying/victimization (Wolke, Lereya, & Tippett, 2016). First, time spent online can contribute to the prevalence rates and in existing studies, it has consistently appeared as an important determinant for cyberbullying victimization (Çelik, Atak, & Erguzen, 2012). It has been stated that due to simple exposure effect, spending more time online contribute to high risk of cyberbullying/victimization. (Betts, 2016). A study found that victims of cyberbullying spend more hours per day using a computer than those who are uninvolved in cyberbullying (Mishna, Khoury-Kassabri, Gadalla, & Daciuk, 2012).

Similar to cyber victimization, cyberbullying perpetration has also been found significantly associated with greater amount of time spent online (Chen, Ho, & Lwin, 2016; Guo, 2016) and especially time spent on Internet-based social activities (Shapka, Onditi, Collie, & Lapidot-Lefler, 2018). Further, empirical support for this association has been found for all roles in cyberbullying. Twyman, Saylor, Taylor, and Comeaux (2010) conducted a study on children and adolescents samples showed that those who were identified as victims, bullies and mixed victim-bullies spent a larger amount of time online for social purposes such as instant messaging, emailing, and posting in chatrooms.

In addition, Kokkinos et al. (2016) reported the engagement in cyberbullying perpetration in males was predicted by spending a large amount of time on Facebook.

Barlett and Chamberlin (2017) found that use of technology and cyberbullying both increased from adolescence to young adulthood and then subsequently decreased. Although the relationship between cyberbullying/victimization and time spent on the Internet has not yet been fully investigated with university students (Kowalski, Limber, & McCord, 2018), it is reasonable to believe that both would correlate because university students are also always connected generation.

Further, it has been argued that instead of spending a large amount of time online, it is more important to know how the students engage with particular activities on the Internet. For example, cyber victimization was predicted by participation in public chatrooms, viewing YouTube clips and using SNS (Mesch, 2009). Additionally, involvement in risky online behaviors, for example posting sensitive information online, interacting on the Internet with strangers, posting pictures online, or disclosing passwords to their friends were linked with the increased risk of being harassed and cyber victimized (Sengupta & Chaudhuri, 2011; Vandebosch & Van Cleemput, 2009; Wolke et al., 2016). A study by Katzer, Fetchenhauer, and Belschak (2009) revealed that cyber victims were more presumably spend time on risky locations i.e. pornographic, right-wing extremist, and howling chatrooms.

A number of studies have indicated superior technological abilities in using ICTs and social media is also associated with perpetration of cyberbullying. For example, Ybarra and Mitchell (2004a) reported that perpetrators of cyberbullying more likely rate

themselves superior at using the Internet and spending a higher amount of time online. Similarly, Xiao and Wong (2013) indicated that cyberbullying was predicted by the higher level of ICT self-efficacy. Further, Walrave and Heirman (2011) assert spending greater time online enables cyber bullies to enhance their technological abilities and skills. Conversely, it has been found that victims of cyberbullying were even unaware of online safety skills (Mishna et al., 2012).

The evidence presented here highlights the significance of considering ICT-related factors that can contribute to the cyberbullying/victimization. More specifically, ICT usage and time spent online can contribute to the variations in the prevalence rates of cyberbullying/victimization are significant to consider while comparing prevalence rates of different studies.

Demographic characteristics. Demographic variables such as age and gender are also important to explain the variation of the prevalence rates of cyberbullying.

Age of the sample. Some researchers argued that the prevalence of cyberbullying increases with age (Butler et al., 2009; Kiriakidis & Kavoura, 2010). A study by Ševčíková and Šmahel (2009) demonstrated that adolescents and young adults most likely experience cyberbullying. Sam et al. (2018) indicated that cyberbullying is more prevalent among university students followed by high school students in comparison to junior school students. They attributed this high prevalence to the fact that university and high school students have greater access to technology. Further, a qualitative investigation has indicated that most of the university students do not consider cyberbullying as serious issue and assume its prevalence is lower in higher education

than other educational levels (Crosslin & Golman, 2014). However, when students were asked about specific cyberbullying behaviors, a majority of them admit that they had experienced some forms of cyberbullying at the university level (Watts et al., 2017). Likewise, some other studies demonstrate that, though traditional bullying decreases with age, cyberbullying incidence is relatively similar at university in comparison to high schools (Wensley & Campbell, 2012). Thus, with reference to the age of the samples, prevalence rates of cyberbullying can be skewed (Betts, 2016).

Bauman (2017) asserts that the application of evolutionary psychology and dominance theories for bullying (Ellis et al., 2012), can be extended to why bullying continues in the university context with reference to increasing age. Bullying behaviors are common in animals in order to compete for the attainment of resources necessary for survival, including sexual mates. Older students often tend to dominate over younger students (Pratto, Sidanius, & Levin, 2006; Walker et al., 2011). Universities are generally more diverse in culture and much larger than schools. Therefore, university students strive to maintain the status, attain a hierarchy necessary for survival and to meet new educational demands. Though in terms of evolutionary history, adolescence is a peak phase of lifespan to strive for potential mates, the competing challenges of higher education and economics in today's world may influence adolescents to postpone finding mates. Therefore, when students enter the university as young adults, they are striving for resources including sexual partners. The evolutionary scenario exhibited in the university context can provide a theoretical rationale concerning an increase in cyberbullying with age. Butler et al. (2009) attributed this increase of cyberbullying with age to greater

access and usage of technology by older students. Moreover, older students have more sophisticated technological skills than younger students.

Gender. This is another demographic variable that accounts for some variation in the prevalence rates of cyberbullying. Early studies on cyberbullying among children and adolescents samples provided inconsistent findings concerning gender. Similar inconsistent findings concerning cyberbullying/victimization and gender have been reported for university students. Several studies reported no gender differences (such as Gibb & Devereux, 2016; Wozencroft et al., 2015), or just a borderline difference (i.e. Sam et al., 2018). On the contrary, several studies indicated greater victimization of female students (i.e. Webber & Ovedovitz, 2018), while others reported greater victimization of male students (for example Wensley & Campbell, 2012). A number of studies have demonstrated male students outnumbered female students for cyberbullying (Ballard & Welch, 2017), who had higher involvement as victims and bullies (Wong, Cheung, & Xiao, 2018) and as cyber bullies and mixed cyber victim-bullies (Kokkinos et al., 2016) than female students.

Barlett and Coyne (2014) conducted a meta-analysis on gender differences and suggested that using gender as moderator variable somehow can help to address the inconsistencies in findings of gender-related cyberbullying research. Wong et al. (2018) investigated how gender moderates the effect of the inhibiting, impelling, and instigating triggers on the perpetration of cyberbullying among university students. Findings revealed that the impelling effect of online disinhibition was stronger for women than men, while the instigating impact of cyber victimization was significantly stronger for

men. Contrary to this, the inhibiting impact of self-control for cyberbullying perpetration was found significant equally for both men and women.

Besides prevalence by gender, some research has focused on same-sex or cross-sex cyberbullying. Faucher et al. (2014) indicated that cyberbullying is more prevalent in people of the same sex than the opposite sex, and female students are more presumably to be involved in bullying if the targets are other female students. On the other hand, with reference to cross-sex cyberbullying, Spitzberg (2002) found that almost half of cyber victimizations arise from former romantic relationships. Consequently, research examining cyberbullying among university students has focused on investigating the extent to which cyberbullying/victimization occurs during breakups and dating relationships (Larrañaga, Yubero, & Ovejero, 2016). Research demonstrated that violent incidents of cyberbullying often occur when the romantic relationship is over (Crosslin & Crosslin, 2014). The reports of university students also revealed that cyberbullying is often used as a means to harm another's romantic relationships by a friend, ex-romantic partner, or acquaintances (Crosslin & Golman, 2014). Additionally, Henry and Powell (2015) have argued that revenge porn, such as creating and distributing non-consensual pornography of the victim is more often linked to female students than male students as the target. Findings of the study by Turan et al. (2011) indicated that female students reported themselves as more disturbed than males about their sexuality on the Internet.

Furthermore, there has been some research that has investigated gender differences concerning cyberbullying victimization and mental health problems. A study by Hinduja and Patchin (2007) conducted on adolescent sample showed that female cyber victims are more presumably feel frustration in comparison to males. Similarly, Bauman

et al. (2013) found that that cyber victimization significantly predicts depression among high school students but only for female students. It has been noted that majority of prior research concerning negative impacts of cyberbullying/victimization on mental health has been undertaken in the school context and the applicability of this association among university students has not been fully established.

Negative outcomes of cyberbullying/victimization. Negative consequences of the involvement of traditional bullying/victimization on mental health have widely been recognized; however, it is not yet established whether similar negative impacts and the level of severity exist for those involved in cyberbullying/victimization. Research has begun to investigate the adverse outcomes of cyberbullying for cyber victims, cyberbullies and the mixed group of those who involved in dual roles as cyber bully-victims (Betts, 2016).

There is growing evidence that youth who experienced cyber victimization reported a great deal of negative impacts on their mental and physical health including anxiety, depression, emotional distress, somatic symptoms, suicidal ideation and attempts (Bottino, Bottino, Regina, Correia, & Ribeiro, 2015). Further research indicated that it's not just cyber victims who suffer from emotional and mental health problems. Some cyber bullies also have more negative impacts on mental health and well-being than those not involved in cyberbullying (Campbell, Slee, Spears, Butler, & Kift, 2013). Yang et al. (2013) found that anxiety and depressive symptoms were found to be stable predictors of the perpetration of cyberbullying. Likewise, Chang et al. (2013) reported similar findings for the mixed group of cyber-bully-victims. Additionally, some studies found the cyber bully-victims group is at higher risk for the negative consequences. For instance,

Sourander et al. (2010) reported that cyber-bully victims were found more stressed, anxious, and depressed than un-involved peers, while Chang et al. (2013) found that cyber-bully victims suffer more from mental illness than any other participant roles on the basis of involvement in cyberbullying. A review of research examined studies from different countries and indicated that cyberbullying has emerged as an international public health issue causing serious mental health concerns not only for adolescents but also for university students (Nixon, 2014).

Though, only few studies exist that investigated the negative impacts of cyberbullying/victimization on university students, Jenaro et al. (2018) postulates that its negative impacts on university students may be as severe as on children and adolescents. Research on university students showed that cyber victimization is linked with serious psychological consequences and was a great threat to the mental health and well-being of those involved (Mitchell et al., 2018; Na, Dancy, & Park, 2015; Romito, Cedolin, Bastiani, & Saurel-Cubizolles, 2016; Schenk & Fremouw, 2012; Tennant et al., 2015). Researchers such as Zalaquett and Chatters (2014) argued that university students often experience more emotional forms of cyberbullying than school students; therefore, its negative impacts on mental health can be of more severe in intensity for university students. Several studies indicated that different types of victimization lead to different negative impacts. For example, students who experience unwanted sexual advances were prone to develop depression (Didden et al., 2009; Selkie et al., 2015). This is important with relevance to university students because sexual form of cyberbullying is more prevalent in the adult group than in children and adolescents populations.

Further, research found that university cyber victims reported feelings of stress, frustration, aggression and concentration problems (Schenk & Fremouw, 2012). Similarly, a qualitative study revealed that cyber victims reported a range of negative emotions such as feelings of hurt, humiliation, powerlessness, embarrassment, isolation, and anger (Cassidy, Faucher, & Jackson, 2017).

The negative consequences of involvement in cyberbullying for perpetrators and for mixed roles (both perpetrator and victim) have also been examined. Findings showed that cyber-bully victims and cyber bullies scored higher than the control group on the scales of hostility, interpersonal sensitivity, phobic anxiety, depression and psychoticism (Schenk et al., 2013).

Besides the negative impacts on the mental health, there is also evidence that the experience of cyberbullying affected academic performance and social relationships of college and university students (Crosslin & Golman, 2014; Smith & Yoon, 2013). Likewise, Faucher et al. (2014) reported that cyber victimization affected university students' feeling of emotional and physical security, academic grades, friendships, personal relationships, and their ability to accomplish assignments. Female students more frequently than male students reported such negative impacts. With reference to long-term consequences of cyber victimization, Kota et al. (2014) indicated that university students think that their professional career can be affected by cyber victimization because online content has a long shelf life (Faucher et al., 2014), and digital footprints are often difficult to remove. Therefore, university students may worry that potential future employers may carry out checks to their social media profiles (Betts, 2016).

However, Watts et al. (2017) indicated that not all people who experienced cyber victimization are equally affected. Several variables such as gender (Hinduja & Patchin, 2007; Bauman et al., 2013), sexual orientation (Mitchell et al., 2018), empathy (Doane, Pearson, & Kelley, 2014), social support (Tennant et al., 2015), and coping skills (Ak, Özdemir, & Kuzucu, 2015; Na et al., 2015) help to understand the differential impact of cyber victimization.

There is growing evidence to show the independent association of cyberbullying victimization with the negative impacts on the mental health of children and adolescent populations (Bonanno & Hymel, 2013) and also the unique contribution of cyber bullying victimization, while controlling for traditional bullying victimization (Sakellariou, Carroll, & Houghton, 2012). Contrarily, some other studies such as Mitchell, Ybarra, and Finkelhor (2007) reported that after accounting for traditional victimization, demographic factors and life adversity, cyber victimization was not found significantly associated with depressive symptoms. The findings of this study were also confirmed by Dempsey, Sulkowski, Nichols, and Storch (2009) particularly for depression. Moreover, research has shown that those adolescents who are exposed to both traditional and cyberbullying at the same time have the highest levels of psycho-social adjustment problems (Gradinger, Strohmeier, & Spiel, 2009). With reference to university students, Tennant et al. (2015) found that experience of being cyberbullied predicted depression above and beyond of the experience of being traditionally bullied.

In view of these contradictory findings for the incremental impact of cyber victimization, more research is required. Additionally, Junco, Merson, and Salter (2010) pointed out that university students have greater access to online technology and spend

more time in digital interactions than the younger students, and therefore may have a greater potential risk of cyber victimization than school students. Tennant et al. (2015) showed that the negative effects of cyber victimization on university students may be more grievous because of the lack of social support. University students live more independently and have unmonitored online activities in comparison to younger students. Therefore, more studies are needed to examine the incremental impact of cyber victimization over and above traditional victimization on the well-being and mental health of university students.

Bullying and Cyberbullying in Pakistan

Cultural contextualization. Bullying or cyberbullying is a complex and deep-rooted phenomenon. Wright (2017) indicated that most of the explanations concerning bullying or cyberbullying are embedded in the cultural context. Therefore, to understand bullying or cyberbullying in Pakistan, it is important to know the distinctive facets of Pakistani culture that may contribute to bullying and cyberbullying. Pakistan is a developing country in South Asia bordered by Afghanistan, China, Iran, and India. It is the sixth most populated country with a population of over 202 million. Islam is the principal religion as 95-98% Pakistanis are Muslims. Violence or bullying is one of the major issues in Pakistani society. Although Pakistan has collectivistic, strict, family-controlled culture, collective or group nature of violence prevails in the society due to religious, sectarian, ethnic, and political segregation (Zaman & Sabir, 2013).

Within the country, a diverse culture exists with high social polarization. Although the patriarchal values are deeply rooted in Pakistani society, a great diversity

exists concerning gender roles across social classes, regions, and the urban/rural stratification with reference to the impact of tribal, feudal, capitalist social articulations, and inequitable socioeconomic development (Critelli, 2010). Overall in the social-cultural milieu, men hold the primary power and dominate in all aspects of the society. Issues related to honor, shame, and humiliation are of utmost significance in Pakistani society. The “honor” is generally tied with the conduct of a woman (Tarar & Pulla, 2014), as the woman is considered the representative and carrier of the honor of a family.

On account of stigmas and cultural taboos, victimized women are generally judged by specific divisions of the society as villainous and accountable for their own abuse and victimization. Mistreatment and abuse of women are justified by the accusation of dressing immodestly and working in male-dominated organizations. Furthermore, a study by Magsi et al. (2017) demonstrated that mistreatment and harassment of a woman is considered as humiliation and threat to the honor of the family.

The situation is worse in some rural and conservative regions of the country where a woman is subject to honor killing if she is judged by the family to have acted against religious and cultural values and norms. Similar to offline victimization, online victimization of women is also common. For example, the Kohistan video incident occurred in 2012, where a short video of five young girls singing and dancing with two boys at a private gathering went viral. All the girls shown in the viral video were honor killed by their families following the directions of local *jirga* (tribal council) in the name of honor (Constable, 2016). Similarly, another example is the case of Qandeel Baloch, a social media celebrity, bombarded with immense abuse for her bold online persona and

later in July 2016 killed by her own brother for tarnishing the honor of the family through her online activities (Masood, 2018).

Existing research has indicated that attitudes favoring revenge and retaliation predict aggression and bullying (McConville & Cornell, 2003). Reciprocated aggression is deeply embedded in Pakistani societal norms. For example, rivalries between castes, clans, and ethnic groups are common and generally passed on from one generation to another. In view of this, taking revenge is considered as maintaining the honor (Zaman & Sabir, 2013). Attitudes favoring revenge seeking could exist because people have distrust of the judicial system and social justice in the country. In some tribal and rural areas, a decision to file a legal case in court instead of seeking revenge often considered as a symbol of weakness and shame (Zaman & Sabir, 2013).

Background of higher education system and the environment in universities.

To understand the nature of bullying and cyberbullying among Pakistani university students, it is imperative to consider the background or context in which bullying occurs. Higher education refers to education above grade twelve in Pakistan. The universities generally offer undergraduate (four years BS program), masters, and postgraduate programs to students. Besides universities, colleges that are situated separately also offer undergraduate education as Intermediate (grade eleven and twelve) and two-year Bachelor programs (World Bank Group, 2013). Public sector colleges are usually run by the provincial and federal governments and affiliate with specific universities as the degree awarding institution. Similarly, the majority of medical and engineering colleges are working independently, with the exception of a few that are situated within the larger universities.

There are a large number of private and public sector universities in Pakistan. Generally, mixed sex or co-education exists at university level. However, there are also few women-only universities to facilitate gender segregation in Pakistan as Muslim majority state. Despite a steady change from highly religious and conservative norms to moderate views of female education, conservative norms and values yet prevail in Pakistani society (Mehmood, Chong, & Hussain, 2018), and therefore some parents don't allow females to study in co-educational institutions.

Besides women-only universities, some universities have separate campuses (such as International Islamic University) for male and female students. Moreover, some universities have greater influence of right-wing Islamic student organizations. The students of such organizations guard public morality and ensure segregation in male and female gatherings (Mehmood et al., 2018). In some universities, male and female students are not even allowed to sit together. Gender segregation at such university campuses has become a norm and fully enforced through notices, campus policies, codes of conduct, and fines (Imran & Shiza, 2017). The attraction between opposite sex is natural; therefore, such gender segregation may encourage students to develop their friendships with the opposite sex through online interactions. A study by Ali (2011) indicated that growth in ICTs has enhanced communication and friendships with opposite sex in Pakistani university students and consequently the culture in universities is changing rapidly regarding gender segregation.

Additionally, clashes are common in different unions of students at university campuses which often led to brutal physical violence among students and later shutdown of the universities (Haider, 2018; Junaidi, 2018). Furthermore, Pakistani universities have

no anti-bullying or cyberbullying policies in their codes of conduct and psychological support and counseling services are not adequate to meet the demands of a large number of students.

Research on bullying in Pakistan. Despite the significant concern of students, educators and health professionals about the issue of bullying, very limited research on bullying and cyberbullying exists generally in South Asian countries and particularly in Pakistan. Moreover, the majority of the studies have been conducted at schools or in work settings especially focusing on medical professionals.

The existing literature on school students indicated a greater prevalence of bullying victimization. For example, Khawar and Malik (2016) investigated bullying in different roles among 4th to 6th-grade school students and found 19.3% of students as victims, 17.3% perpetrators and 28.8% in dual roles as victims and perpetrators. Similarly, Shaikh (2013) demonstrated the findings of a study that was carried out in 2009 by employing a representative sample of Pakistani school students. Results indicated 41.3% of 4676 students experienced victimization in the past month and prevalence was higher in male students (45.1%) in comparison to female students (35.5%). Further, Murshid (2017) analyzed the GSHS data for three south Asian countries i.e. Pakistan, Myanmar, and Sri-Lanka and indicated that experiencing bullying was significantly positively associated with symptoms of depression in school students from all three countries.

With regard to investigating bullying in older students, Ahmer et al. (2008) surveyed 342 final year medical students. 11% of them reported being bullied once in a

week, 15.9% once in a month, and more than half (52%) of students reported experiencing bullying victimization less than once in a month. While reporting different forms of victimization, a large proportion of students, 56.9% said they experienced verbal abuse, 25.7% indicated other negative behavioral gestures that represents harassment or bullying, 15.6% reported intentionally being ignored by someone, 10.9% experienced exclusion, 5% reported being physically abused and 2.5% experienced written abuse. Furthermore, 88% indicated the absence of anti-bullying policies in medical colleges. Likewise, another study (Mukhtar et al., 2010) on a sample of 106 medical students showed 66% of the total sample reported experiencing some form of bullying victimization in the past six months. Of the sample, 70% of students who experienced bullying were female students and 30% were male students. Factors that were associated with the experience of bullying were feeling lonely or sad, lacking close friendships and lack of awareness regarding support services at medical campuses.

Further, research on bullying in Pakistan has been extended from medical students to medical professionals (Gadit & Mugford, 2008), junior doctors (Imran, Jawaid, Haider, & Masood, 2010) trainee psychiatrists (Ahmer et al., 2009), and nurses in the hospitals (Somani, Karmaliani, Farlane, Asad, & Hirani, 2015). However, little attention has been given to investigating bullying among university students.

We found only one study undertaken by Qudsia and Asma (2011) that compared the prevalence of bullying in both adolescents and adult groups on very small samples of (35 adolescents and 35 adults). Adolescents were recruited from schools and colleges, while, adults were selected from the University of Karachi in the Sindh province. Results showed bullying victimization was higher among adolescents group (77.14%) than adults

(57.14%) in the past 12 months. Moreover, the authors provided their observation that the concept and the term “bullying” was not fully comprehended by the participants and they suggested future research should provide the definition of bullying to counter this limitation.

The emergence of cyberbullying. Cyberbullying manifested with the advancement in ICTs and the broad array of communication possibilities that evolved with digital technology and social media tools. Pakistan is currently one of those countries that highly influenced by dynamic growth in ICTs. As of December 2017, there are 44.6 million Internet users (Internet World Stats, 2017). According to the latest figures provided by the Pakistan Telecommunication Authority (PTA) on October 2018, subscribers of cellular phones has almost exceeded to 152 million. Additionally, there are 62 million broadband subscribers (PTA, 2018). Regarding social media penetration, there are 35 million active social media users and 92% of them are Facebook users (AlphaPro, 2018). Research indicated that internet usage is most prevalent and a popular communication channel among students in higher education worldwide (Hong, Li, Mao, & Stanton, 2006).

Investigation of cyberbullying in Pakistan is very recent. The term cyberbullying is less common in Pakistan. Most such cases have been described using the term “cyber harassment” or the umbrella term of “cybercrime”. The majority of the newspaper and media reports showed different forms of cyber abuse including creation of fake Facebook accounts of female students, to share private photos and videos of them, raping and recording their videos which were later used for blackmailing them ("FIA Cyber Crime Wing," 2018; "Rape, Blackmailing," 2018). Some incidents showed the involvement of

college and university students ("FIA Cyber Crime Wing," 2018; "Rape, Blackmailing," 2018). The majority of the stories indicated female students as victims and male as perpetrators (Ahmed, 2018), while in some recent case female also appeared as the perpetrator ("First women," 2018; "Woman arrested," 2017).

In 2007, the Government of Pakistan created the National Response Centre for Cyber Crime (NR3C) to control the technological abuse, cyber-crime, cyber-harassment and online bullying (NR3C, 2007). In April 2016, the Prevention of Electronic Crimes Bill was passed by the National Assembly of Pakistan to control technology related crimes (Khan, 2016). Before this, there was no legislation to deal with cyberbullying that is on rise in Pakistan. FIA indicated a 20% increase in the figures of reported cases from 2015 to 2016 (Federal Investigation Agency, 2016), and 30% increase in the figures have been observed from 2016 to 2017 (Federal Investigation Agency, 2017). The latest performance report of FIA for the first quarter of 2018 reported 90% of victims were women and the majority of cases involved extortion and cyber harassment using pornographic content. Additionally, 90% of the reported complaints revealed that harmful acts were performed through Facebook and WhatsApp (Imran, 2018). NR3C is the sole designated law enforcement agency for receiving reports of cyber harassment, online abuse, and all kinds of technology-based crime in Pakistan. The offices of NR3C are only located in five major cities in Pakistan. The reporting procedure requires the complainant to appear in person in NR3C office to register a complaint about formal legal proceedings. Therefore, victims residing in small cities or other remote areas have problems in accessing NR3C. Furthermore, it is facing the challenges of shortage of staff and resources.

Digital Rights Foundation, a non-governmental organization launched Cyber harassment Helpline that started working on December 1, 2016. The first year helpline's operation report revealed that 67% reported cases were of female victimization while 33% were of male victimization (Digital Rights Foundation, 2018). The highest frequency of complaints was about non-consensual usage of personal information followed by unsolicited messages, blackmailing, impersonation, gender-based bullying, hacking, and threats. In addition, Facebook was reported as the most common venue to experience cyber harassment followed by phone calls, texts, Skype video calls, WhatsApp, Instagram, Email, Viber, Twitter, YouTube, and other websites. With reference to geographical region, 50% reports were received from the Punjab, which is the most populous province of Pakistan. More than half of the victims (54%) fell into the range of 18 to 25 years and young women were found as most vulnerable to cyber harassment (Digital Rights Foundation, 2018).

Empirical findings of research on cyberbullying. Cyberbullying is a relatively new area of research in Pakistan. There are only a few studies that exist to date on the investigation of this phenomenon. Ashiq, Majeed, and Malik (2016) surveyed 150 young adults recruited from colleges, universities, and Internet cafes. Findings of the survey revealed that anxiety and depression are significantly associated with cyberbullying.

In a later qualitative study, Magsi and colleagues (2017) conducted interviews with 120 female university students in order to investigate their experiences of cyber victimization. They found that 40% of the sample indicated that they had experienced cyber victimization. Male perpetrators targeted their physical appearance, sent them dirty sex stories, and posted vulgar comments on their Facebook posts. Furthermore, 45% of

the women did not report the incident, because they consider reporting the incident to their families or formal law enforcement agencies will not lead to any positive outcome.

Despite the evidence concerning high prevalence of cyberbullying and reports of some tragic stories including the suicide of female university students (Musharraf & Lewis, 2018), less consideration has been provided to examine this phenomenon in Pakistan. Overall, only a few studies have been undertaken so far on cyberbullying in Pakistan and indeed are not sufficient to deal with this contemporary phenomenon. Further, most of the studies were conducted on very small samples and without taking into account any theoretical background.

Theoretical Frameworks

In a review of literature Tokunaga (2010) highlighted the need for utilizing well-established theoretical frameworks to gain a deep understanding of the cyberbullying phenomenon. Tokunaga's call was addressed in subsequent research and a number of theories were applied to understand cyberbullying. For example, Protection Motivation Theory (Lwin, Li, & Ang, 2012), Social Dominance Theory (Salmivalli, Sainio, & Hodges, 2013), Social-ecological Theory (Bauman, 2010; Cross et al., 2015; Hong et al., 2016), Social Cognitive Theory (DeSmet, Gunther, Jacobs, & De Bourdeaudhuij, 2015; Swearer, Wang, Berry, & Myers, 2014), Social Information Processing Theory (Ang, Tan, & Mansor, 2011; Runions, Shapka, Dooley, & Modecki, 2013) General Strain Theory (Ak et al., 2015; Hay, Meldrum, & Mann, 2010; Jang, Song, & Kim, 2014; Lianos & McGrath, 2018; Paez, 2018; Patchin & Hinduja, 2010) Problem Behavior Theory (Lester, Cross, & Shaw, 2012), Routine Activity Theory (Marcum, Higgins, &

Ricketts, 2010; Ngo & Paternoster, 2011), and the Online Disinhibition Effect (Barlett, Gentile, & Chew, 2016).

The transactional model of stress and coping (TMSC)

For the present study, TMSC (Lazarus, 1984) has been adopted to study cyberbullying victimization among university students. Sutton, Smith, and Swettenham (1999) assert that the improvement in anti-bullying programs is likely to depend upon a broader understanding of the ongoing psychological processes (Sutton et al., 1999). Considering cyberbullying a stressful situation, it is an influential model explaining how individuals cope with stress. Additionally, it is scarcely utilized as an explanatory framework in cyberbullying/victimization research (Raskauskas & Huynh, 2015). However, only a few studies have applied this theory to understand aspects of coping, and the role of cognitive appraisal in cyberbullying victimization.

There is growing evidence that experience of cyberbullying is linked to poor mental health and well-being (Bottino et al., 2015). Conversely, Newman, Holden, and Delville (2005) indicated that not all individuals who experience victimization have negative impacts. How victims appraise the cyberbullying incident and cope with the situation may distinguish those who experience negative outcomes and those who are resilient against the negative impacts of being cyberbullied (Raskauskas & Huynh, 2015). Therefore, using the TMSC to test the relationship between cyberbullying victimization, well-being, and mental health problems and to investigate the mediating role of cognitive appraisals and coping strategies may help to recognize the individual variation in the outcomes.

In the decades of the 1960s and 1970s, stress was typically described as a transactional association between the stimulus and the perceiver (Lazarus, 1966). The TMSC model illustrates how an individual copes with the stressful event, taking into account both the cognitive appraisals and the coping strategies. TMSC is based on four prime constructs: stress, cognitive appraisals, coping strategies, and the outcomes of stress for the well-being of a person (Lazarus & Folkman, 1987). According to Björkqvist (2001) bullying victimization is a form of social stress. The TMSC posits that an individual's reaction to a stressful situation (such as the experience of cyber victimization) is a result of the individuals' cognitive appraisals and the consequent selection of coping strategies. Cognitive appraisals refer to the evaluations of the significance and severity of a stressful situation for one's well-being.

Coping involves the cognitive and behavioral efforts to regulate emotions, tolerate, master, or reduce a particular stressor (Lazarus, 1984; Lazarus & Folkman, 1987). The coping styles have been broadly classified as emotion-focused /avoidant-focused coping and problem-focused coping (Lazarus & Folkman, 1987). Emotion-focused coping involves efforts to deal with the emotional reaction to cyber victimization. These strategies include venting emotions and avoidance-oriented approaches, i.e. denial, distancing or disengagement (Endler & Parker, 1994). Problem-focused coping refers to the efforts to deal with the problem and to reduce the risk of its future occurrence. Seeking advice or help to deal with cyber victimization and standing up against cyberbullying are problem-focused coping strategies (Parris, Varjas, Meyers, & Cutts, 2012; Raskauskas & Huynh, 2015). Generally, research has found that individuals who employ problem-focused coping adapt better to a threatening situation

than those who employ passive emotion-focused coping. Additionally, selection of a specific coping strategy is influenced by both the nature of the stressor and the assessment of the available resources (Lazarus, 1984; Lazarus & Folkman, 1987).

Cognitive appraisals

Cognitive appraisals imbue the occurrences with personal interpretation and subsequently determine the degree of stress experienced (Holroyd & Lazarus, 1982; Lazarus, 1984). Hojat, Gonnella, Erdmann, and Vogel (2003) indicated that the appraisal system can be understood in terms of individual differences that how a certain situation can be distressing for one person but not for another. According to TMSC, there are two kinds of cognitive appraisals: primary and secondary. The primary appraisal refers to evaluating the situation or categorizing the seriousness and severity of an event by assessing its significance for one's wellbeing (Lazarus, 1984; Lazarus & Launier, 1978). The occurrences of an event might be appraised as irrelevant, trivial, positive, negative, or stressful. The stress-related appraisals include threat, loss/harm, and challenge. However, these appraisals can occur in tandem and may not be mutually exclusive. For instance, the perception of threat may contain elements of loss or harm (Lazarus, 1999). Challenge appraisal involves finding positive outcomes from a negative experience that leads to growth or mastery. For example, one gains the experience of coping with cyber victimization after becoming a victim of it. This kind of experience may benefit in the future if one knows how to deal with victimization if it happens again (Hunter & Boyle, 2004). Secondary appraisal involves the evaluation of the changeability of a stressful situation (such as cyber victimization) along with the assessment of available resources (Lazarus & Folkman, 1987). For example, with respect to cyber victimization, one evaluates one's

ability to control cyber victimization or evaluates the available resources in terms of seeking help or social support.

In order to develop a theoretically and psychometrically sound measure of appraisal including both primary and secondary dimensions in the context of TMSC, Peacock and Wong (1990) identified three kinds of primary appraisal which includes challenge, threat, and centrality. Challenge appraisal refers to the growth or gains from the stressful experience, while threat appraisal reflects the potential for loss/harm. Centrality appraisal involves the perceived significance of an event for the individual's well-being and long-term consequences of the particular event for one's life. Contrarily, secondary appraisal refers to the perception of control over the stressful situation in terms of the available resources (Lazarus, 1984).

Cognitive appraisals and mental health. To date, a very little research exists regarding the appraisal of cyberbullying. TMSC provides a good framework to examine how cognitive appraisals work in the relationship between cyber victimization and mental health outcomes. Existing longitudinal research in the context of traditional victimization and primary appraisal showed that fear reactivity predicts an increase in internalizing symptoms (such as getting upset or crying) over time as a result of victimization (Terranova, 2009). With reference to secondary appraisal, an individual evaluates what available resources are there and to what extent such resources can be helpful to deal with a stressful situation. Social-ecological theory considers bullying and cyberbullying victimization not only with reference to personal factors but also from the perspective of contextual system (Espelage, Rao, & Craven, 2013). This theory can be applied to examine the possible available resources to victims (Noret, Hunter, & Rasmussen, 2018).

Regarding individual factors, appraisal of resources may include an individual's ability to control a stressful situation such as cyber victimization. Existing research concerning traditional bullying context indicated that lower perception of control is associated with higher victimization (Hunter & Boyle, 2002) and higher perception of control also works as a protective factor to deal with the negative impacts of victimization (Pape & Arias, 1995). Resources may involve the perception of available social support from a broad range of contextual systems including friends, teachers, family, or the wider campus community. Lower perceived support has found to be linked with greater victimization and lower levels of mental health (Smokowski, Evans, & Cotter, 2014).

Cognitive appraisals may evaluate an event as stressful and consider the potential reactions to that event (Lazarus, 1984). Therefore, cognitive appraisals are not only salient for the relationship of victimization and mental health outcomes, but they also determine the selection of coping strategies to deal with the stressful situation. Theoretically, such cognitive appraisals affect a person's response to a threatening encounter, operationalized as either moderating or mediating variables (Noret et al., 2018).

A moderating variable affects the relationship between predictor and outcome variables. Under various conditions of the moderator, the strength, direction or even significance of the relationship between predictor and outcome varies. On the other hand, a mediator variable explains the predictor-outcome relationship and helps to understand the causal chain of relationship from predictors to outcomes (Baron & Kenny, 1986).

There is a scarcity of research on cognitive appraisals and mental health consequences concerning cyber victimization. Further, most of the studies exist in the context of traditional victimization and are limited to school-aged samples. Additionally, no study used both primary and secondary appraisal together (Noret et al., 2018).

Na et al. (2015) examined the relationship between the frequency of cyber victimization, challenge, threat, and control appraisals and mental health problems in a sample of 121 college students. The authors reported a significant negative association between challenge appraisal, cyber victimization, anxiety, and depression. No significant association was found between the control appraisal and cyber victimization, while, a significant positive association was reported among threat appraisal, anxiety, and depression. Besides these significant associations, none of the three appraisals predicted depression and anxiety in cyber victims (Na et al., 2015). Moreover, this study did not investigate any moderating or mediating role of appraisals.

Cognitive appraisals may function in the relationship between victimization and mental health. For example, an individual's perception of the victimization experience as a threat, challenge, or the judgement of the consequences, evaluating the significance of that experience for an individual's wellbeing and the assessment of available resources to deal with this situation. All such evaluations can impact the relationship between a harmful situation and mental health outcomes or well-being of an individual (Cohen & Wills, 1985). Though both primary and secondary appraisals may work as moderators, the majority of the studies that exist in the context of traditional victimization examined the role of primary appraisal as mediators and secondary appraisals as moderators (Noret

et al., 2018). A few studies such as (Pouwelse, Bolman, Lodewijkx, & Spaa, 2011) examined the cognitive appraisals as both mediators and moderators.

Regarding primary appraisals, there is a growing body of research indicating primary appraisals act as mediating variables and explain the theoretical relationship between a stressful situation and maladjustment as described by the TMSC (Lazarus, 1984). A majority of the studies in the peer victimization context examined only the threat appraisal. A very few used control and challenge along with threat (Hunter & Boyle, 2004) and no study included the centrality appraisal. As Peacock and Wong (1990) indicated that centrality refers to the perceived importance of an event for one's well-being. Lazarus (1984) considered centrality as an important appraisal that plays a crucial role in the stress process.

Hunter, Durkin, Heim, Howe, and Bergin (2010) examined 924 school-aged students and reported that threat appraisal partially mediated the impact of victimization on depressive symptoms. On the contrary, Giannotta, Settanni, Kliever, and Ciairano (2012) found complete mediation of threat appraisal for the relationship of peer victimization, anxiety and depression in a sample of 155 adolescents.

Grych, Harold, and Miles (2003) indicated that when one encounters a threatening situation, he or she may have disturbing thoughts about that experience, which eventually leads to negative emotional symptoms, such as depression. A longitudinal study by Taylor, Sullivan, and Kliever (2013) demonstrated that threat appraisal is more dependent on the form of victimization, as findings of the study indicated that relational but not physical victimization predicted threat appraisal and subsequent maladjustment.

Relational bullying was often enacted in order to damage the social relationships, friendships and the social status of the victim (Hawker & Boulton, 2000a). Because of these similarities, cyberbullying has also been considered a form of relational bullying.

In view of this, it is important to investigate cognitive appraisals in response to the experience of cyberbullying victimization. With reference to secondary appraisal, Compas, Banez, Malcarne, and Worsham (1991) argued that perceiving control can affect how an individual manages a stressful experience. A study by Catterson and Hunter (2010) showed a significant negative association between appraisals of victimization as control and threat. Findings of the study indicated that an individual having a greater sense of control may appraise the victimization as less threatening and the incident may have less impact on the mental health (Noret et al., 2018). Likewise, O'Neill and Kerig (2000) examined 161 women victims of physical violence and reported that perceived control, behavioral self-blame moderated the relationship between violence and severity of emotional symptoms.

Social support is an important element for evaluating the resources with reference to secondary appraisal. There are inconsistent findings in the literature about whether the perception of social support functions as a moderator or mediator. For instance, some studies reported the moderating role of the perception of social support for the relationship of victimization and mental health (Cheng, Cheung, & Cheung, 2008; Davidson & Demaray, 2007; Li et al., 2018), while other studies in the context of cyber and traditional victimization found no moderating role of social support (Tennant et al., 2015). Contrarily, several studies reported significant mediation effects of peer victimization on mental health (Pouwelse et al., 2011; Seeds, Harkness, & Quilty, 2010).

Cognitive appraisals and coping. As TMSC posits, appraisals not only function in the relationship between victimization and mental health impacts, they also determine the selection of coping strategies to deal with the stressful situation (Lazarus, 1984). Cognitive appraisals are crucial because they propel the coping efforts and vary from individual to individual. Generally, an individual tends to use emotion-focused coping when a stressful situation is evaluated as uncontrollable, while problem-focused coping is used when the stressful situation is interpreted as controllable (Carver, Scheier, & Weintraub, 1989; Newman, Holden, & Delville, 2011).

On the other hand, Roth and Cohen (1986) explain this mechanism in the context of approach-avoidance coping. Approach coping drives towards managing a stressful situation while, avoidance coping drives away from a stressful situation, without managing it. They assert that in order to achieve an ultimate balance, usually people tend to use avoidance coping to deal with short-term, uncontrollable stressors and then shift to approach coping for long-term and controllable stressors. Although avoidance coping may seem to be an adaptive response to an uncontrollable stressful situation, this adaptation may result in failure to deal with the stressor and may lead to long-term stress (Roth & Cohen, 1986). Empirical research also supported this notion to some extent. For example, Hunter and Boyle (2004) carried out a study in the context of traditional bullying victimization by examining 459 school children.

These researchers reported that those who appraised their experiences of victimization as a challenge (expecting positive outcomes) were more likely used problem-focused and social support-seeking coping strategies. Further, both challenge and control appraisal determined which coping strategy was used. Children who

appraised victimization as uncontrollable, more frequently used wishful thinking as a coping strategy than those who appraised victimization as controllable. Additionally, those who appraised the situation as a challenge (expecting positive outcomes) used less wishful thinking than those who did not appraise the situation as a challenge (not expecting any positive outcomes). Similarly, another study on school children showed that greater appraisal of victimization as a challenge was associated with support seeking and more reporting the incident (Hunter, Boyle, & Warden, 2002).

Attributions have been studied concerning cyber victimization and coping (Bauman, 2009; Wright et al., 2018). Although attributions and appraisals have been used interchangeably in research, they are distinct on theoretical grounds and both kinds of cognitions function differently with relevance to predicting emotions (Leon & Hernandez, 1998; Smith, Haynes, Lazarus, & Pope, 1993). Attributions are more based on factual and non-evaluative information, while appraisals are more about personal interpretation, evaluation, and meaning (Lazarus & Smith, 1988).

With reference to attribution and coping, Bauman (2009) reported that self-blame attributions predict stress in children but not acting out behaviors in response to cyber victimization scenarios. Wright et al. (2018) conducted a study on samples of adolescents from India, China, Japan, Czech Republic, Cyprus, and the United States to investigate the influence of attributions on coping in response to various hypothetical scenarios of face-to-face victimization (private and public) and cyber victimization (private and public). Findings revealed that when Czech and Indian adolescents made more of the aggressor-blame attributions, they reported using more retaliation coping for face-to-face public victimization in comparison to face to face-private victimization and private and

public cyber victimization. Additionally, when Chinese adolescents made self-blame and aggressor-blame attributions, they used more helplessness coping. Similar patterns were observed in Cypriot adolescents; the self-blame attributions were associated with the ignoring style of coping.

The interaction between cognitive appraisals and coping strategies has not been studied in the context of cyber victimization. Cognitive appraisals of cyber victimization might differ from traditional victimization due to the unique features of ICT. For example, perception or interpretation of the victimization depends on available physical and social cues regarding intentionality of the perpetrator (Wright et al., 2018). These cues may be less visible in the context of cyber victimization than the traditional victimization.

Coping strategies

There is growing evidence to show that deleterious impacts of cyber victimization on mental health and well-being can be reduced by using effective coping strategies by children and adolescents (Machmutow et al., 2012; Perren et al., 2010; Völlink, Bolman, Dehue, & Jacobs, 2013; Worsley, McIntyre, & Corcoran, 2018). Research concerning coping strategies of university students with cyberbullying is sparse but a few available studies indicate university students use different coping strategies to deal with cyber victimization than those employed by school students (Orel, Campbell, Wozencroft, Leong, & Kimpton, 2015). Findings of a study by Erişti and Akbulut (2018) provided empirical support for this notion and reported school students employed more avoidance coping while university students used more counter measure coping (legal, social and

technical solutions). TMSC highlights that the process of coping is based on cognitive appraisals and appraisals become more sophisticated with age (Lazarus, 1984; Orel et al., 2015; Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2011). Given that, it is important to investigate the coping strategies of university students in response to cyber victimization.

Within the broader classification of problem-focused and emotion-focused coping styles, there are various strategies that can be employed to deal with the short term and long-term impacts of cyber victimization. Although with reference to stress and coping, the dichotomy of problem-focused and emotion-focused coping has remained the focus of research, it has also been criticized on a number of grounds. The most notable point is that these categories are not mutually exclusive and conceptually clear and exhaustive. Most of the coping strategies can serve as both emotion-focused and problem-focused functions (Ben-Zur, 2017; Skinner & Zimmer-Gembeck, 2007), and often complement each other (Lazarus, 2006). Lack of clarity is more evident concerning emotion focused coping. Within the higher order labelling, there is little agreement about the sub-categories it encompasses. For instance, in some cases efforts to calm oneself is considered to be emotion-focused, while in other cases panic episodes and uncontrolled venting of emotions are also included (Skinner, Edge, Altman, & Sherwood, 2003; Stanton, Danoff-Burg, Cameron, & Ellis, 1994). Similarly, ignoring or avoidance coping is specified in some studies as emotion-focused, while in others as problem-focused or mixed (Tokunaga, 2010).

These higher order categories of coping are not exhaustive with reference to lower order categories. For example, several coping actions appears to fall outside of both, such

as seeking social support which represents neither problem-focused nor the emotion-focused and instead focused on the self for accommodation. There is also less agreement on conceptual grounds, as in some cases social support has been measured as help seeking while in other cases used as proximity seeking and emotional support for getting away from the problem (Skinner et al., 2003).

It has been argued that rather than identifying higher order categories such as problem-focused or emotion-focused, it is more advantageous to identify categories on the basis of the specific actions (Skinner et al., 2003) that can be used to combat cyber victimization and reduce its negative impacts. A literature review by Perren, Corcoran, Cowie, et al. (2012) proposed a more comprehensive classification of responses to deal with cyber victimization in three domains: (1) reducing the risks of cyberbullying occurrences, (2) combating cyberbullying, and (3) buffering the negative impacts. These authors suggested anti-bullying/cyberbullying programs to reduce the risks of cyberbullying. Strategies to combat cyberbullying were classified as technical solutions (e.g. reporting the abuse or blocking), confronting the perpetrator (i.e. retaliation), active ignoring (i.e. forgetting about the experience, pretending that nothing has happened), and support seeking (i.e. asking for help from teachers, parents or peers). To buffer the negative impacts, strategies encompass seeking emotional support from friends, parents or teachers, and emotional coping (i.e. blaming oneself -maladaptive or blaming the perpetrator-adaptive). The review of studies (Perren, Corcoran, Cowie, et al., 2012) also indicated that there is clear lack of empirical evidence concerning the effectiveness of the coping strategies. To reduce and eliminate the damaging impacts of cyber victimization,

it is important to investigate the effectiveness of specific coping strategies (Erişti & Akbulut, 2018).

Existing research indicated that coping strategies students use to deal with cyber victimization are often different from those they use to combat traditional victimization. Because of the involvement of technology, both online and offline strategies are used to manage cyber victimization. Patchin and Hinduja (2006) reported that adolescent victims often remove themselves from the online spaces, even staying offline temporarily. Other technical solutions include blocking or unfriending the perpetrator, keeping records of derogatory texts as proof of the offense, registering a complaint to the service providers, and reporting the incidents to the concerned authorities (Smith et al., 2008), changing phone number, email address, account ID, username, and changing the account's passwords (Arıcak et al., 2008; Juvonen & Gross, 2008) . Blocking the perpetrator was also reported as more frequently employed coping strategy among university students (Orel et al., 2015).

Another way of coping is retaliation such as seeking revenge from the perpetrator by fighting or bullying back (Juvonen & Gross, 2008; Perren, Corcoran, Cowie, et al., 2012; Smith et al., 2008; Sticca et al., 2015). Such confrontational acts can be taken in both online and offline settings. The authors such as Arıcak et al. (2008) and Stacey (2009) indicated that offline confrontation in response to cyber victimization can only be done when victims know the perpetrator. On the other hand, Arıcak et al. (2008) and Stacey (2009) reported that majority of those who confronted or retaliated did so offline and only 10% of them confronted online.

Avoiding or ignoring is also a common strategy in response to cyber victimization (Riebel, Jaeger, & Fischer, 2009). Findings of the study of Smith et al. (2008) showed that 25% of the youth did nothing in response to cyber victimization, while 41% ignored the cyber victimization. DeHue et al. (2008) reported that youngsters mostly respond to cyber victimization by ignoring it and deleting the offensive message. Similarly, it has been demonstrated that cyber victims more frequently use passive avoidance coping (Randa & Reynolds, 2014).

Seeking social support in response to cyber victimization has been considered an effective coping strategy (Mishna, Saini, & Solomon, 2009). Research on school students in traditional victimization context revealed that social support was found to be more effective for girls than boys and younger students reported more seeking social support than older students (Skrzypiec, Slee, Murray-Harvey, & Pereira, 2011). No buffering effect of social support on depression in response to cyber victimization was found for university students (Tennant et al., 2015).

Telling peers, parents or teachers or seeking advice from them is another important strategy reported in the literature. The majority of the school students recommended telling their parents and teachers about the incident and seeking help from them (Arıcak et al., 2008). Contrarily, some students considered that telling the incident of cyber victimization to parents, teachers or adults is not an effective strategy because of having the fear of losing access to technology (Mishna, Saini, et al., 2009). Research on university students reported that cyber victims were more presumably to inform a lecturer to seek help (Orel et al., 2015).

Seeking help from friends or peers has been consistently recommended as an effective coping strategy (DiBasilio, 2008; Price & Dalgleish, 2010; Topçu et al., 2008). Further, with respect to university students, it was found that female students showed a higher tendency to seek help in response to cyber victimization than male students (Orel et al., 2015). Schenk and Fremouw (2012) indicated that university students generally cope with cyber victimization by avoiding friends and seeking revenge.

Additional responses to cyber victimization have been classified as assertiveness coping such as having a dialogue or negotiation with the bully to stop the victimization (Erişti & Akbulut, 2018; Weinstein et al., 2016), and such dialogue or communication has been considered as a useful coping strategy (Perren, Corcoran, Mc Guckin, et al., 2012). Victims of cyberbullying often cope by self-blaming or by showing helplessness responses (Sticca et al., 2015). Researchers such as Machackova and colleagues (2013) assert that the use of specific coping strategy mostly depends on the context and severity of the cyberbullying incident. For example, Wright et al. (2018) indicated that helplessness responses are more frequently reported by adolescents for public cyber victimization than private.

According to the TMSC, all these actions to deal with cyber victimization may be categorized as either emotion-focused or problem-focused. It has been suggested that individuals tend to use problem-focused coping when they believe that they have the ability (self-efficacy) to control a stressful situation. Therefore, self-efficacy can be an important factor to influence the selection of coping strategies. Although self-efficacy is not explicitly included in the TMSC, it may influence the cognitive appraisals and the selection of coping strategies. Raskauskas and Huynh (2015) suggested that it should be

tested as a mediator or moderator between appraisals and the selection of coping strategies. Self-efficacy many influences the way one appraise the experience of cyber victimization. It can also influence the relationship between using coping strategies and mental health outcomes.

Self-efficacy

Self-efficacy refers to people's beliefs on their capabilities to execute and organize a course of action. It reflects the confidence on one's own ability to exert control over a situation (Bandura, 1977). The strength of perceived self-efficacy not only influences the selection of coping strategies, but it also impacts an individual's ability to initiate and regulate the coping efforts. Gist and Mitchell (1992) state that self-efficacy is a crucial factor that influences a person's cognitive manipulation and decision-making process, coping efforts, goals, persistence, and emotional responses. Existing research in the context of traditional victimization has shown a negative relationship between bullying victimization and self-efficacy (Kokkinos & Kipritsi, 2012). Furthermore, it has been found that coping self-efficacy mediate the relationship between victimization and psychological maladjustment in children (Singh & Bussey, 2011).

There is very limited research that has examined the cyber victimization and self-efficacy. For instance, Eden, Heiman, and Olenik-Shemesh (2016) carried out a study on a large sample of school students and reported negative association between cyber victimization, social support, and self-efficacy. Likewise, lower level of emotional and social self-efficacy was found in cyber victims than non-victims (Olenik-Shemesh & Heiman, 2014).

We find only one study (Wong, Chan, & Cheng, 2014) that investigated the self-efficacy in the context of coping with cyber victimization by examining the 1917 Chinese adolescents. Findings revealed self-efficacy was significantly negatively correlated with cyber victimization, revenge-seeking coping, and avoidance/withdrawal coping and significantly positively correlated with active/problem-focused coping among Chinese adolescents. Further cyber victimization, revenge-seeking, and avoidance coping were negatively associated with psychosocial well-being, while a positive association was found between active coping and psychosocial well-being. In this study, Self-efficacy was measured by using a self-esteem scale, but self-efficacy and self-esteem are theoretically and conceptually distinct constructs (Chen, Gully, & Eden, 2004). The former refers to the tendency to view oneself as capable or incapable of meeting demands and achieving goals in a wide variety of situations, while the latter is the tendency of a person of liking or disliking for oneself (Brockner, 1988). Moreover, self-esteem is more about affective evaluation, whereas, self-efficacy is more about judgement or motivational belief with reference to task capabilities. Further, this study neither examined the cognitive appraisals nor the mediating or moderating role of self-efficacy for the relationship of coping and well-being.

General self-efficacy can be an important variable that may affect the way an individual appraises the experience of cyber victimization and select a specific coping strategy to manage and cope with the situation. Research has also shown that a higher level of general self-efficacy can work as a protective factor to deal with the negative impacts of cyber victimization (Álvarez-García, Pérez, González, & Pérez, 2015).

ICT self-efficacy. Given that self-efficacy is a domain-specific construct, Raskauskas and Huynh (2015) proposed that the role of specific technology use self-efficacy, or ICT self-efficacy, should be tested to examine how it may affect the selection of coping strategies. Existing research has examined the relationship of perpetration of cyberbullying and ICT self-efficacy (Xiao & Wong, 2013), but less attention has been paid to examining the role of ICT self-efficacy for coping with cyber victimization.

A recent study by Erişti and Akbulut (2018) examined the behavioral and emotional reactions in response to cyber victimization in a sample of 211 high school students and 567 university students. The authors reported that internalizing responses were positively associated with negotiation, and avoidance coping and externalizing responses were positively associated with negation, revenge, and countermeasures. Though cognitive appraisals were not investigated in the said study, results showed that perceived computer self-efficacy was negatively associated with avoidance coping and positively associated with countermeasure coping. However, it is important to note that perceived computer self-efficacy was measured by a single item measure.

Research using TMSC with respect to cyber victimization

TMSC explains the significance of coping strategies and how they function as the mediators for the relationship of a stressful event and negative outcomes. Raskauskas and Huynh (2015) indicated that the selection of a specific coping strategy to deal with the stressor is a component of the social-cognitive process. Therefore, examining the coping strategies in isolation does not contribute to the complete understanding of the process of

coping. Raskauskas and Huynh (2015) conducted a review of research to find out whether this process has been examined for the identification of effective coping strategies or pathways to resilience. Findings showed that, though some components concerning coping processes have been examined, the process of coping in response to cyber victimization using TMSC has not been fully investigated in the existing literature (Raskauskas & Huynh, 2015).

Parris et al. (2012) conducted interviews with 20 high school students to explore the coping mechanisms they used in response to cyber victimization. Using TMSC, the authors of the study suggested two prospective pathways to cope with cyber victimization and outcomes. The experience of cyber victimization triggers the threat (primary appraisal) in both paths and then leads to the evaluation of the controllability of the situation (secondary appraisal). The first pathway indicates that when the incident of cyber victimization is appraised as uncontrollable then it may lead to the use of helplessness coping such as taking no action and accepting the situation as it is, without making any effort to defend oneself. It was assumed that this pathway would lead to negative outcomes. On the other hand, in the second path, the incident of cyber victimization is appraised as controllable, and thus expected to lead to the use of either problem-focused coping such as seeking social support or emotion-focused coping such as avoidance or justification. It is assumed that the second pathway may lead to more positive outcomes. However, these proposed pathways were not further tested using an empirical approach.

Further, Völlink et al. (2013) conducted a study to investigate the coping strategies of school children. Findings were explained in the light of TMSC and indicated

that victims used more emotion-focused coping than bully-victims and un-involved children. This study did not examine the cognitive appraisals along with the coping strategies. Similarly, Machackova et al. (2013) investigated the coping in response to different forms of cyber victimization and the perceived effectiveness of coping strategies of school children, but cognitive appraisals were not included. There is scant research regarding the mediating role of coping strategies for the relationship of cyber victimization and mental health problems as suggested by TMSC. Only one longitudinal study was found that was carried out on a sample of school children and investigated the moderating role of coping strategies. Findings showed that seeking social support moderated the relationship between cyber victimization and depression (Machmutow et al., 2012). However, this study did not examine the mediating role of cognitive appraisals for the relationship among cyber victimization, selection of specific coping strategy, and mental health outcomes.

To date, only two studies were found that were conducted with university students and used the TMSC to frame their research questions. Na et al. (2015) investigated the association between the frequency of cyber victimization, cognitive appraisals and coping strategies with psychological adjustments (depression, anxiety, and self-esteem) by examining a sample of 121 university students. Findings revealed a positive association between approach coping, avoidance coping, and anxiety. Similarly, a positive association was found between avoidance coping and depression, while a negative relationship was found between cyber victimization, self-esteem and avoidance coping. Cognitive appraisals were not associated with psychological adjustments. Although, the said study examined cognitive appraisals, no mediating role of either appraisal or coping

strategies was examined for the relationship of the frequency of cyber victimization and psychological adjustment. Further, coping was assessed with a general measure of coping rather than cyber-specific coping (such as technical coping).

A more comprehensive investigation of cognitive appraisals, coping strategies and self-efficacy in the light of sound theoretical background would help to better understand the sequential link between cyber victimization and its negative mental health outcomes. Further, examining the role of cognitive appraisals, general and domain-specific self-efficacy in the selection of coping strategies would shed light on why and in what situations victims use ineffective coping and how effective coping can be enhanced to develop resilience in cyber victims and protect them from negative mental health impacts of cyber victimization.

Rationale of the study

Although traditional bullying has received considerable attention in the scientific literature, the phenomenon of cyberbullying is relatively new, and a significant amount of research has emerged in the last ten years. However, much of the research on traditional and cyberbullying has been undertaken in western countries, although a few research studies have emerged recently in non-western countries (Smith, Sundaram, Spears, et al., 2018). Further, most of the research on this issue is limited to developed countries. There is a clear lack of research on bullying and cyberbullying in low and middle-income countries particularly in Asia, Africa, and Latin America (Backe, Lilleston, & McCleary-Sills, 2018). Additionally, there is a paucity of research on bullying and cyberbullying generally in South Asian countries (Sittichai & Smith, 2015) and particularly in Pakistan. However, notable differences exist between eastern, western, developed and developing countries with respect to the level of traditional bullying and violence, access to ICT and ownership of technological devices, cultural and social norms in opposite-sex friendships, and dating relationships (Backe et al., 2018). Therefore, to establish the applicability of findings from developed to developing countries is crucial and highlights the need for research on bullying and cyberbullying in developing countries.

Similar to traditional bullying, most of the research on cyberbullying has been conducted with children and adolescents, still at school (Cassidy et al., 2018). However, empirical evidence suggests that bullying occurs at all developmental phases of human life (Monks & Coyne, 2011), there is continuity between bullying at school and bullying at higher levels of education such as post-secondary institutions (Bauman & Newman, 2013; Lappalainen et al., 2011), and even at workplaces (Smith et al., 2003). Similarly,

research indicated that stability exists in the participants' roles in bullying from childhood to adolescence and adulthood (Pörhölä, 2016). Nevertheless, bullying and cyberbullying among university students is relatively a neglected area of research (Coleyshaw, 2010; Cowie & Myers, 2016; Meriläinen et al., 2015).

Research has found a strong link between cyberbullying victimization and frequency of ICT usage and more time spent online (Çelik et al., 2012; Wolke et al., 2016). Researchers such as Betts (2016) postulate that it might be due to a simple exposure effect that spending more time online lead to greater involvement in cyberbullying victimization. University students are “the always-connected generation” nowadays and technology is integrated into all aspects of their lives (Bull, 2010; Kentworthy et al., 2012). They have greater access to the Internet, a wide range of social media platforms and technological devices in comparison to children and adolescent populations (Kentworthy et al., 2012). Further, research reported that cyberbullying increases with age (Butler et al., 2009; Kiriakidis & Kavoura, 2010) and the nature of cyberbullying is somehow different in adult population from that of children and adolescents. For example, cyberbullying among university students is often associated with sexuality, intimate partner violence, or politics (Kota et al., 2014; Lindsay et al., 2016).

With respect to the negative consequences of cyberbullying, an emerging body of research revealed that cyberbullying is a problem not limited to children and adolescents (Cassidy et al., 2018; Watts et al., 2017). Several cases of cyber victimization among university students become the news headlines that led to serious negative consequences involving the suicides of victimized students (Musharraf & Lewis, 2018; Schwartz,

2010). Therefore, there is well-established need to investigate bullying and cyberbullying phenomenon among university students.

A great deal of research has examined traditional and cyberbullying together and inconsistent findings have been found across studies concerning the degree of the overlap between traditional and cyberbullying (Brown et al., 2017; Olweus, 2012b; Ybarra & Mitchell, 2004a) and whether cyberbullying is less frequent than traditional bullying or cyberbullying is increasing more than traditional bullying with the growth in technology. The majority of studies conducted to examine the prevalence are correlational in nature and there are only a few studies that examined this overlap with respect to involvement in different roles in cyberbullying. In addition, most of these comparative studies are limited to school-aged samples and it is important to investigate this overlap and comparative prevalence among older students such as university students. School children often have restricted access to technology as well as the monitoring of parental and school staff. On the other hand, university students generally have 24/7 unmonitored access to online spaces. Norms of face-to-face interactions, and the perception of accountability in traditional contexts may embolden university students to bully others in the online context in comparison to offline.

Further, there is a debate in the literature about the relative negative impact of cyber victimization in comparison to traditional victimization. Some studies indicated that cyber victimization is more harmful than traditional victimization due to its unique features (Fredstrom et al., 2011; Menesini, Calussi, et al., 2012), while others found the opposite (Dempsey et al., 2009; Mitchell et al., 2007). The incremental or unique impact of cyber victimization in comparison to traditional victimization should also be

investigated on university students because some researchers assert that university students often experience more emotional forms of cyber victimization than school students (Zalaquett & Chatters, 2014). Additionally, students who faced unwanted sexual advances were more prone to develop depression (Didden et al., 2009; Selkie et al., 2015). Further, Spears et al. (2009) found that younger students discussed cyberbullying/victimization with respect to friendships and attacks about social status, while older participants discussed a more sexual nature of cyber victimization. Therefore, with reference to the sample of university students, the impact of cyber victimization could be more harmful and should be investigated in comparison to traditional victimization.

Inconsistent findings have been reported in the literature with respect to gender differences in cyberbullying/victimization among children and adolescents (Wolke et al., 2016), and similar inconsistent findings have been found for university students. Several studies reported no gender differences (Gibb & Devereux, 2016; Wozencroft et al., 2015), while others found greater victimization of female students (Faucher et al., 2014; Webber & Ovedovitz, 2018) and some other studies reported greater victimization of male students (Wensley & Campbell, 2012). Besides this, similar mixed findings have been reported with respect to the perpetration of cyberbullying. Some reported greater involvement of female students in cyberbullying perpetration (Schenk et al., 2013) while others reported male students outnumbered female students in cyberbullying perpetration (Ballard & Welch, 2017). Most of the studies investigated gender differences among university students regarding cyber victimization and perpetration of cyberbullying, and there are only a few studies that examined the gender differences with respect to dual role

i.e. involvement as cyber bully-victims. In view of this, more research is required to fully examine the gender differences among university students and with respect to all roles in cyberbullying/victimization.

Moreover, a great deal of the research that examined gender in the prevalence of cyberbullying/victimization and its impacts did not consider the moderating role of gender. Further, well-known covariates such as age, gender, and traditional bullying/victimization have not been controlled in most of the existing studies that attempt to understand the impacts of cyber victimization, appraisals and coping on the mental health.

Social desirability is a crucial factor that can lead to under-reporting or over-reporting of cyberbullying/victimization and consequently influence the prevalence rate and overall findings of the study. University students generally consider cyberbullying as socially undesirable behavior, thus under-reporting such acts to create a favorable impression (Akbulut & Eristi, 2011; Betts, 2016). Existing research indicated those who perpetrated cyberbullying had low score on social desirability (Doane et al., 2013). Besides this, no attempt has been made to control social desirability in the systematic investigation of cyberbullying/victimization.

Most of the studies on cyberbullying have been conducted without taking into account any theoretical foundation. The development of theories related to cyberbullying/victimization is in its infancy. Using existing well-established theories to examine behaviors has utility when the underlying mechanisms are not clear. TMSC is an

influential model and has not been fully incorporated in previous studies to examine the phenomenon of cyber victimization.

There is a scarcity of research on cognitive appraisals and mental health consequences in the context of cyber victimization. Most of the past studies have been conducted in traditional victimization contexts and are limited to school-aged samples. Further, the interaction between cognitive appraisals and coping strategies has not been studied in the context of cyber victimization as proposed by TMSC. Cognitive appraisals of cyber victimization might differ from traditional victimization due to the unique features of ICT. For example, one's perception or interpretation of the victimization depends on available physical and social cues regarding intentionality of the perpetrator (Wright et al., 2018). These cues may be less visible or absent in the context of cyber victimization than the traditional victimization.

Research concerning the coping strategies of university students with cyberbullying is sparse. TMSC highlights that the process of coping is based on cognitive appraisals, and appraisals turn to be more sophisticated with the growing age (Lazarus, 1984; Orel et al., 2015; Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2011). Given that, it is important to investigate the coping strategies of university students in response to cyber victimization in the framework of TMSC.

In addition, self-efficacy can be an important factor that may influence the selection of coping strategies. Although self-efficacy is not explicitly included in the TMSC, it may influence both cognitive appraisals and the selection of coping strategies, but it has not been examined as a moderator between appraisals and the selection of

coping strategies in prior studies. Self-efficacy may influence the way one appraises the experience of cyber victimization as well as the relationship between using coping strategies and mental health outcomes.

Moreover, self-efficacy is a domain-specific construct, Raskauskas and Huynh (2015) proposed that the role of specific technology use self-efficacy or ICT self-efficacy should be tested to examine how it may affect the selection of coping strategies. Existing research has examined the relationship of perpetration of cyberbullying and ICT self-efficacy, but less attention has been given to examining the role of ICT self-efficacy for coping with cyber victimization.

Previous research mostly examined simple correlations between appraisals, coping strategies, self-efficacy, and mental health. However, examining these variables as moderators and mediators may provide deeper understanding to the underlying mechanisms. A more comprehensive investigation of cognitive appraisals, coping strategies, and self-efficacy in the light of a sound theoretical background would help to better understand the sequential link between cyber victimization and its negative mental health outcomes. Additionally, examining the role of cognitive appraisals, and general and domain-specific self-efficacy in the selection of coping strategies would shed light on why and in what situations victims use ineffective coping, and may contribute the understandings of how effective coping can be enhanced to develop resilience in cyber victims and protect them from the negative mental health impacts of cyber victimization.

To address this gap in the literature, the present study adopted the TMSC as a framework from which to examine the sequential process with respect to the impact of

cyber victimization on negative mental health outcomes. Additionally the mediating role of appraisals and coping strategies, and the potential moderating role of self-efficacy has also been investigated to understand this link.

The model provided in figure 1 shows the role of mediators and moderators and control variables to explain the relationship between predictor and outcomes. The directions of the paths were determined based on TMSC and existing literature. The model shows that the mental health consequences of university students experiencing cyber victimization may depend on their cognitive appraisals of victimization, and their choice of coping strategy. There is growing evidence that the experience of cyber victimization has a direct effect on mental health by increasing depression, anxiety, and stress, and by decreasing mental well-being.

However, not all individuals who experience cyber victimization have negative impacts. How victims appraise the cyberbullying incident and cope with the situation may distinguish those who experience negative outcomes and those who are resilient against the negative impacts of cyber victimization. The variations in the mental health consequences are the result of several of the variables related to victimization and mental health (i.e., mediators), and variables that influence the relationships between victimization and mental health (i.e., moderators).

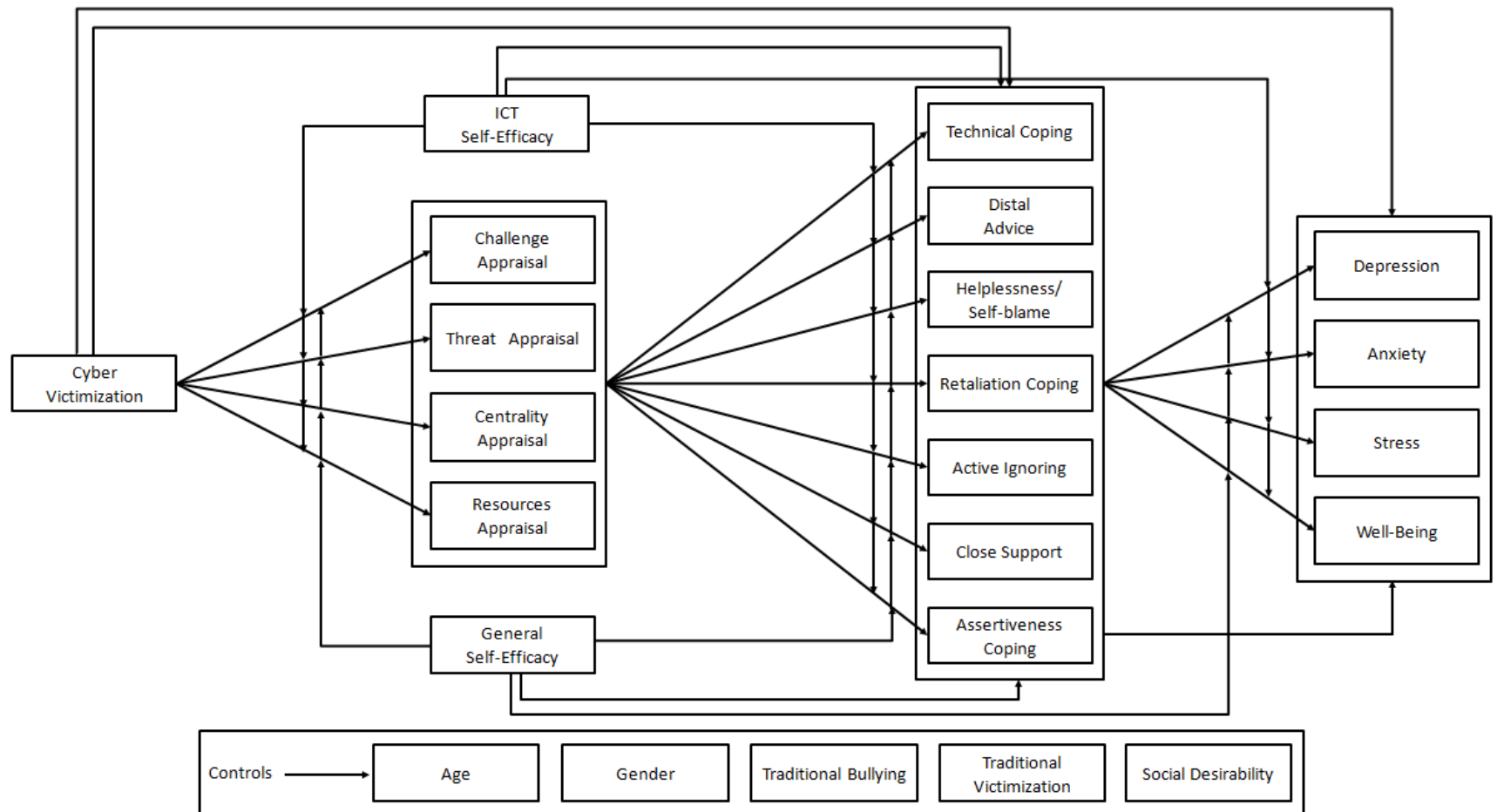


Figure 1. Conceptual framework of the study.

To explain the role of the mediators, the model indicates that cyber victimization leads to various types of cognitive appraisals, and these cognitive appraisals further determine the use various coping strategies that ultimately impact the mental health and mental-wellbeing of students.

TMSC posits that positive appraisals (i.e. challenge and resources) are more likely to result in problem-focused coping strategies (i.e. technical coping, distal advice, assertiveness coping, social support). Contrary to this, negative appraisals (i.e. threat and centrality) are more likely to result in avoidant/emotion-focused coping (i.e. helplessness/self-blame, active ignoring). However, the broader classification of problem-focused and emotion-focused coping styles has been criticized for not being mutually exclusive and several coping strategies serve both emotion-focused and problem-focused functions. Further, controversy exists about the classification of specific coping strategies, some researchers consider them problem focused while others categorized them as emotion-focused. Therefore, the present study will investigate the role of specific coping actions independent of the broader categories to understand the impact of cyber victimization on mental health.

This has been conceptualized in the model of the present study by showing varying use of different coping techniques due to varying cognitive appraisal of cyber victimization. The indirect paths from cyber victimization to coping techniques are mediated parallel by four types of cognitive appraisals, and the indirect paths from cognitive appraisals to mental health are further mediated parallel by seven types of coping strategies. Finally, the indirect paths from cyber victimization to mental health are serially mediated through different types of cognitive appraisals and coping techniques.

These parallel and serial mediations explain the variations in the mental health consequences of students experiencing cyber victimization.

The model further explains the role of moderators by showing the direct and the indirect effect of cyber victimization on the mental health of the students vary at different levels of general and ICT self-efficacy. For the direct effect, it is assumed that the higher level of self-efficacy decreases the negative consequences of cyber victimization on mental health. For the indirect paths, it is assumed that higher level of self-efficacy may counter the negative consequences of cyber victimizations by increasing the use of positive cognitive appraisals and selection of effective coping strategies, and by decreasing the likelihood of negative appraisals and selection of ineffective coping strategies. To add precision to the role of moderators and mediators for the relationship between cyber victimization and mental health, the model includes control variables based on existing literature i.e., age, gender, social desirability, traditional bullying, and traditional victimization.

RESEARCH DESIGN

This research was conducted utilizing a triangulation approach. Therefore, it was carried out using both qualitative investigation and cross-sectional survey research. The present research comprised of three studies. Study I aimed to explore the phenomenon of cyberbullying victimization in the Pakistani context while study II was conducted to develop the Cyberbullying and Cyber Victimization Scales (CBCVS), and to pilot test the various selected measures. Study III was the main study that aimed to examine the factorial and convergent validity of newly developed CBCVS and to test the hypotheses as well as the proposed model of TMC in the context of cyberbullying victimization.

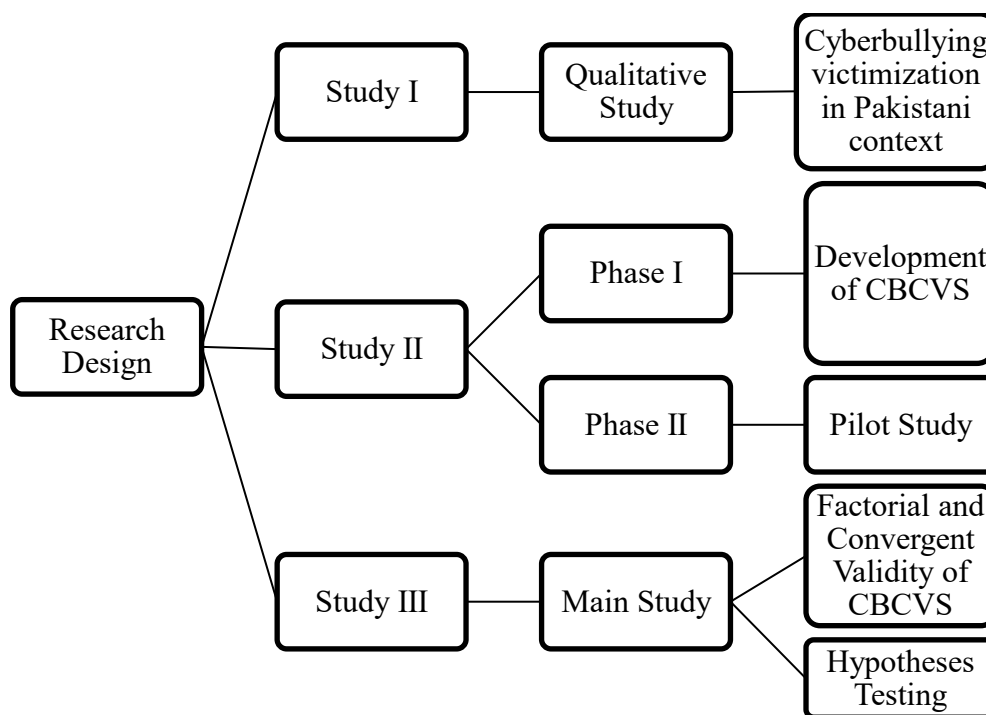


Figure 2. Graphical presentation of research design

Study I: Cyberbullying victimization in Pakistani Context

This qualitative study was designed to explore the terms perceived as most appropriate to label cyberbullying scenarios, cyberbullying victimization experiences, coping responses, causes and socio-cultural impacts of cyber victimization in Pakistani university students using semi-structured interviews. Furthermore, gender differences with reference to experiencing cyber victimization, causes and socio-cultural impacts of victimization were also investigated to gain a comprehensive understanding of the phenomenon within a particular cultural context.

Study II: Development of Cyberbullying and Cyber Victimization Scales (CBCVS) and Pilot Study

Study II consisted of two phases. Phase I aimed to develop the Cyberbullying and Cyber Victimization Scales (CBCVS), whereas phase II was the pilot study carried out to examine the psychometric evaluation of various scales. A detailed description of these phases of study has been provided below.

Phase I: Development of scales. This phase aimed to develop Cyberbullying and Cyber Victimization Scales (CBCVS) to investigate the experiences of cyberbullying and victimization among Pakistani university students.

Phase II: Pilot study. The purpose of the pilot study was to examine the psychometric soundness of newly developed Cyberbullying and Cyber Victimization Scales (CBCVS) and other measures being used in the present research. Because most of the measures were originally developed in western cultures and two of them (Coping with Cyberbullying Questionnaire, and Stress Appraisal Measure) have not been used

previously with a sample of Pakistani university students. This pilot study examined the suitability of different measures for the population of interest. Determining their comprehensibility, appropriateness with reference to proposed sample, and the level of accuracy for the measurement of different constructs was, therefore, of prime importance. Accordingly, the findings of the pilot study provided important information concerning the psychometric properties of the scales. Moreover, the pilot study investigated the initial patterns of the relationships among different variables. A detailed description of the pilot study has been provided in the next section.

Study III: Main Study

Study III was the main study and carried out to examine the factorial and convergent validity of Cyberbullying and Cyber Victimization Scales (CBCVS) and to test the hypotheses of the study.

Chapter III**STUDY I: CYBERBULLYING VICTIMIZATION IN PAKISTANI CONTEXT:
A QUALITATIVE INVESTIGATION OF LABELS, EXPERIENCES, COPING,
CAUSES AND SOCIO-CULTURAL IMPACTS**

This chapter describes a qualitative study that is conducted to identify the terms used by university students to describe cyberbullying phenomenon, to investigate their experiences of cyberbullying victimization, the nature of gender differences, coping strategies, the causes and socio-cultural impacts of this phenomenon.

The body of research on cyberbullying is growing, and interest has increased in investigating the phenomenon across cultures and regions of the world. An initial step in cross-cultural inquiry requires an understanding of the specific terms used to describe the phenomenon in different languages and cultures. Issues concerning comparability of specific terms used to describe cyberbullying in different languages are similar to the translation issues found in traditional bullying research.

A cross-national investigation of bullying noted that it is difficult to find equivalent words to translate “bullying” in different languages (Smith et al., 2002). Many languages do not have an exact word for this phenomenon, and often the approximately equivalent words used cannot fully capture the construct of bullying. For instance, there is no direct translation of the word “bullying” in French (Smith & Monks, 2008). Similarly, the most equivalent non-English term used in the literature is “ijime” in the Japanese language. However, it is considered different from bullying, with more feminine

types of aggression and higher emphasis on social manipulation (Morita, Soeda, Soeda, & Taki, 1999; Smith et al. 2002).

The English term “cyberbullying” is subject to similar problems when used in different cultures. In Germany, the term “cybermobbing,” is used most often while, in Italy, “virtual or cyber-bullying,” and in Spain, “harassment or harassment via Internet or mobile phone” are most commonly used terms to describe cyberbullying (Nocentini et al., 2010).

Researchers (Khawar & Malik, 2016; Shujja & Atta, 2011) have mostly used the English term “bullying” to investigate this phenomenon in Pakistan. This is because there is no equivalent word in the Urdu language for “bullying.” Several Urdu words are close to, but not exactly equivalent to “bullying”. For example, *gunda gerdi* represents an act of vandalism, *badmashi* ruffianism, *badsaloki* abuse, *tang kerna* teasing, *dhamkana* threaten, and *harasan kerna* harassment (Haqee, 2011). Thus, none of these words fully describes the construct of bullying. Research on cyberbullying is very recent in Pakistan and broader terms such as “cybercrime” and “online violence” have been used most by social and news media reports concerning cyberbullying behaviors (Baloch, 2016; Digital, 2017).

Cyberbullying is a new and less investigated phenomenon in Pakistan that emerged with the growth of technology. Efforts to reduce the prevalence and negative consequences of cyberbullying victimization require comprehensive knowledge of the victim’s experiences of victimization as well coping strategies they employ to combat

with it. Therefore, it is important to investigate the experiences and coping strategies of Pakistani university students.

Several studies have examined gender differences in cyberbullying and its impact on mental health. Hinduja and Patchin (2007) conducted a study of an online sample of adolescents and reported that male cyber victims feel less frustrated than female cyber victims. In another study, Bauman et al. (2013) found that cyber victimization in high school students significantly predicted depression, but only for girls.

The findings of existing studies suggest that female students are more vulnerable to negative psychological impacts. Researchers have suggested that females may be more at risk for cyber victimization due to their inherently disadvantageous position in society (Navarro & Jasinski, 2013), or, because of socio-cultural impacts that they face as a consequence of being cyber victimized. Analysis of different socio-cultural factors in various countries (developed or developing) can increase our understanding of this phenomenon and contribute to gender related research in cyberbullying. For example; according to the recent study by the Georgetown Institute for Women, Peace and Security and Peace Research Institute Oslo (2017), Pakistan was ranked as the fourth worst country among 153 countries concerning women's peace, security, inclusion, and justice.

Although a few studies have reported psychological impacts of cyberbullying in university students, there is clear gap in the literature concerning socio-cultural impacts of cyber victimization. Investigation of socio-cultural impacts is important for two reasons: First, it will be useful to understand the variation in socio-cultural impacts of cyber victimization in different cultures. Second, these impacts may exacerbate or reduce

the perceived severity of cyber victimization that consequently impacts the mental health of students. Recent cross-national research by Palladino et al. (2017) examined the differences in the perceived severity of cyberbullying in students from Estonia, Germany, Italy, and Turkey and found that Turkish students perceived the cyberbullying scenarios as more severe than other countries and the authors of the study discussed this finding in the light of cultural aspects. Similarly, Schäfer, Naumann, Holmes, Tuschen-Caffier, and Samson (2017) conducted a review of research and found the significant moderating role of origin of country for the association of different types of victimization with depression in cross-cultural perspectives. Given that, it is essential to investigate the social cultural impacts of cyber victimization.

A small number of studies that exist in Pakistan on cyberbullying victimization have relied on quantitative data. Although quantitative studies are crucial to highlight the scope of the problem, qualitative studies are required to gain more in-depth understanding of the phenomenon (Taylor, Bogdan, & DeVault, 2015). Moreover, most of the qualitative studies on cyberbullying explored this phenomenon from the perspective of bullies (Wilton, & Campbell, 2011), or the perceptions of students about cyber victimization rather than examining their actual experiences (Compton, Campbell, & Mergler, 2014; Crosslin & Golman, 2014). Thus, the aim of the present study is to broaden the current knowledge base by investigating experiences of cyber victims, the coping strategies they use to cope with cyber victimization, causes of cyber victimization, and its socio-cultural impacts and how these impacts differ for male and female students in Pakistani cultural context.

Method

Sample

Students were recruited from undergraduate and masters programs in the Quaid-i-Azam University, Islamabad. This university was chosen in order to recruit a more representative sample. As a leading university in Pakistan, students generally come here from all provinces of the Pakistan. Pakistani society is multi-ethnic and highly polarized. More specifically, considerable diversity exists in the role of gender across regions, classes, and the rural/urban division owing to the impact of feudal, tribal and capitalist social formations and unequal socioeconomic development (Critelli, 2010). In addition, we decided to include both day scholars that live in the twin cities of Islamabad and Rawalpindi as well as boarders/hostelites that are from other provinces in Pakistan and stay in dormitories on campus. Potential participants were invited to participate in the study using various platforms such as announcements in classes, and an invitation containing brief description and rationale of the study posted on the notice boards of the library, cafeterias, hostels, and Facebook groups of the university students. Sample size was based on the code saturation and meaning saturation (Hennink, Kaiser, & Marconi, 2017) for the present study. The final sample consisted of 51 male students and 42 female students. Details of the demographics of the sample are provided in Table 2.

Table 2*Demographic information of participants*

	Male students <i>n</i> (Weighted %)	Female students <i>n</i> (Weighted %)
Number of respondents	51 (55%)	42 (45%)
Age (range in years)	19-27	19-26
Program		
BS (hons)	30 (32%)	26 (28%)
Masters	21 (23%)	16 (17%)
Residential status		
Day scholars	9 (10%)	7 (8%)
Boarders	42 (45%)	35 (38%)
Province wise distribution of boarders		
Punjab	12 (13%)	10 (11%)
Sindh	10 (11%)	6 (6%)
Khyber Pakhtunkhwa	11 (12%)	11 (12%)
Balochistan	9 (10%)	8 (9%)

Research design

Semi-structured interviews were conducted to collect information from the participants (LeCompte & Schensul, 1999). This technique is well suited to explore sensitive issues such as cyber victimization and provides the opportunity to probe for clarification of responses and to get more detailed information (Louise Barriball & While, 1994). In addition, it allows the interviewer to observe non-verbal indicators that help to evaluate the validity of participants' responses (Gorden, 1975).

Interview guide

An interview guide was prepared in accordance with the objectives of the study after reviewing the extant literature on cyberbullying victimization. Initially, participants were presented with five scenarios (see Table 3 on p. 111) without using the term 'cyberbullying,' and asked to label these scenarios with the most appropriate term. The

scenarios were originally provided by Willard (2005) to describe different types of cyberbullying. We adapted these scenarios for the present study that described; flaming, harassment, impersonation, cyberstalking and exclusion. Participants were asked to individually label each scenario and then to collectively label all five scenarios. Further, they were asked whether the term “cyberbullying” is useful or not in order to describe these types of behaviors depicted in scenarios (see table 3 on p. 111). To explore student’s experiences of cyber victimization, causes, and social-cultural impacts of cyber victimization, the following key questions were utilized: (1) “Have you experienced something like what is described in the scenarios? (If yes, describe the experience in detail)” (2) “Have any of your friends experienced something like this, or have you ever witnessed this anywhere?” (3) “Who was the cyber-bully?” (4) Why did he/she do this to you? (5) “If you were cyber victimized, what type of socio-cultural issues did you faced as a result of this experience?” The complete interview guide is available in Appendix A.

Procedure

After receiving consent to participate in the study, participants were contacted to seek agreement about the suitable time and place for the interview. Interviews were conducted at various quiet and private places within campus at the convenience of participants. Some interviews of students were conducted in study halls and common rooms within hostels (dorms). All interviews were audio recorded and to ensure confidentiality, a pseudonym was assigned to each participant and gender is mentioned as (M) for Male (F) for Female. Participants were thanked and light refreshment was provided to each participant at the end of the interview.

Use of some English words in Pakistani context

Interview questions were asked in English, as English is the official language in Pakistan and the medium of instruction in Pakistani universities (Khalid, 2016). Students were encouraged to ask for clarification if needed and they were asked to provide responses in English or Urdu according to their preference. No student reported any difficulty in understanding the questions. All students provided their responses in English, although some students provided culture specific information in Urdu while reporting their experiences. Those sentences were translated into English. It was also noted that a few English words have a different connotation in the Pakistani context. For example, the term “hostels” refers to boarding facilities or student dormitories situated within university campus, segregated by gender, and students who live there are called as hostelite or boarders.

Another noteworthy point was that female university students used the word ‘male friend’ to describe their “lovers:” When probe questions were asked, they clarified that they were in love with them. This is because opposite sex friendships and romantic relationships are not appreciated in Pakistani society and especially in conservative families; females are not allowed to befriend males (Ali, 2011). Similarly, male students used the word ‘romantic relationships’ but this relationship was just the reflection of emotional attachment without any physical relationship. Physical relationships without marriage are considered illegal and are prohibited by Islam and socio-cultural Pakistani norms.

Analytic strategy

The audio files were transcribed and thematic analysis (Braun & Clarke, 2006) was begun with the readings of transcripts by the researcher several times independently. Further, a coding list was generated on the basis of repeated readings of transcripts and main questions of the study. Thematic analysis was performed using a data driven approach (Braun & Clarke, 2006) and codes were collated into similar categories to form over reaching potential themes and sub-themes. Following the suggestions of Braun and Clarke (2006), the researcher did not solely focus on the prevalence to identify themes. Thus, a few themes were unique and less prevalent than others but nonetheless contributed to the interesting reflections of a student's experiences concerning cyber victimization. Similarities and differences in emerging themes were re-evaluated and themes were compared against transcripts to ensure accuracy. Finally, all themes and subthemes were finalized and appropriate labels were provided to illustrate the content of the themes. To examine gender-wise occurrences of cyber victimization, frequencies were also counted using content analysis approach.

Data trustworthiness

The technique of peer debriefing, recommended by Lincoln and Guba (1985) was utilized to enhance the credibility of data and to establish the overall trustworthiness of the findings (Lincoln & Guba, 1985). In this technique, the researcher and an impartial peer had extensive discussions concerning methodological issues, data collection, analysis and interpretation of the findings (McMillan & Schumacher, 1984). The questions asked and the feedback provided by the impartial peer facilitated the

researcher's recognition of how his or her personal beliefs, values, and perspectives might influence the findings and consequently lead to minimize the bias in research (Guba & Lincoln, 1989). An impartial peer performed the role of debriefer for the present study. He was an assistant professor with prior experience conducting extensive qualitative research.

Transferability refers to generalizability of findings to other contexts as a way to establish external validity (Tobin & Begley, 2004). This can be achieved by providing 'thick descriptions' of the data and extensive details of the context which allows its comparisons to other possible contexts to which transfer might be considered (Guba, 1981). In order to ensure transferability for the present study, rich thick descriptions concerning method, contexts and findings have been provided. Rich descriptions were also included in the form of verbatim quotes of the participants' experiences of cyber victimization.

Ethical considerations

The study was approved by the ethical review board of National Institute of Psychology at the Quaid-i-Azam University. Participants were assured about the anonymity of their responses and were informed about their right to withdraw or discontinue at any time during the interview. Participation was on a voluntary basis and no credit was given. Participants were provided a list of support organizations to contact if they experienced emotional distress because of the interview.

Results

This study explored the term used to label cyberbullying scenarios by Pakistani university students, the nature of their experiences, causes of cyber victimization, and its socio-cultural impacts on their lives. Main themes and sub-themes emerged during analysis are described in detail below with the quotes to illustrate them.

Term used to label cyberbullying scenarios

An initial theme in the analysis described the best term used by students to label the five scenarios (see Table 3 on p. 111). A large number of students used phrases such as “misconduct through technology” or “hostile behavior on social media” while a few used more specific technical terms such as “hacking” or “cyber stalking.” When students were asked to provide a single term that could describe all five scenarios, they provided such terms as “cybercrime,” “cyber harassment,” and “online violence.” Interestingly, none of the students used the term “cyberbullying” to label individual scenarios or to describe all five scenarios.

Table 3

Examples of different scenarios and terms used for each scenario individually and collectively for cyberbullying

No.	Scenarios	Types	Terms used to label these scenarios by students
1.	Sara and Aslam were chatting online or texting via cell phone and got a fight. Aslam sent her messages with angry and vulgar language.	Flaming (Online fights using electronic messages with angry and vulgar language)	Heated conversion on social media Unethical behavior through new technology Misconduct through technology Abuse through ICT Online fighting Hostile behavior on social media
2.	Adeel has repeatedly sent sexually explicit images, videos and vulgar messages to someone with an intention to harm the person.	Harassment (Repeatedly sending nasty, mean and insulting messages)	Cyber harassment Electronic harassment Misuse of internet and mobile phone Sexual harassment
3.	Rabia stole Aslam's password of email/Facebook account and sent hurtful emails to his friends or shared mean status and images through his Facebook account.	Impersonation (Pretending to be someone else and sending or posting material to get that person in trouble or to damage that person's reputation or friendship)	Theft through internet and mobile phone Cyber crime Hacking Stealing through modern technology Cyber stalking
4.	When Hina broke up with Aamir, he sent her many angry, threatening messages. He spread mean rumors about her and he posted conversations with her along with her pictures, Email address and phone number to humiliate her.	Cyberstalking (Repeated, intense harassment and denigration that includes threats or create significant fear)	Blackmailing Fraud Deceiving someone through internet Cheating Cyber crime Harassment through social media
5.	Sara joined a Facebook group of her classmates at university. She recently blocked by admin of the group who want to hurt her. Now, She is unable to participate in a group.	Exclusion (Intentionally and cruelly excluding someone from an online group)	Ignoring someone Blocking someone to communicate with others
Collective term for five scenarios			Online violence Cyber crime Cyber harassment

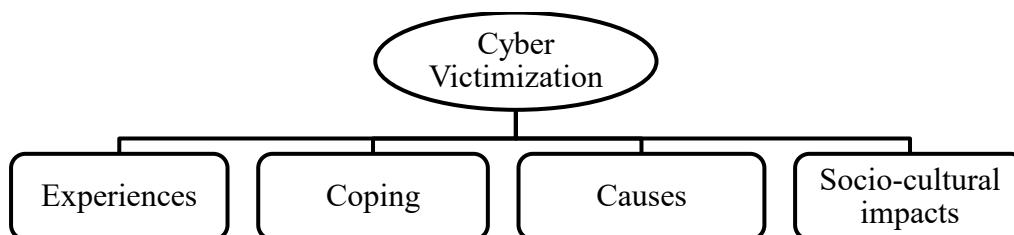


Figure 3. Figure showing major classification of the qualitative data

Experiences of cyber victimization

Students described different experiences of cyberbullying victimization. Many female students (27 of 42) described at least one experience of cyber victimization in their past university life, while seven participants reported the experience of their female friends who were also university students. More than half (16 out of 27) of victimized female students reported that perpetrator was male while four out of 27 reported that perpetrator was female and seven out of 27 said the perpetrator was unknown. Male students (19 out of 51) reported at least one experience of cyber victimization and two male students reported the experiences of their female class-mates. More than half of male participants (32 out of 51) informed the interviewer that they have never experienced cyberbullying. Almost half of the victimized male students (9 out of 19) said that perpetrator was male student while only four said that perpetrator was female student. Five victimized males were unaware of the gender of the perpetrator.

Most of the known perpetrators were described as ex-lovers, ex-friends, ex-fiancé or fiancée, roommates, Internet friends, known friends, senior class fellows, lab fellows, cousins, and neighbors. Only one female student reported that the perpetrator was her lab

assistant and another female student reported that perpetrator was security guard sitting outside of the examination center with whom she deposited her mobile phone. Moreover, cyberbullying was not only confined to perpetrators and victims, but also extended to other people. Some female students reported that fake accounts were created in their names, and their pictures were posted online by the perpetrators who have no direct concern with them but want to get revenge for perceived harm to someone close to them.

The majority of the experiences reported by female students were very severe in nature, while most of the experiences of male students were mild. The severity was assessed by the nonverbal emotional responses such as tearful eyes, tormented facial and vocal expressions. More male students than female students reported that their experiences were based on jokes, and said the perpetrators were their friends who enacted these behaviors without intent to harm. Several male students also said that they never experienced victimization because such things usually happen with girls instead of boys. Moreover, repetition of cyber victimization was more common in female stories than male stories. Overall, respondents indicated ten different forms of cyberbullying experiences (see figure 3a). Details of themes and sub-themes are described below.

Abusive and mean messages or comments. This was the most common experience of cyberbullying reported by both female and male students. For example, Hadeeqa (F) reported, “He sent me extremely abusive messages,” and Sara (F) said “I am slightly overweight, and a boy commented on my picture “Are you pregnant?” Similarly, Hassan (M) said, “He sent me insulting and abusive messages because my views were different from his,” and Imran (M) expressed his experience in these words: “I just asked her name and she sent me rude and mean messages.”

Threats. Both female and male students reported that they have experienced threat-related cyberbullying but the nature of threats differed by gender. For example, female students more often received the threats of being raped, killed, and dishonored by the perpetrator, while male students received threats of physical aggression. For instance, Nadia (F) reported “He said he will rape me and he sent me nude images of what positions he will rape me,” and Aamir (M) reported “He texted me, “If I ever saw you with her (a female class-mate) again, I will beat you to death....you yourself will be responsible for further consequences....just consider my texts as my first and last warning.”

Blackmailing. Many female students reported blackmailing in cyber space none of the males reported any such experience. Most of the blackmailing experiences of female students happened after the end of a romantic relationship and involved revealing pictures and videos. Banafshan (F) reported her experience as, “When I realized that his love and friendship was fake, then I tried to unfriend him on Facebook, but he started blackmailing me through texting on my cell phone and threatened that he will post my pictures and videos online.” Blackmailing was not limited to posting pictures or videos online; a few girls reported that the perpetrator blackmailed them by threatening to reveal secret information to their families. Abeer (F) said, “I expressed love to him many times through chat. He kept all the records of it and then started blackmailing me that he will show the romantic chat history and recorded calls with him to my family.” Male perpetrators also blackmailed female students and demanded they have physical relations with them or provide them with money. Shaista (F), “A boy got my pics and edited them to make them nude photos. He asked me to give him money and then he will delete all

those pictures. I told him, I don't have any money. Then he asked me to meet in a restaurant. Later, he asked me to go to watch a movie with him. He had never-ending demands to blackmail me. He wanted to develop physical relations with me; he threatened me that if I didn't follow his commands then he will post those images online."

Account hacking. Both males and female students reported the hacking of their Email and Facebook accounts. Analysis of transcripts showed that this type of cyber victimization was more common in romantic relationships. Zulekha (F) described, "My classmate loves me and I also like him. He is a skeptical man, very possessive about me and he had hacked many times my email and social networking accounts to spy on me or keep an eye on my incoming and outgoing texts. He often snatched my mobile phone to see my messages". Saleem (M) reported, "An unknown person hacked my email account and stole my data and deleted very important emails concerning my notes on my dissertation." In a few cases, pictures were stolen by hacking male student's accounts, and then were used to cyber victimize a female student. For example Adnan (M) reported "He hacked my account and stole and misused the pictures of my female friend. He (perpetrator) wanted to spoil my image in front of her and he was successful in doing so. She broke the friendship with me because she felt I intentionally shared her pictures online and she thought I am making up a story that my account has been hacked."

Sharing photos and videos online. Results revealed four sub-themes under this theme; (1) making pictures or videos without permission, (2) picture and video sharing online without permission, (3) compromising and obscene pictures or videos sharing, (4) morphed (edited) picture sharing. Thirteen female students reported being cyberbullied

by having photos and videos shared online and four male students also reported their experiences. For example, Haleema (F) added, “A boy made a photo of me and I was not even aware of it. Later another girl told me about this. I felt so uncomfortable. Although, I don’t cover my face (*purdah*), I don’t like someone secretly capturing my photo and posting it online”. Sana (F) shared her story; “There was an annual dinner at dormitory. Afterwards to have fun, we friends had a dance party in the hall. I don’t know how but someone made a video of my dance and then shared it online. The video went viral. My family even doesn’t allow me to share pictures online. When I came to know about that video from a friend, there were already hundreds of views of that video.”

Participants also reported that it is not only obscene pictures but, often, sharing ordinary pictures of female students online by the perpetrator can be perceived as cyber victimization. Attiqah (F) described her experience;

“She posted my pictures on university’s Facebook group and few other groups as well. I (victim) wear *hijab* with *niqab* (veil) and *Abayh* (loose over garment to cover whole body except the head, feet and hands). She posted my pictures even without my *doppata* (scarf). Pictures were taken while I was relaxing and sitting in a common room (exclusively reserved for female students). When she took those pictures, we were friends that time and I couldn’t imagine that she misused my pictures.”

Similarly, findings showed that obscene pictures and video sharing is also common among male university students. Muddasir (M) described the following story;

“I was with my friends and they were having alcoholic drinks (Alcohol is prohibited in Islam and legally banned for Muslims in Pakistan). I just grabbed the bottle to accompany them. I was not aware but a boy made a photo of me and shared it online. There was a quarrel between me and him about some issue. He took revenge and sent that picture to all my Facebook friends including my uncle, whose daughter was my fiancée.”

Students also shared their experiences concerning morphed picture sharing. Maryam (F) shared the experience of her friend who was being cyberbullied and then left the university. She explained, “A boy stole her mobile phone while she was working in the lab and accessed her Facebook and google account using her phone. He modified her pictures and shared those morphed pictures online.” Usman (M) said, “They shared funny cartoons with my pictures on Facebook to make fun of me, but they were my friends and was just joking. I didn’t mind it”.

Fake accounts. More than half of the participants reported that a pseudo/fake account has been created with their names. More girls than boys have described this experience. For example, Mussarat (F) narrated her experience thusly:

“She created a fake account with my name and uploaded my bio-data on it. She knew me well because she lives near my home. She added friends who were all the notorious street boys of my locality and neighborhood in that fake account. She put my actual cell number there and also posted, “I am a call girl, and anyone can contact me on this number.”

Similarly, Nadir (M) said “an unknown person created a fake account with my name to spoil my reputation.”

Trickery and deception. Both male and female participants reported in their interviews that people deceived them in cyber space and used tricks to reveal secrets. Such deception included sharing private chats online or showing it to others to damage the reputation of a person or to tell a lie to someone to hurt him or her. For instance, Saba (F) said, “Someone lied to me, deceived me, and caused me immense loss” and Najeeb (M) said, “Someone forwarded my personal chat conversation with him to others that later created worse problems”. Azra (F) described her experience “He lied to me and he was not actually the person he said he was.”

Exclusion. Analysis revealed that both male and female participants had experienced exclusion on social media. Most of the participants perceived exclusion when someone intentionally unfriended them to make them feel bad, or ignored their comments or excluded them from particular Facebook or WhatsApp group created by classmates or peers. Faiza (F) indicated that “They excluded me from the WhatsApp group so that I can feel bad and cannot read their gossip.” Ali (M) added, “They always ignored my status on Facebook and whenever I commented on their status, they never liked or responded to it.”

Sexting. More female than male students reported to have an experience of receiving sexts including nude and sexually suggestive images and links to pornographic videos from an unknown person or known male students. Female students also reported that sexts are often accompanied by friendship or sex offers by males, which can cause

lot of distress and feelings of harassment, while male students reported they send sexts to mostly male friends just as a joke. Only one male student reported that his friends tried to show him a pornographic video but he felt very uncomfortable. Examples of student's experiences of sexting are described here. Zulekha (F) reported, "I received vulgar images through WhatsApp". Hadeeqa (F), "He offered me friendship and sent me links of pornographic videos". Hassan (M) said, "My friends forcefully showed me a pornographic video that made me so uncomfortable."

Unwanted phone calls. Participant's accounts revealed that receiving unwanted and irritating phone calls were also more common in female than male students. Three sub-themes emerged from the data concerning unwanted phone calls (1) Repeated unknown phone calls (2) silent phone calls (3) silent phone calls with heavy breathing. Sehrish (F) said, "An unknown person called me from different unknown numbers. But he didn't speak. What I could only hear was the sound of heavy breathing that sounded very harassing."

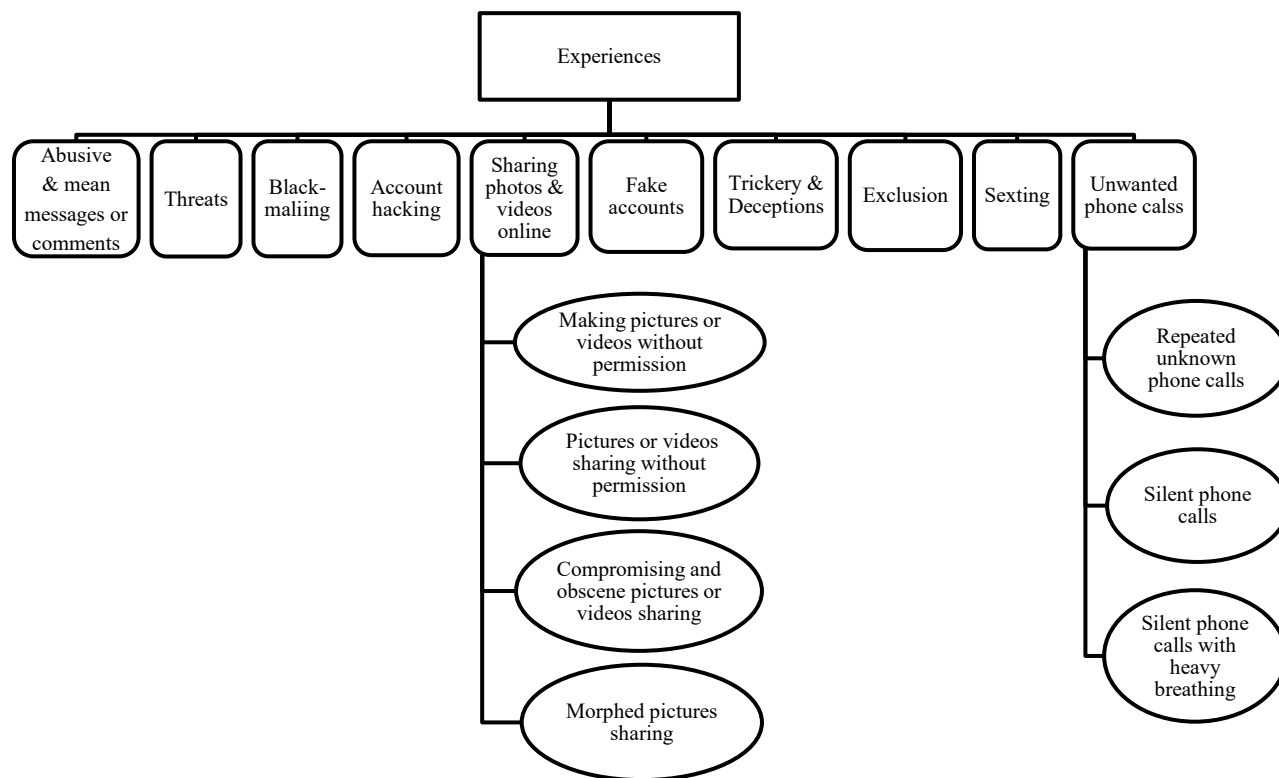


Figure 3a. Figure showing classification experiences of cyber victimization

Coping strategies

Students reported to employ a variety of coping strategies to deal with cyber victimization. Seven themes were found (see figure 3b); namely, (1) Technical coping, (2) Confrontation, (3) Seeking support, (4) Seeking advice (5) Avoidance, (6) Helplessness, (7) Assertiveness. The majority of the students reported the use of more than one coping strategies in response to their experiences of victimization.

Technical coping. Both male and female students reported almost equally (42% vs. 43%) the use of technical coping strategies to combat with cyber victimization. Saleem (M) reported “I changed my account passwords and privacy settings.” Similarly, Mussarat (F) said that she captured the screenshots to save the evidences of cyber victimization. Nadeem (M) revealed that “I reported the fake account to web service providers and asked my friends to report that account too.”

Confrontation. Although both male than female students reported the use of confrontation or retaliation, more victimized male students (36%) than female students (18%) reported confrontation, retaliation and revenge as a common strategy along with other strategies that they used in response to cyberbullying victimization. Najeeb (M) reported that “I did the same with the perpetrator, it’s fair if you get hit first, you are allowed to hit back.” Similarly, Faiza (F) revealed, “I wrote nasty things to the perpetrator as revenge.”

Seeking Support. Both male and female students reported seeking support in response to cyber victimization. Many victimized males (42%) reported seeking emotional support from friends. For example, Aamir (M) said, “I went to my friends and shared the whole story with them.” On the other hand, majority of female students (55%) reported to seek help from their family members such as parents and siblings. Besides this, several (5 out of 27) victimized female students reported that they hide the incident of cyber victimization from their family members (especially when ex-boyfriend was blackmailing or when female students belong to un-educated families).

Seeking advice. Majority of the male and female students reported seeking advice in response to cyber victimization. Zulekha (F) reported I informed the head of the department and request him to guide me to handle this situation.” Similarly, Harris responded “Initially I tried to handle the situation myself and later sought help from an IT professional.”

Avoidance. More female victims (23%) than male victims (15%) reported the use of avoidance coping in response to cyber victimization. Ayesha (F) said “I just ignored and perpetrator disappeared after some time, perhaps, its better because people lose interest in cyberbullying if they don’t get a response.” Imran reported, “I did nothing in response, it’s better to ignore such things.”

Helplessness. Similar to avoidance, a higher number of female victims (26%) than male victims (15%) reported the use of helplessness coping. Banafshan (F) reported, “There is nothing one can do when the perpetrator made irreversible damage to one’s reputation with few clicks.” Muddasir (M) said it’s hard to escape from cyber victimization as I changed my phone number and the perpetrator started sending me mean things via Facebook and emails.”

Assertiveness. Both male and female students reported the use of assertiveness coping in response to cyber victimization. Nadia said, “It’s better to dialogue the perpetrator when you cannot stop victimization.” Similarly, Adil (M) reported, “I asked the perpetrator what is the motive behind his acts.”

Although students reported the use of variety of different coping strategies including retaliation, helplessness and avoidance, majority of both male (74%) and

female students (85%) who experienced cyber victimization considered technical coping, and seeking advice as best strategies to deal with cyber victimization.

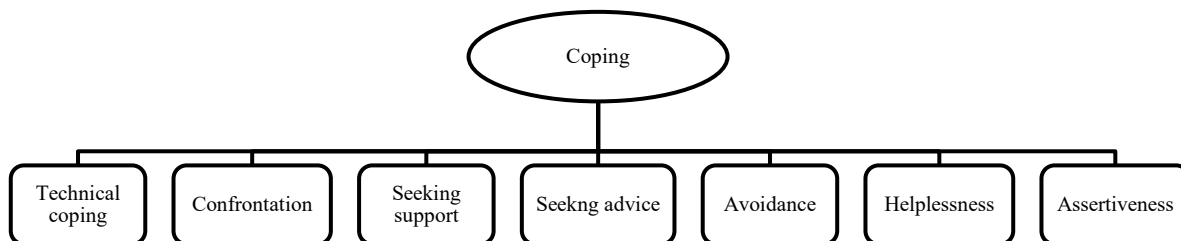


Figure 3b. Figure showing classification of coping for cyber victimization

Causes of cyber victimization

Causes of cyber victimization were identified from the participant's stories of cyber victimization. Five themes were found; namely, (1) romantic relationships, (2) revenge, (3) competition, (4) ethnic, religious, political and sectarian prejudices, (5) gender intolerance and sharing secular feministic thoughts, (6) lack of knowledge of digital safety skills.

Romantic relationships. Four sub-themes emerged under the theme of romantic relationships. (1) break-up of romantic relationship, (2) rejection of overtures to form a relationship, (3) exposing some one's love due to jealousy (villain), and (4) Risky sharing

Six female and two male students described their experiences of cyber victimization that occurred because of the break-up of romantic relationship in which the perpetrator was an ex-lover or fiancé. Salma (F) said "He proposed to me and I felt in love with him. We remained friends since three years. He was just supposed to send his proposal to my home. But he took a long time and was making lame excuses. When I realized that his

love was faked and tried to break the friendship, then he started blackmailing me and threatens me that he will post my pictures and videos online.”

Harris (M) reported “She broke the friendship with me, when I found a new female friend and then she started posting mean comments on my statuses about me and my new female friend.”

Similarly, three female students reported that they rejected the offer of friendship or love of someone that resulted in cyber victimization. Saba (F) shared her story: “He offered me friendship, and I refused, he created a fake account using my name”. No male participant reported any such experience but a female student reported that she experienced cyber victimization because her brother rejected the proposal of a girl. Kashmala (F) said, “A girl was interested to marry my brother but he refused her and said he wanted to marry a noble girl. Then she said to my brother, I will tell you how noble are you and your family. To take revenge from my brother for his rejection, she created a fake account using my name details and picture.”

Eight girls and two boys reported that their pictures were shared with their male friends or (romantic partner) by someone who was jealous of their relationship. Abeer (F) said, “I was sitting with my male friend behind the library. Someone made our pictures and shared it online.” Nasir (M) reported his story “Someone hacked the email account of my female friend. I was in love with her and we used to give gifts to each other. I often make pictures of gifts and receipts of courier services and send to her. She also used to wear those gifts and send her picture to me. A boy hacked her account and shared all her personal details online including our pictures and images of gifts and courier receipts and

sent them to all of her Facebook friends and my Facebook friends including our parents and siblings.”

Data analysis also revealed that respondents were involved in risky sharing with their lovers including account passwords, personal pictures, and videos. Sara (F) reported “I shared my private pictures with him at his request. I had blind trust on him and never thought that he would harm in this way”.

Azra (F) said “I shared my Facebook account password with him. He was insecure about me because I have friendships with other classmates. Thus, for clarification, I provided him my password, and asked to go and check my account.”

Revenge. Analysis revealed that seeking revenge was also a common motive for cyber victimization. For example, Mamoona (F) described, “I had a fight with my (female) classmate over the division of tasks concerning a group assignment. Afterwards, to seek revenge for her insult, she posted my pictures online”. Harris (M) said, “He created a fake account of me to damage my reputation, so that he gets revenge on me.”

Competition. Findings showed that competition was another cause of cyber victimization in university students. Faiza (F) said “He was in competition with me for first position in the class. Before our final term, he did this to me so that I would get distracted and be unable to focus on my studies.”

Ethnic, religious, political and sectarian prejudices. Results indicated that ethnic, religious, political and sectarian prejudices were the most common motive for the verbal type of cyberbullying victimization among university students. More male students than female students reported this type of cyber victimization. Hamza (M) said,

“A scholar from the other province sent me abusive messages and threats to beat me. He blamed me that I am against Pashtuns” (an ethnic group in Pakistan). Bilal (M) described his experience this way: “He sent me a text message on Facebook, approximately of two pages, that was against my religion and sect and was so hurtful.” Hadeeqa (F) said, “I commented on a video shared by a class-mate about a political party. I just provided my point of view about video, using appropriate words, but he responded to my comment in a very rude way and sent very insulting and abusive messages to my inbox.”

Gender discrimination and sharing secular feministic thoughts. Analysis of transcripts revealed sharing secular feministic ideas also contributed to cyber victimization. This theme was only found in female student’s stories of cyber victimization.

Nazia (F) said, “Whenever I shared posts concerning women rights; I received abusive comments and messages from boys.” Jawaria said “I wrote a blog about women’s sexual health for creating awareness among women. I received a lot of abusive comments from boys that blamed me for spreading vulgarity.”

Lack of the knowledge of digital safety skills. A few participants reported that they became cyber victim because of the lack of knowledge of digital safety skills. Faiza (F) reported, “Someone tagged me in nude images on Facebook and at that time I was not aware how to remove them and restrict others from tagging”. Akram (M) said, “I reported the account as abusive that was created using my name but I was not aware how many more reports were required to block that account.”

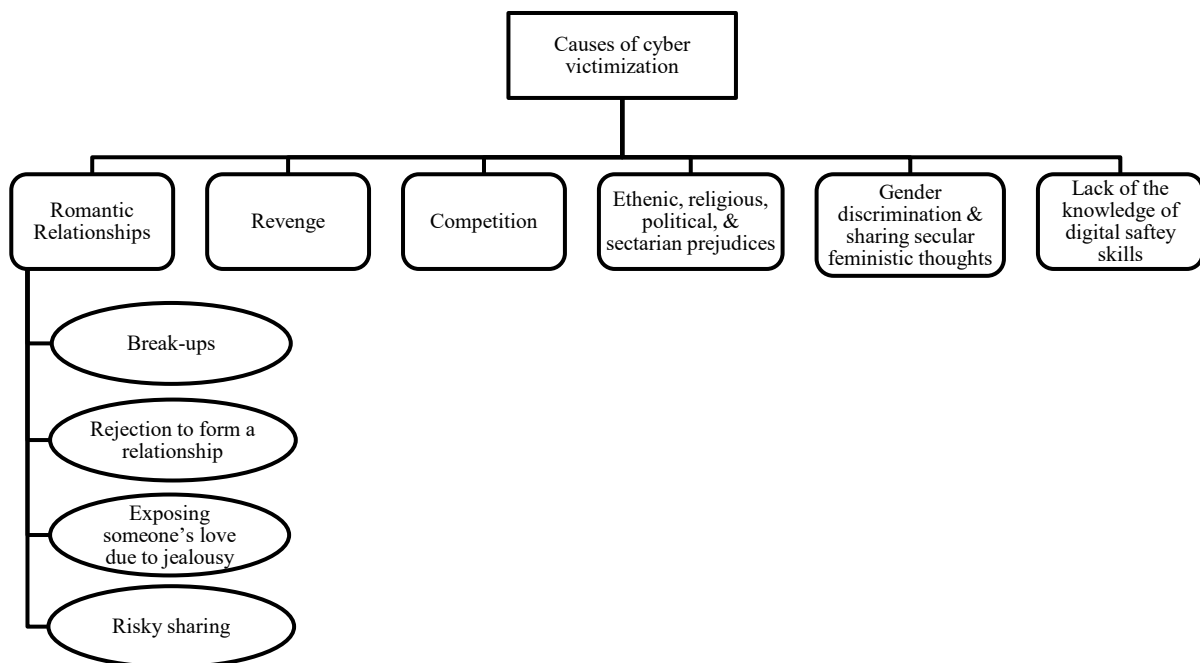


Figure 3c. Figure showing classification of causes of cyber victimization

Socio-cultural impacts

Some themes were common in both male and female student's stories concerning socio-cultural impacts of cyber victimization, while other sub-themes were gender specific. Two common sub-themes were found in the data (1) reputational damage, (2) break-up in engagements and romantic relationships (see Figure 3d). These sub-themes are described in detail below.

Reputational damage. Both male and female students reported that the occurrence of cyber victimization damaged their reputation not only in the university but also with their relatives and in their neighborhood because of the vast audience in cyber space. For instance, someone created a fake account using Munnaza (F)'s identity. She said, few people of my town considered it my real account and an uncle in my neighborhood noticed obscene pictures and posts on that fake account and instructed to

my father that he should be aware of his daughter's online activities because she is tarnishing our honor. My father was so embarrassed to hear all." Hamaza (M) said, "I cannot explain to everyone that the post or picture shared by someone was not real and was just an effort to ruin my reputation. Sometime people don't believe what you say in clarification."

Break-ups in engagement and romantic relationships. Three female and one male student reported about their engagement breakups that were contributed to their experience of cyber victimization.

Sana (F) said, "I faced the worst time of my life, when my dance video went viral. This was shocking for my family who even don't allow me to share my picture on social media. At that time, I was engaged and at the end of semester I was supposed to get married. But after that viral video, his family broke off the engagement of their son with me with an excuse that they want a gentle girl for their son."

Muddasir (M) said, "Someone shared a photo of me while holding a bottle of alcoholic drink. When my uncle saw that picture, he broke off his daughter's engagement with me and said that my character and friend's company is not good and he doesn't want to spoil his daughter's life." Numan (M) said, "The perpetrator hacked my account, stole pictures of my female friend and posted them online. She broke up with me because she thought it's me.... who shared her pictures."

Gender-specific themes.

Themes that only emerged in female stories were (1) being blamed by the family, (2) being labeled as immoral, (3) revenge by the family, (4) honor suicide ideation (5) risk of being honor killed, and (6) a threat to their career. One gender specific themes in males was (1) mocked by peers.

Being blamed by the family. Seven female students reported that they were being blamed by their families because the experience of cyber victimization brought shame and dishonor to their families. Three sub-themes emerged in the data concerning being blamed by the family; (1) Fake is perceived as real due to technological gap, (2) uploading pictures on social media, and (3) indulging in opposite sex friendship. Details of these sub-themes are given below

Technological gap. Female students reported that due to lack of education and technological gap between the students and their parents, the parents don't understand exactly how pictures and videos can be modified and shared online and thus fake posts and images often perceived as real by them.

Laraib (F) said, "Though it was not my fault in that situation ... of course, you do not ask the person to create your fake profile. But, my parents blamed me and warned me that if they had allowed me to live in away from home and to continue my education, I should take care and not indulge in any such affair that can harm to whole family's reputation and honor."

Uploading pictures on Social media. A few female students described that when the incident of cyber victimization was brought to the attention of their family members,

then they, especially mother and elder brothers, blamed them (victims) for uploading pictures on social media. As an example, Shaista (F) explained, “My brother said, you are responsible for it....why you uploaded your pictures on Facebook?... so that, people can steal, modify, and share them online.”

Indulging in opposite sex friendship. Few students said that they were blamed for having opposite sex friendships because the perpetrator was their male friend.

Saman (F) described “My mother scolded me and said it’s because you talked with boys online?”

Label of immorality. Many female students described that when a mean post or picture about a girl become public, people consider her to be immoral. Haleema (F) said, “Though you try your best to prove yourself innocent by providing proof, but...still people consider you immoral in our society. When I posted a status on Facebook describing the story of how my account had been hacked and misused, a boy commented on it that “there you must be at fault in some way that you have hidden in the story...why someone followed only you, instead of other girls.”

Revenge by the family. Female students reported that it is difficult to inform family members about these experiences, because sometimes, they get furious to seek revenge. Sehrish (F) exemplified this by the following story: “When I told my brother, that a boy was constantly calling me and requesting for friendship, then he asked me to provide that mobile number. He tracked the mobile number and traced the boy. He went there with his friends and brutally beat the boy. He himself got punched on his eye and remained in hospital for a week.”

Honor suicide ideation. A few female students who have experienced cyber blackmailing and threats of sharing their compromising pictures and videos reported that they were so depressed and they thought about suicide to protect their honor. Nosheen (F) said, “When he threatened and blackmailed me that he will share my intimate pictures online....at the moment...I felt immense shame and guilt....the only thought that was in my mind was suicide...only way out.... suicide to stop causing dishonor to my family.”

Fear of being harmed or honor killed by the family. Several female respondents reported that they were scared to inform their family members about the experience of cyber victimization, and in a few cases that perpetrator threatened to send their photos to their (victim’s) family instead of posting online.

Hadia (F) said “He threatened me that he would send my (intimate) pictures with him to my home, I was very frightened. I belong to a rural and conservative family....My family cannot tolerate their daughter’s friendship with boys. I imagined for a moment...it was extremely scary thought...I thought my father will kill me if he saw these pictures.”

Threat to career. Many female students reported that experience of cyber victimization is a clear threat to their educational life and over the long term, to their career. A number of students reported that their family was afraid to send them back to university when they reported their experience, while other interviewees of female students reported that they tried to hide their experiences from family because after such experiences, they will not be allowed to continue university education as punishment or concerns for their safety. As an example of this a female student reported her female

friend's experience that left the university after being cyberbullied by a boy who share her morphed pictures online.

Maryam (F) said "After that... my friend left the university, her parents didn't allow her to visit university again. I talked to her...she was even not able to face all friends and classmates after viewing those edited pictures. Her career just got ruined."

Mocked by other students. Male students reported that when someone posted their private information online, their peers laughed and mocked them. Some also reported that mocking by their peers after cyber victimization instigated them to take revenge on the perpetrator. This type of mocking was exemplified by the following statement of Jibrán (M), who said, "He posted online...images of my conversation with my beloved...boys laughed at me and passed taunting comments... a boy said he is coward, he did nothing in response to take revenge."

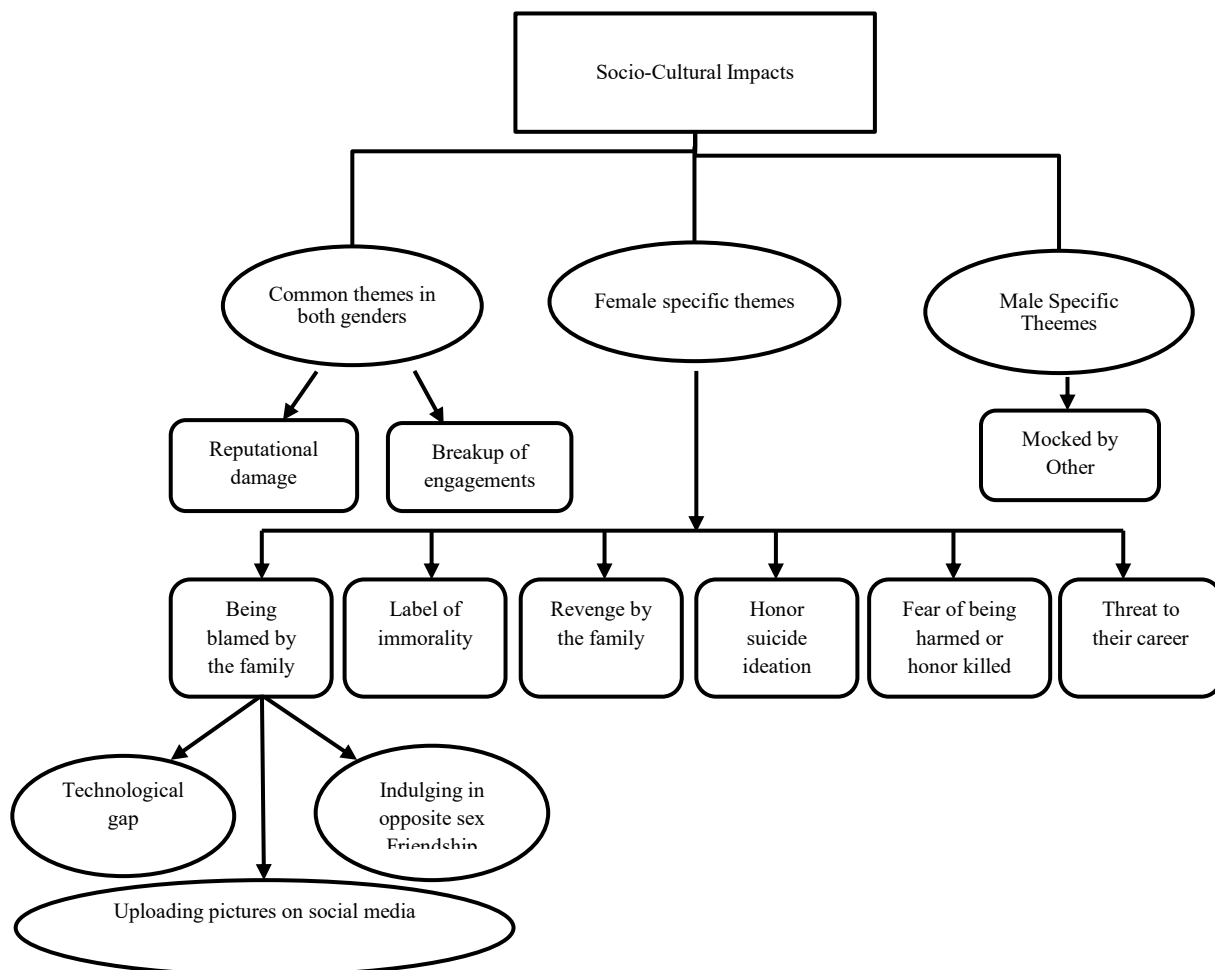


Figure 3d. Figure showing classification of socio-cultural impacts of cyber victimization

Discussion

The purpose of the present study was to gain a comprehensive understanding of cyberbullying phenomenon in the Pakistani cultural context. The findings from the present study broaden the current knowledge by providing the rich descriptions of experiences of cyberbullying victimization, identifying the causes, and illuminating socio-cultural impacts of cyber victimization on Pakistani university students. Important findings of the study are discussed in detail below.

Labels to describe cyberbullying scenarios

Interestingly, but not surprisingly, none of the students used the term cyberbullying to label independently or collectively to all five scenarios of cyberbullying. Moreover, most of the students reported that they never heard the term of cyberbullying. Our findings are consistent with the previous cross cultural research on this issue that provided evidence regarding differences in how cyberbullying is labeled in various countries (Crosslin & Golman, 2014; Nocentini et al., 2010).

Thus, although the experiences described by participants meet the definition of cyberbullying, the term itself was unfamiliar. The use of the term “cybercrime” may be due to the media coverage to describe this type of behavior after passing the cybercrime law by the government of Pakistan on August 2016 (Khan, 2016). Apart from this, an awareness-raising campaign and helpline on gender based violence and cyber harassment were launched in December 2016 (Digital Rights Foundation, 2016). In addition, National Response Centre for Cyber Crime (NR3C) is working under a Federal Investigation Agency, and has provided various categories of cybercrime on its website

(<http://nr3c.gov.pk/crimecategorie.html>); one of them is cyberbullying. They have further provided following details about cyberbullying “*Cyberbullying (also called cyber harassment) is when someone uses the Internet to threaten or make unwanted advances towards someone else*”. These details are vague and do not include elements of the original definition and its essential criteria (intention, repetition, power imbalance). Furthermore, it does not mention misuse of images, humiliating someone online, etc. Cyberbullying in Pakistan is a very recent phenomenon and our findings provide insights as to why Pakistani university students lack knowledge of the term “cyberbullying” and consider cybercrime and cyber harassment or online violence as better terms to describe this phenomenon.

Experiences of cyber victimization

Findings showed that more female students than male students reported experiences of cyber victimization. These findings are in line with the previous literature on college and university students in Asian countries that indicated greater victimization of female students (Balakrishnan, 2015). Another important finding was that in female students cross-sex cyberbullying was more common, while in male students same-sex cyberbullying was more prevalent. These findings are in contrast to existing research on gender in college students that indicated overall, cross-sex cyberbullying was less common (Navarro, Yubero, & Larrañaga, 2016). This could be because of cultural difference concerning gender roles and power structures (Barlett & Coyne, 2014).

Moreover, our analysis showed that cyberbullying was not restricted to typical relationships between bully and victim. A few female students shared that their fake

accounts were created and their pictures and videos shared online by someone who wanted to take revenge on their brother or their male friends (lover). Data revealed that perpetrators sometime target an extended group, especially sister or female friend of the male victim. This might be because females are at the most disadvantageous position in society (Navarro & Jasinski, 2013), or they are the easiest to target, or because they are the ones who are most affected by cyber victimization because of the associated “honor issue.”

Findings showed a number of different types of cyber victimization among university students. Though, almost all forms of cyber victimization reported by students had been mentioned in the literature (Kopecký, 2014; Kraft & Wang, 2010), there were a few unique culture-specific findings found within the rich descriptions of experiences of these forms of cyber victimization. For example, not only the nude or embarrassing pictures or videos were problematic; for some female students, their normal routine picture or pictures without a *hijab* that were shared online was harmful cyber victimization to them. This is because *purdah* (veil) is a common practice in Pakistani women. Some of them observe *purdah* to follow the tradition of Islamic faith (Burn, 2005), while others follow it as an adherence to regional and social norms that represent the modest female conduct and a consider *purdah* as a carrier of their family honor (Pastner, 1972). Violating such norms can bring enormous psychological and social consequences to the victim.

Female students also reported that sometimes male students secretly capture their photos that can be later misused. This is also a unique type of cyber victimization that is not reported in previous literature and emerged with the availability of wide number of

silent/hidden camera apps on mobile phone and other devices such as smart watches and hidden pen cameras. This kind of cyber victimization can be more important in cultures where *purdah* is a symbol of women's morality and character strength, and where family and cultural norms don't allow women to share their photos online.

Coping Strategies

Findings indicated that university students reported a wide range of coping strategies to deal with cyber victimization including technical solutions, confrontation or retaliation, avoidance, helplessness reactions, assertiveness responses, seeking support and advice. These strategies are similar to those found in past research (Jacobs, Goossens, Dehue, Völlink, & Lechner, 2015; Sticca et al., 2015). Although students reported the use of a variety of different coping strategies including retaliation, helplessness, and avoidance, the majority of both male and female students who experienced cyber victimization considered technical coping, and seeking advice as best strategies to deal with cyber victimization. It is also noted that the majority of respondents particularly female students reported seeking help from their family members such as parents and siblings. The selection of particular coping techniques is partly influenced by cultural orientations, norms, and values. Regarding seeking family support, our findings are consistent with the existing research in eastern culture (Hu et al., 2016).

Causes of cyber victimization

Third aim of the study was to identify the various causes of cyber victimization in Pakistani university students. The findings revealed break-up either in engagements, romantic relationships, or friendships was the most common reason for cyber

victimization. These findings are consistent with the existing research that indicated that problems and break-ups in relationships (Felmlee & Faris, 2016; Hoff & Mitchell, 2009; Kellerman, Margolin, Borofsky, Baucom, & Iturralde, 2013), rejection of an offer of a romantic relationship or opposite sex friendship (Hoff & Mitchell, 2009) and jealousy over romantic relationships (Reason, Boyd, & Reason, 2016) were the most common reasons for cyber victimization.

However, in the present study, risky sharing concerning private information, such as passwords and intimate photos, were only reported by students that were in romantic relationships. It was afterward, during break-ups, that private information was misused by their exes (lovers) against the victims. The majority of the respondents regretted their risky sharing and they attributed their risky sharing to the feeling of love and blind trust in the perpetrator (ex-lover). These findings illustrate Shakespeare's reflection about the blindness of love and also show the role of disinhibition in online communication by lovers. The fantasies of love, in combination with online communication produce a fragmentation or dissociation between the fictional/fabricated digital world and the realities of offline 'real' life. Therefore, lovers might often practice risky sharing and end up being cyber victimized (Agustina, 2015). The findings corroborate the previous findings of König, Gollwitzer, and Steffgen (2010) and Varjas, Talley, Meyers, Parris, and Cutts, (2010) that showed revenge by the perpetrator is an important contributing factor to cyber victimization. The notion that academic competition can be a cause of cyber victimization was supported by the study of Khiat (2012) and Cross et al. (2015).

Ethnic, religious, political and sectarian prejudices were evident in findings of the present study as a reason of cyber victimization in students. Regional literature also

supports the existence of these prejudices that trigger violence in Pakistani youth (Zaman & Sabir, 2013). Though, 98 % Pakistanis are Muslims, a diverse sectarian interpretation of religion exists, and youth are taught by elders and clergy members to protect their own version of religion (Haleem, 2003). Religious prejudices and biases as reasons for cyber victimization were also supported by the finding of the study by Reason et al. (2016).

The findings are consistent with existing research that shows gender discrimination as another reason for cyber victimization (Hoff & Mitchell, 2009). However, in the present study sharing secular feministic thoughts online were specifically identified as a reason of cyber victimization in female students. This finding can be interpreted in the light of patriarchal culture and traditions that are deeply embedded in Pakistani society (Critelli, 2010). Moreover, the lack of digital skills was also found a cause of cyber victimization and supported by the narrative review of Mishna et al. (2012) that described the link of Internet safety skills and cyber victimization.

Socio-cultural Impacts

Findings showed that reputational damage was a common impact of cyber victimization among both male and female students, which is in agreement with the findings of Walker et al. (2011). In this study we also found that cyber victimization not only occurs due to relationship problems but it also has adverse impact on student's relationships as a consequence. Many students reported the breakup of their engagements; then their friends and lovers ended relationships with them as a result of cyber victimization. These findings are also consistent with the studies of Cassidy et al. (2017) and Faucher et al. (2014).

The gender-specific socio-cultural impacts of cyber victimization on female students were mostly related to honor. They reported that after being cyber victimized they were often considered immoral by society and blamed by their family members for uploading pictures on social media and talking or having friendship with males on the internet. These findings are obvious in Pakistani culture where opposite sex friendships are not appreciated by the family and society (Ali, 2011). Women are not allowed to post their photos online in some conservative Pakistani families. This situation is exacerbated by the technological literacy gap exists between students and their parents.

Findings also revealed that female students often feel reluctant to share their experiences of cyber victimization because it can lead to revenge on the perpetrator by the victim's family and often results in violence. This is because women are typically considered the "honor of a family" and male members of the family are taught from childhood to protect their family honor. Families are considered as *Khandani* (pure families), if they maintain this type of honor (Zaman & Sabir, 2013). Thus, considering cyber victimization towards female as an attack on their family's honor can evoke the feeling of rage in the male family members and ultimately lead to acts of revenge.

Female students also reported honor suicide ideation because their experience of cyber victimization led to shame and dishonor to their families and in some cases where their opposite sex friendship and romantic relationships were exposed by the perpetrator, they were afraid of being harmed or killed by their families for tarnishing their family honor. These specific findings highlight the role of culture in experiencing cyber victimization by female students where domestic violence and honor killing of women are real possibilities (Critelli, 2010).

Among males a gender specific theme was mocking by peers after being cyber victimized; male students reported this post cyber victimization mocking by peers can incite them to take revenge on the perpetrator. Future research can extend this line of inquiry to investigate the role of post cyber victimization mocking in retaliation in males.

It is fact that cyber harassment, online violence, and cybercrime are clearly different constructs. Rather than suggesting that researchers should use the local terms, it would be suggested that new measures of cyberbullying use a list of specific behaviors rather than descriptive terms. However, it might also be useful to increase awareness raising programs that introduce the term of cyberbullying so that students can differentiate between these terms. Finally, although the behaviors known in the literature as cyberbullying may be similar in different cultures, they are interpreted and experienced differently.

Chapter IV**STUDY II: DEVELOPMENT OF CYBERBULLYING AND CYBER
VICTIMIZATION SCALES (CBCVS) AND PILOT STUDY**

Study II consisted of two phases. Phase I aimed to develop the Cyberbullying and Cyber Victimization Scales (CBCVS), whereas phase II is a pilot study conducted to examine the psychometric evaluation of various scales.

Phase I: Development of Cyberbullying and Cyber Victimization Scales (CBCVS)

Research on Cyberbullying in Pakistan is very recent and issues arising from the measurement of cyberbullying/victimization are more significant due to the absence of an indigenous reliable and valid measure. A small number of studies that exist in Pakistani context employed self-report questionnaires which have been explicitly designed in order to conduct each specific research without describing construction and validation procedures (see Batool, Yousaf, & Batool, 2017; Khan & Daniyal, 2018). Additionally, in some cases evidences of psychometric properties have not been tested or described (see Magsi et al., 2017). A few studies used single item measure for the assessment of cyberbullying/victimization (see Muzamil & Shah, 2016). Generally, multiple-item measurement is considered more accurate, valid, and reliable in comparison to a single item (Nunnally, 1978). With reference to cyberbullying, Gradinger et al. (2010) indicated that a single item global measure may lead to underestimation of the reports of cyberbullying and victimization. Several studies employed the scales without any cross-cultural adaptation which have been originally developed for the assessment of

cyberbullying victimization in western countries (see Ashiq et al., 2016; Butt, Jamil, & Khalid, 2019).

Baek and Bullock (2014) conducted a review of international research which indicated that the nature of cyberbullying is different in different regions of the world and cultural differences exist concerning cyberbullying between Asian and Western societies. The accurate and precise measurement of cyberbullying/victimization is essential for prevention and intervention efforts to reduce this phenomenon. Considering this, an indigenous, empirically valid and reliable assessment tool can help in achieving this goal. Therefore the aim of the study II was to develop a measure for the assessment of cyberbullying/victimization among Pakistani university students. This study was completed in the following steps.

Step-I: Literature review. In this stage an extensive literature review was conducted in order to examine the full domain of cyberbullying and cyber victimization manifestations. More specifically, due to the changing trends in the world wide web and emerging communication technologies, those scales were consulted which were either most recent at that time or have been validated on late adolescents or young adults i.e. Cyberbullying Experiences Survey (Doane et al., 2013), European Cyberbullying Intervention Project Questionnaire (Del Rey et al., 2015), and Cyberbullying Perpetration and Cyberbullying Victimization Questionnaire (Lee, Abell, & Holmes, 2015). Additionally, existing qualitative studies with in Pakistani context were also reviewed for the identification of cyberbullying/victimization behaviors and experiences (Hafsa & Hanif, 2015; Magsi et al., 2017). After this review, a list of 22 behaviors was formed with reference to cyberbullying/victimization.

Step-II: Semi-structured interviews. At the second step, semi-structured interviews were conducted with 93 Pakistani university students (51 male students and 42 female students). The purpose of these interviews was to identify the unique nature of behaviors regarding cyberbullying/victimization in Pakistani context and which behaviors have not been observed in existing scales developed in western countries. Finally, 13 behaviors were identified related to capturing photos or videos without permission, posting someone's private photos or videos without permission, lying to deceive, showing private conversations with someone to others, sending sexually charged messages or images, repeated unknown and anonymous phone calls etc. (for more information please see Study I). These behaviors were added in the existing list of behaviors that was formed after literature review at step I, which resulted into the list of total 35 behaviors.

Step-III: Evaluation by a committee. During this step, the list of 35 behaviors was carefully evaluated by a committee. This committee was comprised of three researchers who have prior experience conducting research in the field of psychometrics and bullying victimization. Finally, the list of 35 behaviors was reduced to 23 behaviors after eliminating redundancy and slight variations in particular actions which referred to one single behavior.

Step-IV: Generation of item pool. After identifying the cyberbullying/victimization behaviors, a parallel set of 23 items for each scale of cyberbullying and cyber victimization was generated on the basis of previous research (Del Rey et al., 2015) and data of semi-structured interviews (see study I for details). Existing research indicated that social media platforms and other mechanisms through which cyberbullying

and victimization occurs have evolved over time. Additionally, popularity and penetration of different social media sites vary from country to country (Betts, 2016). In view of this, items were included statements that reflect cyberbullying/victimization behaviors through a variety of ICT means, for instance, mobile phone (call/text) or internet and social media sites (e.g. websites, chat-rooms, blogs, messenger, Facebook, Twitter, etc.) which are popular in Pakistan (Zaib, 2015), and have been previously used as venues for cyber harassment in Pakistan (Digital Rights Foundation, 2018). Further CBCVS were designed to include the core criteria of “intention to harm,” and “repetition” for the measurement of cyberbullying/victimization.

A time frame of the past 12 months was included to report the behaviors of cyberbullying/victimization. Although, existing research indicated the variation in the time frame can impact the prevalence rates (Gomez-Garibello et al., 2012), the majority of past studies have assessed cyberbullying/victimization in the past 12 months (see Arıcak, 2009; Blaya et al., 2018; Juvonen & Gross, 2008; Schneider, O'Donnell, Stueve, & Coulter, 2012; Tomşa et al., 2013; Wachs, 2012). Additionally, 12 months' time frame is recent enough to allow for accurate recall and fully capture the experiences that occur throughout the university year including summer breaks and holidays (Doane et al., 2013).

Following Del Rey et al. (2015), the five-point (0-4) frequency rating scale was employed with response options ranging from 0 = “never,” to more 1 = “once or twice,” 2 = “once a month,” 3 = “once a week,” and 4 = “more times a week.” The use of a five-point scale is preferred in order to improve the respondent’s ability to differentiate meaningfully among different response options and to improve validity and reliability

(DeVellis, 2016; Moors, Kieruj, & Vermunt, 2014). A continuous score for the measurement of cyberbullying/victimization can be obtained by summing up the scores on each set of the items of Cyberbullying Scale and Cyber Victimization Scale. For the identification of the cyber-bullies, cyber-victims and cyber victim-bullies, behavior “participation” and “repetition” is considered. Cyber-victims would be those subjects who score equal or higher than 2 (“once a month”) in any of the items related to the experiences of cyber victimization and with scores equal or lower than 1 (“once or twice”) in all of the items of the Cyberbullying Scale. In contrast to this, cyber-bullies would be those participants with scores equal or higher than 2 (“once a month”) in any of the items of cyberbullying scale and with scores equal or lower than 1 (“once or twice”) in all of the items of the Cyber Victimization Scale. Additionally, cyber victim-bullies would be identified those participants with score in any of the items of both cyberbullying and cyber victimization with a score equal or higher than 2 (“once a month”).

Step-V: Subject matter Experts’ review and finalization of items. In this step, a committee approach of the three subject matter experts in the field of Psychometrics, Developmental and Educational Psychology was conducted to critically review the scales. Experts were requested to review the content in order to assess the appropriateness and suitability of the items, clarity in wording, and format. Their critique was further led to the elimination of three items in each set of scales in order to enhance content validity and to minimize redundancy. Finally, a set of 20 representative items was finalized for each of cyberbullying and cyber victimization scales.

Step-VI: Pre-testing and empirical evaluation. Pre-testing and empirical evaluation of the scales was conducted in phase II (pilot study). Pre-testing was done on a small sample of 50 university students to assess the readability and comprehension of items (for details see pp. 169-170). Further, CBCVS were empirically evaluated using a sample of 508 university students. The purpose of this evaluation was to explore the factor structures of CBCVS and to examine their psychometric properties (for details see pp. 175-181). Finally, the factor structure of CBCVS was confirmed and convergent validity was assessed in study III on a sample of 1314 university students (for details see pp. 236-239).

. Phase II: Pilot Study

This section addresses the details of the pilot study by focusing its objectives, method, results, and discussion.

Objectives

The major objective of the pilot study was to determine the suitability of various measures that are selected to use in this study for the population of Pakistani university students. Following this, items in different scales were adapted to make them more clear, comprehensible, and relevant to Pakistani university settings. In addition, the pilot study provided evidence of psychometric properties of various scales being used in this research on a sample of Pakistani university students by examining the reliability and factorial validity of these scales. In particular, the pilot study was carried out to achieve the following objectives.

1. To explore the factor structure and examine the reliability of Cyberbullying and Victimization Scales developed in Phase I of this study.
2. To adapt the selected scales for enhancing their comprehension with respect to Pakistani university students and making them more relevant to the university setting.
3. To evaluate the clarity of wording and suitability of various other measures used in this study.
4. To examine the factorial validity and reliability of various scales being used in this research.
5. To examine the initial trends of relationships between study variables.

The pilot study was carried out in five different steps.

Step-I: Selection of Instruments

Step-II: Expert opinion for the adaptation of selected scales.

Step-III: Pre-testing of various instruments on a small sample of university students for examining their readability, and suitability.

Step-IV: Committee approach for further adaptation of scales to resolve the issues raised by participants concerning comprehension and readability of various items.

Step-V: Pilot testing of finalized instruments

Details about each of these steps have been provided below.

Step-I: Selection of Instruments

Self-report measures in the English language were selected for the present study that provided the best operationalization of variables in accordance with the pertinent

theoretical background of the present study. Pakistani students are bilingual. Urdu is the national language in Pakistan, whereas English is the official language. English is taught at the school level and medium of instruction at the university level in Pakistan is English (Khalid, 2016). Therefore, instruments in the English language were found to be suitable for university students instead of translating them into Urdu. Besides this, the researcher chose only those instruments that hold good psychometric properties across a variety of samples. Following instruments were selected and were administered along with an informed consent form and demographic sheet for the present study.

ICT Use Scale. The original version of the ICT Use Scale was developed to examine adolescents' use of ICT in a Swiss longitudinal study netTEEN (Sticca, Ruggieri, Alsaker, & Perren, 2013). A number of items with response option “Yes” or “No”, asks respondents about mobile phone ownership e.g., “Do you have a mobile phone?” and its use during class hours e.g., “How often do you use the mobile phone during classes?” location of Internet use e.g., “Do you use the Internet at home?”. In addition, they were asked about the number of hours spent on the Internet e.g., “How many hours do you spend on the Internet each day?”

Respondents were also asked about a set of activities engaged in while using different electronic devices and the Internet (e.g. receive or send emails, chat etc.). Each item is rated on a five-point Likert scale ranging from “never” (1), “once or twice” (2), “about once a month” (3), “about once a week” (4), and “almost daily” (5).

Further, Corcoran (2013) adapted the ICT Use Scale to collect data from adolescents in post-primary School in Ireland. A number of modifications were made.

For example, a question was added to ask participants about the ownership of a Smartphone. In addition, a question was added to ask respondents "Do you have a social network account, e.g., Facebook?" (see Appendix B).

California Bully Victimization Scale (CBVS). The California Bully Victimization Scale (Felix, Sharkey, Green, Furlong, & Tanigawa, 2011) was selected to measure traditional bullying and victimization (see Appendix C). The scale contains eight items that measure several forms of victimization in the past month such as (1) being teased, (2) gossip or rumors spread behind their back; (3) being ignored on purpose or left out of group; (4) physically hurt, pushed, hit; (5) being threatened; (6) receiving sexual comments, gestures, jokes; (7) had things damaged or stolen; (8) being teased, threatened or rumors spread through the Internet. Each item is phrased in a way that also measures intention to harm "in a mean or hurtful way". The frequency of each of these experiences is rated on a 5-point scale "Never" (0), "once in the past month" (1), "two or three times in the past month" (2), "about once a week" (3), and "several times a week" (4). The score is calculated by summing up scores on all the items. Likewise, a parallel set of items has been provided in the scale to measure various forms of bullying. Other items that are particularly designed for measuring power imbalance etc. are not included in the present research.

Criteria to identify victims or bullies those who indicated at least one form of victimization at minimum 2 to 3 times per month, perceived intentionality of the perpetrator at least some of the time. Similar criteria were used to identify bullies in view of the endorsement of responses on the bullying scale.

Felix et al. (2011) developed the CBVS using several important steps to ensure the content validity of the scale. The developers of the scale reported temporal stability of the CBVS through test-retest across the time interval of two weeks, and a high degree of consistency ($r = .80$ to $.83$) was found between the scores of victimization across two different time points. In addition, a moderate level of Cohen's kappa coefficient was reported (range $.46$ to $.64$) after the assessment of individual items. The scale was also used to classify the students as either "bullied" or "not bullied" at two different time points and consistency was observed in this classification with 89.6 % agreement. Likewise, a similar level of temporal stability ($r = .83$) across a time interval of two weeks was found by Atik and Guneri (2012) for the Chinese version of the CBVS in a sample of middle school children. They also reported satisfactory internal consistency ranging from $.72$ to $.83$ for victimization items. Felix et al. (2011) indicated the predictive validity of the scale by reporting the significant negative correlations between the scores of victimization and the scores on the measures of hope, life satisfaction, and school connectedness.

Besides the sound psychometric characteristics of CBVS, there are several other potential reasons to select this scale for the present research. For instance, a majority of the instruments to measure bullying and victimization are developed and validated on a sample of primary or middle school children such as Peer Victimization and Bully Behavior Scales (Austin & Joseph, 1996), Adapted Participant Role Scale (Sutton & Smith, 1999), Olweus Bully/Victim Questionnaire-Revised (Kyriakides, Kaloyirou, & Lindsay, 2006), Peer Interaction Primary School Questionnaire (Tarshis & Huffman, 2007), and the Bullying and Ostracism Screening Scales (Saylor et al., 2012). In contrast,

the CBSV was validated not only on a sample of middle school students (7th to 8th grade) but also on high school students (9th to 12th grade) with the inclusion of an item to measure the sexual form of bullying. This form of bullying generally starts from puberty onwards (Felix & McMahon, 2007) and therefore can be more imperative to measure in university students. Moreover, existing studies showed that CBVS has been used in Asian cultural setting (Atik & Guneri, 2012) and also for the measurement of bullying victimization among university students (Reid, Holt, Bowman, Espelage, & Green, 2016). Therefore, the CBSV was found most suitable to use for the present study.

Stress Appraisal Measure (SAM). The Stress Appraisal Measure (Roesch & Rowley, 2005) was selected to measure the cognitive appraisals of a hypothetical situation of cyber victimization. Cyberbullying victimization is a relatively new field of research and there is a scarcity of research concerning the cognitive appraisal of a cyber victimization incident. Therefore, we did not find any existing instrument that was specifically developed for this purpose. Consequently, considering cyber victimization as a stressful situation, it was decided to adapt the existing appraisal measure that has been developed to measure appraisal of a stressful situation. The Stress Appraisal Measure (SAM) was found most suitable and pertinent for the present study. First, sufficient evidence of its psychometric properties was reported (Peacock & Wong, 1990; Roesch & Rowley, 2005). Second, the SAM is grounded on Transactional Theory of Stress (Carpenter, 2016; Peacock & Wong, 1990) and measures both primary and secondary dimensions of appraisal. Third, it was developed to assess the appraisal of stressful situations on a sample of undergraduate students.

The revised version of the SAM (Roesch & Rowley, 2005) was selected for use in the present study. The measure contains 19-items (see Appendix D) consists of four scales; Challenge (7-items), Threat (5-items), Centrality (4-items), and Resources (3-items). Subjects were asked to indicate how stressed they feel and think when encountering a stressful situation. Response options ranged from (1) “Not at all” to (5) “A great amount.” The Challenge scale refers to self-efficacious judgments and optimistic thoughts associated with the appraisal of a stressful situation. Sample items include “I have the ability to overcome stress.” The Threat factor indicates anxious and helplessness feelings in response to a threatening situation. Sample items include “I feel totally helpless.” The Centrality factor indicates the perceived significance of an event for the person’s wellbeing. Sample items include “The event has serious implications for my life.” Resources factor refer to the appraisal of resources that are available to a person to deal with the particular situation. Sample items include “There is someone I can turn to for help”.

Roesch and Rowley (2005) reported a satisfactory level of internal consistency for the four factors across the diverse gender groups/samples. Cronbach’s Alphas ranged for Challenge ($\alpha = .81-.85$), Threat ($\alpha = .77-.79$), Centrality ($\alpha = .71-.75$) and Resources ($\alpha = .68-.72$). Moreover, they found an adequate level of discriminant and convergent validity by examining the correlations of each appraisal factor and the validity measures (Roesch & Rowley, 2005).

Coping with Cyberbullying Questionnaire (CWCBQ). The Coping with Cyberbullying Questionnaire (Sticca et al., 2015) was selected to measure university students’ coping with the hypothetical experiences of cyberbullying (see Appendix E).

The questionnaire provides a hypothetical situation i.e. “Sometimes, the Internet or mobiles are used to bully others. Imagine that for a few weeks, you have been receiving nasty and threatening text messages. Aside from that, you found out that embarrassing pictures of you are being spread around.” Then respondents were asked to imagine that they experienced something similar to the description of the scenario and to rate how likely they would use the coping strategies.

The CWCBQ is a 36-item questionnaire and consists of 7 subscales; Distal advice (5-items), Assertiveness (5-items), Helplessness/self-blame (5-items), Active ignoring (5-items), Retaliation (5-items), Close support (5-items), and Technical coping (6-items). Distal advice includes coping strategies such as reporting to the police, seeking advice on an online platform or calling a helpline. Assertiveness encompasses telling the bully to stop or asking the bully why he/she is doing this. Helplessness or Self-blame includes self-blaming thoughts or thinking that nothing can be done to stop the cyberbullying. Active ignoring involves avoiding contact with the bully or ignoring all messages concerning cyberbullying. Retaliation includes writing threatening or mean things to the bully. Close support refers to coping strategies such as contacting someone who supports and listens, spending time with friends to take mind off from the experience of cyberbullying. Technical coping includes reporting the incident to Internet service provider or website owner, changing the contact details such as social networking ID or phone number.

Response options include “Definitely Not” (1), “Probably Not” (2), “Probably” (3), “Definitely Yes” (4) and “No answer” (5). The score on each subscale can be

obtained by averaging the respondent's ratings ranging from (1) to (4) on each corresponding item. "No answer" (5) indicates a missing response.

Sticca et al. (2015) reported the Cronbach's alpha reliabilities for CWCBQ on a sample of 3970 students from three countries including Switzerland, Italy, and Ireland. Thus, reliability for Distal Advice was reported as .65 to .77, Assertiveness = .65 to .81, Helplessness/Self-blame = .52 to .72, Active ignoring = .60 to .64, Retaliation = .72 to .82, Close Support = .70 to .77, and Technical Coping = .68.

Coping with cyberbullying is a new area of research and therefore there are only a few instruments available to measure coping strategies with reference to cyberbullying. The CWCBQ was found to be a promising instrument for the measurement of coping strategies as it has sound psychometric properties that are established on a cross-national sample.

Social Desirability Scale. Social desirability Scale SDS-17 (Stober, 2001) was selected to use in the present research (see Appendix F). Although this variable is not of direct concern in the present study, it has been used as a control variable and to examine the biases by desirable responding on the actual variables of interest. Existing research indicated that reporting perpetration and victimization is likely to be affected by the desire to present themselves in a socially favorable light (Pornari & Wood, 2010; Tian, Yan, & Huebner, 2018).

The SDS-17 was found to be a reliable and valid measure to assess social desirability and Cronbach alpha reliability ranged from .72 to .80 in various studies (Stöber, 1999, 2001). The temporal stability coefficient was .82 over the time period of

four weeks across two administrations (Stöber, 1999). The scale possesses good convergent validity as it was found to be associated with other measures of social desirability. The scores on SD-17 were found to be positively associated ($r = .52$) with the Lie Scale of Eysenck Personality Questionnaire (Eysenck, 1991), positively associated ($r = .85$) with the Sets of Four Scale (Borkenau & Ostendorf, 1992), and positively associated ($r = .68$) with the Marlowe-Crowne Scale (Crowne & Marlowe, 1960). Further, with reference to discriminant validity, nonsignificant associations of SD-17 scores were found with extraversion, neuroticism, psychoticism, and openness to experience (Stöber, 2001). Furthermore, the scores on the SD-17 were distinctively associated with impression management but not with self-deception (Stöber, 2001).

SD-17 was found to be more developed and was preferred over previous measures of social desirability in two ways. First, it is particularly developed for use with the general population without any reference to psychopathological implications as there are in Edward's Scale (Edwards, 1953, 1957). Second, it does not include outdated parameters of social desirability as in Marlowe and Crowne's scale (Crowne & Marlowe, 1960).

The revised version of the DS-17 (Stöber, 2001) is a 16-item scale with True/False response format. Sample items include "There has been an occasion when I took advantage of someone else," "There has been at least one occasion when I failed to return an item that I borrowed". The scores on SD-17 ranged from 0 to 16. It contains six reversed keyed items (1, 5, 6, 10, 14, and 16).

General Self-Efficacy Scale (GSE). General Self-Efficacy was measured by the GSE scale that was developed by Schwarzer and Jerusalem (1995). It is a widely used scale originally developed in German and then adapted in 28 different countries and language versions (Luszczynska, Scholz, & Schwarzer, 2005). The scale is composed of 10 items (see Appendix G) that assess generalized sense of perceived self-efficacy or stable and broad sense of personal competence to deal or cope with a wide range of stressful situations in life. It measures the strength of one's belief about his or her general abilities. Response options for each statement range from (1) "Not at all true" to (4) "Exactly true" and scores on the scale ranged from 10 to 40 points. Sample items include Item 2 "If someone opposes me, I can find the ways and means to get what I want," and Item 9 "If I am in trouble, I can think of good solution."

Scholz, Doña, Sud, and Schwarzer (2002) reported the Cronbach's alpha reliabilities of .75 to .90 for different samples. The English version of the scale yielded alpha reliabilities ranged from .87 to .88 (Scholz et al., 2002). Furthermore, sufficient evidence of the temporal stability of the scale was found in various studies. A test-retest reliability coefficient of .55 was found over a period of one year using a sample of 2846 students (Schwarzer & Jerusalem, 1999). With reference to convergent validity, GSE scale showed correlation coefficients of .45 with the perception of challenge in response to stressful situations, and .49 with optimism.

ICT Self-Efficacy Scale. This scale has been selected to measure the ICT self-efficacy of university students. The ICT Self-Efficacy Scale (Musharraf et al., 2018) is an 18-item measure (see Appendix H) that consists of three subscales; Privacy and security (10-items), Differentiation and Learning (5-items), and Communication (3-items).

Privacy and Security related items measure the confidence in the skills concerning security and privacy features of ICT including skills required for the safe use of SNS. For example, setting passwords, controlling privacy settings, recovering email or SNS account after forgetting passwords, removing or hiding tags, and handling spam on the Internet. The Differentiation and Learning sub-scale involves items related to the confidence in one's ability to learn various features of ICT and ability to evaluate the trustworthiness of online communication. For instance, the judgment about the accuracy of information provided by someone through SNS, the ability to express one's point of view on the online platforms, and awareness of the outcomes of one's conduct on the Internet. The Communication sub-scale includes items related to confidence on one's ability to communicate verbally and visually on the Internet. For instance, the ability to use chat rooms, and talking to others through a webcam.

Response options on each item are provided on a 5-point scale ranging from "agree strongly" (5) through "Uncertain" (3) to "disagree strongly" (1). Higher scores indicate the higher level of ICT self-efficacy. Sample items include; "I can easily control the privacy settings of social networking sites that I mostly use i.e. Facebook, Twitter, Skype, WhatsApp, Viber etc." (Item 8-Privacy and security subscale), "When I open any website, I can easily learn in a very short time that how to use its features/functions." (Item 15- Differentiation and Learning sub-scale), and "I can easily talk to others through the Internet using a webcam." (Item 17- Communication sub-scale).

Musharraf et al. (2018) developed this scale using several important steps. First, to ensure content validity of the scale, the initial item pool was reviewed by six expert panelists in terms of suitability and appropriateness for the measurement of the desired

construct. Items of the scale were retained and revised on the basis of the feedback provided by the panelists. Second, principal component analysis on a sample of 436 Pakistani university students provided evidence of three conceptually and statistically validated components in the scale. Third, the factor structure of the scale was confirmed on the second independent sample of 115 Pakistani university students and a good model fit to the data was found. Fourth, the high Cronbach's alpha reliabilities were reported by examining both samples of students. The reliability for the sub-scale of Privacy and security was reported as .89 to .93, Differentiation and learning = .81 to .83, and Communication = .67.

Fourth, sufficient evidence of convergent validity was reported as general self-efficacy was significantly positively correlated with all three sub-scales of ICT self-efficacy ranged from ($r = .27$ to $r = .43$) and the composite score of ICT self-efficacy ($r = .50$). Additionally, the significant positive associations were found between the scores on the ICT Self-Efficacy Scale and the time spent online on weekdays ($r = .08$), off days or weekends, ($r = .18$), and time spent on SNS ($r = .09$).

Besides the good psychometric properties, this scale was a domain-specific measure that particularly tailored to examine the relationship of cyberbullying and victimization with the ICT self-efficacy. Considering the evidence that the majority of the cyberbullying/victimization is occurring on social media platforms, the ICT Self-Efficacy Scale has developed in the context of social digital interactions and particularly includes items related to the skills required to the safe and secure use of SNS.

Depression, Anxiety, and Stress Scales-21 (DASS-21). The DASS-21 was found to be a suitable measure for the present study to measure mental health problems in university students. It is the shortened form of the DASS-42 items (Lovibond & Lovibond, 1995) and composed of three 7-item subscales to measure Depression, Anxiety and Stress (see Appendix I). Participants are asked to indicate how much each statement applied to them over the past week. Response options for each item are provided on a 4-point scale range from (0) “did not applied to me” to (3) “applied to me very much, or most of the time”. Sample items include: Item number 6 (stress scale) “I tended to over-react to situations”, Item number 15 (anxiety scale) “I felt I was close to panic”, Item number 21 (depression scale) “I felt that life was meaningless”. The scores for each of the three subscales are calculated by summing all seven items of that scale and then multiplied by two. Thus the scores ranged from 0 to 42 for each subscale and higher scores on each subscale indicate the higher level of the relevant emotional state.

The DAS-21 has been used in a wide range studies with several ethnic samples (Apóstolo, Mendes, & Azeredo, 2006; Daza, Novy, Stanley, & Averill, 2002; Oei, Sawang, Goh, & Mukhtar, 2013; Tonsing, 2014) and using clinical and non-clinical groups (Aboalshamat, Hou, & Strodl, 2015; Haan, Egberts, & Heerdink, 2015; Hmwe, Subramanian, Tan, & Chong, 2015). The sound psychometric properties of the DAS-21 were supported in different studies. For example, Norton (2007) conducted a study with 895 university students from diverse racial groups and reported Cronbach’s alpha values of .82, .77, and .87 for the subscales of depression anxiety, and stress respectively. Similarly, satisfactory internal consistency values ranged from .78 to .86 for the three sub-scales of DAS-21 were found using a large cross-national Asian sample (Oei et al.,

2013). Moreover, the DAS-21 has been used in the growing number of studies in Pakistan. Shafiq and Malik (2017) reported Cronbach's alpha's value of .80 for depression, .76 for anxiety and .71 for stress subscale using a sample of Pakistani students. Moreover, sufficient evidence of the convergent, discriminative, concurrent and factorial validity of the scale has been demonstrated in existing research (Gloster et al., 2008; Norton, 2007; Osman et al., 2012).

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS). A uni-dimensional 14-item, the Warwick-Edinburgh Mental Well-being Scale developed by Tennant et al. (2007) was selected to measure the mental well-being of students. It assesses positive functioning, subjective well-being, happiness, and psychological functioning over the previous two weeks (see Appendix J). The scale is composed of 14 positively worded items with five response options that range from (1) "None" to (5) "All the time". The Scores on each item are summed to calculate the final score. Thus the scale provides a minimum score of 14 and a maximum score of 70.

The scale has been translated and adapted into numerous languages (Castellví et al., 2014; Lang & Bachinger, 2017; Smith, Alves, Knapstad, Haug, & Aaro, 2017; Trousselard et al., 2016) and good psychometric properties have been reported on a cross-cultural sample (Taggart et al., 2013). The scale demonstrates good content and factorial validity. Cronbach's alpha reliability value of .91 was reported for the general population .89 for the student sample (Tennant et al., 2007) and .91 for Pakistani community sample (Stewart-Brown, 2013). In addition, a high temporal stability was indicated as a correlation coefficient value of .83 was found between the two administrations of the measure over the period of one week (Tennant et al., 2007).

Moreover, sufficient evidence of the convergent validity was found as the scores on the scale found to be highly correlated with other measures of well-being and mental health (Tennant et al., 2007).

Demographic sheet. The demographic sheet included information about the age, gender, residence type (hostel versus home), educational program, and discipline. Existing literature provided the rationale for including these demographic variables (see Appendix L).

Informed Consent Form. The informed consent form contained a brief introduction explaining the nature and purpose of the study. In addition, information was provided about the rights of the participants to withdraw from participation at any time during the study. Respondents were required to check the tick box in the consent form if they are willing to participate in the research (see Appendix M).

Step-II: Expert opinion for the adaptation of selected scales

During the second step of the pilot study, we sought expert opinion regarding possible adaptations of selected scales. Four full time faculty members at the researcher's institute provided services for this purpose. One of them was a professor, and the other three were assistant professors. They possessed sound knowledge of psychometrics and extensive prior research experience. The objective of this adaptation was to assess suitability and tailor the instruments to meet the needs of the study population and to achieve the study objectives.

All experts were contacted at their offices and briefed about the nature and goals of the present research. They were provided copies of all the instruments that were

selected in step I of the pilot study (excluding Cyberbullying and Cyber victimization Scales (CBCVS) and ICT Self-efficacy Scale as both of these scales were originally developed in Pakistani context using a sample of university students therefore did not require adaptation. Further, experts were provided a brief overview of each construct and its operationalization. They were asked to provide their feedback about the suitability, relevance, and appropriateness of each scale for the sample of Pakistani university students. Finally, they were asked to provide their suggestions for improvement, especially, if they considered that any modification or change is required to increase the suitability, construct measurement, and comprehension.

After the time period of three weeks, a meeting was arranged in which each member provided his or her written feedback about the suitability of the instrument for the relevant construct. They also suggested few modifications or revisions in the selected instruments in order to achieve the pertinent research objectives and to improve the comprehension and suitability of different instruments for university students. None of the committee members suggested translating the instruments into Urdu language considering the fact that medium of instruction is English in Pakistani universities and students are fluent in speaking, writing and comprehending the English language. However, they suggested that a few uncommon English words and phrases should be translated into simple English or alternate simple words should be provided in parenthesis for easy comprehension. All the recommended modifications were discussed in the meeting. Finally, each of these recommended modifications was incorporated in the relevant instruments if at least three members in the meeting approved that suggested

modification or revision. The details of these modifications with reference to the particular instrument have been provided below.

Adaptation of ICT Use Scale. In the present study, an adapted version of ICT Use Scale (Corcoran, 2013) was further adapted to investigate Pakistani university students' use of Internet and communication technology. Two items were further added to investigate time spent on SNS each day and to estimate the frequency of mobile phone use to capture photos. Further, considering almost all the university students, in comparison to school students, use the internet at their homes and rooms; therefore, two items "Do you use the Internet at home?" and "Do you use the Internet in your room" were removed from the scale.

Adaptation of California Bully Victimization Scale (CBVS). A goal of the present study was to measure university students' experiences of victimization and bullying behaviors in the past 12 months instead of past one month. Therefore, an original time frame of "past one month" was replaced with the time frame of "past 12 months." Another goal of the study was to compare the frequency of traditional bullying victimization and cyberbullying victimization. For this reason, the wording in response options was modified in order to make them similar to the response options used in the Cyberbullying and Victimization Scales. Consequently, three response options were modified "once in the past month" was replaced as "once or twice," "2 or 3 times in the past month" was replaced as "about once a month," and "several times a week" was replaced as "about more times a week." Two other response options "Never," "about once a week" were not modified because they were already similar to the response options of Cyberbullying and Victimization Scales.

Furthermore, item 8, “Been teased, had rumors spread, or threatened through the Internet or text messaging” was removed from the scale. This is because it measures cyberbullying victimization and we used separate scales to measure cyberbullying and victimization in the present study. Likewise, in order to avoid repetition in measurement, this item was removed.

Moreover, similar criteria were required to identify bullies and victims in the traditional and cyber context. Because power imbalance has been considered a controversial criterion in cyberbullying (Menesini et al., 2016; Smith et al., 2013) and to adopt the same measurement approach for both traditional and cyberbullying, power imbalance was not measured in the present study with respect to both traditional and cyberbullying and victimization. Therefore, “at least one form of power imbalance” in the original criteria was excluded. Following Del Rey et al. (2015), criteria were set on the basis of behavior participation and repetition in bullying and victimization. Accordingly, victims will be identified as those participants who report victimization at least “once in a month” (equal or higher) in any of the forms of victimization and report “once or twice” for all forms of the victimization. Similarly, bullies will be identified as those participants who report bullying at least “once in a month” (equal or higher) in any of the forms of bullying and report “once or twice” for all forms of bullying. Likewise, bully/victims (combined role) will be identified as those participants who reported any form of both victimization and bullying “once in a month” (equal or higher).

Adaptation of Stress Appraisal Measure (SAM). The SAM (Roesch & Rowley, 2005) was specifically developed to appraise a general stressful situation. Considering cyberbullying to be a stressful situation, we measured of university students’ appraisal of

a hypothetical scenario of cyberbullying. In order to do so, SAM was adapted for the present study. Participants were provided a following hypothetical scenario of cyberbullying victimization *“Imagine that you have experienced cyberbullying (Cyberbullying is an aggressive act or behaviour that is carried out using electronic means (through email, instant messaging, social media, in a chat room, on a website, in an online game, or through a text message sent to a cell phone) by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself). For example, someone sent you mean messages in an email or posted negative comments or information about you via social media, like Facebook.”*

The above scenario is clarified by including the definition of cyberbullying proposed by Smith et al. (2008). Further, Betts (2016) pointed out that modes and venues concerning cyberbullying have evolved rapidly in the last decade with the expansion and advancement in technology. Reflecting these advancements in technology, we provided the details in parenthesis to explain the *electronic means* in the light of the definition proposed by Whittaker and Kowalski (2015) as *“through email, instant messaging, social media, in a chat room, on a website, in an online game, or through a text message sent to a cell phone”*. In addition, an example of typical cyberbullying behavior on social media was also provided in the description of the scenario (Whittaker & Kowalski, 2015).

Further, respondents were asked to imagine the cyberbullying victimization situation provided in the scenarios, and indicate what they would do in that situation. They were asked to provide their responses on 5-point Likert scale. Moreover, items of the scale were revised and the word “stress” was replaced with “such situation” (situation provided in the scenario). For example, Item 1 “I have the ability to overcome stress” was

modified as “I have the ability to overcome such situation” and Item 8 “I perceive stress as threatening” was modified as “I perceive such situation as threatening.”

Adaptation of Coping with Cyberbullying Questionnaire (CWCBQ). The CWCBQ developed to measure coping strategies with cyberbullying in European adolescents and in the school context, while, in the present research we were intended to use this measure with adult students and specifically in the university context. Moreover, this measure was not previously used in Pakistani cultural context. Therefore, we considered the findings of study I for decisions about the adaptation of the questionnaire. These findings were obtained through semi-structured interviews with Pakistani university students and suggested the inclusion of a few coping strategies that are not available in the original version of the CWCBQ. For example, some students reported in the interviews (see the study I) that they tried to solve the issue with the help of their families and friends. Moreover, several female students reported that they tried to hide the experience of cyber victimization from their family members (especially when ex-boyfriend was blackmailing or when girls belonged to uneducated families). Items were phrased for the measurement of these coping strategies and provided to experts for review and further revision. Finally, three items were finalized. “I would inform my family (to seek help or to take the family into my confidence),” “I would seek advice from my friends,” “I would try to hide the situation from my family.” Further, these items were sent to the first author (Fabio Sticca) of the original version of CWCBQ for his review. Content analysis of the items concerning pertinent theoretical dimensions was also discussed with the author through an email communication (see Appendix E3).

The original measure was developed to use in the western school context. In order to adapt the items concerning Pakistani university setting, we modified the three items. Item 17 “I would inform a teacher or the principal” was modified as “I would inform a teacher or head of the department/director.” Item 18 “I would get back at the bully in the real world (offline, e.g., at school)” was modified as “I would get back at the bully in the real world (offline, e.g., at university etc.)” Item 32 “I would call a helpline (e.g. Kids Helpline, CyberBullyHotline) was modified as “I would call a helpline (e.g. National Response Centre for Cyber Crime etc.)”

Further, the scenario used in the original scale (Sticca et al., 2015) was replaced with a new scenario that is used in the measure of appraisal (see above section). The purpose of this replacement was to provide the respondents a scenario that reflects the holistic view of cyberbullying victimization, following a definitional approach rather than to provide a single form of situation-specific cyberbullying.

Moreover, experts suggested modifying the response options to make them more clear and comprehensible. Consequently, the original response option “Definitely Not” was modified as “I definitely don’t agree,” the response option “Probably Not” was modified as “I probably don’t agree,” the response option “Probably” was modified as “I probably agree,” and the response option “Definitely Yes” was modified as “I definitely agree.”

Adaptation of Depression, Anxiety, and Stress Scales-21 (DASS-21). As mentioned earlier, the original version of DAS-21 uses the time frame of “past week” to provide a boundary for the experience. For the present study, the time frame of “past

week” was replaced with the timeframe of “past 12 months.” Consequently, the instructions were revised as “Please read each statement and circle a response which indicates how much the statement applied to you over the past 12 months.”

This modification was made because we used a time frame of “past 12 months” to measure the traditional and cyberbullying victimization in the present study. Therefore, we used a consistent time frame to measure the frequency of the predictor and outcome variables of the study. The authors of the scale gave permission to change the time frame of the DASS or to use the trait wording (feeling “in general”) in order to fulfil the specific study requirement. Therefore, scores on the scale cannot be strictly comparable with the normative data of DASS (Psychology Foundation of Australia, 2014).

Further, the committee indicated two items of the scale that can be difficult to comprehend by the students. Subsequently, simple English wording was provided as a substitute to simplify the items. These items include Item 1 “I found it hard to wind down” was replaced as “I found it hard to wind down (cool down/relax)” and Item 8 “I felt that I was using a lot of nervous energy” was replaced as “I felt that I was using a lot of nervous energy (nervous energy is arousal caused by stress).”

Adaptation of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS). The time frame of “past two weeks” was used in the original version of WEMWBS to ask participants to think about while answering the statements. For the present study, the time frame of “past two weeks” was replaced with the timeframe of “past 12 months.” Accordingly, the instructions section of WEMWBS was revised as

“Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the past 12 months.”

Step-III: Pre-testing of Instruments

The purpose of this try out was to assess comprehension and readability of all the study instruments by a small sample of the university students. In order to achieve this goal, a survey booklet was prepared to contain all the instruments that were selected and adapted in step I and II of this study. In addition, items generated for Cyberbullying and Cyber Victimization Scales (CBCVS) in phase I were also included in the booklet along with a participant’s consent form and the demographic sheet. This survey was administered on a sample of ($N = 50$) university students at Quaid-i-Azam University Islamabad. Their participation was on a voluntary basis and they were assured about the confidentiality of their responses. Their age range was 19 to 26 years. They were asked to read all the statements in the survey booklet and provide their responses. Further, they were asked to indicate any word or statement that sound ambiguous or unclear to them and express their views if they had difficulty to comprehend any item or its contextual meaning. The average time consumed by the participant to fill out the questionnaire was 37.52 minutes with a standard deviation of 9.32 minutes. In the end, queries and remarks were recorded.

Step-IV: Committee approach

The committee approach was used to resolve the issues raised by the participants concerning the comprehension and readability of various items. A committee was formed for this purpose that consisted of five members. Three of them were full time faculty

members at the researcher's institute (one professor and two assistant professors) and two were doctoral students at the institute.

A booklet containing all the study instruments used for the try-out in step III was given to each committee member. Further, the issues raised by the respondents in the try-out (Step III) pertaining to the comprehension of items were discussed with the committee members and they provided their suggestions to resolve them. Finally, changes were made accordingly in the questionnaire survey booklet and simple English words or phrases were provided in parenthesis as the substitute for uncommon or difficult words or items. Table 4 indicates the items reported as ambiguous by the respondents along with the changes made in a committee meeting.

Table 4

Problematic words or statements concerning comprehension in the original version of the Scales indicated by students (N = 50) and their revisions

Scale	Item No.	Statement	Issue	Revision
ICT US	16.	Surf the net	Difficult term “surf”	The definition of surfing is provided in parenthesis as “Surfing is moving from site to site on the internet without a definite objective”
CBVS	1.	Been teased or called names	Difficult to comprehend “called names”	Been teased or called (bad) names
SAM	2.	I can positively attack such situation	Difficult to comprehend the item	I can positively attack (deal) such situation
SAM	3.	I have what it takes to beat such situation	Difficult to comprehend “to beat”	I have what it takes to beat (overcome) such situation
CWCBQ	5.	I would write mean and threatening things to the bully	Difficult word “bully”	I would write mean and threatening things to the bully (offender/perpetrator). This revision was also made in items 6, 9, 16, 19, 22, 25, 28, and 34.
CWCBQ	10.	I would keep myself out of the bully’s way	Difficult to comprehend “out of the bully’s way”	I would keep myself out of the bully’s way (avoid the bully)
CWCBQ	18.	I would get back at the bully in the real world (offline, e.g., at university etc.)	Difficult to comprehend the item	I would get back at the bully (to take revenge/ retaliate) in the real world (offline, e.g., at university etc.)
SDS	1.	I sometimes litter	Difficult word “litter”	I sometimes litter (throw rubbish/waste on surroundings or public places)
SDS	9.	When I have made a promise, I keep it--no ifs, ands or buts	Difficult to comprehend the item	When I have made a promise, I keep it (fulfil the promise)--no ifs, ands or buts (without excuses).
SDS	13.	During arguments I always stay objective and matter-of-fact	Difficult word “matter-of-fact”	During arguments I always stay objective and matter-of-fact (realistic)
DASS	13.	I felt down-hearted and blue	Difficult words “down-hearted” and “blue”	I felt down-hearted (sad) and blue (sorrowful)
DASS	18.	I felt that I was rather touchy	Difficult to comprehend item	I felt that I was rather touchy (oversensitive)
WEMWBS	5.	I’ve had energy to spare	Difficult to comprehend “energy to spare”	I’ve had energy to spare (feeling energetic).

Note. ICT US = ICT Use Scale, CBVS = California Bully Victimization Scale, SAM = Stress Appraisal Measure, CWCBQ = Coping with Cyberbullying Questionnaire, SDS = Social Desirability Scale, DASS = Depression, Anxiety, and Stress Scales, WEMWBS = Warwick-Edinburgh Mental Well-being Scale

Step-V: Pilot testing of the finalized instruments

The final step of study II aims to examine the psychometric properties of the finalized instruments. In particular, objectives were to explore the factor structure of CBCVS, to examine descriptive statistics of various measures used in this study such as mean, range, standard deviation, skewness, and kurtosis, determine factorial validity, internal consistency as well as to examine the patterns of relationships between variables of the study.

Sample. The sample for the pilot study consisted of 508 university students (males = 160, females = 348) with ages from 18 to 25 years ($M = 20.53$, $SD = 1.77$). The sample was recruited from six different universities in Islamabad and Rawalpindi through a convenience sampling technique. Just over half of the sample, 54% was obtained from three public sector universities including Quaid-i-Azam University ($n = 95$), International Islamic University ($n = 87$), and Pir Mehr Ali Shah Arid Agriculture University ($n = 90$), while, 46% of the sample was recruited from three private universities i.e., Foundation University ($n = 89$), National University of Modern Languages ($n = 78$), and Bahria University ($n = 69$). The sample was chosen from universities in Islamabad and Rawalpindi because these universities generally have students from all over the four provinces of Pakistan. Almost 43% of the sample, 216 participants were residing in hostels while 57% were day scholars. Of the 508 participants, 317 (62%) were from Arts and Social Sciences and 191 (38 %) were from the schools of Natural Sciences. Participants were included in the sample if they were mobile phone or internet users and were enrolled either in BS degree programs or in a Master degree Program in the university. Moreover, the inclusion criterion restricted participation to students who had

completed at least two semesters (12 months) of their program at the university. Therefore, participants were not sought from Semester I and Semester II of either BS program or Master program. This criterion was employed because an objective of the study was to examine the prevalence of bullying and victimization in university students within the past 12 months. Accordingly, this criterion was important to ensure that they have indicated their experiences of bullying and victimization in the past 12 months within their university life instead of prior school or college life.

Initially, 550 survey forms were distributed, out of which, 519 (94%) were returned. All of these survey forms were carefully examined to identify response patterns and the general attitude of the respondents. Furthermore, cases were identified who have a high level of missing responses. Consequently, 11 forms were discarded. Thus, the final 508 cases were utilized to carry out the pilot study. Analyses were conducted in SPSS (version 22) and *Mplus* Version 8 (Muthén & Muthén, 2017). Missing data were handled in SPSS on the assumption of missing at random (MAR) using the list-wise deletion technique. This technique has been considered a reasonable strategy for the handling of missing data (Graham, 2012; Kang, 2013). In *MPlus* (Muthén & Muthén, 2017) missing data were handled using a full information maximum likelihood (FIML) approach (Enders, 2010; Hartley & Hocking, 1971). Studies showed that FIML missing data estimation is most pragmatic and preferred approach (Enders & Bandalos, 2001; Schlomer, Bauman, & Card, 2010).

Procedure. After obtaining the approval of Ethical Review Board Committee at National Institute of Psychology, Quaid-i-Azam University, the chairs of various departments of concerned private and public sector universities were contacted by the

researcher. They were briefed about the study by providing an overview including its nature, objectives, and implications. Besides this briefing, they were provided a letter indicating the duration and procedure of the data collection. After obtaining the consent of concerned chairs, participants were approached in classrooms during class hours. Prior to the administration of the survey, participants were briefed about the nature of the study. They were assured that the information collected from them would be used solely for research purposes and their anonymity would be protected. They were also informed about their right to withdraw from the study at any time. Following this, they were asked to check the tick box in the consent form (see Appendix M) to indicate their participation in the study. After obtaining the consent of participants, an anonymous paper-and-pencil survey booklet was administered in a group setting. Participants were asked to provide honest responses when answering the survey. Participation of the respondents was purely on a voluntary basis and no incentive was provided. In the end, participants were heartily thanked for their cooperation and participation in the study.

Results

Empirical Evaluation of Cyberbullying and Cyber Victimization Scales (CBCVS)

Before conducting EFA, multivariate normality was evaluated by examining Mardia's coefficient (Mardia, 1970) that was obtained using FACTOR 10.5.02 (Lorenzo-Seva & Ferrando, 2017). Results indicated that variables violated the assumption of multivariate normality. Although, no excessive skewness was found (Mardia's coefficient = 1240.66, $\chi^2 = 98426.11$, $p = 1.00$), there was a significant amount of kurtosis in the data (Mardia's coefficient = 2484.23, $\chi^2 = 751.73$, $p < .05$).

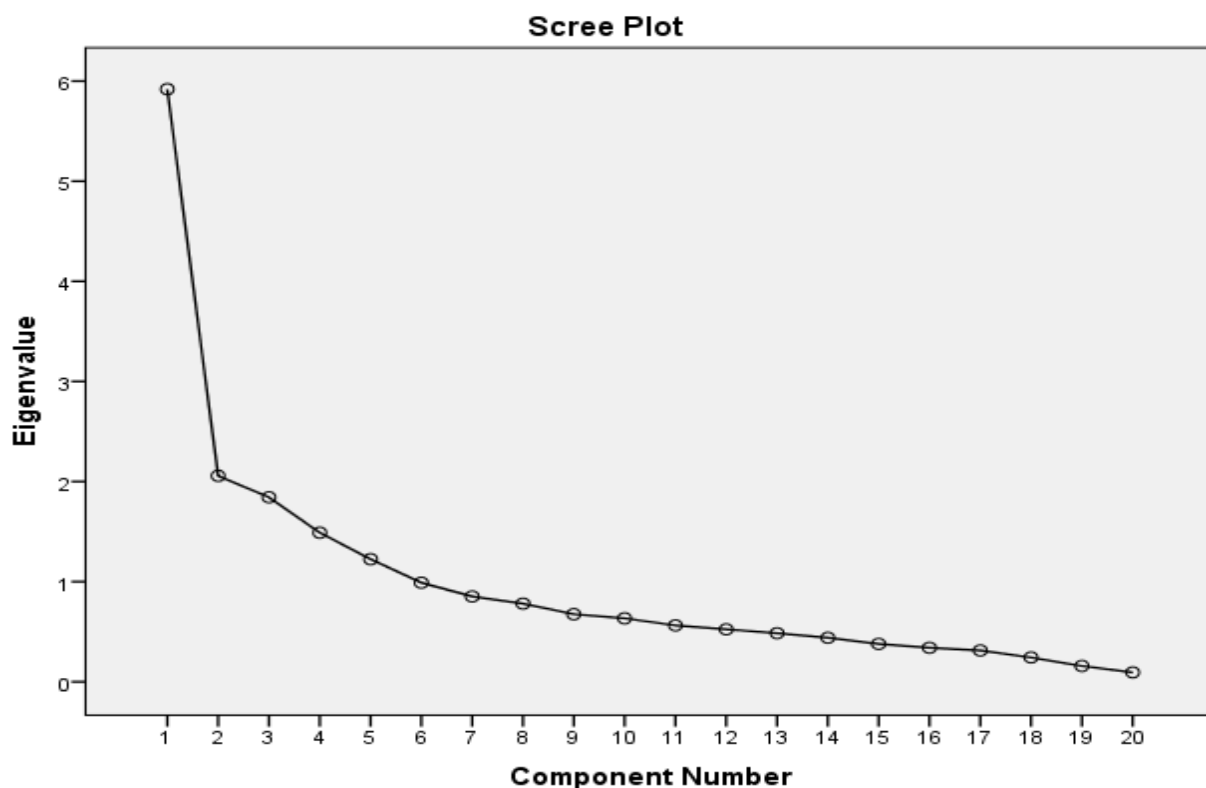


Figure 4. Scree plot for the exploratory factor analysis of the Cyberbullying Scale.

The scree plot presented in figure 4 clearly indicated the point of inflection after first factor. The plot indicated a one factor solution of the cyberbullying scale.

Table 5*Exploratory factor analysis of the Cyber Bullying Scale (N = 508)*

Item No.	Item Statement	Loadings
CB1	I said nasty (rude/insulting/abusive) things to someone or called them by bad names in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).	.34
CB2	I said nasty (rude/insulting/abusive) things about someone to other people in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).	.69
CB3	I threatened someone in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).	.81
CB4	I blackmailed someone in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).	.70
CB5	I hacked into someone's account and stole personal information (e.g. through email or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.	.82
CB6	I hacked into someone's account and pretended to be them (e.g. through instant messaging or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.	.71
CB7	I created a fake account, pretending to be someone else (e.g. on Facebook etc.) in a mean or hurtful way.	.85
CB8	I posted personal information about someone online in a mean or hurtful way.	.69
CB9	I posted embarrassing videos or pictures of someone online in a mean or hurtful way.	.86
CB10	I altered (changed) pictures or videos of someone in a mean or hurtful way.	.77
CB11	I excluded or ignored someone on a social networking sites (e.g. on Facebook etc.) or internet chat rooms in a mean or hurtful way.	.74
CB12	I spread rumors about someone in a mean or hurtful way using mobile phone (call/text) or internet (web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).	.72
CB13	I ignored someone's comments on social media (Facebook etc.) in a mean or hurtful way.	.70
CB14	I made a cell phone picture or video of someone without his/her permission in a mean or hurtful way.	.65
CB15	I posted someone's private pictures or videos online (on Facebook, WhatsApp, chat groups etc.) in a mean or hurtful way.	.68
CB16	I lied to someone on electronic media (internet, mobile) in a mean or hurtful way.	.82
CB17	I saved an electronic conversation (messages, chat history, images) with someone and then showed to others in a mean or hurtful way.	.71
CB18	I sent someone unwanted sexual messages or nude/semi-nude images using mobile phone or internet.	.69
CB19	I gave someone silent phone calls with heavy breathing to harass him/her.	.69
CB20	I gave someone anonymous/unknown phone calls in a mean or hurtful way.	.84

Exploratory factor analysis of cyberbullying scale was conducted using *MPlus* version 7.0 (Muthén & Muthén, 2012). Given the non-normal distribution of the data, items were treated as categorical and estimation method Weighted Least Squares Means and Variance (WLSMV) was used. The results supported a uni-factor solution with $\chi^2 = 397.32$, $df = 170$, RMSEA = .05, RMSR = .13. All items loaded well on the cyberbullying factor with loading ranging from $\lambda = .34$ to $\lambda = .86$.

Before conducting Exploratory Factor Analysis (EFA) for Cyber Victimization Scale, multivariate normality was evaluated by examining Mardia's coefficient (Mardia, 1970) that was obtained using FACTOR 10.5.02 (Lorenzo-Seva & Ferrando, 2017). Results suggested that variables violated the assumption of multivariate normality. Although, no excessive skewness was found (Mardia's coefficient = 207.06, $\chi^2 = 16323.67$, $p = 1.00$), there was a significant amount of kurtosis in the data (Mardia's coefficient = 849.00, $\chi^2 = 149.93$, $p < .05$).

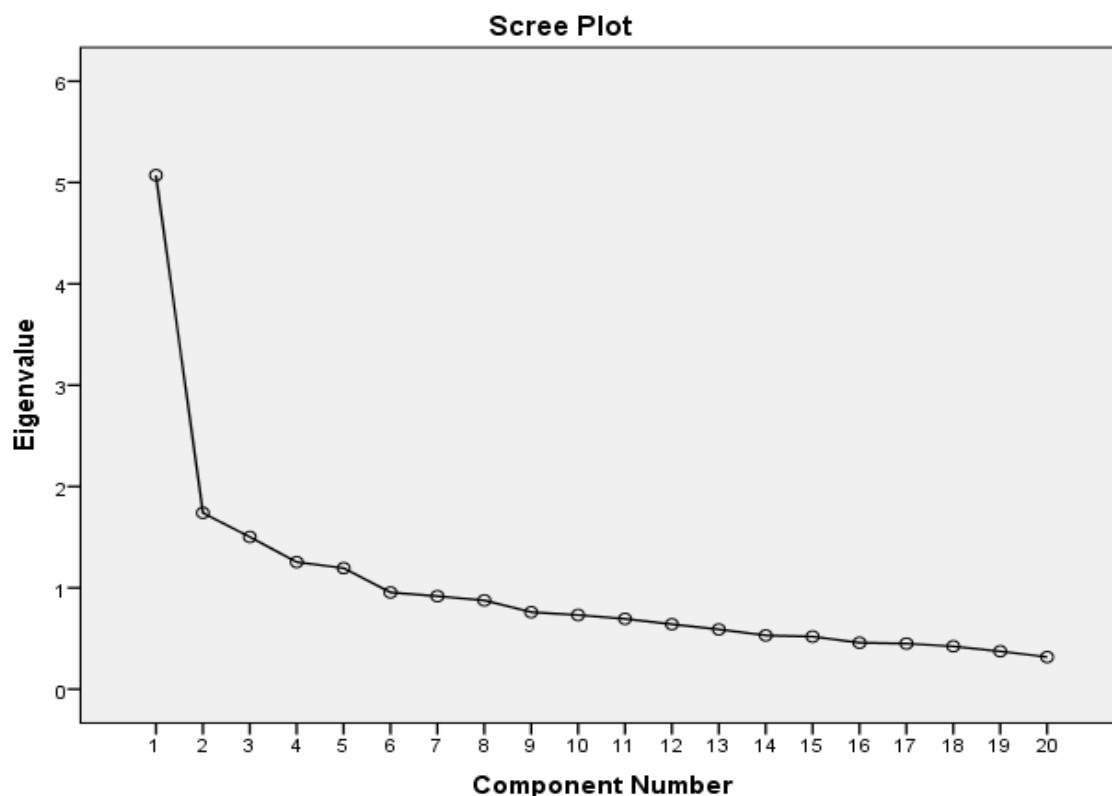


Figure 5. Scree plot for the exploratory factor analysis of the Cyber Victimization Scale.

The scree plot presented in figure 5 clearly indicated the point of inflection after first factor. The plot indicated a one factor solution of the cyberbullying scale.

Table 6*Exploratory factor analysis of the Cyber Victimization Scale (N = 508)*

Item No.	Item Statement	Loadings
CV1	Someone said nasty (rude/insulting/abusive) things to me or called me by bad names in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).	.36
CV2	Someone said nasty (rude/insulting/abusive) things about me to others in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).	.46
CV3	Someone threatened me in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).	.57
CV4	Someone blackmailed me in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).	.59
CV5	Someone hacked into my account and stole personal information (e.g. through email or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.	.64
CV6	Someone hacked into my account and pretended to be me (e.g. through instant messaging or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.	.69
CV7	Someone created a fake account, pretending to be me (e.g. on Facebook etc.) in a mean or hurtful way.	.79
CV8	Someone posted personal information about me online in a mean or hurtful way.	.52
CV9	Someone posted embarrassing videos or pictures of me online in a mean or hurtful way.	.63
CV10	Someone altered (changed) pictures or videos of me in a in a mean or hurtful way.	.61
CV11	I was excluded or ignored by others on a social networking sites (e.g. on Facebook etc.) or internet chat rooms in a mean or hurtful way.	.77
CV12	Someone spread rumors about me in a mean or hurtful way using mobile phone (call/text) or internet (web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).	.53
CV13	Someone ignored my comments on social media (Facebook etc.) in a mean or hurtful way.	.54
CV14	Someone made a cell phone picture or video of me without my permission in a mean or hurtful way.	.51
CV15	Someone posted my private pictures or videos online (on Facebook, WhatsApp, chat groups etc.) in a mean or hurtful way.	.57
CV16	Someone lied to me on electronic media (internet, mobile) in a mean or hurtful way.	.63
CV17	Someone saved an electronic conversation (messages, chat history, images) with me and then showed to others in a mean or hurtful way.	.54
CV18	Someone sent me unwanted sexual messages or nude/semi-nude images using mobile phone or internet.	.64
CV19	Someone gave me silent phone calls with heavy breathing to harass me.	.58
CV20	Someone gave me anonymous/unknown phone calls in a mean or hurtful way.	.60

Exploratory factor analysis of cyber victimization scale was conducted using *MPlus* version 7.0 (Muthén & Muthén, 2012). Given the non-normal distribution of the data, items were treated as categorical and estimation method Weighted Least Squares Means and Variance (WLSMV) was used. The results supported a uni-factor solution with $\chi^2 = 971.24$, $df = 170$, RMSEA = .06, RMSR = .10. All items loaded well on the cyber victimization factor with loading ranging from $\lambda = .36$ to $\lambda = .79$.

Further, the reliability coefficients Cronbach's α and McDonald's ω (McDonald, 1999) were estimated using the JASP 0.9.2.0 (JASP Team, 2018). Reliability analysis revealed that Cyber Victimization Scale has adequate internal consistency (Cronbach $\alpha = 0.83$; McDonald's $\omega = 0.84$). Similarly, a high level of internal consistency was found for Cyber Bullying Scale (Cronbach $\alpha = 0.85$; McDonald's $\omega = 0.87$).

Table 7*Mean, Standard Deviations and Range of study variables (N=508)*

Scales	No. of items	α	M	SD	Range		Skew	Kurt
					Potential	Actual		
ICT Usage	16	.82	58.81	10.34	16-80	25-80	-0.38	-0.21
Cyber Victimization	20	.83	8.94	7.92	0-80	0-64	2.07	7.53
Cyber Bullying	20	.85	2.80	5.30	0-80	0-33	2.71	8.20
Traditional Victimization	7	.79	3.71	4.02	0-28	0-26	1.66	3.42
Traditional Bullying	7	.83	2.20	3.54	0-28	0-24	2.62	8.51
Appraisal								
Challenge	7	.90	13.42	7.67	0-28	0-28	0.14	-0.98
Threat	5	.80	6.94	4.74	0-20	0-20	0.69	0.00
Centrality	4	.84	5.56	4.19	0-16	0-16	0.71	-0.22
Resources	2	.83	4.13	2.56	0-8	0-8	0.00	-1.16
Coping with Cyberbullying								
Technical Coping	6	.73	17.43	4.43	6-24	6-24	-0.71	0.15
Distal Advice	7	.79	17.63	4.89	7-28	7-28	-0.18	-0.46
Helplessness/ self-blame	5	.64	10.31	3.27	5-20	5-20	0.34	-0.41
Retaliation	5	.82	10.50	4.01	5-20	5-20	0.37	-0.76
Active Ignoring	5	.74	14.47	3.7	5-20	5-20	-0.67	-0.05
Close Support	5	.78	14.99	3.73	5-20	5-20	-0.85	0.21
Assertiveness	5	.84	12.98	4.19	5-20	5-20	-0.24	-0.84
Social Desirability	15	.82	9.22	3.01	0-15	0-15	-0.7	0.64
General Self Efficacy	10	.89	27.91	6.58	10-40	10-40	-0.51	0.00
DASS								
Depression	7	.83	7.16	4.78	0-21	0-21	0.44	-0.42
Anxiety	7	.79	7.74	4.44	0-21	0-21	0.27	-0.29
Stress	7	.82	8.24	4.58	0-21	0-21	0.22	-0.27
Well-being	7	.83	45.84	12.22	14-70	14-70	-0.30	-0.33

ICT Use Scale**Table 8***Corrected item-total correlation and alpha reliability values for ICT Use Scale (N=508)*

Item No.	Corrected Item-total correlation	Cronbach's Alpha if Item deleted
1	.33	.82
2	.34	.81
3	.17	.82
4	.44	.81
5	.47	.81
6	.49	.81
7	.54	.80
8	.56	.80
9	.43	.81
10	.38	.81
11	.51	.80
12	.51	.80
13	.43	.81
14	.47	.81
15	.35	.81
16	.41	.81

Table 8 explains that ICT Use Scale has an internal consistency of .82 and all the items contribute substantially toward the constructs with item-total correlation above .30 (for criteria see Kline, 2005), except item 3 that is “Receive or send text messages with a mobile phone” Examining the last column, it was observed that if item 3 were deleted, Cronbach’s α reliability coefficient would very slightly increase from .824 to .825. The frequency table revealed that 91% of the sample has reported to receive or send text messages with a mobile phone on a daily basis, which shows a very low variation in

response, and hence indicated the low item total correlation of .17. Considering item 3 as an important indicator for measuring ICT usage, the item was retained in the scale.

California Bully Victimization Scale (CBVS)

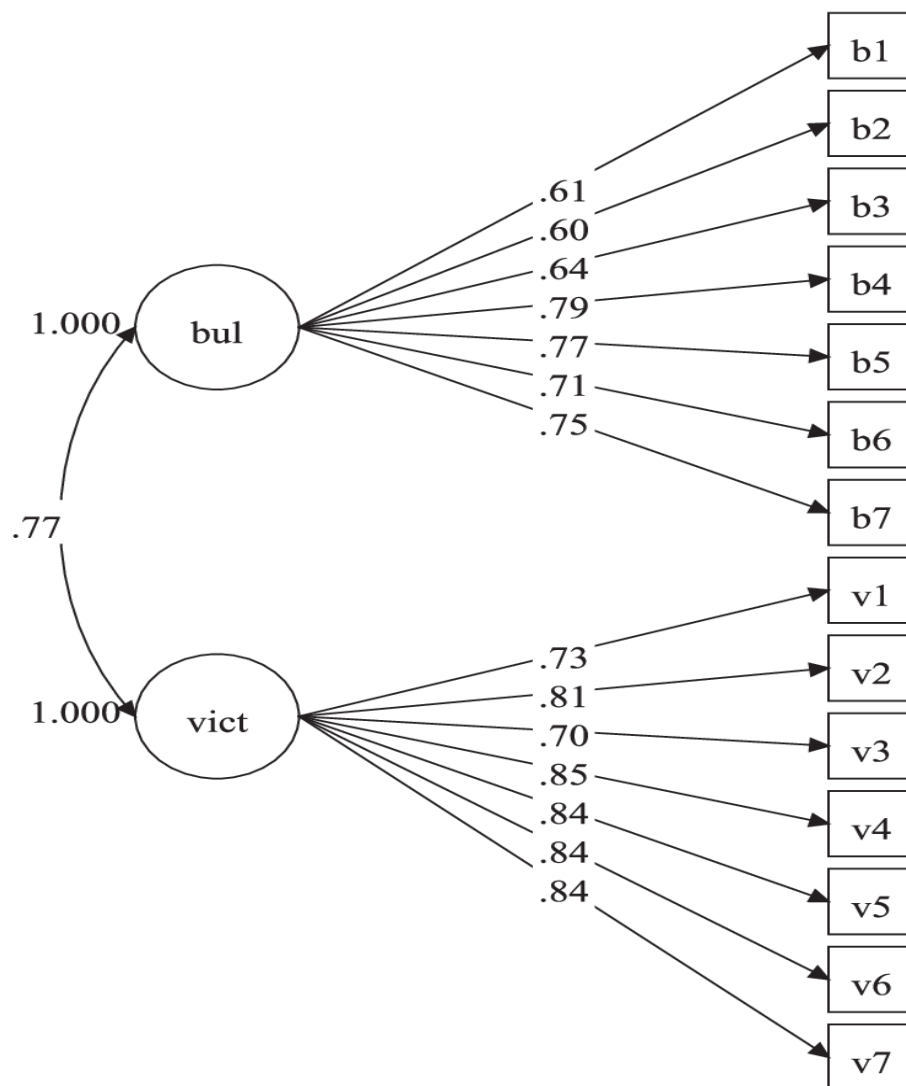


Figure 6. Confirmatory factor analysis for the California Bullying Victimization Scale.

Table 9

Confirmatory factor analysis (CFA) values for the California Bully Victimization Scale (CBVS) (N=508)

Model	χ^2 (df)	CFI	TLI	RMSEA	WRMR
M1	255.785(76)	.97	.96	.05	1.0

Confirmatory factor analysis of the California Bully Victimization Scale was conducted using *Mplus* Version 8 (Muthén & Muthén, 2017). Given the non-normal distribution of the data, items were treated as categorical and weighted least squares means and variance adjusted (WLSMV) estimation method was used. This estimation method has been recommended for non-normal ordinal data (Li, 2016; Lubke & Muthén, 2004; Muthén & Muthén, 2017). The results indicated a good model fit with χ^2 (df) = 255.79 (76), Cumulative Fit Index (CFI) = .97, Tucker-Lewis Fit Index (TLI) = .96, and Root Mean Square Error of Approximation (RMSEA) = .054 and weighted root mean square residual (WRMR) = 1.0.

Generally for continuous data (using ML estimator), the cut off values for CFI and TLI of .90 or above, for RMSEA of .06 or below, and for standardized root mean square residual (SRMR) of .08 or below are required to conclude a good fit (Hu & Bentler, 1999). However, with reference to categorical and ordinal data, researchers suggest the cut-off values i.e. for CFI of .95, TLI of .96, for RMSEA .06 and for WRMR of .90 or below (Schreiber, Nora, Stage, Barlow, & King, 2006; Yu, 2002).

Confirmatory factor analysis of CBVS indicated that all fit indexes are good according to the recommended criteria except the WRMR. If the majority of values

indicate a good fit in a model then there is probably a good fit (Schreiber et al., 2006). Besides, this, DiStefano, Liu, Jiang, and Shi (2018) examined the performance of WRMR for ordinal data and suggested a cut of value of 1.0 work adequate.

Further, with respect to loadings of CBVS, all seven items of victimization showed good loadings ranging from .70 to .85. Items of the bullying dimension also appeared to be representative of the construct with loadings ranging from .60 to .79.

Measure of Appraisal of Cyberbullying Victimization

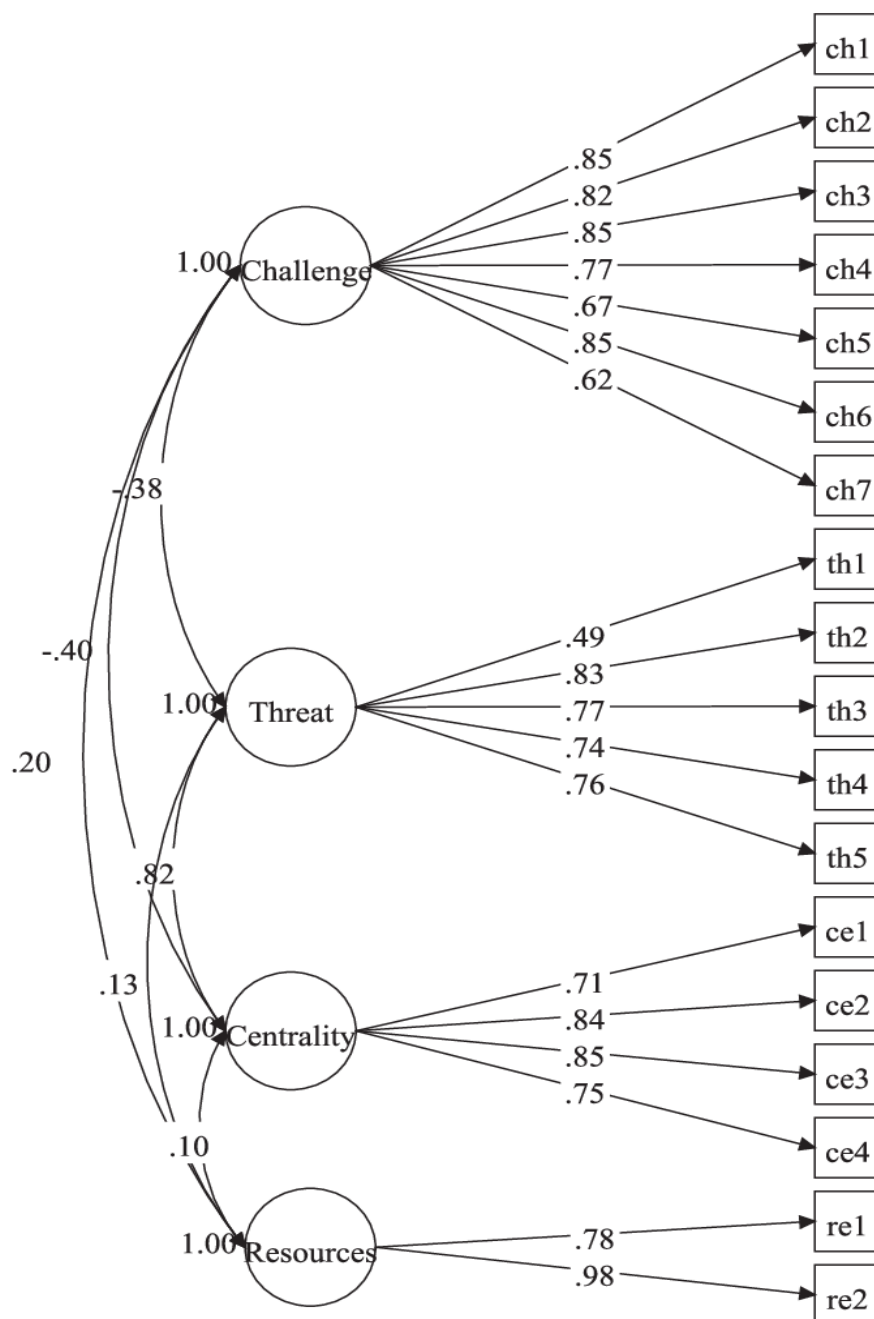


Figure 7. Confirmatory factor analysis for the measure of Appraisal of Cyberbullying Victimization

Table 10

Confirmatory factor analysis (CFA) values for the Measure of Appraisal of Cyberbullying Victimization (N=506)

Models	χ^2 (df)	CFI	TLI	RMSEA	SRMR	$\Delta \chi^2$ (df)
M1	1297.465(146)	.89	.87	.07	2.25	
M2	1106.410(128)	.91	.87	.07	2.03	191.055(18)
M3	455.082 (119)	.97	.96	.05	1.19	651.328(9)

Note. M1 = default model, M2 = Model with error covariances, M3 = Item 19 (re3) deleted

Confirmatory factor analysis was conducted for the measure of Appraisal of Cyberbullying Victimization. Model fit was estimated using *Mplus* Version 8 (Muthén & Muthén, 2017). Given the normal distribution of the data, the maximum likelihood (ML) estimation method was used. Model M1 showed marginal fit indices. Given the correlated nature of the factors of the measure of Appraisal of Cyberbullying Victimization and in view of the existing research on the original measure (Peacock & Wong, 1990; Roesch & Rowley, 2005), the model was revised and in M2 residuals covariations were allowed. The M2 showed significant improvement with $\Delta \chi^2$ (df) = 191.06 (18), $p < .01$ over M1. However, TLI = .87, and RMSEA = .07 still were below than the optimal fit indices. A review of the items loadings showed low loading of item 19 (see Appendix D1 for item 19) on resources appraisal ($\lambda = .20$). The item was deleted and model estimation was revised. The resulting Model M3 further showed significant improvement with $\Delta \chi^2$ (df) = 651.33 (9), $p < .01$ over M2. All items appeared to be valid indicators of their respective factors with items loading ranging from .62 to .85 for challenge appraisal, .49 to .83 for threat appraisal, .71 to .85 for centrality appraisal, and .78 to .98 for resources appraisal. The fit indices showed an excellent fit of the model to

the data $\chi^2 (df) = 455.08 (119)$, CFI = .97, TLI = .96, and RMSEA = .05. However, SRMR = 1.19 was above the recommended cut off value (Hu & Bentler, 1999). It has been suggested that value of SRMR should be interpreted in view of chi-square test statistics and if it indicates the model fit, then there is no need to consider SRMR index and the large SRMR values can occur quite often due to sample variations. (Asparouhov & Muthén, 2018).

The Coping with Cyberbullying Questionnaire.

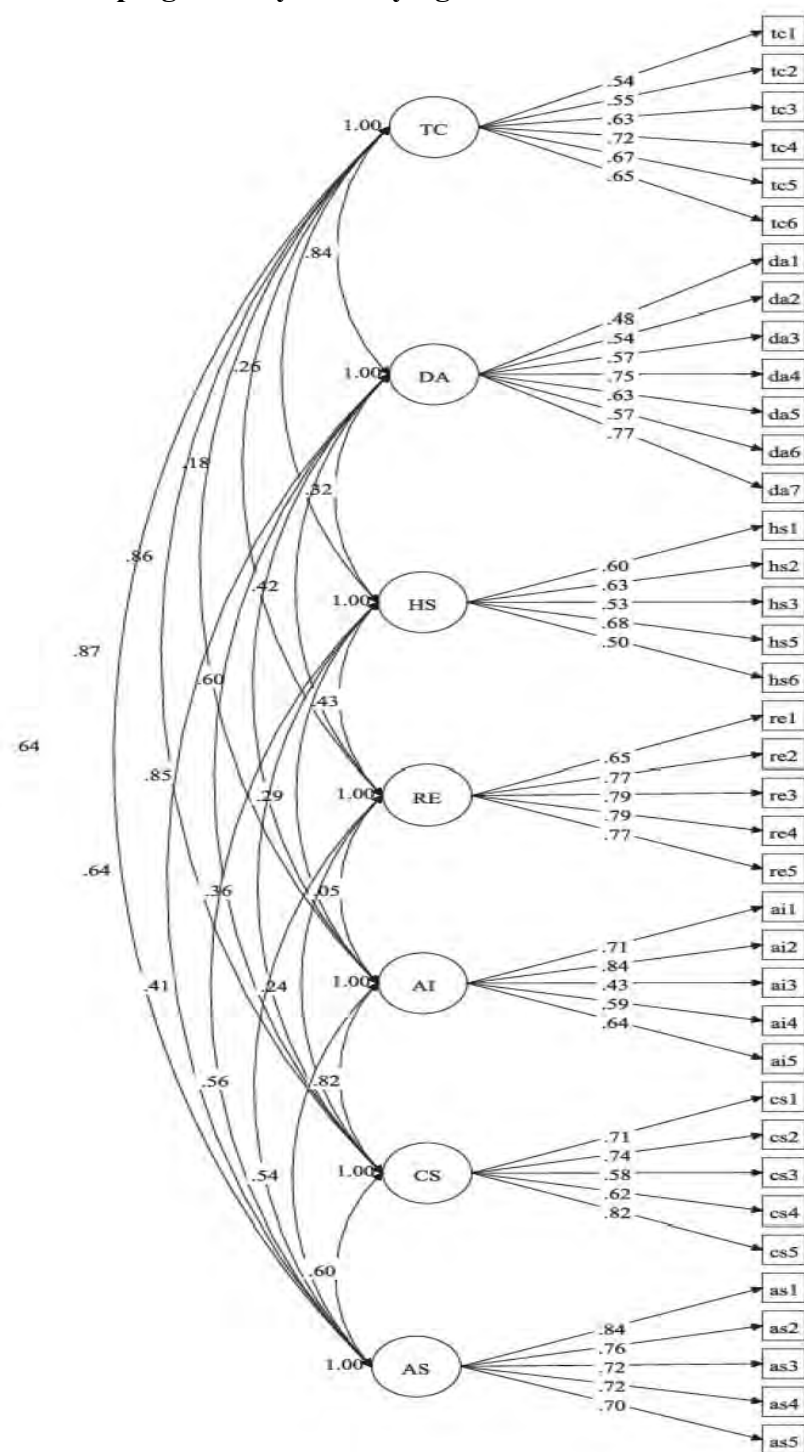


Figure 8. Confirmatory factor analysis for The Coping with Cyberbullying Questionnaire

Table 11

Confirmatory factor analysis (CFA) values for the Coping with Cyberbullying Questionnaire (N=506)

Models	χ^2 (df)	CFI	TLI	RMSEA	SRMR	$\Delta\chi^2$ (df)
M1	1675.204(681)	0.81	0.79	0.05	0.06	
M2	1221.055(657)	0.91	0.89	0.04	0.06	454.149(24)
M3	1091.289(620)	0.95	0.94	0.04	0.05	129.766(37)

Note. M1 = default model, M2 = Model with error covariances, M3 = item 20HS (HS4) deleted

Confirmatory factor analysis was conducted on the Coping with Cyberbullying Questionnaire. Model fit was estimated using *Mplus* Version 8 (Muthén & Muthén, 2017) with MLR estimation method. Model M1 showed poor fit indices. Given the correlated nature of the factors of Coping with Cyberbullying Questionnaire, Model was revised and in M2 residuals covariations were allowed. The M2 showed significant improvement with $\Delta \chi^2$ (df) = 454.15 (24), $p < .01$ over M1, but the value for TLI = .89 was still below then the optimal fit indices. A review of the items loadings showed low loading of item 20 on helplessness coping ($\lambda = .21$). For item 20 HS, please see Appendix E1 Therefore, the item was deleted and model estimation was revised. The resulting Model M3 further showed significant improvement with $\Delta \chi^2$ (df) = 129.77 (37), $p < .01$ over M2. All items appeared to be valid indicators of their respective factors with items loading ranging from .54 to .72 for technical coping, .48 to .77 for distal advice coping, .50 to .68 for helplessness coping, .65 to .79 for retaliation coping, .59 to .84 for active ignoring coping, .58 to .82 for close support coping, and .70 to .84 for assertiveness coping. The fit indices showed an excellent fit of the model to the data with χ^2 (df) = 1091.29 (620), CFI = .95, TLI = .94, and RMSEA = .04, and SRMR = .05.

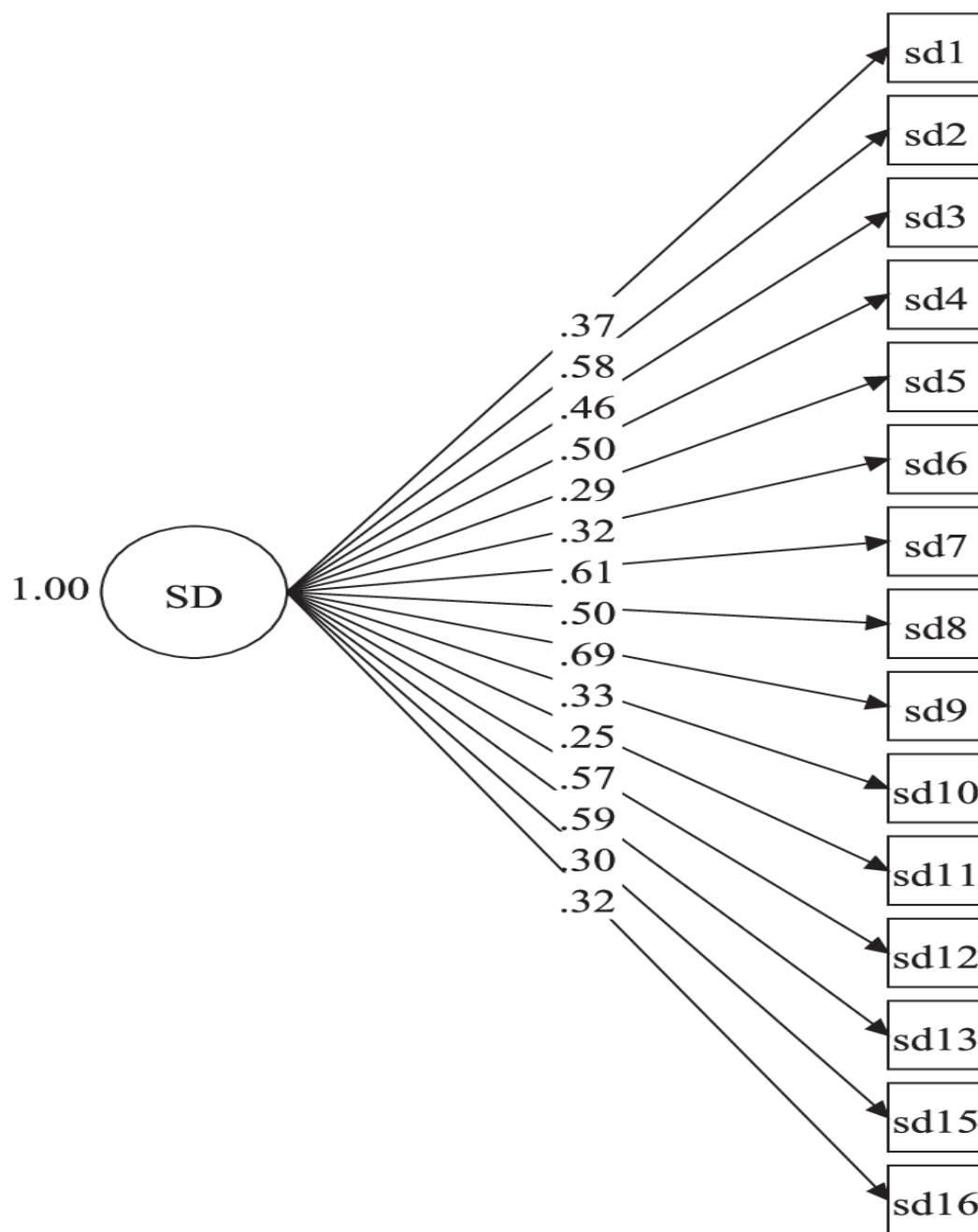
Social Desirability Scale

Figure 9. Confirmatory factor analysis for The Social Desirability Scale

Table 12

Confirmatory factor analysis (CFA) values for the Social Desirability Scale (N=508)

Models	χ^2 (df)	CFI	TLI	RMSEA	WRMR	$\Delta \chi^2$ (df)
M1	279.722(105)	.78	.75	.06	1.38	
M2	218.510(100)	.85	.82	.05	1.20	61.212(5)
M3	116.296(85)	.96	.95	.03	.89	163.426(20)

Note. M1 = default model, M2 = model with error covariances, M3 = after deleting the item 14

Confirmatory factor analysis of the social desirability scale was conducted. The scale has a uni-factor solution consisting of 16 items with dichotomous (Yes/No) response options. It is recommended to use WLSMV estimator instead of ML estimator for conducting CFA with categorical items (Lubke & Muthén, 2004; Muthén & Muthén, 2017). The uni-factor CFA with WLSMV estimation method was conducted in *Mplus* Version 8 (Muthén & Muthén, 2017). The results showed a poor fit of the model to the data. A review of the modification index showed some covariances between residuals of the items. The items were reviewed and based on the similarity of the content of items, four residual covariances were added. For instance, items 6 stating that “There has been an occasion when I took advantage of someone else” and item 16 stating that “Sometimes I only help because I expect something in return” shows similarity in terms of taking advantage or being selfish. The items indicate correlated behaviors and hence residual covariance is expected. The model significantly improved with $\Delta \chi^2$ (df) = 61.212 (5), $p < .01$ yet fit indices still showed less than the optimal fit of the model to the data. A review of the item loadings showed poor loading of item 14 ($\lambda = .17$). Content analysis of the item “There has been at least one occasion when I failed to return an item that I

borrowed” showed a culturally common behavior that majority of the sample has performed once in their life and hence item has very low variance making it an item with poor discrimination index. In the further revision of the model, item 14 was removed from the model and the model was reanalyzed. The CFA model containing 15 items showed significant improvement $\Delta \chi^2 (df) = 163.42 (20), p < .01$ over M2. The resulting model has a very good fit of the model to the data with $\chi^2 (df) = 116.30 (85)$, CFI = .96, TLI = .95, and RMSEA = .03, and WRMR = .89.

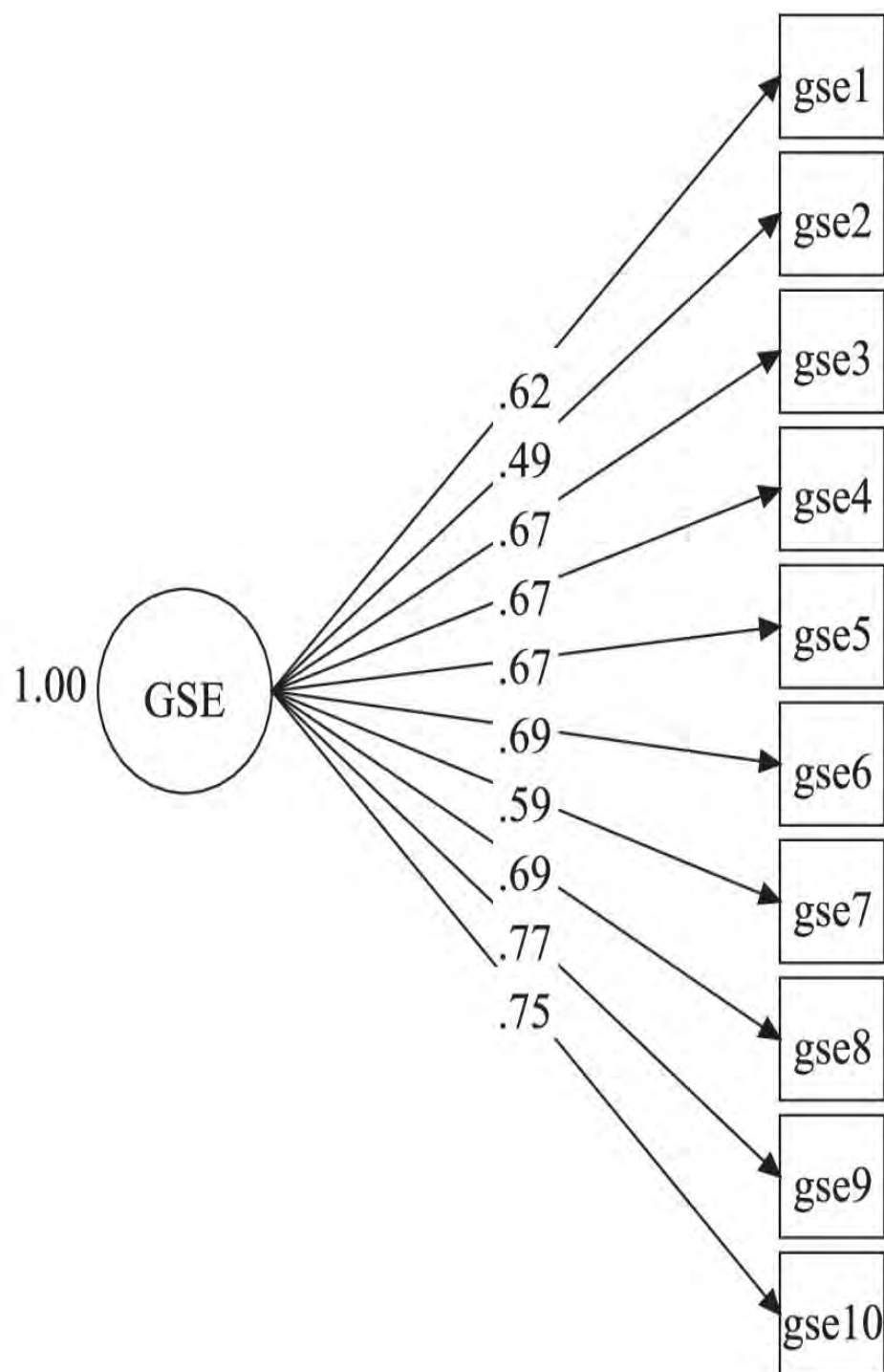
General Self-Efficacy Scale (GSE).

Figure 10. Confirmatory factor analysis for General Self-Efficacy Scale (GSE)

Table 13

*Confirmatory factor analysis (CFA) values for General Self-Efficacy Scale (GSE)
(N=507)*

Models	χ^2 (df)	CFI	TLI	RMSEA	SRMR	$\Delta \chi^2$ (df)
M1	190.538(35)	.92	.90	.09	.05	
M2	72.302 (29)	.97	.96	.06	.03	118.236(6)

Note. M1 = default model, M2 = Model with error covariances

Confirmatory factor analysis of the General Self-efficacy scale was conducted. The scale consists of ten items rated on a Likert type scale with four response options. A uni-factor CFA was conducted using ML estimation method in *Mplus* Version 8 (Muthén & Muthén, 2017). The results showed a good fit of the model to the data except for the value of RMSEA. A review of the modification index indicated some covariances between residuals. The items were reviewed and on the basis of the similarity of the content of items, three residual covariances were added. For instance, item 1 stating “I can always manage to solve difficult problems if I try hard enough” has similar content to item 6 stating “I can solve most problems if I invest the necessary effort.” The addition of the covariances resulted in significant improvement $\Delta \chi^2$ (df) = 118.24 (6), $p < .01$ of the model M2 over the default model M1. The final model showed an excellent fit of the model to the data with χ^2 (df) = 72.30 (29), CFI=.97, TLI=.96, and RMSEA = .06 and SRMR .03. The items loading ranged from .49 to .77 indicating that all are valid for the underlying construct of general self-efficacy.

Depression, Anxiety, and Stress Scales-21 (DASS-21)

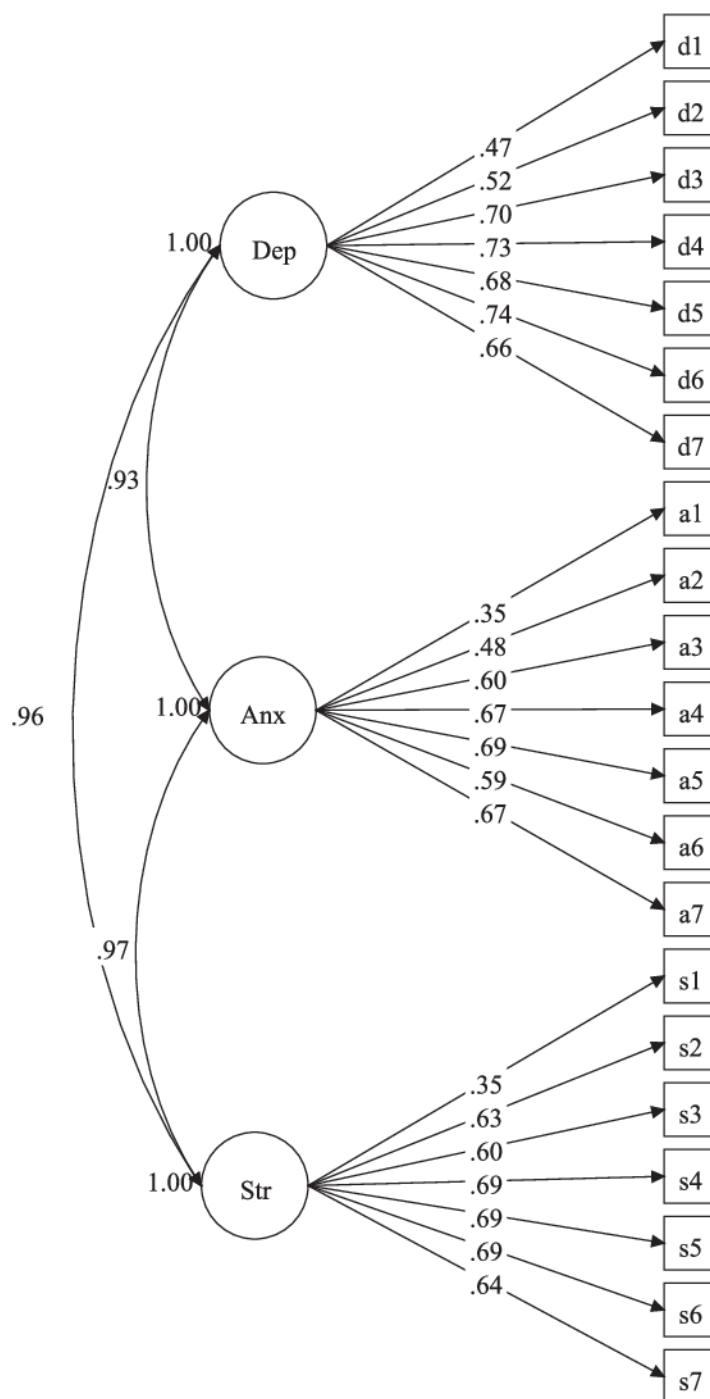


Figure 11. Confirmatory factor analysis for Depression, Anxiety and Stress Scale (DASS-21).

Table 14

Confirmatory factor analysis (CFA) values for Depression, Anxiety and Stress Scale (DASS-21) (N=506)

Models	χ^2 (df)	CFI	TLI	RMSEA	SRMR	$\Delta\chi^2$ (df)
M1	718.401(186)	.88	.86	.07	.05	
M2	523.255(179)	.92	.90	.06	.04	195.146(7)

Note. M1 = default model, M2 = Model with error covariances

Confirmatory factor analysis of the Depression, Anxiety, and Stress (DASS-21) was conducted in *Mplus* Version 8 (Muthén & Muthén, 2017). The scale has 21 items rated on a four point Likert type scale. It consists of three factors each containing seven items. The three factor model was tested using ML estimator. All items appear to be valid indicator of their respective factors (i.e., $\lambda > .30$). The model fit indices of the default model M1 showed less than optimal fit. Given the high level of correlations among the underlying factor of DASS-21, residual of the errors were allowed to co-vary. The revised model M2 significantly improved the model M2 with $\Delta\chi^2$ (df) = 195.15 (7), $p < .01$ over the default model M1. The final model showed a good fit of the model to the data with χ^2 (df) = 523.26 (179), CFI = .92, TLI = .90, and RMSEA = .06. The items loading ranged from .47 to .74 for depression, from .35 to .69 for both anxiety, and stress.

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

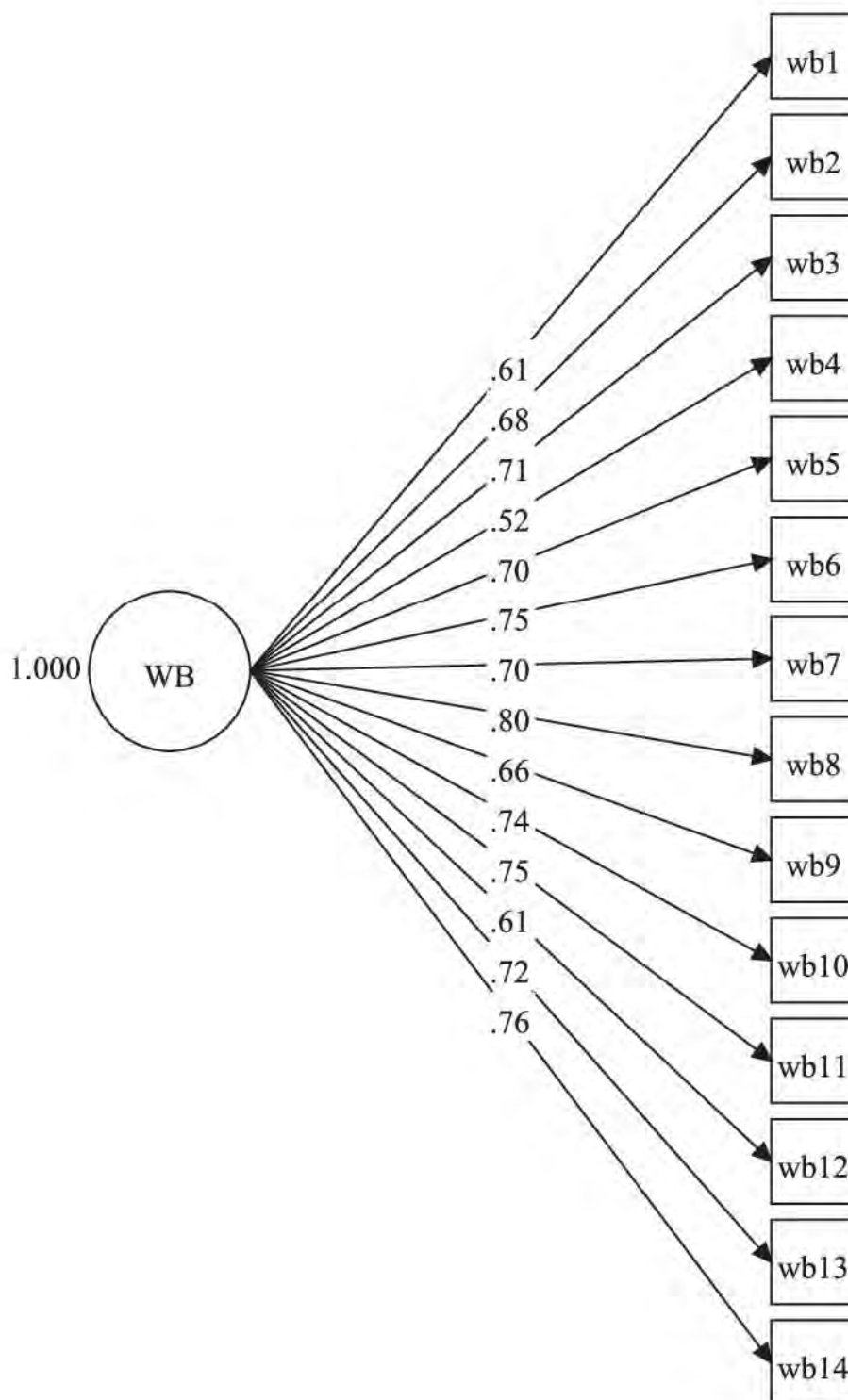


Figure 12. Confirmatory factor analysis for The Warwick-Edinburgh Mental Well-being Scale.

Table 15

Confirmatory factor analysis (CFA) values for The Warwick-Edinburgh Mental Well-being Scale (N=507)

Models	χ^2 (df)	CFI	TLI	RMSEA	SRMR	$\Delta\chi^2$ (df)
M1	336.942 (77)	.90	.88	.08	.05	
M2	226.817 (73)	.94	.93	.06	.04	110.125(7)

Note. M1 = default model, M2 = Model with error covariances

Confirmatory factor analysis of the Warwick-Edinburgh Mental Well-being Scale was conducted. The scale consists of 14 items rated on a Likert type scale with five response options. A uni-factor CFA was conducted using ML estimation in *Mplus* Version 8 (Muthén & Muthén, 2017). All items appear to be valid indicators of their respective factors (i.e., $\lambda > .30$). The model fit indices of the default model M1 showed less than optimal fit. A review of the modification index indicated some covariances between residuals. The items were reviewed and on the basis of similarity of the content of items, three residual covariances were added. For instance, item 10 stating “I have been feeling confident” has content similarity to some extent with the item 11 stating “I have been able to make up my own mind about things”. The addition of the covariances resulted in significant improvement $\Delta \chi^2$ (df) = 110.12 (7), $p < .01$ of the model M2 over the default model M1. The final model showed a good fit of the model to the data with χ^2 (df) = 226.82 (73), CFI = .94, TLI = .93, RMSEA = .06, and SRMR = .04. The items loading ranged from .52 to .80 indicating that all are valid for the underlying construct of general self-efficacy.

Table 16*Pearson bivariate correlations among study variables (N=507)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1 ICTU	-	.24**	.15**	.11*	.07	.19**	.03	.01	.07	.03	-.07	.02	.09	.04	.01	
2 CV		-	.59**	.51**	.41**	-.05	.20**	.13**	-.02	-.04	.02	.26**	.11*	.02	.02	
3 CB			-	.45**	.56**	.00	.19**	.11*	.07	-.14**	-.04	.18**	.14**	-.06	-.02	
4 TV				-	.56**	-.07	.21**	.13**	.00	-.06	-.02	.23**	.07	.03	.05	
5 TB					-	-.03	.21**	.17**	-.01	-.14**	-.03	.23**	.18**	-.06	-.08	
6 CH						-	-.26**	-.32**	.16**	.17**	.11*	-.21**	.09	-.10*	.10*	
7 TH							-	.66**	.11*	.07	.01	.36**	.07	.08	.06	
8 CEN								-	.09	-.12*	-.08	.35**	-.06	.11*	.10*	
9 RES									-	.25**	.18**	-.04	.02	.21**	.29**	
10 TC										-	.61**	.19**	.16**	.63**	.65**	
11 DA											-	.18**	.30**	.43**	.59**	
12 HS												-	.29**	.22**	.25**	
13 RE														-.09	.20**	
14 AI															-.60**	
15 CS																-

Continued.....

		16	17	18	19	20	21	22	23	24	25	26
1	ICTU	.01	-.11*	.06	.25**	.23**	.16**	.22**	.05	.08	.03	.14**
2	CV	.06	-.18**	-.11*	.03	-.05	-.06	.10*	.21**	.29**	.24**	-.11*
3	CB	.00	-.19**	-.13**	.02	.04	-.07	.06	.16**	.21**	.15**	-.06
4	TV	.04	-.16**	-.11*	.01	.03	-.10*	.02	.18**	.20**	.21**	-.10*
5	TB	.07	-.21**	-.15**	-.08	-.08	-.14**	.01	.15**	.13**	.13**	-.14**
6	CH	.10*	.23**	.40**	.36**	.35**	.33**	.25**	-.09*	-.04	-.04	.37**
7	TH	.11*	-.19**	-.16**	-.13**	-.12**	-.08	-.09*	.20**	.18**	.23**	-.16**
8	CEN	-.14**	-.17**	-.15**	-.15**	-.16**	-.10*	-.10*	.22**	.18**	.24**	-.18**
9	RES	.05	.03	.14**	.17**	.18**	.16**	.02	.05	.06	.13**	.13**
10	TC	.49**	.22**	.40**	.41**	.39**	.41**	.15**	.05	.13**	.22**	.30**
11	DA	.48**	.17**	.25**	.19**	.16**	.20**	.11*	.01	.07	.08	.24**
12	HS	.31**	-.13**	-.16**	.00	-.02	-.01	.03	.37**	.35**	.35**	-.12*
13	RE	.46**	-.04	.02	.06	.02	0.1	.12*	.05	.06	.03	.06
14	AI	.39**	.12*	.30**	.28**	.27**	.28**	.10*	.08	.14**	.21**	.21**
15	CS	.45**	.19**	.32**	.35**	.36**	.28**	.19**	.11*	.19**	.26**	.27**

Continued.....

		16	17	18	19	20	21	22	23	24	25	26
16	AS	-	.11*	.18**	.16**	.12*	.16**	.16**	.06	.17**	.11*	.17**
17	SD		-	.27**	.19**	.18**	-.19**	.10*	-.20**	-.13**	-.11*	.29**
18	GSE			-	.53**	.46**	.55**	.30**	-.08	-.04	-.01	.51**
19	ICT SE				-	.95**	.82**	.63**	-.03	.11*	.12**	.50**
20	PS					-	.64**	.50**	-.04	.11*	.14**	.47**
21	DL						-	.45**	-.02	.08	.10*	.44**
22	Com							-	.03	.09*	.06	.35**
23	DEP								-	.75**	.79**	-.15**
24	ANX									-	.78**	-.05
25	ST										-	-.05
26	MWB											-

Note. ICTU = ICT Usage; CV = Cyber Victimization; CB = Cyber Bullying; TV = Traditional Victimization; TB = Traditional Bullying; CH = Challenge; TH = Threat; CEN = Centrality; RES = Resources; TC = Technical coping; DA = Distal advice; HS = Helplessness/self-blame; RE = Retaliation; AI = Active Ignoring; CS = Close support; AS = Assertiveness; SD = Social desirability; GSE = Generalized Self-Efficacy; ICT SE = ICT Self-Efficacy; PS = Privacy & Security; DL = Differentiation & Learning; Com = Communication; DEP = Depression; ANX = Anxiety; ST = Stress; MWB = Mental Well-being.

* $p < .05$, ** $p < .01$.

To examine the relationship between study variables, preliminary analyses were conducted using Pearson correlations. Table 16 shows correlation coefficients among study variables. Results showed that ICT usage (online activities) is significantly positively correlated with cyber victimization and cyberbullying perpetration. The significant positive associations of ICT usage were also found with ICT self-efficacy including all dimensions of ICT self-efficacy. Cyber victimization was found to have a strong positive association with cyberbullying perpetration.

Cyber victimization and cyberbullying both were further significantly positively correlated with traditional bullying and traditional victimization. Cyber victimization was also significantly positively correlated with the threat and centrality dimensions of appraisal of cyber victimization suggesting that cyber victimization is associated with increased perception of threat and centrality appraisal. With reference to coping strategies, cyber victimization was significantly positively associated with helplessness/self-blame and retaliation coping.

Cyberbullying/victimization as well as traditional bullying/victimization were significantly positively associated with depression, anxiety, and stress, yet significantly negatively associated with mental well-being suggesting that greater experiences of cyber and traditional victimization as well as greater involvement in both cyber and traditional bullying behaviors are associated with a higher level of mental health problems and a lower level of mental well-being among university students.

Discussion of the Study II

The objective of phase I of study II was to develop Cyberbullying and Cyber Victimization Scales (CBCVS) to investigate the experiences of cyberbullying and victimization among Pakistani university students. The 20 items were finalized for each scale of cyber victimization and cyberbullying perpetration after following a rigorous step by step procedure of scale development. The Phase II-pilot study was conducted for the evaluation of the suitability of selected measures, to adapt them, and to test the functionality of measures with reference to Pakistani university context. Another objective was to examine the initial trends of relationships between the study variables. The Phase II- pilot study was undertaken using five steps.

First, the scales were selected that provided the best operationalization of variables. Second, expert opinion was sought for the suitability of the scales in order to measure the particular constructs. Suggestions were also requested for the adaptation of scales. Third, the revised measures were used as try-out on a small sample of 50 university students to assess their comprehension and readability by students. Fourth, the issues that were raised by the students regarding readability and comprehension were addressed using a committee approach. Fifth, the psychometric properties of the measures were assessed by administering them on a sample of 508 Pakistani university students. More specifically, evidence of the content validity, factorial validity, and reliability of the various measures helped to determine the suitability of the scales that originally developed in western context and some of them previously used only in the school context. Moreover, the patterns of the relationship were examined between the variables of the study.

Findings provided the evidence of good psychometric properties of all the measures. A uni-factor structure was found for newly developed Cyberbullying and Cyber Victimization Scales through exploratory factor analysis. Confirmatory factor analyses of other scales showed that factorial structures were in line with the original measures. Items that showed loadings below the cut off criteria were removed to improve the validity of the scales. Moreover, the correlation matrix indicated that the relationships of variables were in the expected directions.

STUDY III: MAIN STUDY

The main study was planned to examine the factorial and convergent validity of Cyberbullying and Cyber Victimization Scales (CBCVS). Further the main study was aimed to examine the traditional and cyberbullying/victimization and its negative impacts on the mental health of university students. Additionally, the role of cognitive appraisals, coping strategies and self-efficacy was examined in the light of TMSC (Lazarus & Folkman, 1984).

The main study was conducted to meet the following objectives.

Objectives

1. To examine the factorial and convergent validity of Cyberbullying and Cyber Victimization Scales (CBCVS).
2. To investigate the role of demographic variables with reference to traditional and cyberbullying and victimization.
3. To investigate the prevalence of traditional and cyberbullying and victimization among university students.
4. To investigate the mean differences in study variables concerning different participant's roles in traditional bullying/victimization.
5. To investigate the mean differences in study variables concerning different participant's roles in cyberbullying/victimization.
6. To investigate the degree of overlap between traditional and cyberbullying /victimization.

7. To test the impact of cyber victimization on mental health and mental well-being of university students.
8. To test the moderating role of gender for the effect of cyber victimization on mental health and mental well-being.
9. To test the moderating role of age for the effect of cyber victimization on mental health and mental well-being.
10. To test the mediating role of cognitive appraisals for the relationship between cyber victimization and coping strategies.
11. To test the mediating role of coping strategies for the relationship between cognitive appraisals, mental health problems, and mental well-being.
12. To test the serial mediation of cognitive appraisals and coping strategies for the relationship between cyber victimization, mental health problems and mental well-being.
13. To examine the moderating role of general and ICT self-efficacy for the relationship between cyber victimization, mental health problems and mental well-being.
14. To examine the moderating role of general and ICT self-efficacy for the indirect effect of cyber victimization on mental health and mental well-being mediating through cognitive appraisals and coping strategies.

Hypotheses

1. Female university students experience more cyber victimization, traditional victimization compared to their male counterparts, while male university students are higher in the involvement of cyberbullying and traditional bullying compared to female university students.
2. Male university students are higher on ICT usage compared to their female counterparts.
3. Female university students appraise cyber victimization more as threat and centrality compared to male university students, while male university students appraise cyber victimization more as challenge and resources compared to female university students.
4. Male university students use more technical coping, retaliation coping, and assertiveness coping compared to female university students.
5. Female university students rely more on distal advice coping, helplessness coping, active ignoring coping, and close support coping compared to male university students.
6. Male university students are higher on general, and ICT self-efficacy compared to female university students.
7. Female university students are higher on mental health problems (i.e., depression, anxiety, and stress) compared to male university students.
8. Male university students are higher on mental well-being compared to female university students.

9. University students living in hostels are higher on ICT usage compared to students living in their homes.
10. University students living in hostels are higher on, cyber victimization, traditional victimization, cyberbullying, and traditional bullying compared to students living in their homes.
11. More female university students are involved as cyber victims and traditional victims than male university students, while more male university students are involved as cyber bully, cyber bully-victims, traditional bully, and traditional bully-victims than female university students.
12. Significant overlap exists between different participant roles (i.e., bully, victim, victim-bully, and un-involved) in traditional and cyberbullying/victimization.
13. Cyber victims, cyber victim-bullies and cyber bullies are higher on ICT usage in comparison to un-involved students.
14. Cyber victims are low on challenge appraisal compared to cyber victim-bullies, cyber bullies and un-involved students.
15. Cyber victims and cyber victim-bullies are higher on threat appraisal in comparison to cyber bullies and not-involved students.
16. Cyber victims and cyber victim-bullies are higher on centrality appraisal in comparison to cyber bullies and un-involved students.
17. Cyber bullies are higher on resources appraisal compared to cyber victims, cyber victim-bullies and un-involved students.
18. Cyber Victim and cyber victim-bullies use more of the helplessness/self-blame coping than un-involved students.

19. Cyber victim-bullies and cyber-bullies use more retaliation coping than cyber victims and un-involved students.
20. Cyber victims use more of the active ignoring coping than cyber victim-bullies, cyber bullies and un-involved students.
21. Cyber victims use more of the close support coping than cyber victim-bullies, cyber bullies and un-involved students.
22. Cyber bullies and cyber victim-bullies are higher on assertiveness coping than un-involved students.
23. Cyber victims are lower on general self-efficacy than cyber bullies and un-involved participants.
24. Cyber victims are low on ICT self-efficacy in comparison to cyber bullies.
25. Cyber victims, cyber victim-bullies, and cyber bullies are higher on mental health problems (i.e., depression, anxiety, and stress) in comparison to un-involved students.
26. Cyber victim-bullies are significantly higher from the cyber victims, cyber-bullies and un-involved in terms of experiencing more symptoms of depression, anxiety, and stress.
27. Cyber victims and cyber victim-bullies are lower on mental well-being in comparison to un-involved participants.
28. Cyberbullying/victimization increases mental health problems (i.e., depression, anxiety and stress) and decreases mental well-being over and above caused by traditional bullying/victimization.

29. Gender moderates the effect of cyber victimization on mental health problems (i.e., depression, anxiety, and stress) with increased consequences of cyber victimization for female university students.
30. Age positively moderates the effect of cyberbullying perpetration on mental health problems (i.e., depression, anxiety, and stress) of university students.
31. Threat and centrality appraisals positively mediate the effect of cyber victimization on mental health problems (depression, anxiety, and stress).
32. Appraisal of cyber victimization as challenge increases the use of technical coping, distal advice coping and assertiveness coping.
33. Appraisal of cyber victimization as challenge decreases the use of helplessness/self-blame coping, and active ignoring coping.
34. Appraisal of cyber victimization as threat increases the use of helplessness/self-blame coping.
35. Appraisal of cyber victimization as threat decreases the use distal advice coping.
36. Appraisal of cyber victimization as centrality increases the use of technical coping, distal advice coping, close support, and retaliation coping.
37. Appraisal of cyber victimization as centrality decreases the use of active ignoring coping.
38. Appraisal of cyber victimization as resources increases the use of technical coping, distal advice, and close support coping.
39. Appraisal of cyber victimization as resources decreases the use of helplessness/self-blame and active ignoring coping.

40. ICT self-efficacy and general self-efficacy moderate the effect of cyber victimization on cognitive appraisals.
- a. ICT self-efficacy and general self-efficacy positively moderate the effect of cyber victimization on challenge appraisal.
 - b. ICT self-efficacy and general self-efficacy negatively moderate the effect of cyber victimization on threat appraisal.
 - c. ICT self-efficacy and general self-efficacy negatively moderate the effect of cyber victimization on centrality appraisal.
 - d. ICT self-efficacy and general self-efficacy positively moderate the effect of cyber victimization on resources appraisal.
41. ICT self-efficacy and general self-efficacy moderate the direct effect of cyber victimization on coping strategies.
- a. ICT self-efficacy and general self-efficacy positively moderate the direct effect of cyber victimization on technical coping.
 - b. ICT self-efficacy and general self-efficacy positively moderate the direct effect of cyber victimization on distal advice coping.
 - c. ICT self-efficacy and general self-efficacy negatively moderate the direct effect of cyber victimization on helplessness/self-blame coping.
 - d. ICT self-efficacy and general self-efficacy negatively moderate the direct effect of cyber victimization on retaliation coping.
 - e. ICT self-efficacy and general self-efficacy negatively moderate the direct effect of cyber victimization on active ignoring coping.

- f. ICT self-efficacy and general self-efficacy positively moderate the direct effect of cyber victimization on close support coping.
 - g. ICT self-efficacy and general self-efficacy positively moderate the direct effect of cyber victimization on assertiveness coping.
42. ICT self-efficacy and general self-efficacy moderate the direct effect of cyber victimization on mental health problems and mental well-being.
- a. ICT self-efficacy and general self-efficacy negatively moderate the direct effect of cyber victimization on anxiety.
 - b. ICT self-efficacy and general self-efficacy negatively moderate the direct effect of cyber victimization on depression.
 - c. ICT self-efficacy and general self-efficacy negatively moderate the direct effect of cyber victimization on stress.
 - d. ICT self-efficacy and general self-efficacy positively moderate the direct effect of cyber victimization on mental well-being.
43. Indirect effect of cyber victimization serially mediated through cognitive appraisals and technical coping is negatively moderated by self-efficacy on mental health problems and positively moderated on mental well-being.
- a. Indirect effect of cyber victimization serially mediated through challenge appraisal and technical coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.

- b. Indirect effect of cyber victimization serially mediated through threat appraisal and technical coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - c. Indirect effect of cyber victimization serially mediated through centrality appraisal and technical coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - d. Indirect effect of cyber victimization serially mediated through resources appraisal and technical coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
44. Indirect effect of cyber victimization serially mediated through cognitive appraisals and distal advice coping is negatively moderated by self-efficacy on mental health problems and positively moderated on mental well-being.
- a. Indirect effect of cyber victimization serially mediated through challenge appraisal and distal advice coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.

- b. Indirect effect of cyber victimization serially mediated through threat appraisal and distal advice coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - c. Indirect effect of cyber victimization serially mediated through centrality appraisal and distal advice coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - d. Indirect effect of cyber victimization serially mediated through resources appraisal and distal advice coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
45. Indirect effect of cyber victimization serially mediated through cognitive appraisals and helplessness/self-blame coping is negatively moderated by self-efficacy on mental health problems and positively moderated on mental well-being.
- a. Indirect effect of cyber victimization serially mediated through challenge appraisal and helplessness/self-blame coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems

- (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- b. Indirect effect of cyber victimization serially mediated through threat appraisal and helplessness/self-blame coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - c. Indirect effect of cyber victimization serially mediated through centrality appraisal and helplessness/self-blame coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - d. Indirect effect of cyber victimization serially mediated through resources appraisal and helplessness/self-blame coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
46. Indirect effect of cyber victimization serially mediated through cognitive appraisals and retaliation coping is negatively moderated by self-efficacy on mental health problems and positively moderated on mental well-being.
- a. Indirect effect of cyber victimization serially mediated through challenge appraisal and retaliation coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e.,

depression, anxiety, and stress) and positively moderated on mental well-being.

- b. Indirect effect of cyber victimization serially mediated through threat appraisal and retaliation coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- c. Indirect effect of cyber victimization serially mediated through centrality appraisal and retaliation coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- d. Indirect effect of cyber victimization serially mediated through resources appraisal and retaliation coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.

47. Indirect effect of cyber victimization serially mediated through cognitive appraisals and active ignoring coping is negatively moderated by self-efficacy on mental health problems and positively moderated on mental well-being.

- a. Indirect effect of cyber victimization serially mediated through challenge appraisal and active ignoring coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e.,

- depression, anxiety, and stress) and positively moderated on mental well-being.
- b. Indirect effect of cyber victimization serially mediated through threat appraisal and active ignoring coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - c. Indirect effect of cyber victimization serially mediated through centrality appraisal and active ignoring coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - d. Indirect effect of cyber victimization serially mediated through resources appraisal and active ignoring coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
48. Indirect effect of cyber victimization serially mediated through cognitive appraisals and close support coping is negatively moderated by self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- a. Indirect effect of cyber victimization serially mediated through challenge appraisal and close support coping is negatively moderated by ICT self-

- efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- b. Indirect effect of cyber victimization serially mediated through threat appraisal and close support coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - c. Indirect effect of cyber victimization serially mediated through centrality appraisal and close support coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
 - d. Indirect effect of cyber victimization serially mediated through resources appraisal and close support coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
49. Indirect effect of cyber victimization serially mediated through cognitive appraisals and assertiveness coping is negatively moderated by self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.

- a. Indirect effect of cyber victimization serially mediated through challenge appraisal and assertiveness coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- b. Indirect effect of cyber victimization serially mediated through threat appraisal and assertiveness coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- c. Indirect effect of cyber victimization serially mediated through centrality appraisal and assertiveness coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.
- d. Indirect effect of cyber victimization serially mediated through resources appraisal and assertiveness coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being.

Method

Sample

The sample of the main study consisted of 1314 university students (male students = 535, female students = 779) from six different universities in the Punjab Province and Islamabad including Quaid-i-Azam university, Pir Mehr Ali Shah Arid Agriculture University, Foundation University, Punjab University, Bahauddin Zakriya University, Institute of Southern Punjab. Participants were included in the sample if they were mobile phone or internet users and were enrolled either in BS degree program or in a Master degree Program in the university. Moreover, the inclusion criterion restricted participation to students who had completed at least two semesters (12 months) of their program at the university. Therefore, participants were not sought from Semester I and Semester II of either BS degree program or Master degree program. This criterion was employed because an objective of the study was to examine the prevalence of bullying and victimization in university students within the past 12 months. The sample age ranged from 18 years to 25 years with mean age = 20.76 years, $SD = \pm 1.78$. A larger number of the sample was residing in homes $n = 815$ (62.02%). Sample included students from BS $n = 747$ (56.85%), and masters $n = 565$ (43%) classes. Majority of the sample 73.97% belong to disciplines of arts and social sciences (i.e., $n = 972$) and remaining 24.96% was recruited from natural sciences disciplines. Initially, data were collected from sample of 1400 students, out of which 86 forms were discarded due to incomplete information. The demographic details of the sample have been provided in Table 17.

Table 17
Demographic characteristics of the sample (N = 1314)

Variables	Groups	Frequency	Percentage	Mean	SD
Age				20.76	1.78
Gender	Male students	535	40.72		
	Female students	779	59.28		
Living	Hostel	489	37.21		
	Home	815	62.02		
	Missing	10	0.76		
Program	BS Honors	747	56.85		
	Masters	565	43.00		
	Missing	2	0.15		
Discipline	Natural sciences	328	24.96		
	Arts and Social Sciences	972	73.97		
	Missing	14	1.07		

Instruments

Following instruments were used along with an informed Informed Consent Form and Demographic Sheet. The details of the instruments have been provided below.

Demographic Sheet. The sheet included information about the age, gender, residence type (hostel versus home), educational program, and discipline. Existing literature provided the rationale for including these demographic variables (see Appendix L).

Informed Consent Form. This form contained a brief introduction explaining the nature and purpose of the study. In addition, information was provided about the rights of the participants to withdraw from participation at any time during the study. Respondents were required to check the tick box in the consent form if they are willing to participate in the research (see Appendix M).

ICT Use Scale. The adapted version of the ICT Use Scale (Sticca et al., 2013) was used to examine university students' use of ICT (see Appendix B1). A number of items with response option “Yes” or “No”, asks respondents about the mobile phone, smartphone ownership and accounts on SNS. In addition, they were asked about the time spent on the Internet on a normal day, off day (i.e. Sunday), and time spent on SNS. Respondents were also asked about a set of (16-item scale) activities engaged in while using different electronic devices and the Internet (e.g. receive or send emails, chat, etc.). Each item is rated on a five-point Likert scale: “never” (1), “once or twice” (2), “about once a month” (3), “about once a week” (4), and “almost daily” (5). The higher score indicates the higher use of ICT.

Cyberbullying and Cyber Victimization Scales (CBCVS). These Scales were developed and validated in study II for the assessment cyberbullying and cyber victimization in Pakistani university students. Each scale comprised of 20 Likert type items (see Appendix K). A time frame of the past 12 months was included to report the behaviors of cyberbullying/victimization. Response options ranging from 0 to 4 where 0 “Never”, 1 “Once or twice”, 2 “Once a month”, 3 “Once a week”, 4 “More times a week.” The scales were designed to include the core criteria of “intention to harm,” for the measurement of cyberbullying/victimization.

A continuous score for the measurement of cyberbullying/victimization can be obtained by summing up the scores on each set of the items of Cyberbullying Scale and Cyber Victimization Scale. For the identification of the cyber-bullies, cyber-victims and cyber victim-bullies, behavior “participation” and “repetition” criteria are considered. Cyber-victims would be those subjects who score equal or higher than 2 (“once a

month”) in any of the items related to the experiences of cyber victimization and with scores equal or lower than 1 (“once or twice”) in all of the items of cyberbullying scale. In contrast to this, cyber-bullies would be those participants with scores equal or higher than 2 (“once a month”) in any of the items of cyberbullying scale and with scores equal or lower than 1 (“once or twice”) in all of items of cyber victimization scale. Additionally, cyber victim-bullies would be identified those participants with score in any of the items of both cyberbullying and cyber victimization with a score equal or higher than 2 (“once a month”).

California Bully Victimization Scale (CBVS). The California Bully Victimization Scale (Felix et al., 2011) was selected to measure traditional bullying and victimization (see Appendix C1). The scale contains seven items that measure several forms of victimization in the past 12 months such as (1) being teased, (2) gossip or rumors spread behind their back; (3) being ignored on purpose or left out of group; (4) physically hurt, pushed, hit; (5) being threatened; (6) receiving sexual comments, gestures, jokes; (7) had things damaged or stolen. Each item is phrased in a way that also measures intention to harm “in a mean or hurtful way”. The frequency of each of these experiences is rated on a 5-point scale “Never” (0), “once or twice” (1), “about once a month” (2), “about once a week” (3), and about “more times a week” (4).

The score is calculated by summing up scores on all the items. Likewise, a parallel set of items has been provided in the scale to measure various forms of bullying. Higher score indicated higher level of bullying/victimization. For the identification of participant roles in bullying, criteria were set on the basis of behavior participation and repetition in bullying and victimization. Accordingly, victims will be identified as those

participants who report victimization at least “once in a month” (equal or higher) in any of the forms of victimization and report “once or twice” for all forms of the victimization. Similarly, bullies will be identified as those participants who report bullying at least “once in a month” (equal or higher) in any of the forms of bullying and report “once or twice” for all forms of bullying. Likewise, bully/victims (dual role) will be identified as those participants who reported any form of both victimization and bullying “once in a month” (equal or higher).

Measure of Appraisal of Cyberbullying Victimization. Adapted version of The Stress Appraisal Measure (Roesch & Rowley, 2005) was selected to measure the cognitive appraisals of a hypothetical situation of cyber victimization. The measure contains 18-items (see Appendix D2) consists of four scales; Challenge (7-items), Threat (5-items), Centrality (4-items), and Resources (2-items). The measure provided a definition along with the situation of cyberbullying victimization. Subjects were asked to imagine the cyberbullying victimization situation and indicate what they would do in that situation. They were asked to provide their responses on 5-point Likert scale. Response options ranged from (1) “Not at all” to (5) “A great amount”. The Challenge scale refers to self-efficacious judgments and optimistic thoughts associated with the appraisal of cyber victimization. The Threat factor indicates anxious and helpless feelings in response to a cyber victimization situation. The Centrality factor indicates the perceived significance of an event of cyber victimization for the person’s wellbeing. Scores can be obtained after summing the scores of all items on a particular scale.

Coping with Cyberbullying Questionnaire (CWCBQ). The Coping with Cyberbullying Questionnaire (Sticca et al., 2015) was selected to measure university

students' coping with cyberbullying victimization. Respondents were asked to imagine the situation and rate how likely they would use the coping strategies. The adapted version of CWCBQ is a 38-item questionnaire (see appendix E2) and consists of 7 subscales; Distal advice (7-items), Assertiveness (5-items), Helplessness/self-blame (5-items), Active ignoring (5-items), Retaliation (5-items), Close support (5-items), and Technical coping (6-items). Response options include "Definitely don't agree" (1), "Probably don't agree" (2), "Probably agree" (3), "Definitely agree" (4) and "No answer" (5). The score on each subscale can be obtained by averaging the respondent's ratings ranging from (1) to (4) on each corresponding item. "No answer" (5) indicates a missing response.

Social Desirability Scale. Social desirability Scale (Stober, 2001) was selected to assess social desirability. The adapted version is a 15-item scale with True/False response format (see Appendix F2). Sample items include "There has been an occasion when I took advantage of someone else." The scores on scale ranged from 0 to 15. It contains five reversed keyed items (1, 5, 6, 10, 14, and 15).

General Self-Efficacy Scale (GSE). General Self-Efficacy was used to measure general self-efficacy in the present research. The scale was developed by Schwarzer and Jerusalem (1995). The scale is composed of 10 items (see Appendix G) that assess generalized sense of perceived self-efficacy or stable and broad sense of personal competence to deal or cope with a wide range of stressful situations in life. It measures the strength of one's belief about his or her general abilities. Response options for each statement range from (1) "Not at all true" to (4) "Exactly true" and scores on the scale ranged from 10 to 40 points.

ICT Self-Efficacy Scale. This scale has been selected to measure the ICT self-efficacy of university students. The ICT Self-Efficacy Scale (Musharraf et al., 2018) is an 18-item measure (see Appendix H) that consists of three subscales; Privacy and security (10-items), Differentiation and Learning (5-items), and Communication (3-items). Response options on each item are provided on a 5-point scale ranging from “agree strongly” (5) through “Uncertain” (3) to “disagree strongly” (1). Higher scores indicate the higher level of ICT self-efficacy.

Depression, Anxiety, and Stress Scales-21 (DASS-21). The DASS-21 was used to measure negative mental health outcomes in university students (see Appendix I1). It is the shortened form of the DASS-42 items (Lovibond & Lovibond, 1995) and composed of three 7-item subscales to measure Depression, Anxiety and Stress. Participants are asked to indicate how much each statement applied to them over the past 12 months. Response options for each item are provided on a 4-point scale range from (0) “did not applied to me” to (3) “applied to me very much, or most of the time.” The scores for each of the three subscales are calculated by summing all seven items of that scale and then multiplied by two. Thus the scores ranged from 0 to 42 for each subscale and higher scores on each subscale indicate the higher level of the relevant negative mental health state.

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS). A uni-dimensional 14-item (see appendix J1) the Warwick-Edinburgh Mental Well-being Scale developed by Tennant et al. (2007) was selected to measure the mental well-being of students. It assesses positive functioning, subjective well-being, happiness, and psychological functioning over the previous twelve months. The scale is composed of 14

positively worded items with five response options that range from (1) “None” to (5) “All the time”. The Scores on each item are summed to calculate the final score. Thus the scale provides a minimum score of 14 and a maximum score of 70.

Procedure

After obtaining the approval of the Ethical Review Board Committee at National Institute of Psychology, Quaid-i-Azam University, the chairs of various departments of concerned private and public sector universities were contacted by the researcher. They were briefed about the study by providing an overview including its nature, objectives, and implications. Besides this briefing, they were provided a letter indicating the duration and procedure of the data collection. After obtaining the consent of concerned chairs, participants were approached in classrooms during class hours. Prior to the administration of the survey, participants were briefed about the nature of the study. They were assured that the information collected from them would be used solely for research purposes and their anonymity would be protected. They were also informed about their right to withdraw from the study at any time. Following this, they were asked to check the tick box in the consent form (see Appendix M) to indicate their participation in the study. After obtaining the consent of participants, an anonymous paper-and-pencil survey booklet was administered in a group setting. Participants were asked to provide honest responses when answering the survey. The participation of the respondents was purely on a voluntary basis and no incentive was provided. In the end, participants were heartily thanked for their cooperation and participation in the study.

Results

Analyses for this study were conducted using three statistical programs, i.e. SPSS (version 22), the JASP 0.9.2.0 (JASP Team, 2018) and *Mplus* Version 8 (Muthén & Muthén, 2017). In view of the objectives of the present study, preliminary analyses were conducted and model testing was performed to test the proposed hypotheses.

More specifically, preliminary analyses were conducted to examine descriptive statistics and to test the assumptions of parametric testing. Further, reliability coefficients for all the scale were assessed. CFA was conducted to confirm the factor structure of newly developed Cyberbullying and Cyber Victimization Scales (CBCVS). Additionally, the convergent validity of these scales was assessed by examining their associations with measures of traditional bullying/victimization.

Pearson correlations were computed to investigate the magnitude and directionality of relationships between the variables of the study. Independent sample t-tests were employed to test gender differences on different variables of the study. The frequencies of traditional and cyberbullying/victimization were evaluated and overlap between two forms of bullying/victimization was examined. Mean differences were computed and group differences were compared on different study variables among cyber-victims, cyber-bullies, cyber victim-bullies and un-involved participants using One-way ANOVAs and Post hoc analyses. Step-wise regression analysis was conducted to estimate the incremental effect of cyberbullying/victimization over and above traditional bullying/victimization. Moreover, the moderating role of gender and age was investigated for the effect of cyber victimization on the mental health of students.

Model testing was performed to test the effect of cyber victimization on depression, anxiety, stress, and mental well-being serially mediated by four types of cognitive appraisal of cyber victimization as level one mediator and one of the seven coping techniques as level-2 mediator.

Missing data were handled in SPSS on the assumption of missing at random (MAR) using the list-wise deletion technique. This technique has been considered a reasonable strategy for the handling of missing data (Graham, 2012; Kang, 2013). In *MPlus* (Muthén & Muthén, 2017) missing data were handled using a full information maximum likelihood (FIML) approach (Enders, 2010; Hartley & Hocking, 1971). Studies showed that FIML missing data estimation is most pragmatic and preferred approach (Enders & Bandalos, 2001; Schlomer et al., 2010).

Table 18*Mean, standard deviations and Range of major study variables (N=1314)*

Scales	<i>M</i>	<i>SD</i>	Range		Skewness	Kurtosis
			Potential	Actual		
ICT Usage	58.38	10.86	16-80	16-80	-0.6	0.35
Cyber Victimization	8.93	7.82	0-80	0-64	1.8	4.96
Cyberbullying	4.04	6.27	0-80	0-34	2.31	6.15
Traditional Victimization	3.82	4.05	0-28	0-28	1.69	3.93
Traditional Bullying	2.15	3.46	0-28	0-25	2.54	8.03
Appraisal						
Challenge	13.71	7.63	0-28	0-28	0.07	-1.03
Threat	6.8	4.69	0-20	0-20	0.7	0
Centrality	5.71	4.27	0-16	0-16	0.63	-0.47
Resources	4.29	2.57	0-8	0-8	-0.08	-1.15
Coping with Cyberbullying						
Technical Coping	17.84	4.2	6-24	6-24	-0.81	0.17
Distal Advice	18.15	4.84	7-28	7-28	-0.29	-0.38
Helplessness/self-blame	10.32	3.29	5-20	5-20	0.31	-0.52
Retaliation	10.54	4.07	5-20	5-20	0.38	-0.73
Active Ignoring	14.39	3.52	5-20	5-20	-0.6	-0.03
Close Support	15.35	3.52	5-20	5-20	-0.85	0.32
Assertiveness	13.06	4.17	5-20	5-20	-0.26	-0.85
Social Desirability	8.35	2.33	0-15	0-15	-0.48	0.92
General Self-Efficacy	28.39	6.35	10-40	10-40	-0.49	0.07
ICT Self-Efficacy	62.75	14.02	18-90	18-90	-0.81	0.6
Privacy & Security	36.86	9.15	10-50	10-50	-0.76	0.24
Differentiation & Learning	16.63	4.35	5-25	5-25	-0.53	-0.01
Communication	8.77	2.95	3-15	3-15	-0.06	-0.61
DASS						
Depression	7.16	4.84	0-21	0-21	0.49	-0.38
Anxiety	7.78	4.59	0-21	0-21	0.35	-0.35
Stress	8.32	4.7	0-21	0-21	0.27	-0.29
Mental Well-being	47.25	11.64	14-70	14-70	-0.37	-0.2

Table 18 shows descriptive statistics of the study variables for the data. Considering an overview of the study variables, mean, standard deviation, range (both potential and actual), and indices of normal distribution i.e., skewness and kurtosis are reported. For most of the study variables, values of both skewness and kurtosis follow the

most conservative/strict criteria i.e., less than 1 (George & Mallery, 2010; Trochim & Donnelly, 2006; Field, 2009; Gravetter & Wallnau, 2014). However, the data on a few variables such as traditional and cyberbullying/victimization indicated relatively high skewness and kurtosis (see table 18). This issue is common in criminological research when sample variance exceed the mean (McDowall, 2010). This may occur when majority of sample endorsed low level of bullying acts, with a small minority engaging in greater intensity in such acts. Kim (2013) suggests that for large samples i.e., ($N > 300$), a value larger than 2 for skewness and a value greater than 7 for kurtosis shall be used to determine non-normality. The central limit theorem suggests that importance of normal distribution decreases with increase in sample size and in large samples distribution of sample tend to be normal regardless of the shape of the data (Elliott, 2007; Field, 2009). Therefore, in view of these criteria, study variables were found appropriate for parametric testing.

Table 19*Number of items and alpha reliabilities of all scales and sub-scales (N = 1314)*

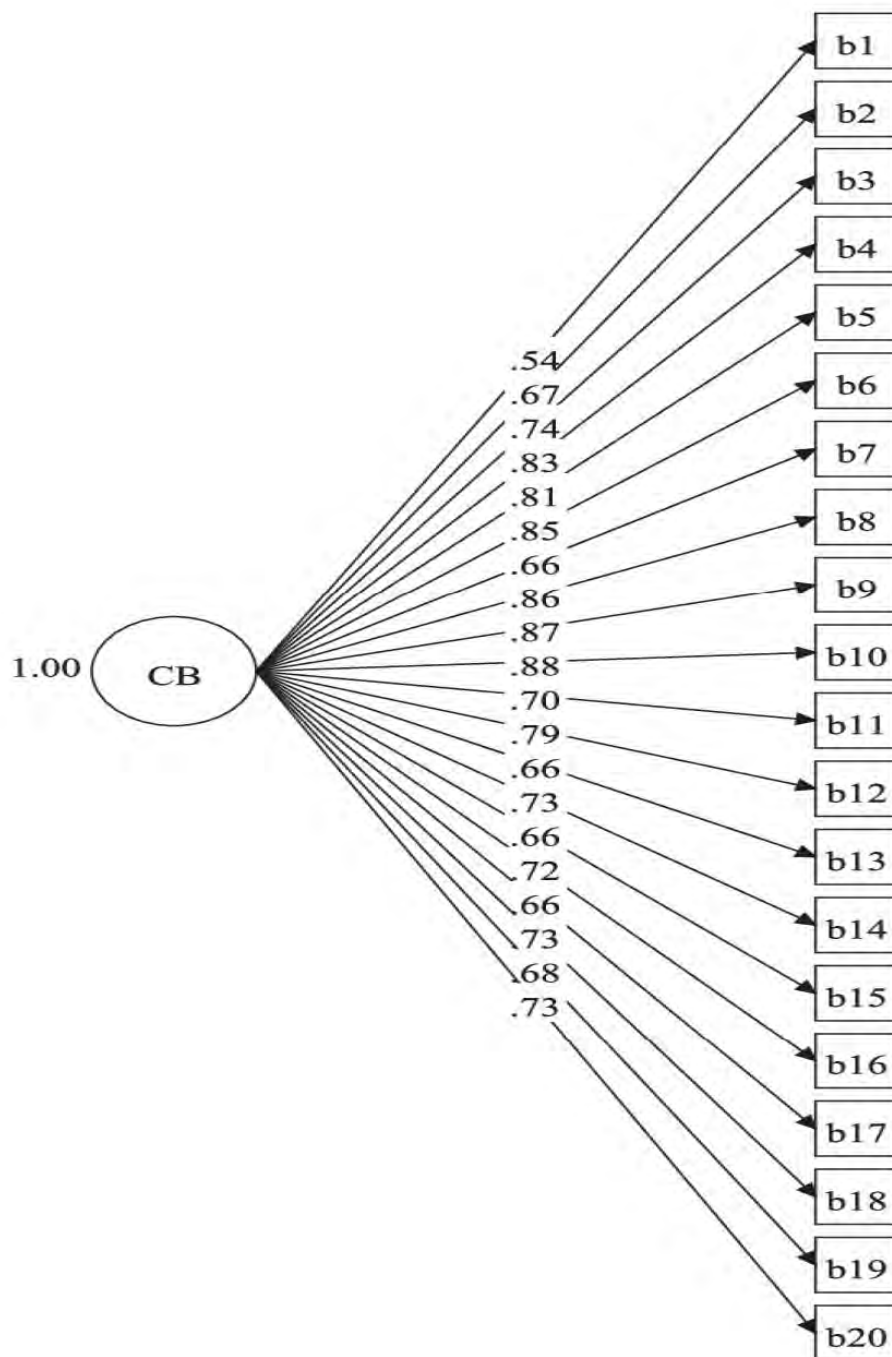
Scales	No. of items	α	ω
ICT Use Scale	16	.84	
CyberVictimization Scale	20	.83	0.84
Cyber Bullying Scale	20	.86	0.88
California Bullying Victimization Scale			
Victim Scale	7	.79	
Bullying Scale	7	.83	
Appraisal Measure			
Challenge	7	.89	
Threat	5	.80	
Centrality	4	.85	
Resources	2	.84	
The Coping with Cyberbullying Questionnaire			
Technical coping	6	.71	
Distal advice	7	.78	
Helplessness/self-blame	5	.62	
Retaliation	5	.82	
Active ignoring	5	.68	
Close support	5	.76	
Assertiveness	5	.83	
Social Desirability Scale	15	.79	
Generalized Self-Efficacy Scale	10	.88	
ICT Self-Efficacy Scale	21	.92	
Privacy & Security	10	.92	
Differentiation & Learning	5	.83	
Communication	3	.67	
(DASS-21)			
Depression	7	.84	
Anxiety	7	.81	
Stress	7	.83	
The Warwick-Edinburgh Mental Well-being Scale	14	.93	

Table 19 shows Cronbach's alpha coefficient along with number of items of all scales and subscales used in the main study. The results showed that most of the scales

have excellent reliability with alphas greater than .80 while a few have good reliability with alpha ranging from .71 to .79. Reliability of only some subscales is marginally compromised due to the complexity of the constructs (Kline, 1999) i.e., helplessness/self-blame ($\alpha = .62$), diversity in indicators of the behavior being measured (Cortina, 1993) i.e., active ignoring ($\alpha = .68$) and a low number of indicators (Field, 2014) i.e., communication ($\alpha = .67$) subscale of the ICT-Self-efficacy. Kline (1999) argues that psychological constructs with such issues can realistically be measured even with alpha as low as .50. The reliability analysis of the main study data showed that all scales and subscales that are used in the study has substantial evidence for the internal consistency of the measures. Further, the reliability coefficients Cronbach's α and McDonald's ω (McDonald, 1999) were estimated using the JASP 0.9.2.0 (JASP Team, 2018). Reliability analysis revealed that Cyber Victimization Scale has adequate internal consistency (Cronbach $\alpha = 0.83$; McDonald's $\omega = 0.84$). Similarly, a high level of internal consistency was found for Cyber Bullying Scale (Cronbach $\alpha = 0.86$; McDonald's $\omega = 0.88$).

Confirmatory Factor Analyses (CFA) of Cyberbullying and Cyber Victimization Scales (CBCVS)

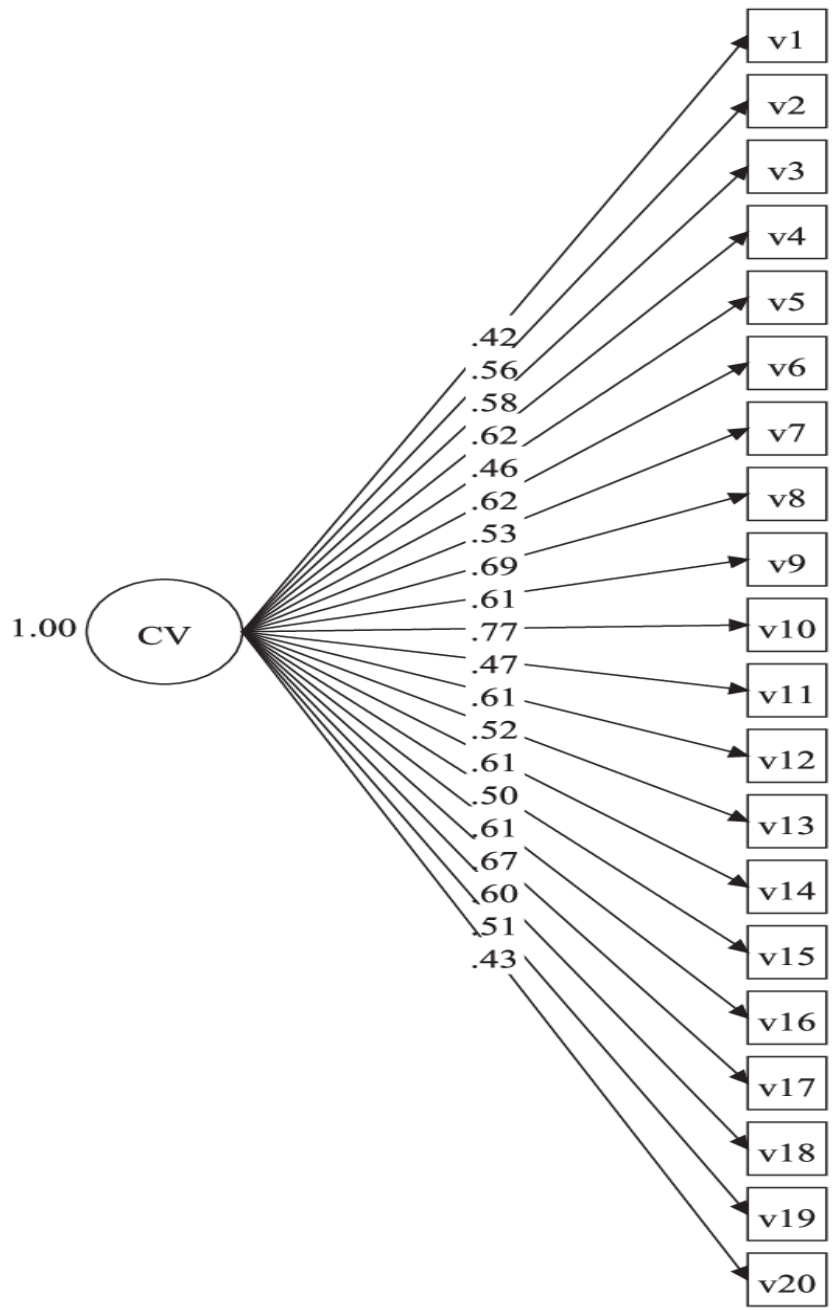
Cyberbullying Scale



$$\chi^2 = 635.46, df = 166, CFI = .97, TLI = .97, RMSEA = .04 (p = .95), WRMR = 1.56$$

Figure 13. Figure showing results of confirmatory factor analysis of Cyber Bulling Scale.

Confirmatory factor analysis of cyberbullying scale was conducted using *MPlus* version 7.0 (Muthén & Muthén, 2012). Given the non-normal distribution of the data, items were treated as categorical and estimation method Weighted Least Squares Means and Variance (WLSMV) was used. The results confirmed the uni-factor solution established in EFA. Item loading ranged from .54 to .88. The one factor solution showed a good of the model to the data with $\chi^2 = 635.46$, $df = 166$, CFI = .97, TLI = .97, RMSEA = .04.



$\chi^2 = 753.82, df = 162, CFI = .94, TLI = .93, RMSEA = .05 (p = .18), WRMR = 1.54$

Figure 14. Figure showing results of confirmatory factor analysis of Cyber Victimization Scale.

Confirmatory factor analysis of cyber victimization was conducted using *MPlus* version 7.0 (Muthén & Muthén, 2012). Given the non-normal distribution of the data, items were treated as categorical and estimation method Weighted Least

Squares Means and Variance (WLSMV) was used. The results confirmed the uni-factor solution established in EFA. Item loading ranged from .42 to .77. The one factor solution showed a good of the model to the data with $\chi^2 = 753.82$, $df = 162$, CFI = .94, TLI = .93, RMSEA = .05.

Convergent Validity

To assess the convergent validity of the Cyberbullying and Cyber Victimization Scales (CBCVS), Pearson bivariate correlations were computed with traditional bullying and traditional victimization. The results presented in Table 20 showed that cyber victimization was moderately positively correlated with traditional victimization ($r = .54$, $p < .01$). Similarly a moderate level of positive association exist between cyberbullying and traditional bullying ($r = .59$, $p < .01$). There was also a significant positive association between cyber victimization and cyberbullying ($r = .59$, $p < .01$), which indicates that those who experienced cyber victimization also reported an engagement in cyberbullying behaviors. Together these significant associations have provided the sufficient evidence of the convergent validity of the CBCVS.

Table 20*Bivariate correlations among study variables (N=1314)*

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	ICTU	-	.15**	.33**	.24**	.23**	.15**	.15**	.09**	.16**	.04	.03	.10**	.06	.00	.05
2	TS Nor D		-	.47**	.36**	.16**	.16**	.19**	.09**	.08*	.05	.06*	.01	.03	-.07*	.08*
3	TS off D			-	.50**	.27**	.24**	.21**	.11**	.04	.11**	.08**	.02	.05	-.08*	.08**
4	TS SNS				-	.28**	.20**	.18**	.18**	.04	.06*	.06*	-.01	-.04	-.06*	.11**
5	CV					-	.59**	.54**	.45**	-.04	.19**	.16**	-.01	-.03	.00	.23**
6	CB						-	.46**	.59**	.01	.15**	.15**	.02	-.13**	-.07*	.12**
7	TV							-	.53**	-.03	.24**	.16**	-.02	-.03	-.01	.21**
8	TB								-	-.02	.17**	.15**	-.02	-.15**	-.06	.19**
9	CH									-	-.25**	-.29**	.23**	.17**	.11**	-.24**
10	TH										-	.66**	.10**	.09**	.02	.33**
11	CEN											-	.11**	-.13**	-.10**	.31**
12	RES												-	.26**	.23**	-.14**
13	TC													-	.60**	.16**
14	DA														-	.18**
15	HS															-

Continued.....

		16	17	18	19	20	21	22	23	24	25	26	27	28	29
1	ICTU	.10**	.04	.05	.01	-.01	.11**	.25**	.20**	.17**	.25**	.04	.09**	.06*	.15**
2	TS Nor D	.06	.02	.01	.02	-.07*	-.07*	.10**	.11**	.08*	.03	.09**	.09**	.09**	.01
3	TS off D	.09**	-.01	.03	.05	-.01	.00	.14**	.12**	.10**	.13**	.06*	.09**	.08**	.07*
4	TS SNS	.06	-.06	-.01	.00	.02	-.07*	.03	.02	.00	.08**	.12**	.12**	.11**	-.03
5	CV	.14**	.02	.02	.07*	-.02	-.11**	.00	-.04	-.05	.14**	.27**	.33**	.28**	-.12**
6	CB	.16**	-.09**	-.06*	.00	-.09**	-.12**	.06*	.04	-.03	.15**	.12**	.18**	.13**	-.06*
7	TV	.10**	.02	.06*	.06	-.01	-.08**	.01	.03	-.08**	.09**	.22**	.26**	.25**	-.09**
8	TB	.20**	-.08**	-.10**	.06*	-.01	-.13**	-.08**	-.09**	-.11**	.08**	.16**	.16**	.14**	-.14**
9	CH	.07*	-.14**	.12**	.09**	.10**	.40**	.30**	.27**	.29**	.20**	-.10**	-.08**	-.08**	.28**
10	TH	.11**	.08**	.09**	.11**	-.04	-.13**	-.05	-.04	-.05*	-.07*	.22**	.24**	.28**	-.16**
11	CEN	-.10**	.08**	.13**	-.12**	-.06*	-.12**	-.07*	-.07*	-.07*	-.06*	.23**	.23**	.27**	-.14**
12	RES	.03	-.22**	.30**	.10**	-.03	.18**	.19**	.18**	.18**	.06*	-.01	.00	.07**	.14**
13	TC	.19**	.58**	.68**	.47**	.01	.36**	.42**	.40**	.38**	.13**	.06*	.11**	.21**	.26**
14	DA	.31**	.41**	.58**	.48**	.05	.25**	.19**	.16**	.19**	.11**	.01	.04	.06*	.19**
15	HS	.29**	.21**	.19**	.29**	.00	-.15**	-.05	-.05	-.04	.04	.33**	.32**	.32**	-.11**

Continued.....

		16	17	18	19	20	21	22	23	24	25	26	27	28	29
16	RE	-	.07*	.20**	.48**	.03	.04	.07*	.01	.07*	.15**	.11**	.11**	.08**	.07*
17	AI		-	.60**	.37**	.03	.25**	.25**	.24**	.24**	.07*	.07**	.10**	.18**	.17**
18	CS			-	.46**	.02	.27**	.33**	.32**	.27**	.14**	.10**	.15**	.24**	.23**
19	AS				-	.03	.17**	.18**	.13**	.17**	.17**	.10**	.16**	.14**	.12**
20	SD					-	.12**	-.04	-.05	-.02	.00	-.04	-.02	-.03	.10**
21	GSE						-	.49**	.44**	.49**	.27**	-.10**	-.08**	-.02	.47**
22	ICT SE							-	.94**	.80**	.62**	-.03	.05	.07*	.43**
23	PS								-	.61**	.43**	-.02	.06*	.09**	.43**
24	DS									-	.43**	-.04	.02	.04	.34**
25	Com.										-	.01	.06*	.01	.26**
26	DEP											-	.78**	.79**	-.21**
27	ANX												-	.81**	-.13**
28	ST													-	-.12**
29	MWB														-

Note. ICTU = ICT Usage; TS Nor Day = Time Spent on Internet on Normal Day; TS Off Day = Time Spent on Internet on Off Day; TS SNS = Time Spent on Social Networking Sites; CV = Cyber Victimization; CB = Cyber Bullying; TV = Traditional Victimization; TB = Traditional Bullying; CH = Challenge; TH = Threat; CEN = Centrality; RES = Resources; TC = Technical coping; DA = Distal advice; HS = Helplessness/self-blame; RE = Retaliation; AI = Active Ignoring; CS = Close support; AS = Assertiveness; SD = Social desirability; GSE = Generalized Self-Efficacy; ICT SE = ICT Self-Efficacy; PS = Privacy & Security; DL = Differentiation & Learning; Com = Communication; DEP = Depression; ANX = Anxiety; ST = Stress; MWB = Mental Well-being. * $p < .05$, ** $p < .01$.

To investigate the relationship between study variables preliminary analyses were conducted using Pearson correlations. Table 20 shows correlation coefficients among study variables. Results showed that ICT usage (online activities) is significantly positively correlated with time spent on internet, and time spent on SNS variables. Further ICT and all time spent variables has a significant positive correlation with cyber victimization and cyberbullying perpetration suggesting that higher use of ICT and greater time spent online is associated with higher self-reported cyber victimization and cyberbullying. ICT usage was also correlated positively with challenge dimension and resources dimension of appraisal suggesting that increased usage of ICT is associated with the appraisal of cyberbullying as more challenging and with the perception of having more resources to deal with cyberbullying. With reference to coping strategies, ICT usage was significantly positively associated with retaliation coping in response to the experience of cyberbullying, suggesting that increased ICT usage also increases the use of retaliation as a coping mechanism. Significant positive associations of ICT usage were also found with general and ICT self-efficacy including all dimensions of ICT self-efficacy. Finally, ICT usage was significantly positively associated with anxiety and stress as well as mental well-being, suggesting that increased usage of ICT though increases anxiety and stress yet it also increase the mental well-being of university students. Time variables i.e., (time spent on internet on normal day, on off day, and time spent on SNS) further confirmed relationship among ICT usage and other study variables by showing similar dimensions of relationship.

It was found that cyber victimization had a significant positive correlation with cyberbullying suggesting that cyberbullying and cyber victimization have some

commonalities. Cyber victimization and cyberbullying both were further positively correlated with traditional bullying and traditional victimization suggesting some overlap between traditional bullying/victimization and cyber bullying/victimization. Cyber victimization was also significantly positively correlated with threat and centrality dimension of appraisal of cyber victimization suggesting that cyber victimization is associated with increased perception of threat and centrality appraisal. Regarding coping strategies, cyber victimization was significantly positively associated with helplessness/self-blame, retaliation and assertiveness coping. Significant negative associations of cyber and traditional victimization were also found with general self-efficacy suggesting that student with low self-efficacy experience higher level of both traditional and cyber victimization. Both cyber victimization and cyberbullying were significantly positively associated with communication dimension of ICT self-efficacy. Additionally, cyberbullying was significantly positively associated with privacy and security dimension of ICT self-efficacy. Finally, cyberbullying/victimization as well as traditional bullying/victimization were significantly positively associated with depression, anxiety, and stress yet significantly negatively associated with mental well-being suggesting that greater experiences of cyber and traditional victimization as well as greater involvement in both cyber and traditional bullying behaviors are associated with higher level of mental health problems and a lower level of mental well-being among university students.

Two dimensions of the appraisal of cyberbullying situation including challenge and resources were significantly positively associated with general and ICT self-efficacy including its three dimensions suggesting that students with higher level of self-efficacy

have higher level of challenge and resources appraisal in response to cyber victimization. Further, challenge and resources appraisals were negatively associated with depression, anxiety, and stress and positively associated with mental well-being, suggesting that challenge and resources appraisal are associated with higher mental health and well-being. On the contrary, the other two dimensions of appraisal including threat and centrality were negatively associated with both general and ICT self-efficacy including its three dimensions suggesting that higher level of self-efficacy is associated with lower threat and centrality appraisals in response to cyber victimization. Furthermore, these two appraisals were positively associated with depression, anxiety, and stress and negatively associated with mental well-being suggesting that threat and centrality appraisals are associated with more mental health problems and lower level of mental well-being among university students.

With respect to coping strategies in response to being cyber-bullied, results demonstrated that technical coping and seeking distal advice were positively associated with challenge and resources appraisal of cyberbullying and negatively associated with centrality appraisal whereas no association was found between threat appraisal and distal advice ($p > .05$). Helplessness/self-blame coping was significantly positively associated with threat and centrality appraisals but negatively associated with challenge and resources appraisals. These results suggest that those who appraise cyberbullying as a threat and with greater centrality are more likely to use helplessness/self-blame and active ignoring coping. On the other hand, those who appraise the situation of being cyber-bullied as more challenging or with having greater resources are less likely to use helplessness/self-blame and active ignoring coping.

In addition, close support, and assertiveness coping were significantly positively associated with all dimensions of appraisal ($p < .01$) except for the relation between centrality appraisal and assertiveness coping with a significant negative association. All coping strategies were significantly positively associated with general self-efficacy except retaliation coping ($p > .05$), and helplessness/self-blame coping which were significantly negatively associated with general self-efficacy suggesting that students with low general self-efficacy are likely to use the helplessness/self-blame coping strategy.

Most of the coping strategies were significantly positively correlated with mental health problems as well as mental well-being except helplessness/self-blame which had significantly negative correlation with well-being. In contrast to this, close support is significantly negatively correlated with mental health.

General self-efficacy was significantly positively correlated with ICT self-efficacy and its dimensions ($p < .01$). General efficacy was further significantly negatively correlated with depression and anxiety and positively correlated with mental well-being suggesting that students with higher general self-efficacy are less likely to develop depression and anxiety and have higher levels of mental well-being. ICT self-efficacy appeared to have mostly either weak or non-significant relationships with mental health problems, yet had strong significant positive correlations with mental well-being, suggesting that students with higher ICT self-efficacy have higher level of mental well-being. Finally mental well-being was significantly negative correlated with depression, anxiety, and stress.

Table 21*Independent Samples t-tests for gender differences on study variables (N=1314)*

Scales	Male students (n=535)		Female students (n=779)		<i>t</i> (1312)	<i>p</i>	95% <i>CI</i>		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UL</i>	
ICT Usage	59.68	11.34	57.48	10.43	3.63	.001	1.01	3.40	.21
TS Normal Day	2.48	1.87	2.45	2.14	.242	.809	-.22	.28	.01
TS Off Day	5.05	2.93	5.00	3.21	.276	.783	-.30	.40	.02
TS SNS	2.75	2.13	2.73	2.38	.188	.851	-.24	.29	.01
CV	9.60	8.10	15.75	11.25	-11.52	.001	-7.20	-5.04	.61
CB	5.89	7.79	2.76	4.56	8.35	.001	2.39	3.86	.51
TV	3.33	3.02	5.47	6.15	-2.13	.001	-2.63	-1.63	.71
TB	3.13	4.21	1.48	2.63	8.05	.001	1.25	2.05	.50
Challenge	14.20	7.74	13.38	7.54	1.90	.06	-.03	1.67	.11
Threat	6.25	4.34	7.18	4.88	-3.60	.001	-1.43	-.42	.20
Centrality	5.32	4.08	5.98	4.37	-2.75	.01	-1.13	-.19	.16
Resources	4.53	2.56	3.93	2.55	4.09	.001	.88	.31	.23
TC	16.67	4.26	18.62	3.98	-7.95	.001	-2.43	-1.47	.48
DA	17.41	4.7	18.64	4.87	-4.22	.001	-1.81	-.66	.26
HS	10.14	3.2	10.57	3.4	-2.23	.03	-.05	-.81	.13
RE	11.54	4.09	9.84	3.92	6.99	.001	1.22	2.17	.43
AI	13.33	3.46	15.09	3.38	-8.77	.001	-2.16	-1.37	.52
CS	14.41	3.61	16.01	3.3	-7.87	.001	-2.00	-1.20	.47
AS	13.11	3.81	13.03	4.4	.35	.72	-.39	.56	.02
SD	8.21	2.43	8.45	2.26	-1.77	.08	-.49	.02	.10
GSE	28.72	6.10	27.92	6.68	2.23	.03	1.50	.10	.13
ICT SE	60.87	15.86	60.7	13.56	.19	.85	-1.52	1.85	.01
PS	34.91	10.37	35.52	9.39	-1.08	.28	-1.72	.50	.06
DL	16.59	4.63	16.65	4.14	-.21	.84	-.54	.44	.01
Communication	9.26	3.02	8.44	2.87	4.90	.001	.49	1.15	.28
Depression	7.07	4.69	7.23	4.94	-.59	.56	-.70	.38	.03
Anxiety	7.52	4.47	7.95	4.67	-1.64	.10	-.94	.08	.09
Stress	7.78	4.45	8.69	4.83	-3.42	.001	-1.43	-.39	.19
MWB	47.29	12.3	47.23	11.17	.09	.93	-1.26	1.37	.01

Note. CI = confidence interval; LL = lower Limit; UL = upper limit; TS Normal Day = Time Spent on Internet on Normal Day; TS Off Day = Time Spent on Internet on Off Day; TS SNS = Time Spent on Social Networking Sites; TV = Traditional Victimization; TB = Traditional Bullying; CV = Cyber victimization; CB = Cyberbullying; TC = Technical coping; DA = Distal advice; HS = Helplessness/self-blame; RE = Retaliation; AI = Active Ignoring; CS = Close support; AS = Assertiveness; SD = Social desirability; GSE = Generalized Self-Efficacy; ICT SE = ICT Self-Efficacy; PS = Privacy & Security; DL = Differentiation & Learning; MWB = Mental Well-being.

Independent samples t-tests were carried out to examine the gender differences on study variables. Results in Table 21 indicated that scores of male students were significantly higher than female students on ICT usage (mean difference = 2.20, $p < .01$), though, the Cohen's effect size value (J. Cohen, 1992), suggested a small practical significance. Furthermore, male students scores were higher on both, cyberbullying (mean difference = 3.13, $p < .01$), and traditional bullying (mean difference = 1.65, $p < .01$), in comparison to female students with medium effect. In contrast to this, scores of female students were significantly higher on both cyber victimization (mean difference = -6.24, $p < .01$), and traditional victimization (mean difference = -2.14, $p < .01$) than male students and Cohen's effect size value showed a larger practical significance. In addition, significant mean differences were found concerning appraisal of being cyber-bullied, though the effect size of practical significance was small.

Male students's scores were higher on resources appraisal (mean difference = .60, $p < .01$), while female student's score were higher on threat appraisal (mean difference = -.92, $p < .01$), and centrality appraisal (mean difference = -.66, $p = .01$). Significant mean differences were found for coping with cyberbullying. Male students scored higher in comparison to female students on retaliation (mean difference = 1.70, $p < .01$) with small to medium effect size. On the other hand, female students showed significantly higher scores than male students on technical coping (mean difference = -1.94, $p < .01$), distal advice (mean difference = -1.23, $p < .01$), and helplessness/self-blame (mean difference = -.43, $p < .05$) with small to medium value of effect size. Female students also scored higher on active ignoring (mean difference = -1.78, $p < .01$) with medium value of Cohen's effect size, and close support (mean difference = -1.60, $p < .01$) with small to medium

value of Cohen's effect size. Male students reported higher level of general self-efficacy than female students, though the mean difference was small but significant (mean difference = .80, $p < .05$), and the effect size value indicated a small practical significance. Significant mean differences were found on ICT self-efficacy-communication subscale and male students reported higher score than female students (mean difference = .82, $p < .01$), and Cohen's effect size value indicated a small effect. Moreover, though the effect size was small, significant mean differences were found on stress. Female students reported significantly higher level of stress in comparison to male students (mean difference = -.91, $p < .01$).

Table 22*Independent Samples t-tests for residence status on study variables (N=1304)*

Scales	Hostel (n=489)		Home (n=815)		<i>t</i> (1302)	<i>p</i>	95% <i>CI</i>		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UL</i>	
ICT Usage	59.34	10.01	57.79	11.33	2.56	.01	.36	2.72	.14
TS N Day	2.58	2.05	2.37	2.01	1.662	.04	.04	.45	.10
TS O Day	5.51	3.11	4.72	3.06	4.429	.00	.44	1.14	.26
TS SNS	3.08	2.34	2.50	2.20	4.353	.00	.32	.85	.26
CV	14.39	10.91	12.59	10.24	3.00	.01	.62	2.98	.20
CB	4.49	6.23	3.63	5.94	2.48	.01	.18	1.54	.14
TV	5.03	5.51	4.36	5.04	2.23	.02	.08	1.25	.13
TB	2.58	4.00	1.88	3.01	3.34	.01	.29	1.11	.20
Challenge	13.70	7.44	13.75	7.72	-.11	.91	-.91	.81	.01
Threat	6.96	4.43	6.73	4.84	.86	.39	-.29	.74	.05
Centrality	5.85	4.16	5.64	4.33	.88	.38	-.26	.70	.05
Resources	4.39	2.57	4.25	2.58	.92	.36	-.16	.43	.05
TC	17.95	4.09	17.83	4.21	.49	.62	-.37	.61	.03
DA	18.27	4.61	18.11	4.94	.53	.59	-.42	.74	.03
HS	10.29	3.21	10.33	3.33	-.17	.87	-.42	.36	.01
RE	10.55	4.19	10.54	4.00	.05	.96	-.48	.51	.00
AI	14.53	3.57	14.34	3.47	.89	.37	-.22	.60	.05
CS	15.51	3.40	15.31	3.54	.94	.35	-.21	.60	.06
AS	13.33	4.12	12.94	4.17	1.57	.12	-.10	.88	.09
SD	8.42	2.39	8.30	2.30	.86	.39	-.15	.38	.05
GSE	28.44	6.56	28.42	6.22	.05	.96	-.70	.74	.00
ICT SE	60.10	14.04	61.20	14.81	-1.30	.19	-2.77	.56	.08
PS	34.80	9.50	35.59	9.97	-1.39	.16	-1.90	.32	.08
DL	16.44	4.34	16.76	4.36	-1.29	.20	-.81	.17	.07
Communication	8.60	2.79	8.85	3.06	-1.42	.15	-.58	.09	.08
Depression	7.39	4.59	7.04	4.97	1.24	.22	-.20	.89	.07
Anxiety	8.10	4.29	7.60	4.75	1.89	.06	-.02	1.02	.11
Stress	8.48	4.39	8.25	4.85	.85	.40	-.30	.76	.05
MWB	47.47	11.38	47.11	11.80	.54	.59	-.95	1.68	.03

Note. CI = confidence interval; LL = lower Limit; UL = upper limit; TS Normal Day = Time Spent on Internet on Normal Day; TS Off Day = Time Spent on Internet on Off Day; TS SNS = Time Spent on Social Networking Sites; TV = Traditional Victimization; TB = Traditional Bullying; CV = Cyber victimization; CB = Cyberbullying; TC = Technical coping; DA = Distal advice; HS = Helplessness/self-blame; RE = Retaliation; AI = Active Ignoring; CS = Close support; AS = Assertiveness; SD = Social desirability; GSE = Generalized Self-Efficacy; ICT SE = ICT Self-Efficacy; PS = Privacy & Security; DL = Differentiation & Learning; MWB = Mental Well-being.

Independent samples t-tests were employed to test the hypotheses that hostelers (student residing at hostels) and day-scholars (student residing at homes) will be different in terms of reported ICT usage, time spend on internet and social networking sites, cyber victimization, cyberbullying, traditional victimization and traditional bullying. Results in table 21 indicated that students residing at hostels reported significantly higher ICT usage than day-scholars, (mean difference = 1.54, $p = .01$) which is further confirmed on time spend on internet and time spend on social networking sites variables. In addition, hostelers also reported higher cyber victimization (mean difference = 1.81, $p < .01$), higher cyberbullying (mean difference = .86, $p < .01$), higher traditional victimization (mean difference = .67, $p < .05$), and higher traditional bullying (mean difference = .70, $p < .01$), in comparison to day-scholars. Cohen's d effect size value for all these mean differences ranging from .13 to .20 showed small practical significance.

Table 23

Prevalence of cyberbullying/victimization and traditional bullying/victimization in university students (N = 1314)

Groups	Bullying victimization Type			
	Cyberbullying/victimization		Traditional bullying/victimization	
	<i>f</i>	%	<i>f</i>	%
Victim	361	27.50	236	18.00
Bully	95	7.20	43	3.30
Victim-Bully	344	26.20	185	14.10
Not Involved	514	39.10	850	64.70

To estimate the prevalence of cyber and traditional bullying/victimization, frequencies of all four categories of bullying-victimization were calculated for the sample

of the study. The results as presented in Table 23 and illustrated in Figures 15, and 16 shows a relatively higher prevalence of cyber victimization (27.5%) and cyberbullying (7.20%) as compared to traditional victimization (18%) and bullying (3.30%). Similarly, the proportion of 26.20% cyber bully-victims was larger than the proportion of 14.10% traditional bully-victims. Further, 64.70% students were not involved in any of the role of traditional bullying/victimization and only 39.10 % students were not involved in any of the role of cyberbullying.

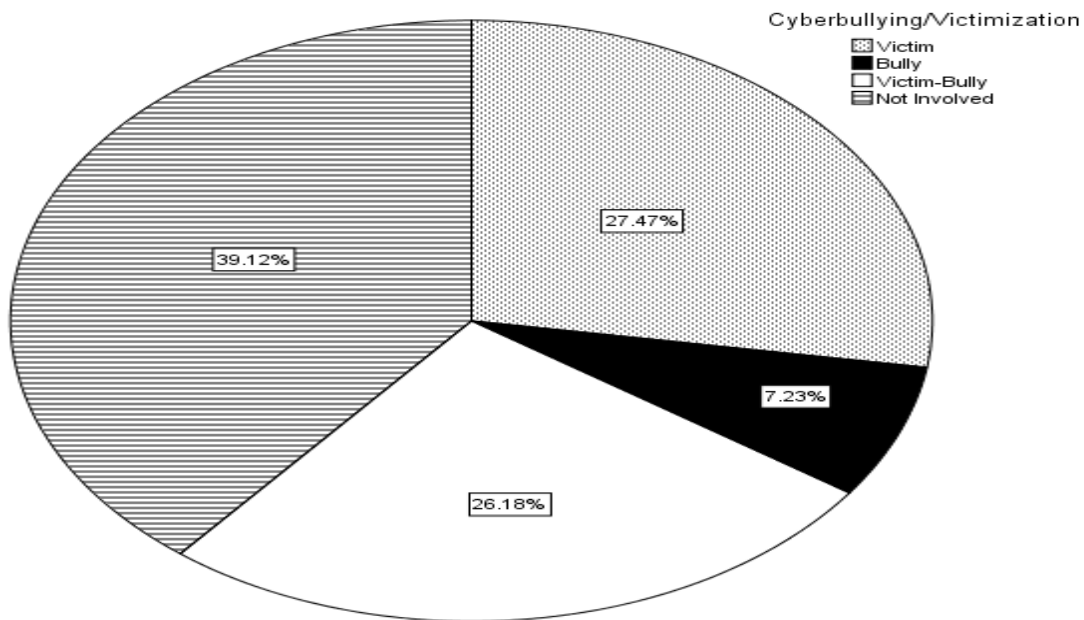


Figure 15. Pie chart showing prevalence of Cyberbullying/Victimization among university students.

The pie chart presented in Figure 15 shows that for the cyberbullying/victimization, largest proportion of the sample (39.10%) were not-involved in any role of cyberbullying. The next largest group was the victim group (27.50%), and approximately equal number of victim-bully (26.20%). The lowest number of cases emerged in bully group consisting 7.20%.

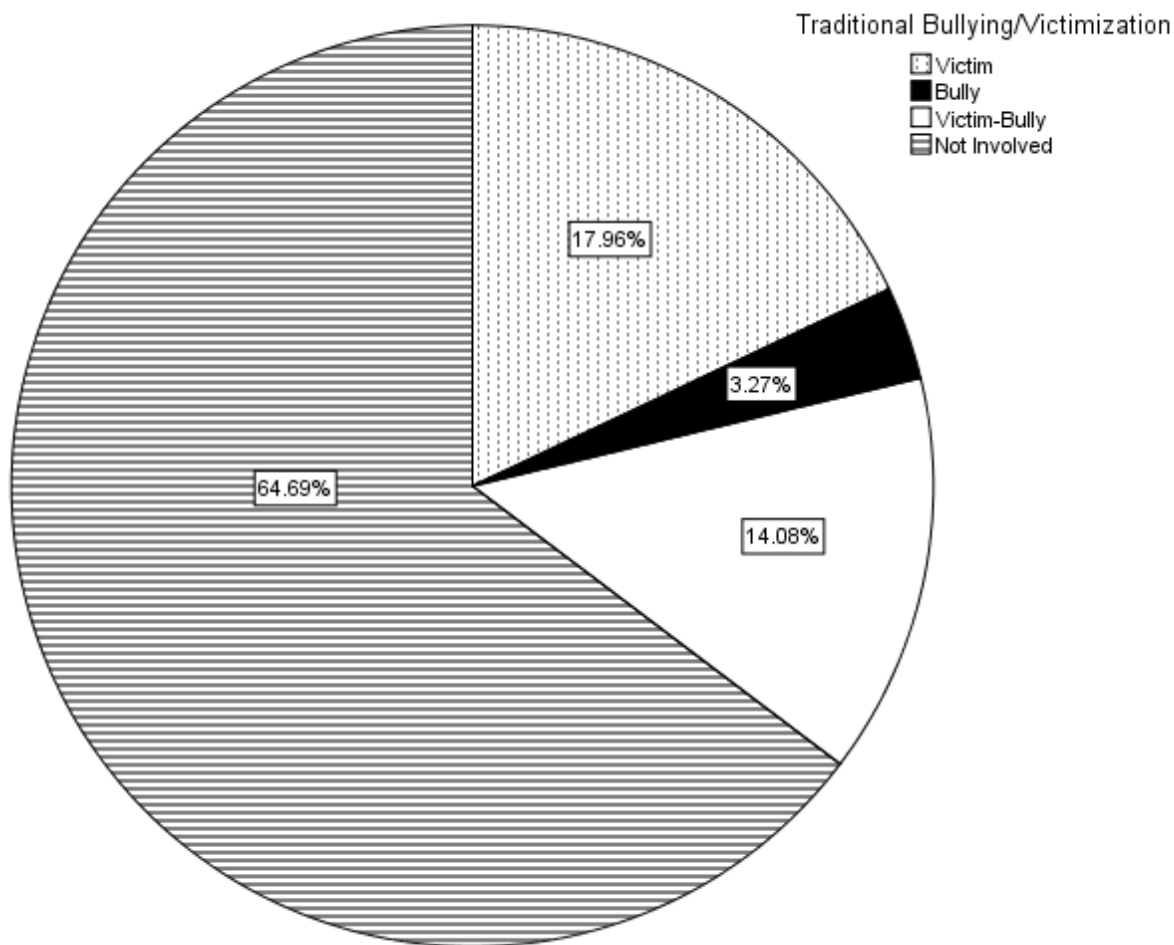


Figure 16. Pie chart showing prevalence of Traditional Bullying/Victimization among university students.

The pie chart presented in Figure 16 shows that for traditional bullying/victimization, a largest proportion of sample 64.69% was not-involved in any role of traditional bullying/victimization followed by victim group (17.96%), and (14.08%) victim-bully group. The lowest proportion emerged in bullies group consisting of a total of 43 cases (3.27%).

Table 24

Chi Square for gender wise prevalence of Cyber and Traditional bullying/victimization (N =1314)

Variable	Groups	Male students		Female students		χ^2	p
		f	%	f	%		
Cyberbullying	Victim	82	15.33	279	35.82	107.02	0.001
	Bully	72	13.46	23	2.95		
	Victim-bully	169	31.59	175	22.46		
	Not-Involved	212	39.63	302	38.77		
Traditional bullying	Victim	81	15.14	155	19.90	23.72	0.001
	Bully	26	4.86	17	2.18		
	Victim-bully	98	18.32	87	11.17		
	Not-Involved	330	61.68	520	66.75		

Chi square tests were applied to examine differences in the prevalence of cyber and traditional bullying-victimization. The results presented in Table 24 showed that the prevalence of both cyber bullying-victimization ($\chi^2 = 107.02$, $p < .01$) and traditional bullying-victimization ($\chi^2 = 23.72$, $p < .01$) differed by gender. It was found that for cyber bullying-victimization, female students represented a larger proportion of the victim group i.e., 35.82% compared to only 15.33% prevalence in male university students. Conversely, only 2.95% female students fulfilled the cyberbullying criteria compared to 13.46% male students. Differences in the proportions of the sample in the cyber victim-bully group also emerged with a higher prevalence 31.59% in male students compared to 22.46% female students. Whereas, almost similar proportions 39.63% of male students and 38.77% of female students were not involved in any participant role of cyberbullying. Further, significant difference across gender was also observed in prevalence of traditional bullying-victimization. A higher proportion of female students were involved as traditional victims in comparison to male students (19.90% vs. 15.14%).

On the other hand, a higher proportion of male students were involved as traditional bullies and victim-bullies than female students.

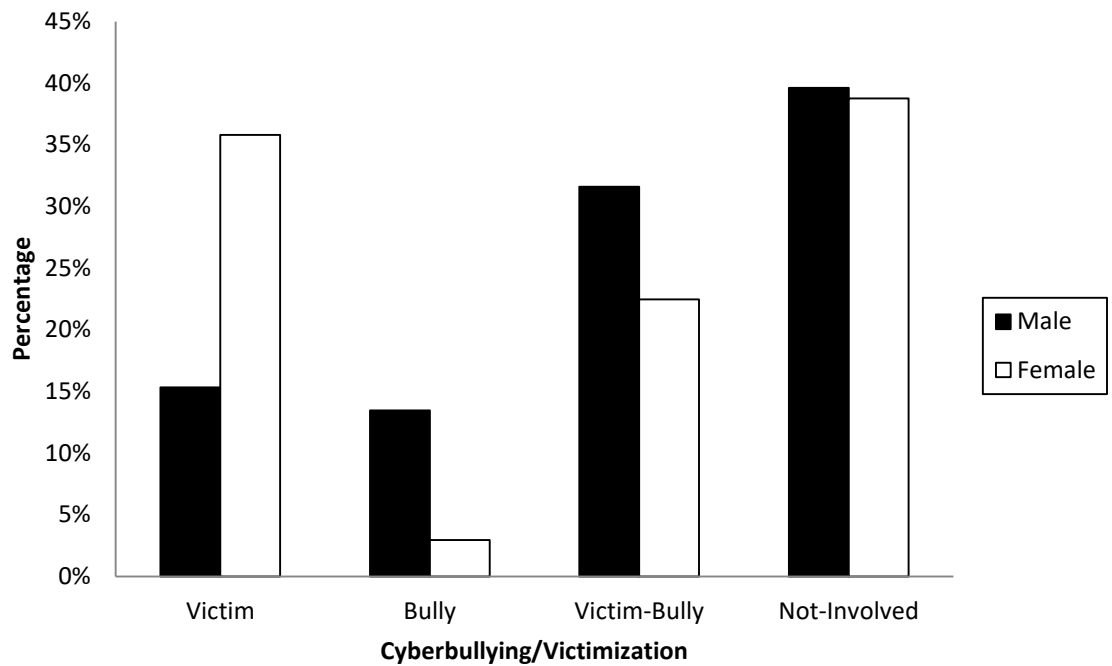


Figure 17. Cluster bar chart showing difference in the prevalence of Cyberbullying/victimization across gender.

The figure 17 shows that female students have a higher involvement as cyber victims than male students, whereas male students have higher involvement as cyber bullies and cyber victim-bullies than female students.

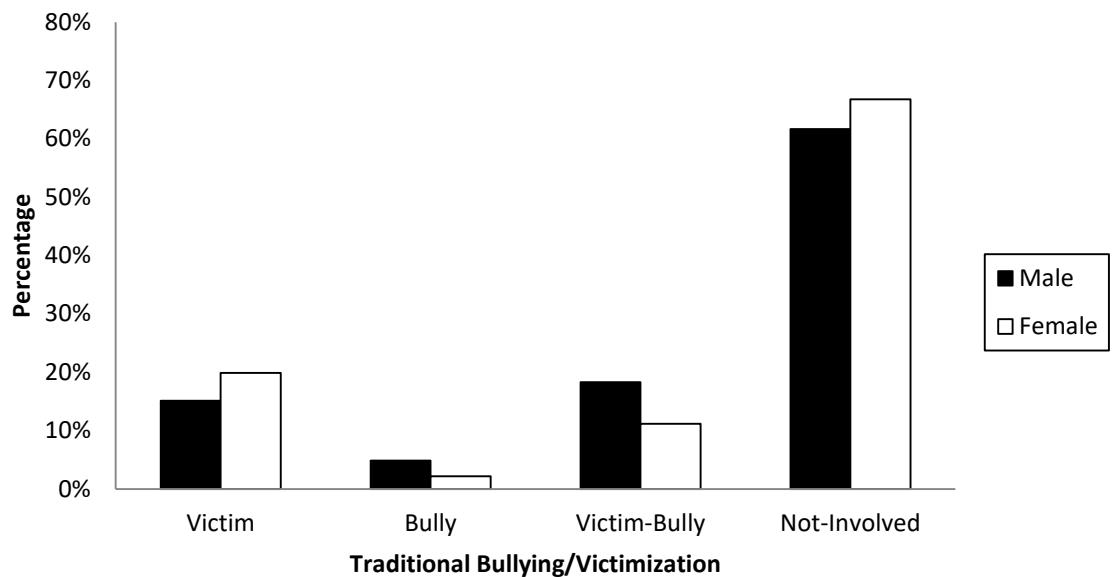


Figure 18. Cluster bar chart showing difference in prevalence of Traditional Bullying/Victimization across Gender.

The figure shows that female students have a higher prevalence of victims in comparison to male students while male students have a higher prevalence of bullying than female students.

Table 25

Chi Square for residence type wise prevalence of cyber and traditional bullying/victimization (N =1314)

Variable	Groups	Hostel		Home		χ^2	p
		f	%	f	%		
Cyber	Victim	234	28.71	126	25.77	17.15	0.00
	Bully	49	10.02	44	5.40		
	Victim-Bully	144	29.45	197	24.17		
	Not-Involved	170	34.76	340	41.72		
Traditional	Victim	97	19.84	139	17.06	6.78	0.08
	Bully	21	4.29	22	2.70		
	Victim-Bully	75	15.34	107	13.13		
	Not-Involved	296	60.53	547	67.12		

Chi square analyses were further extended to test the differences in the prevalence of cyber and traditional bullying/victimization across residence type of university students. The results showed significant differences in prevalence of cyberbullying/victimization ($\chi^2 = 17.15, p < .01$) for students living in hostels in comparison to the students living in their homes. It is evident that a larger proportion of students living in hostels are involved as cyber victims (28.71%) and as cyber bullies (10.02%) in comparison to students living in their homes (25.77% as cyber-victims and 5.40% involved as cyber bully). Similarly, students categorized as cyber bully-victims have also significantly larger proportion of students living in hostel (29.45%) than students living in their homes (24.17%). Contrary to these, the non-involved group comprised of a significantly larger proportion of students living in their homes (41.72%) compare to students living in hostel (34.76%).

Similar trends are observed in prevalence of traditional bullying-victimization across students living in hostels and homes yet the differences in prevalence are non-significant ($\chi^2 = 6.78, p > .05$).

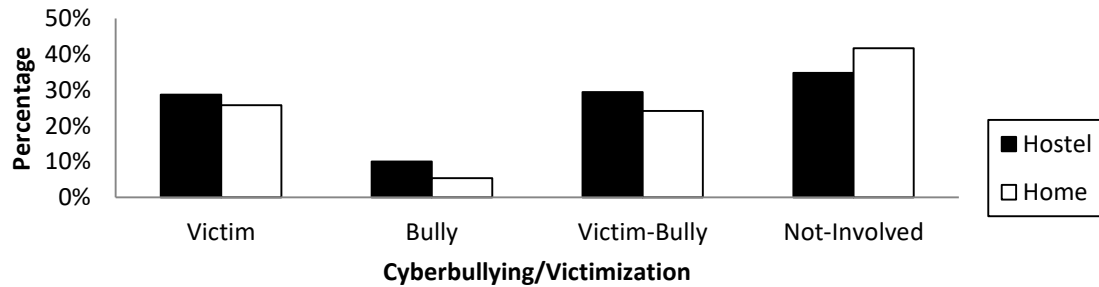


Figure 19. Cluster bar chart showing difference in the prevalence of Cyberbullying /victimization across residence type.

The figure 19 shows that students living in hostel are more involved in cyberbullying and victimization in comparison to students living in homes.

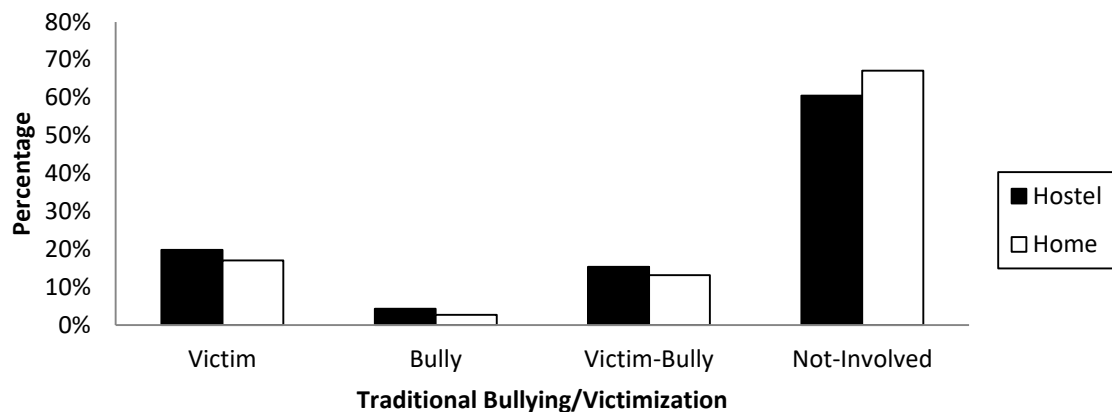


Figure 20. Cluster bar chart showing difference in prevalence of Traditional Bullying/Victimization across residence status.

The figure 20 shows higher trends of involvement in traditional bullying and victimization of students living in hostel yet the difference is non-significant.

Table 26

Overlap in the prevalence of Traditional and Cyberbullying/Victimization among university students (N =1314)

Traditional bullying/victimization	Cyber bullying/victimization							
	Victim		Bully		Victim-bully		Not-involved	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Victim	78	5.9%	11	.8%	101	7.7%	46	3.5%
Bully	6	.5%	11	.8%	21	1.6%	5	.4%
Victim-bully	35	2.7%	11	.8%	125	9.5%	14	1.1%
Not Involved	242	18.4%	62	4.7%	97	7.4%	449	34.2%

Crosstabs analysis was used to estimate the overlap between traditional and cyber bullying/victimization. The results are presented in Table 26 and also illustrated in Figure 21. The results showed that 5.9% of the sample was identified as both traditional and cyber victim. Only 0.8% of the sample was identified as both traditional and cyber bully. Further, 9.5% of the sample were involved as both traditional victim-bullies and cyber victim-bullies and 34.2% of the sample, were not involved in either traditional or cyber bullying/victimization.

Only 0.5% of the traditional bullies were classified as victims in cyber world whereas 0.4% of traditional bullies were not-involved in cyber bullying/victimization. Contrary to that finding, 0.8% of cyber-bullies were also victims in traditional context and 4.7% of cyber-bullies were not involved in any role of traditional bullying/victimization. A total of 101 (7.7%) traditional victims appeared in dual role as victim-bullies in the cyber world while 46 (3.5%) traditional victims were not-involved in any role of cyberbullying victimization. On the other hand, among the traditional victim-bully group, 2.7% were also cyber victims and only 0.8% were cyber-bullies, while 1.1% of them were not involved in any role of cyber bullying/victimization. Among the not-

involved group in tradition bullying/victimization, 18.4% were cyber victims, 4.7% were cyberbullies, and 7.4% were involved as cyber bully-victims.

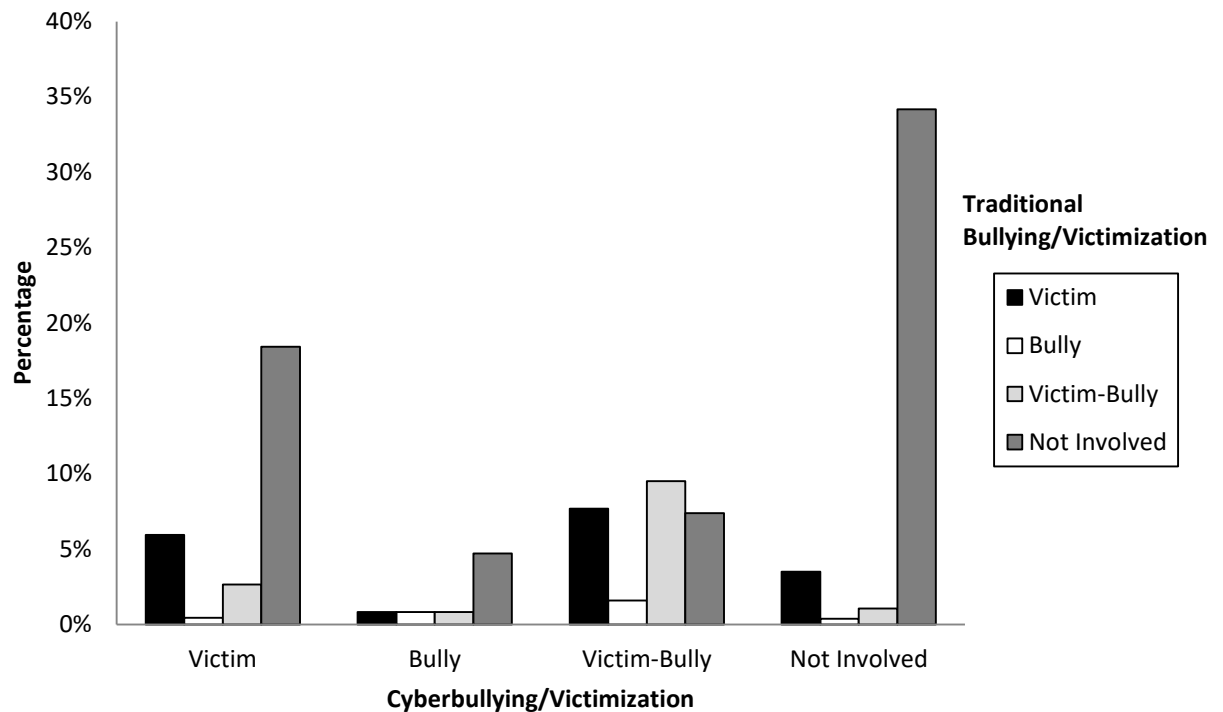


Figure 21. Clustered bar chart showing overlap in participant's roles in Cyber and Traditional bullying/victimization.

The figure shows that most of the sample overlapped in not-involved category followed by victim-bully category and approximately similar proportion overlapping is also found in victim category. The lowest overlapping appeared in bully category wherein only 11 cases (0.8%) of the sample were identified as bully in both traditional and cyber contexts.

Table 27

One-way ANOVAS for differences in study variables across Cyberbullying/victimization (N = 1312)

Variables	Cyber-victim (n = 361)		Cyber-bully (n = 95)		Cyber victim-bully (n = 343)		Not-Involved (n = 513)		F	p	Eta Sq
	M	SD	M	SD	M	SD	M	SD			
ICT Usage	58.49	10.05	59.48	10.19	61.79	9.68	55.82	11.61	22.11	.00	0.05
TS on Internet on Normal day	2.50	2.07	2.64	1.75	3.09	2.46	1.96	1.55	18.29	.00	0.05
TS on Internet on Off day	4.66	2.89	5.83	3.04	6.50	3.34	4.13	2.66	47.77	.00	0.10
TS on SNS	2.77	2.19	2.37	1.58	3.58	2.58	2.14	2.00	27.49	.00	0.07
Challenge	12.52	7.37	14.64	7.51	14.01	7.53	14.19	7.82	4.20	.01	0.01
Threat	7.35	4.95	6.56	4.58	8.15	4.43	5.56	4.37	24.41	.00	0.05
Centrality	6.32	4.57	5.89	3.99	6.59	3.88	4.66	4.13	18.27	.00	0.04
Resources	4.11	2.56	3.83	2.51	4.51	2.43	4.36	2.68	2.46	.06	0.01
Technical Coping	18.29	3.77	17.79	3.80	17.85	4.19	17.52	4.55	2.16	.09	0.01
Distal Advice	18.10	4.80	17.98	3.87	18.29	4.59	18.11	5.21	0.14	.94	0.00
Helplessness	10.57	3.23	10.69	3.17	11.13	3.34	9.55	3.17	16.03	.00	0.04
Retaliation	10.54	3.86	11.74	4.20	11.48	4.15	9.72	3.98	13.84	.00	0.04
Active Ignoring	14.83	3.29	14.00	3.23	14.45	3.14	14.12	3.90	3.07	.03	0.01
Close Support	15.82	3.29	15.37	3.46	15.54	3.49	14.89	3.66	5.07	.00	0.01
Assertiveness	13.19	4.09	13.67	3.75	13.69	3.94	12.44	4.37	6.54	.00	0.02
Social Desirability	8.48	2.28	8.13	2.34	8.26	2.39	8.36	2.34	0.86	.46	0.00
General Self-Efficacy	28.34	6.28	28.20	6.61	27.87	6.28	28.81	6.40	1.53	.20	0.00
ICT Self-Efficacy	59.18	14.71	63.60	12.23	61.87	15.71	60.64	13.83	3.19	.02	0.01
Privacy & Security	34.14	9.95	36.86	8.17	35.71	10.53	35.49	9.39	2.70	.04	0.01
DL	16.39	4.48	17.34	4.21	16.48	4.59	16.76	4.10	1.50	.21	0.00
Communication	8.55	2.89	9.05	2.97	9.47	3.15	8.41	2.79	9.97	.00	0.02
Depression	8.14	5.08	7.15	4.08	8.52	4.63	5.59	4.47	34.13	.00	0.07
Anxiety	8.51	4.79	7.61	4.19	9.57	4.34	6.09	4.08	47.27	.00	0.10
Stress	9.38	4.79	8.10	4.57	9.73	4.14	6.67	4.50	40.33	.00	0.09
Mental Well-being	45.17	11.63	49.69	10.39	46.27	11.87	48.91	11.41	9.58	.00	0.02

Note. DL = Differentiation & Learning, TS = Time Spend, SNS = Social Networking Sites

Mean differences on study variables across four groups in Cyberbullying/victimization including (1) Cyber-bully, (2) Cyber-victim, (3) Cyber victim-bully, and (4) Not-involved were tested using One-way ANOVAs. Results presented in Table 27 show significant mean differences on ICT Usage, time variables (time spend on internet on regular, and off days, and time spend on social networking sites), all dimensions of appraisal (except “resources” $F = 2.46, p > .05$), and all dimensions of coping (except “technical coping”, and “distal advice” $F = 2.16$, and $F = 0.14$ respectively, $p > .05$). Social desirability and general self-efficacy appeared to have non-significant differences whereas significant differences were observed on ICT self-efficacy total and its dimensions expect “differentiation and learning” ($F = 1.50, p > .05$) across various groups of cyber bullying-victimization. Furthermore, significant mean differences were found ($p < .01$) for mental health problems including “depression, anxiety and stress” as well as mental-well-being.

Table 28

Post hoc analysis for differences in study variables across Cyberbullying/Victimization (N = 1312)

Variable	Groups		MD(I-J)	SE	95% CI	
	I	J			LL	UL
ICT Usage	Victim	Victim-bully	-3.30*	.74	-5.21	-1.38
	Victim	Not Involved	2.67*	.74	.77	4.57
	Bully	Not Involved	3.66*	1.16	.64	6.69
Time Spend on Internet on Normal day	Victim-bully	Not Involved	5.97*	.73	4.08	7.85
	Victim	Not Involved	.54**	.14	.90	.18
	Bully	Not Involved	.68**	.21	1.24	.12
Time Spend on Internet on Off day	Victim-Bully	Not Involved	1.12**	.16	1.55	.70
	Victim	Not Involved	.53*	.19	1.03	.03
	Bully	Not Involved	1.70**	.34	2.60	.80
Time Spend on SNS	Victim-Bully	Not Involved	2.38**	.22	2.94	1.82
	Victim	Not Involved	.63**	.15	1.02	.23
	Bully	Not Involved	.24*	.20	.76	.28
	Victim-Bully	Not Involved	1.44**	.17	1.88	1.00

Continued.....

Variable	Groups		MD (I-J)	SE	95% CI	
	I	J			LL	UL
Challenge	Victim	Victim-bully	-1.48*	.57	2.94	-.03
	Victim	Not Involved	-1.66*	.52	-3.01	-.32
Threat	Victim	Not Involved	1.79*	.32	.96	2.63
	Bully	Victim-bully	-1.59*	.53	-2.98	-.20
Centrality	Victim-bully	Not Involved	2.59*	.31	1.80	3.38
	Victim	Not Involved	1.66*	.30	.87	2.44
Helplessness	Bully	Not Involved	1.23*	.45	.05	2.42
	Victim-bully	Not Involved	1.92*	.28	1.21	2.64
Retaliation	Victim	Not Involved	1.02*	.23	.43	1.61
	Bully	Not Involved	1.14*	.37	.18	2.09
Active Ignoring	Victim-bully	Not Involved	1.57*	.24	.95	2.20
	Victim	Victim-bully	-.94*	.33	-1.79	-.08
Close Support	Victim	Not Involved	.82*	.29	.08	1.57
	Bully	Not Involved	2.02*	.50	.72	3.32
Assertiveness	Victim-bully	Not Involved	1.76*	.31	.96	2.56
	Victim	Bully	.84	.39	-.17	1.84
Depression	Victim	Not Involved	.71*	.26	.06	1.37
	Victim	Not Involved	.93*	.25	.30	1.56
Anxiety	Bully	Not Involved	1.23*	.44	.07	2.38
	Victim-bully	Not Involved	1.25*	.30	.47	2.03
Stress	Victim	Not Involved	2.55*	.33	1.69	3.41
	Bully	Victim-bully	-1.36*	.49	-2.64	-.09
Mental Well-being	Bully	Not Involved	1.57*	.47	.35	2.78
	Victim-bully	Not Involved	2.93*	.32	2.10	3.75
ICT Self-Efficacy	Victim	Victim-bully	-1.07*	.35	-1.96	-.17
	Victim	Not Involved	2.41*	.31	1.61	3.22
Privacy & Security	Bully	Victim-bully	-1.97*	.50	-3.27	-.66
	Bully	Not Involved	1.51*	.48	.27	2.76
DL	Victim-bully	Not Involved	3.48*	.30	2.71	4.25
	Victim	Not Involved	2.71*	.32	1.88	3.54
Communication	Bully	Victim-bully	-1.63*	.53	-2.99	-.26
	Bully	Not Involved	1.430*	.51	.09	2.77
DL	Victim-bully	Not Involved	3.06*	.30	2.28	3.83
	Victim	Bully	-4.52*	1.24	-7.74	-1.29
Privacy & Security	Victim	Not Involved	-3.74*	.80	-5.79	-1.68
	Bully	Victim-bully	3.42*	1.26	.16	6.68
DL	Victim-bully	Not Involved	-2.64*	.82	-4.75	-.53
	Victim	Bully	-4.42*	1.51	-8.34	-.50
Communication	Victim	Bully	-2.72*	1.01	-5.33	-.11
	Victim-bully	Not Involved	.22	.71	-1.60	2.04
Communication	Victim	Victim-bully	-.93*	.23	-1.52	-.33
	Victim-bully	Not Involved	1.07*	.21	.52	1.61

Note. DL = Differentiation & Learning. * $p < .05$, ** $p < .01$

Group-wise comparisons were estimated in Post hoc analyses. *Games-Howell procedure* for Post hoc analysis is recommended (Field, 2014) when there are large

differences in sample size across groups. Results of Post hoc analyses, presented in Table 28, shows only significant pair-wise comparisons.

It is apparent that for ICT usage, a significant difference occurred wherein cyber victims appeared to score lower than cyber victim-bullies (mean difference = -3.30) yet higher than not-involved (mean difference = 2.67) group. Furthermore, cyber-bully group (mean difference = 3.66), and cyber victim-bully group (mean difference = 5.97) scored higher than not-involved group on ICT usage. Post hoc analysis of the time variables showed that not-involved group spend significantly less time on internet on regular days (mean difference = .54, .68, and 1.12) respectively from victim, bully, and victim-bully groups, and on off days (mean difference = .53, 1.70, and 2.38) respectively from victim, bully, and victim-bully groups. Furthermore, not-involved group also spend less time on SNS (mean difference = .63, .24, and 1.44 respectively from victim, bully, and victim-bully groups). Post hoc analyses of appraisal of cyber victimization showed that cyber victims have significantly lower scores than the cyber bully-victim and not-involved groups (mean difference = -1.48, 1.66 respectively) on the challenge dimension of appraisal. On the threat domain of appraisal, cyber-victims scored significantly higher than not-involved (mean difference = 1.97), and cyber victim-bullies scored significantly higher than cyber-bully and not-involved groups (mean differences = -1.59, 2.59 respectively). On the centrality domain of appraisal, cyber-victims, cyber-bullies, and cyber victim-bullies had significantly higher score (mean differences = 1.66, 1.23, and 1.92 respectively) than the not-involved participants.

Post hoc analyses of coping strategies showed that cyber-victims, cyber-bullies, and cyber victim-bullies scored significantly higher on the helplessness coping (mean

differences = 1.02, 1.14, and 1.57 respectively) than the not-involved participants. Pair-wise comparison of retaliation coping showed that cyber-victims use less retaliation coping than cyber victim-bullies (mean difference = -0.94), and cyber-bullies (mean difference = 0.84). In addition, not-involved students use lower levels of retaliation coping than cyber-bullies and cyber-victim bullies (mean differences = 2.02, and 1.76 respectively). Post hoc analyses further showed that victims are significantly higher than not-involved groups for both active ignoring (mean difference = -0.71), and close support coping (mean difference = 0.93). Similarly, for the assertiveness coping, cyber-bullies and cyber victim-bullies scored significantly higher (mean differences = 1.23, and 1.25 respectively) than the not-involved participants.

The groups also significantly varied on mental health problems. The cyber-victims, cyber-bullies, and cyber victim-bullies score significantly higher (mean differences = 2.55, 1.57, 2.93 respectively) on depression than the not-involved participants. Furthermore, cyber victim-bully group appeared to be more depressed than the cyber-bully group (mean difference = -1.36). Similar trends also appeared on anxiety showing that cyber-victims, cyber-bullies, and cyber victim-bullies had significantly higher level of anxiety (mean differences = 2.41, 1.51, and 3.48 respectively) than the not-involved students. In addition, cyber victim-bullies also scored significantly higher than both cyber-victims, and cyber-bullies (mean differences = -1.07, and -1.97). The Post hoc analysis of stress also showed that cyber-victims, cyber-bullies, and cyber victim-bullies scored significantly higher (mean differences = 2.71, 1.43, and 3.06 respectively) than the no-involved students. Furthermore, cyber victim-bullies scored significantly higher than the cyber-bully group (mean difference = -1.63) on stress

domain. Post hoc analyses of mental well-being showed that cyber-victims, and cyber-victim-bullies reported significantly lower level of mental well-being (mean differences = -3.74, and -2.64 respectively) than the not-involved participants. Both cyber-victims, and cyber victim-bullies groups had significantly lower levels of mental well-being (mean difference = -4.52, 3.43 respectively) than the cyber-bullies.

Finally, Post hoc analysis of ICT self-efficacy showed that cyber-victims are significantly lower than cyber-bullies on ICT self-efficacy (mean difference = -4.42) as well as two of its sub-dimensions including privacy and security (mean difference = -2.72), and communication (mean difference = -0.93). In addition, cyber victim-bullies scored significantly higher on differentiation and learning domain (mean difference = 0.22) and communication domain of ICT self-efficacy (mean difference = 1.07) than the not-involved students.

Table 29

One-way ANOVAS for differences in study variables across Traditional Bullying/Victimization (N = 1312)

Variables	Victim (n = 236)		Bully (n = 43)		Victim-Bully (n = 184)		Not Involved (n = 849)		F	p	Eta Sq
	M	SD	M	SD	M	SD	M	SD			
General Self Efficacy	28.69	6.03	26.99	6.75	26.64	6.28	28.76	6.38	6.51	.00	0.01
Depression	7.73	4.89	7.56	3.83	9.05	4.44	6.58	4.83	14.94	.00	0.03
Anxiety	8.66	4.96	7.88	3.64	9.72	4.30	7.10	4.43	20.53	.00	0.05
Stress	9.04	4.41	7.89	3.97	10.28	3.98	7.71	4.81	17.84	.00	0.04
Mental well-being	46.76	11.48	43.10	11.11	44.33	12.38	48.23	11.40	7.87	.00	0.02
Social Desirability	8.24	2.10	8.23	2.64	8.34	2.60	8.39	2.32	0.31	.81	0.00

One-way ANOVAs were conducted to test mean differences on study variables across four categories of Traditional Bullying/victimization including 1. Bully, 2. Victim, 3. Bully-Victim, and 4. Not-involved. Results presented in Table 29 shows significant mean differences on general self-efficacy, mental health problems, and mental well-being.

Table 30

Post hoc for differences in study variables across Traditional Bullying/Victimization (N = 1312)

Variable	Groups		MD (I-J)	SE	95% CI	
	I	J			LL	UL
General Self Efficacy	Victim	Victim-bully	2.05*	.61	.48	3.62
	Victim-bully	Not Involved	-2.12*	.51	-3.45	-.79
Depression	Victim	Victim-bully	-1.32*	.46	-2.51	-.14
	Victim	Not Involved	1.15*	.36	.21	2.08
Anxiety	Victim-bully	Not Involved	2.47*	.37	1.52	3.43
	Victim	Not Involved	1.56*	.36	.63	2.49
Stress	Bully	Victim-bully	-1.84*	.65	-3.54	-.13
	Victim-bully	Not Involved	2.62*	.36	1.70	3.54
	Victim	Victim-bully	-1.24*	.41	-2.30	-.18
Mental well-being	Victim	Not Involved	1.33*	.33	.47	2.19
	Bully	Victim-bully	-2.39*	.70	-4.24	-.53
	Victim-bully	Not Involved	2.57*	.34	1.69	3.44
Mental well-being	Victim	Not Involved	-1.47*	.48	-1.94	-.98
	Bully	Not Involved	-5.13*	1.74	-9.76	-.49
	Victim-bully	Not Involved	-3.90*	1.00	-6.49	-1.31

Note. * $p < .05$.

Group-wise comparisons of victims, bullies, victim-bullies and not-involved in traditional bullying/victimization were estimated using Post hoc analyses. Results presented in Table 30 shows only significant pair-wise comparisons.

Post hoc analyses on general self-efficacy showed that victim-bully group is significantly lower than victim (mean difference = 2.05), and not-involved (mean

difference = -2.12) groups. The groups also significantly varied on mental health problems. Victim-bullies reported significantly higher level of depressive symptoms (mean difference = 1.32) than pure victims. Further, pure victim and victim-bully, both groups scored higher on depressive symptoms (mean difference = 1.14, and 1.32 respectively) than the not-involved group. Similar trends also appeared on anxiety showing that victim and victim-bully group has higher level of anxiety (mean difference = 1.56, and 2.62 respectively) in comparison to not-involved group. Additionally, victim-bullies scored higher than pure bullies (mean difference = -1.83) on anxiety symptoms. The Post hoc analysis on stress showed that victim-bullies scored significantly higher than pure victims and pure bullies, (mean difference = -1.24, and -2.39) on stress symptoms. Further, both groups victim-bully and pure victim have significantly higher level of stress (mean difference = 2.57, and 1.33 respectively) than not-involved group. Post hoc analyses on mental well-being showed that victims, victim-bullies and pure bullies have significantly lower level of mental well-being (mean difference = -1.47, -5.13, and -3.90 respectively) than the not-involved participants.

Table 31

Step-wise regression analysis to estimate incremental effect of Cyberbullying/victimization over and above Traditional bullying/victimization on depression, anxiety, stress and mental well-being of university students (N = 1246)

Steps	Predictors	Dependent Variables							
		Depression		Anxiety		Stress		Well-Being	
		β	ΔR^2	β	ΔR^2	β	ΔR^2	B	ΔR^2
1	Control		.03		.03		.04		.31
2	Traditional Victimization	.15**	.05	.24**	.08	.20**	.07	-.02**	.01
	Traditional Bullying	.11**		.09**		.11**		-.01**	
3	Cyber Victimization	.22**	.03	.27**	.05	.25**	.04	-.01*	.01
	Cyberbullying	-.06		-.02		-.04		-.01*	
	R ² Total		.11		.16		.15		.33

Note. Step1. Control: Age, Gender, Residence Status, Academic Discipline Category, Social Desirability, General Self-efficacy, and ICT Self-efficacy. Step2. Control: Age, Gender, Residence Status, Academic Discipline Category, Social Desirability, General Self-efficacy, and ICT Self-efficacy (effect of Traditional Bullying, Traditional Victimization). Step3. Control: Age, Gender, Residence Status, Academic Discipline Category, Social Desirability, General Self-efficacy, ICT Self-efficacy, Traditional Bullying, Traditional Victimization (incremental effect of Cyber Victimization, and Cyber Bullying)

* $p < .05$, ** $p < .01$.

Stepwise, non-hierarchical regression analyses were conducted for all four dependents variables to estimate unique/incremental effect of cyber bullying and victimization. In first step of the regression, effect of demographic and confounding variables (i.e., age, gender, residence status, academic discipline category, social desirability, general self-efficacy, and ICT self-efficacy) was controlled. In second step, effect of traditional bullying, and traditional victimization were estimated. In third step, unique/incremental effect of cyberbullying, and cyber victimization were estimated while controlling for the effect of demographics, confounding, and traditional bullying/victimization. The step-wise regression analyses were conducted separately for all four dependent variables including, depression, anxiety, stress, and mental well-being.

Results presented in Table 31 shows that demographic category and confounding variables accounted for only 3% variance in depression and anxiety each, 4% variance in stress, and 31% variance in mental well-being. Both traditional bullying and traditional victimization significantly positively predicted depression, anxiety and stress explaining 5%, 8%, and 7% variance respectively. However, both traditional victimization and traditional bullying significantly negatively predicted mental well-being and explained 1% additional variance. The analysis further showed that controlling for demographic, confounding variables and traditional bullying/victimization, only cyber victimization significantly positively predicted depression, anxiety, and stress explaining 3%, 5%, and 4% additional variance respectively. Further, both cyber victimization and cyberbullying significantly negatively predicted mental well-being and explained 1% additional variance. Overall regression model including both traditional and cyber bullying/victimization explained 11% variance in depression, 16% variance in anxiety, 15% variance in stress and 33% variance in mental well-being.

Table 32

Moderating role of Gender for the effect of Cyber victimization on Depression (N = 1243)

Predictors	B Model1	Model 2		
		B	95% CI	
			LL	UL
Constant	9.91**	10.76**	7.38	14.14
Age	-0.07	-0.08	-0.22	0.06
Social Desirability	-0.07	-0.07	-0.18	0.04
General Self-efficacy	-0.08**	-.08**	-0.13	-0.03
ICT Self-efficacy	0.01	0.01	-0.01	0.03
Traditional Victimization	0.07*	.08**	0.02	0.14
Traditional Bullying	0.10	0.06	-0.03	0.16
Cyber Victimization	0.10*	.10**	0.07	0.14
Gender	0.38	0.63	1.28	0.02
Cyber Victimization*Gender		0.07*	0.13	0.00
R^2	.08		0.09	
ΔR^2			0.01	
F	15.57**		14.37**	
ΔF			4.40*	

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

* $p < .05$, ** $p < .01$.

Table 32 shows the moderating role of gender for the effect of cyber victimization on depression controlling for age, social desirability, general self-efficacy, ICT self-efficacy, and traditional bullying/victimization. The results showed a significant interaction effect confirming moderating role of gender. It is evident that victimization tends to increase depression in both male and female university student. Simple slope analysis showed that for male students, effect of cyber victimization is low ($B = .08$, $p <$

.01) than female students ($B = .14, p < .01$). The results suggest that cyber victimization has more serious consequences for female students in terms of developing depressive symptoms.

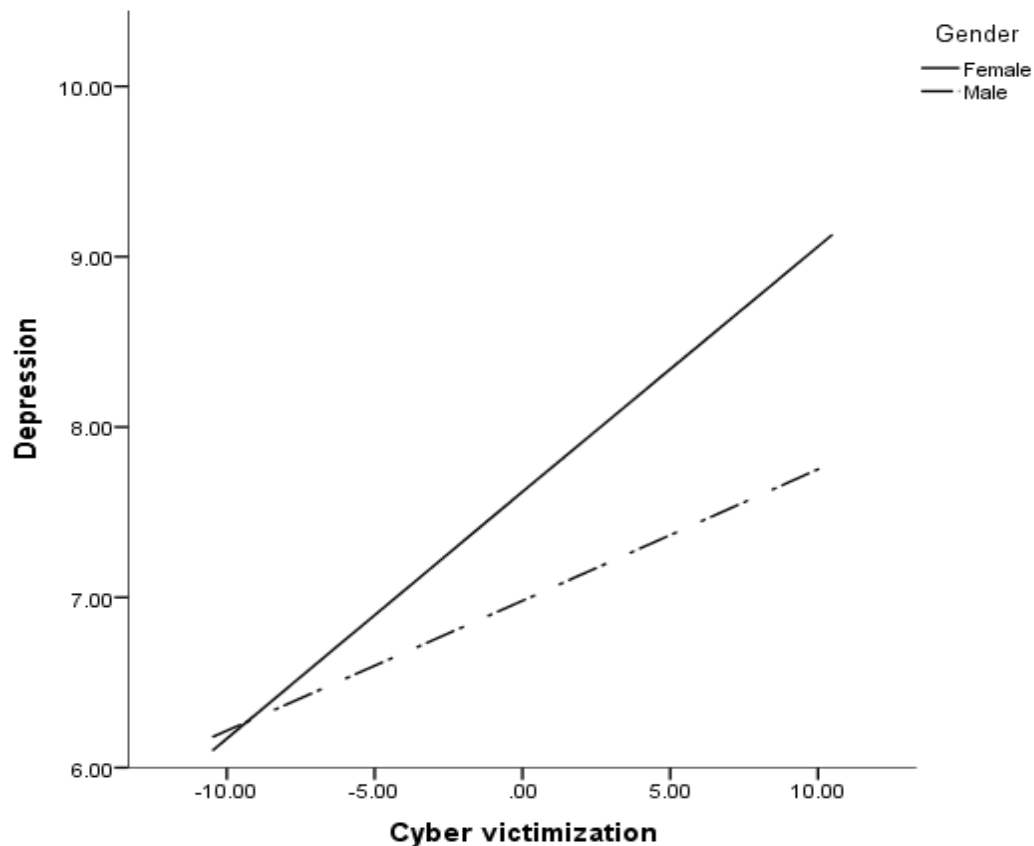


Figure 22. Graph illustrates moderating role of Gender for the effect of Cyber victimization on Depression.

The Figure 22 shows that there is a positive relationship between cyber victimization and depression. However, the relationship between cyber victimization and depression tend to be weaker for male students compared to female university students. The substantial increase in slope of the regression line for female students confirms the moderation. It is evident that female students are more at risk of developing depressive symptoms as a consequence of cyber victimization.

Table 33*Moderating role of Gender for the effect of Cyber victimization on Anxiety (N = 1225)*

Predictors	B Model1	Model 2		
		B	95% CI	
			LL	UL
Constant	8.75**	9.91**	6.77	13.04
Age	-0.07	-0.08	-0.21	0.04
Social Desirability	-0.03	-0.03	-0.13	0.08
General Self-efficacy	-0.09**	-0.09**	-0.13	-0.04
ICT Self-efficacy	0.03**	0.03**	0.01	0.05
Traditional Victimization	0.12**	0.13**	0.08	0.19
Traditional Bullying	0.04	-0.02	-0.11	0.07
Cyber Victimization	0.11*	0.13**	0.10	0.16
Gender	-0.49	0.89**	1.49	0.29
Cyber Victimization*Gender		0.11**	0.16	0.05
R^2	0.14		0.15	
ΔR^2			0.01	
F	25.51*		24.26**	
ΔF			12.37**	

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

* $p < .05$, ** $p < .01$.

Table 33 shows the moderating role of gender for the effect of cyber victimization on anxiety controlling for age, social desirability, general self-efficacy, ICT self-efficacy, and traditional bullying/victimization. The results showed a significant interaction effect confirming moderating role of gender. It is evident that victimization tends to increase anxiety in both male and female university student. Simple slope analysis, however showed that for male students effect of cyber victimization is low ($B = .09$, $p < .01$) than

female students ($B = .20, p < .01$). The results suggest that female students are more vulnerable than male students to develop anxiety symptoms due to cyber victimization.

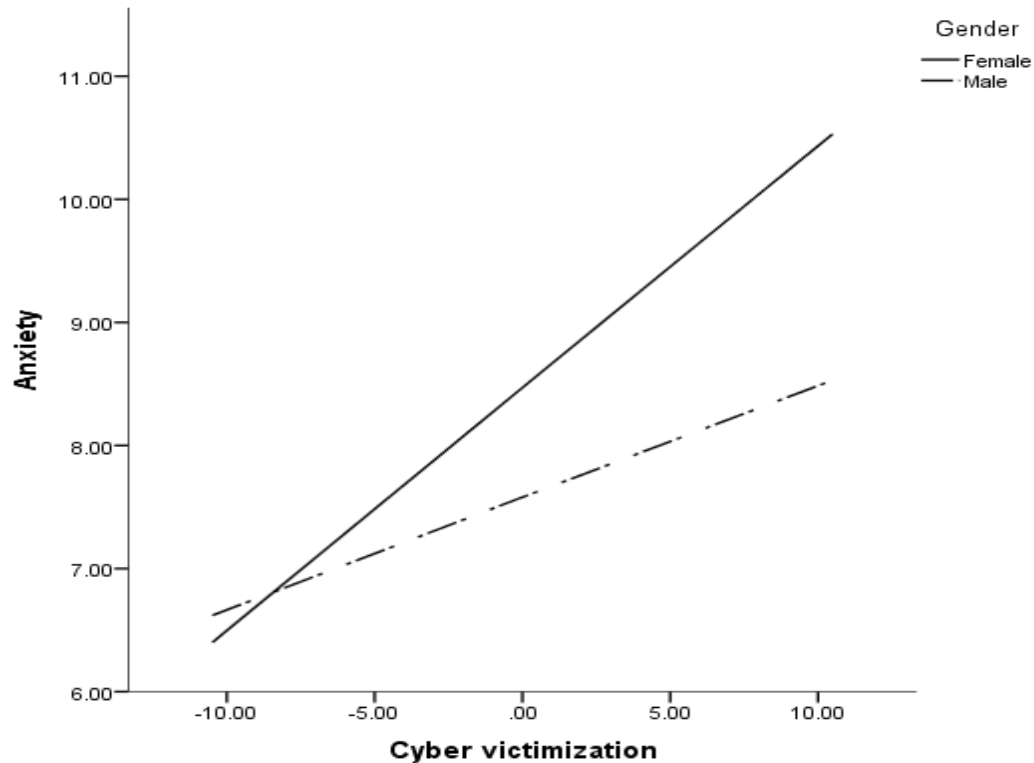


Figure 23. Graph depicting moderating role of Gender for the effect of cyber victimization on Anxiety.

The Figure 23 shows that there is a positive relationship between cyber victimization and anxiety. However, the relationship between cyber victimization and anxiety tend to be weaker for male students compared to female university students. The substantial increase in slope of the regression line for female students confirms the moderation. It is evident that female students are more at risk of developing anxiety symptoms due to cyber victimization.

Table 34*Moderating role of gender for the effect of cyber victimization on stress (N = 1242)*

Predictors	B Model1	Model 2		
		B	95% CI	
			LL	UL
Constant	10.88**	12.50**	9.27	15.74
Age	-0.21**	-.22**	-0.35	-0.08
Social Desirability	-0.08	-0.08	-0.19	0.03
General Self-efficacy	-0.05*	-.05*	-0.09	0
ICT Self-efficacy	0.031**	.03**	0.01	0.05
Traditional Victimization	0.10**	.11**	0.06	0.17
Traditional Bullying	.070	0.03	-0.06	0.13
Cyber Victimization	0.11**	.12**	0.09	0.15
Gender	.010	0.25	-0.87	0.36
Cyber Victimization*Gender		.07*	0.13	0.01
R^2	0.13		0.14	
ΔR^2			0.01	
F	23.45**		21.43**	
ΔF			4.69*	

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

* $p < .05$, ** $p < .01$.

Table 34 shows the moderating role of gender for the effect of cyber victimization on stress controlling for age, social desirability, general self-efficacy, ICT self-efficacy, and traditional bullying/victimization. The results showed a significant interaction effect confirming moderating role of gender. It is evident that victimization tends to increase stress in both male and female university student. Simple slope analysis, however showed that for male students effect of cyber victimization is low ($B = .09$, $p < .01$) than female students ($B = .16$, $p < .01$). These results suggest that female students are more prone to experience stress in comparison to male students due to cyber victimization.

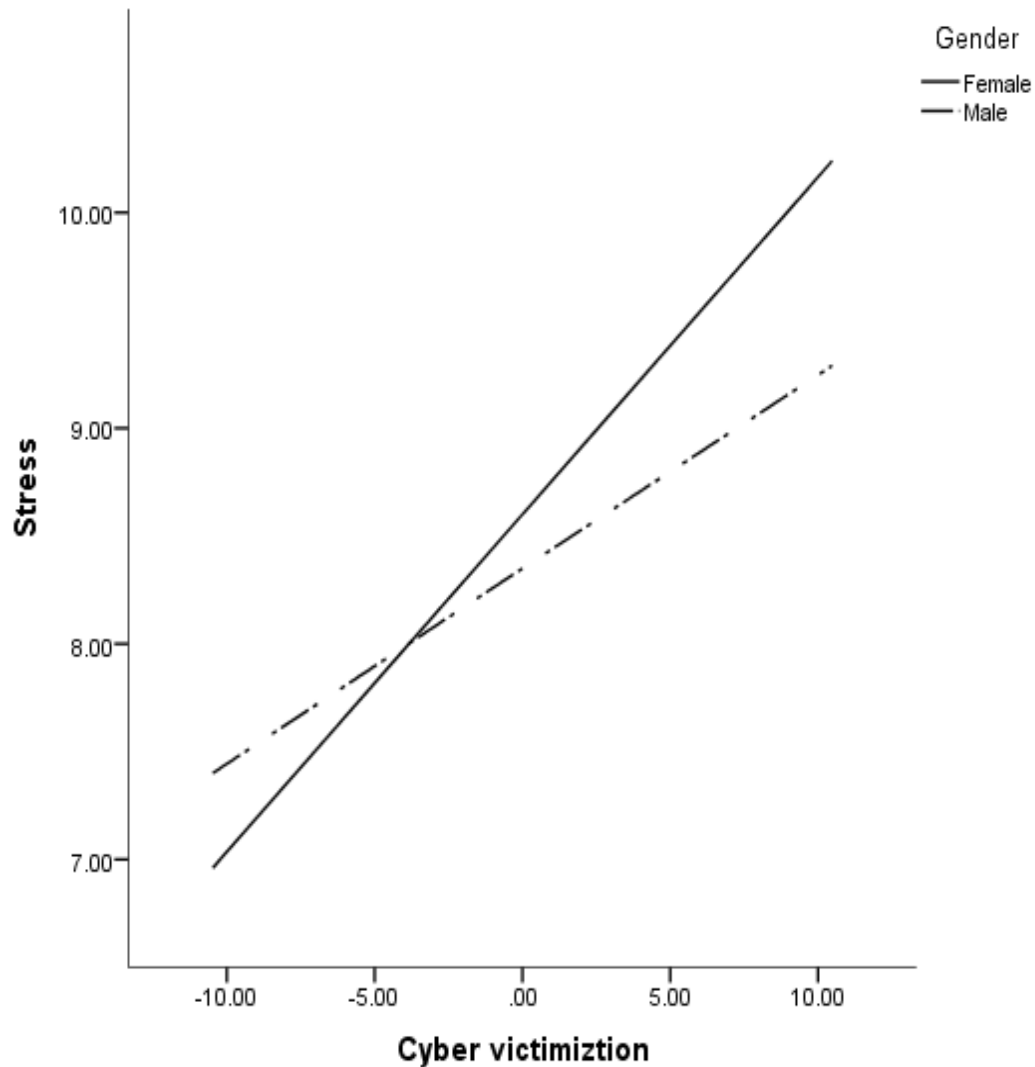


Figure 24. Graph depicting moderating role of Gender for the effect of Cyber victimization on Stress.

The Figure 24 shows that there is a positive relationship between cyber victimization and stress. However, the relationship between cyber victimization and stress tend to be weaker in male compared to female university students. The substantial increase in slope of the regression line for female students confirms the moderation. It is evident that female students are more at risk of developing stress than male students.

Table 35

Moderating role of Age for the effect of Cyberbullying perpetration on Depression (N = 1243)

Predictors	B Model1	Model 2		
		B	95% CI	
			LL	UL
Constant	9.81**	8.27**	6.38	10.15
Gender	0.15	0.10	-0.5	0.7
Social Desirability	-0.07	-0.07	-0.19	0.04
General Self-efficacy	-0.08**	-.08**	-0.13	-0.03
ICT Self-efficacy	0.01	0.01	-0.01	0.03
Traditional Victimization	0.14**	.15**	0.09	0.21
Traditional Bullying	0.16**	.15**	0.04	0.25
Cyber Victimization	0.01	0.00	-0.06	0.05
Age	-0.08	-0.08	-0.22	0.06
Cyber Bullying*Age		.02*	0.01	0.04
R^2	0.06		0.07	
ΔR^2			0.01	
F	10.81**		21.63**	
ΔF			4.13*	

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

* $p < .05$, ** $p < .01$.

Table 35 shows the moderating role of age for the effect of cyberbullying perpetration on depression controlling for gender, social desirability, general self-efficacy, ICT self-efficacy, and traditional bullying/victimization. The results showed a significant interaction effect confirming moderating role of age. Cyberbullying appeared to have different effect on depressive symptoms for younger versus older university students. Simple slope analysis, showed that for younger university students, cyberbullying appeared to have a negative effect on depressive symptoms (associated with a decrease in depressive symptoms) ($B = -.04$, $p < .01$) whereas for older university students cyberbullying is associated with an increase in their depressive symptoms ($B =$

.04, $p < .01$). The results suggest that cyberbullying perpetration has more negative consequences for older university students in terms of developing depressive symptoms.

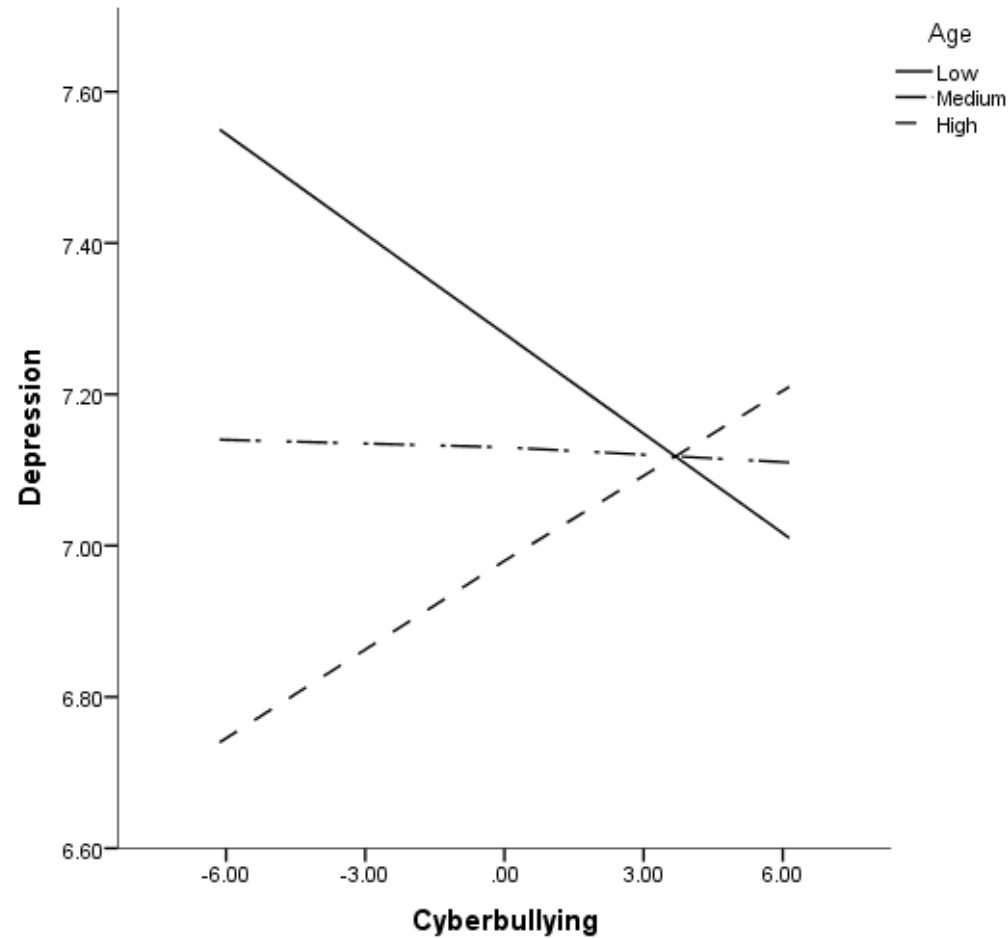


Figure 25. Graph illustrate moderating role of Age for the effect of Cyberbullying on Depression.

The Figure 25 shows that there is a positive association between cyberbullying perpetration and depressive symptoms for older university students; however, this association becomes negative for younger university students.

Model Testing:

The complexity of the conceptual model made it unsuitable to test the whole model completely using any software. Given the testing of 112 interactions created by only two moderators for the conceptual model of the study resulted in multicollinearity issue. The multicollinearity is a violation to the assumptions of parametric testing and may produce unstable and unreliable results (Field, 2009). Variance Inflation Factor (VIF) is used to identify multicollinearity issue in the data. It is recommended that an average value of $VIF > 1$ may result in biased estimates (Bowerman & O'Connell, 1990). VIF were estimated using all predictors in the model and the results showed a range of VIF values form 1.04 to 2.57 that yielded a high average VIF. To handle multicollinearity issue, experts suggest dividing the model into sub-models based on the classification of highly correlated variables (Field, 2013).

The model (see p. 94) was divided into seven sub-models each involving one of the seven coping techniques as the level 2 mediator. Hence model testing was performed seven times in *Mplus* Version 8 (Muthén & Muthén, 2017) to test the effect of cyber victimization on depression, anxiety, stress, and mental well-being serially mediated by four types of cognitive appraisal of cyber victimization as level one mediators and one of the seven coping techniques as level 2 mediators. Each of the seven sub-models consisted 32 moderation (1 predictor, 4 Level-1 mediators, 1 Level-2 mediator, 4 dependent, 2 moderators: $1*4*1*4*2 = 32$) on direct and indirect paths. Though some of the moderations for the direct paths were repeated in each model, these repetitions were necessary to test moderations of indirect effects for the specific type of coping used at level-2 mediator in the serial mediation. All seven serially mediated moderation models

were assessed for fit indices and significant conditional direct and indirect effects were interpreted from each model.

Following are the analyses and results to test the effect of cyber victimization on depression, anxiety, stress, and mental well-being serially mediated through cognitive appraisals and coping strategies and moderated by general and ICT self-efficacy. All seven models are first presented graphically and results of each analysis are then presented in the corresponding table and findings are interpreted. First part of the model showing moderated effect of both general and ICT self-efficacy for the relationship between cyber victimization and four types of cognitive appraisal was same for all seven models. The results of these eight interactions are discussed only in description of model-1. The Level-2 mediator (i.e. each coping strategy) was changed for all further models and hence serially mediated moderation results are presented and discussed for each of the seven models.

The results from the first part of the model estimated moderating role of both general and ICT self-efficacy for the relationship between cyber victimization and cognitive appraisals of cyber victimization while controlling for the effect of age, gender, traditional bullying/victimization, and social desirability showed that general self-efficacy moderated the effect of cyber victimization on challenge appraisal. The model fit indices showed a good fit of the model to the data (i.e., $\chi^2 (df) = 9.52 (10)$, CFI = 1.00, TLI = 1.00, RMSEA = 0.00). Though cyber victimization appeared to have a negative effect on challenge appraisal yet the interaction effect showed that cyber victimization resulted in an increase in perception of challenge for students having higher level of general self-efficacy. Contrary to this, cyber victimization increase threat appraisal yet

the effect was significantly moderated by general self-efficacy. The interaction effect showed that students with low level of general self-efficacy have a significant positive association between cyber victimization and perception of threat appraisal yet this association is decreased for the students having higher level of general self-efficacy. These results suggest that having higher level of general self-efficacy reduce the threat appraisal in response to cyber victimization. Centrality appraisal also appeared to be moderated by general self-efficacy suggesting that cyber victimization associated with an increase in centrality appraisal but the association decreased for students with higher level of general self-efficacy. Neither general nor ICT self-efficacy appeared to moderate effect of cyber victimization on resources appraisal.

Table 36

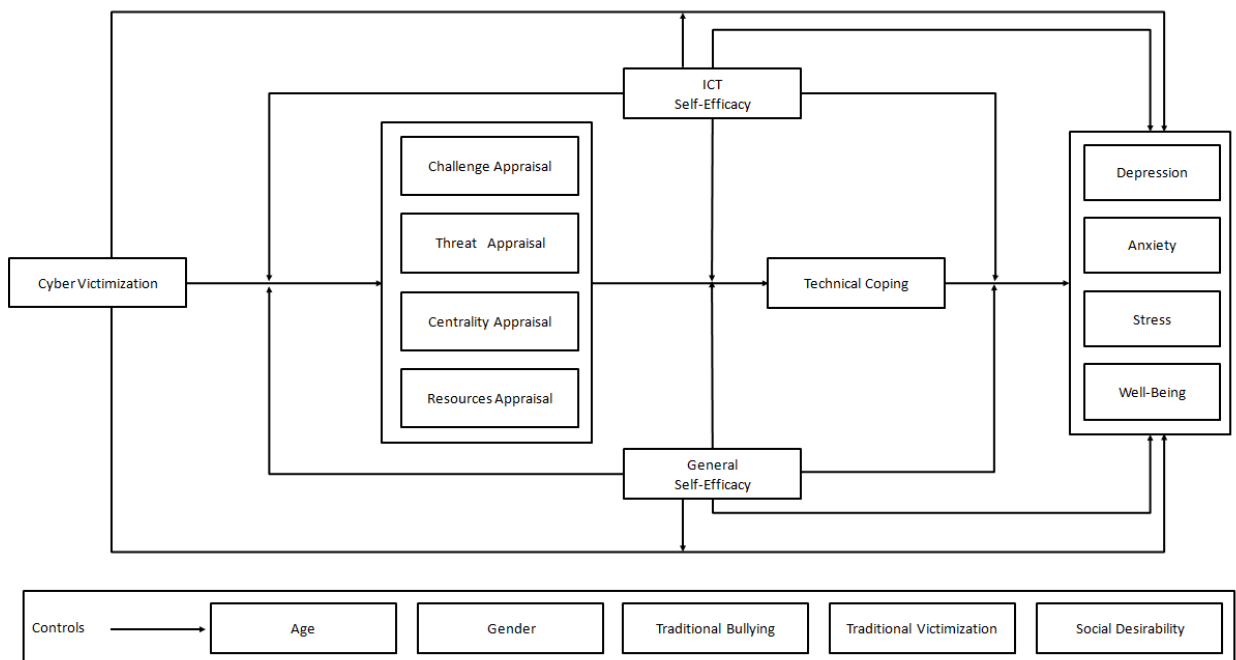
Moderation by general and ICT self-efficacy for the effect of cyber victimization on appraisal (N = 1314)

Category	Variables	Mediators-L1			
		Challenge	Threat	Centrality	Resources
		β	β	β	β
Controls	Age	-.03	-.06*	.01	-.11**
	Gender	-.07*	.07*	.08*	.10**
	Traditional Victimization	-.01	.11**	.05	.02
	Traditional Bullying	.00	.11**	.13**	.04
	Social Desirability	.06*	-.03	-.04	-.05
Predictor	Cyber Victimization	.01	.10**	.08*	-.04
Moderators	ICT Self-Efficacy	.12**	.01	.00	.13**
	General Self-Efficacy (GSE)	.34**	-.12**	-.11**	.12**
Interactions	ICT-SE*Cyber Victimization	-.05	.02	.00	-.03
	GSE*Cyber Victimization	.11**	-.07*	-.08*	-.04
	R^2	.19	.09	.07	.08

Note. L1 = Level1; L2 = Level 2; * $p < .05$, ** $p < .01$.

Serially Mediated Moderation

In the conceptual model of the study effect of cyber victimization was tested on four outcomes including depression, anxiety, stress, and mental well-being. Model 1 as shown in Figure 26 included all four appraisals as level-1 mediators and Technical Coping as level-2 mediator.



$$\chi^2 (df) = 6.38 (8), CFI = 1.00, TLI = 1.00, RMSEA = 0.00$$

Figure 26. Serially mediated moderation by General and ICT self-efficacy for the effect of Cyber victimization on Depression, Anxiety, Stress and Mental well-being through four types of Appraisal and Technical Coping.

The figure 26 shows the conceptual description of the serial mediations (paths between cyber victimization and outcomes) through appraisal followed by technical coping. The figure illustrates that the paths are moderated by both general and ICT self-efficacy for each direct and indirect effect.

Table 37

Serially mediated moderation analysis by Technical coping for the effect of Cyber victimization on Mental health problems and Mental well-being (N = 1314)

Category	Variables	Mediator-L2		Dependents		
		Technical Coping	Depression	Anxiety	Stress	Well-Being
		<i>B</i>	<i>B</i>	β	<i>B</i>	β
Controls	Age	.08**	.04	.04	.09**	.05*
	Gender	.13**	.07*	.08**	.04	.02
	Traditional Victimization	.01	.07*	.14**	.10**	.00
	Traditional Bullying	.11**	.01	.01	.01	.01
	Social Desirability	.01	.01	.02	.00	.06*
Predictor	Cyber Victimization	.08*	.20**	.23**	.21**	-.05*
Mediators-L1	Challenge	.05	.03	.02	.03	.07
	Threat	.03	.08*	.11**	.15**	.047
	Centrality	-.17**	.12*	.08*	.09*	.03
	Resources	.10**	.01	.03	.03	.06*
Mediator-L2	Technical Coping		.00	.05	.02	.04
Moderators	ICT self-efficacy	.27**	.04	.04	.04	.26**
	General Self-Efficacy	.15**	-.15**	-.13**	-.13**	.29**
Interactions	ICT-SE*Cyber Victimization	.04*	.01	.04	.01	.00
	ICT-SE*Challenge	.03	.05	.01	.02	.04
	ICT-SE*Threat	.01	.08	.06	.06	.05
	ICT-SE*Centrality	.04	.16**	.15**	.16**	.01
	ICT-SE*Resources	.03	.04	.01	.01	.03
	ICT-SE*Technical Coping		.13**	.12**	.10**	.01
	GSE*Cyber Victimization	.04	.09**	.08*	.08*	.04
	GSE*Challenge	.02	.05	.05	-.08*	.04
	GSE*Threat	.02	.11	.13*	.16**	.03
	GSE*Centrality	.03	.09	.15*	.17**	.09
	GSE*Resources	.05	.04	.01	.02	.05
	GSE*Technical Coping		.14**	.08*	.09*	.03
	<i>R</i> ²	.29	.19	.22	.26	.32

Note. L1 = Level1; L2 = Level 2; ICT-SE = ICT Self-Efficacy; GSE = General Self-Efficacy.

p* < .05, *p* < .01.

The moderation by both general and ICT self-efficacy were tested for direct and indirect effect of cyber victimization on four outcomes variables including depression,

anxiety, stress, and mental well-being through four types of appraisal followed by technical coping. Results presented in Table 37 showed that though both general and ICT self-efficacy have a positive effect on technical coping. ICT self-efficacy further positively moderated the effect of cyber victimization on technical coping suggesting that university students who are high on ICT self-efficacy have high use of technical coping. ICT self-efficacy also moderate the serially mediated effect of cyber victimization ($\beta = .20, p < .01$) through centrality appraisal ($\beta = .16, p < .01$) and technical coping ($\beta = .13, p < .01$) on depression. It suggested that negative impact of centrality appraisal through technical coping ($\beta = -.17, p < .01$) was decreased for the students who were high on ICT self-efficacy and relied more on technical coping. General self-efficacy also appeared to moderate the effect of technical coping on depression suggesting that students who were high on general self-efficacy and used more technical coping, have lower chances to get depressed.

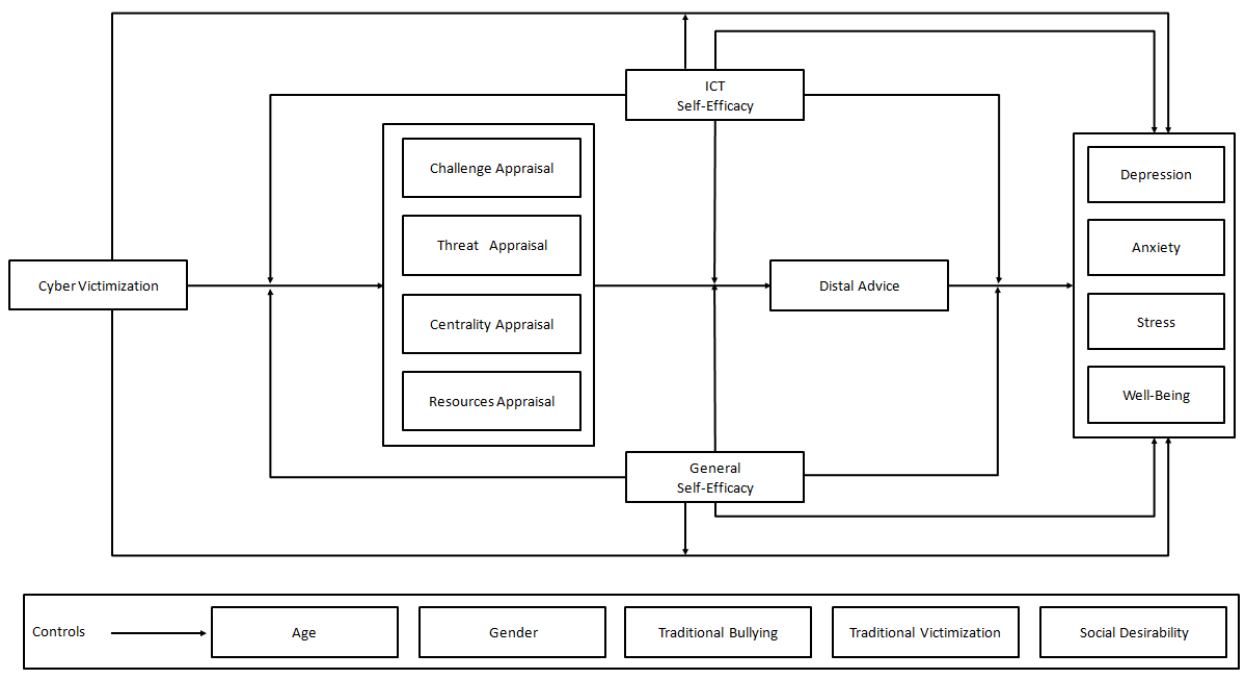
Only general self-efficacy moderated the direct effect of cyber victimization on anxiety. Though cyber victimization is associated with an increase in ($\beta = .23, p < .01$), the increase was less for the students with higher level of general self-efficacy ($\beta = .13, p < .01$). Indirect effect of cyber victimization through appraisal was moderated by both general and ICT self-efficacy. Similar to depression, cyber victimization appeared to increase anxiety and the relationship become stronger for the students using centrality appraisal but for the students with higher level of ICT self-efficacy the increase was less than students with low level of ICT self-efficacy ($\beta = .12, p < .01$). General self-efficacy also resulted in similar moderating trends for the effect of cyber victimization on anxiety through centrality and threat appraisal. The results suggested that cyber victimization is

associated with an increase in anxiety and the relationship was stronger for the students high on threat and centrality appraisal yet the increase in the strength of the relationship was less for the students with high level of general self-efficacy. The serial indirect effect of cyber-victimization on anxiety further decreased for the students high on either general or ICT self-efficacy and using technical coping more frequently.

Similar to depression and anxiety, general self-efficacy moderated the direct effect of cyber victimization on stress. The strength of the relationship decreased for the students with higher level of general self-efficacy ($\beta = .13, p < .01$). Indirect effect of cyber victimization through appraisal was moderated by both general and ICT self-efficacy. Similar to depression, and anxiety cyber victimization increases stress ($\beta = .20, p < .01$) mediated through centrality appraisal yet for the students with higher level of ICT self-efficacy and general self-efficacy the strength of the relationship decreased ($\beta = .16$, and $\beta = .17$ respectively; $p < .01$). General self-efficacy moderated the effect of cyber victimization on stress through all types of appraisal except resources appraisal. The results suggested that cyber victimization is associated with an increase in stress and the relationship was stronger for the students high on threat and centrality appraisal and low for the students who were high on challenge appraisal. Further, the strength of the relationship was decreased for the students with high level of general self-efficacy. Similar to depression and anxiety, the serial indirect effect of cyber victimization on stress further decreased for the students high on either general or ICT self-efficacy and using technical coping more frequently.

Cyber victimization has indirect effect on mental well-being through resources appraisal yet no moderation was found for the relationship. The model explained 29%

variance in technical coping, 19% in depression, 22% in anxiety, 26% in stress and 32% in mental well-being.



$\chi^2 (df) = 1.42 (2), CFI = 1.00, TLI = 1.00, RMSEA = 0.00$

Figure 27. Serially mediated moderation by General and ICT self-efficacy for the effect of Cyber victimization on Depression, Anxiety, Stress and Mental well-being through four types of Appraisal and Distal Advice coping.

Table 38

Serially mediated moderation analysis by Distal Advice coping for the effect of Cyber victimization on Mental health problems and Mental well-being (N = 1314)

Category	Variables	Mediator-L2		Dependents		
		Distal Advice	Depression	Anxiety	Stress	Well-Being
		β	β	B	B	β
Controls	Age	-.04	-.06*	-.06*	-.13**	.06*
	Gender	.08*	-.07*	-.07*	-.03	-.02
	Traditional Victimization	-.04	.05	.12*	.08*	.01
	Traditional Bullying	.02	.02	-.01	.01	-.04
	Social Desirability	.03	-.01	.01	-.01	.05
Predictor	Cyber Victimization	.04	.18**	.22**	.19**	-.04*
Mediators-L1	Challenge	.01	-.01	.00	-.01	.03
	Threat	-.09*	.09*	.11**	.15**	-.06
	Centrality	-.16**	.15**	.12**	.16**	-.03
	Resources	.17**	-.04	-.05	.02	.07*
Mediator-L2	Distal Advice		.00	.03	.01	.06*
Moderators	ICT self-efficacy	.07	-.01	.06	-.09*	.27**
	General Self-Efficacy	.18**	-.12**	-.12**	-.09*	.30**
Interactions	ICT-SE*Cyber Victimization	-.01	.00	.01	.01	.03
	ICT-SE*Challenge	-.03	.03	.03	.03	.04
	ICT-SE*Threat	-.01	-.04	-.01	-.02	.01
	ICT-SE*Centrality	-.03	.12*	.13*	.12*	.01
	ICT-SE*Resources	-.03	-.08*	-.04	-.04	-.01
	ICT-SE* Distal Advice		-.09*	-.10**	-.09*	-.01
	GSE*Cyber Victimization	.03	-.10**	-.09*	-.08*	.01
	GSE*Challenge	-.05	-.07	-.07	-.10*	-.05
	GSE*Threat	-.08	.07	.09	.10	.01
	GSE*Centrality	.07	-.07	-.13*	-.13*	.12*
	GSE*Resources	.04	.03	.02	.03	.04
GSE* Distal Advice		-.04	-.08*	-.04	.02	
	R^2	.13	.17	.22	.24	.34

Note. L1 = Level1; L2 = Level 2; ICT-SE = ICT Self-Efficacy; GSE = General Self-Efficacy.

* $p < .05$, ** $p < .01$.

The moderation by both general and ICT self-efficacy were tested for direct and indirect effect of cyber victimization on four outcomes variables including depression, anxiety, stress, and mental well-being through four types of cognitive appraisals followed by distal advice coping. Results presented in Table 38 showed that general self-efficacy appeared to increase the use of distal advice coping. Neither general nor ICT self-efficacy moderate the effect of any type of the appraisal on distal advice coping.

Though general self-efficacy appeared to decrease depressive symptoms ($\beta = -.12$, $p < .01$), however, it did not moderate the effect of appraisal on depressive symptoms. ICT self-efficacy though showed no direct effect on depression, it positively moderated the effect of centrality appraisal and negatively moderated the effect of resources appraisal. Results suggested that centrality appraisal is associated with a decrease use of distal advice coping ($\beta = -.16$, $p < .01$) whereas resources appraisal of cyber victimization is associated with an increase in the use of distal advice coping ($\beta = .17$, $p < .01$). General self-efficacy moderated the effect of cyber victimization ($\beta = -.10$, $p < .01$) on depression whereas ICT self-efficacy moderated the effect of distal advice coping ($\beta = -.09$, $p < .05$) on depression suggesting that ICT self-efficacy is associated with a decrease in depression for the students who used distal advised coping.

Similar to depression, only general self-efficacy significantly associated with a decrease in anxiety ($\beta = -.12$, $p < .01$) yet, both general and ICT self-efficacy moderated the serially mediated effect of cyber victimization on depression through appraisal and distal advice coping. Centrality appraisal as a result of cyber victimization is associated with an increase in anxiety ($\beta = .15$, $p < .01$) yet the increase was less for the students with higher level of ICT self-efficacy ($\beta = .13$, $p < .01$). Furthermore, it is evident that

distal advice coping is associated with a decrease in anxiety ($\beta = -.10, p < .01$) of the university students with high level of ICT self-efficacy. General self-efficacy decreased the effect of cyber victimization ($\beta = -.10, p < .01$), centrality appraisal ($\beta = -.13, p < .05$), and distal advice coping ($\beta = -.08, p < .05$) on anxiety. The results suggest that both general and ICT self-efficacy decrease anxiety in those students who appraise cyber victimization through centrality appraisal and use distal advice coping.

Results showed that both general and ICT self-efficacy significantly associated with a decrease in stress ($\beta = -.09, p < .01$). Further, both general and ICT self-efficacy moderated the serially mediated effect of cyber victimization on stress through appraisal and distal advice coping. Centrality appraisal as a result of cyber victimization was associated with an increase in stress ($\beta = .16, p < .01$) yet the increase was less for the students with higher level of ICT self-efficacy ($\beta = .12, p < .01$). Furthermore, it is evident that distal advice coping was associated with a decrease in stress ($\beta = -.09, p < .01$) in university students with high level of ICT self-efficacy. General self-efficacy decreased the effect of cyber victimization ($\beta = -.08, p < .01$), through centrality appraisal ($\beta = -.13, p < .01$), and challenge appraisal ($\beta = -.10, p < .05$) on stress. The results suggest that both general and ICT self-efficacy decrease stress in students who appraise cyber victimization either through centrality appraisal or challenge appraisal and who use distal advice coping.

Finally, general and ICT self-efficacy positively predicted mental well-being. Only general self-efficacy positively moderated ($\beta = .12, p < .05$) the serially mediated effect of cyber victimization on mental well-being through centrality appraisal and distal

advice coping. The model explained 13% variance in distal advice coping, 17% in depression, 22% in anxiety, 24% in stress and 34% in mental well-being.

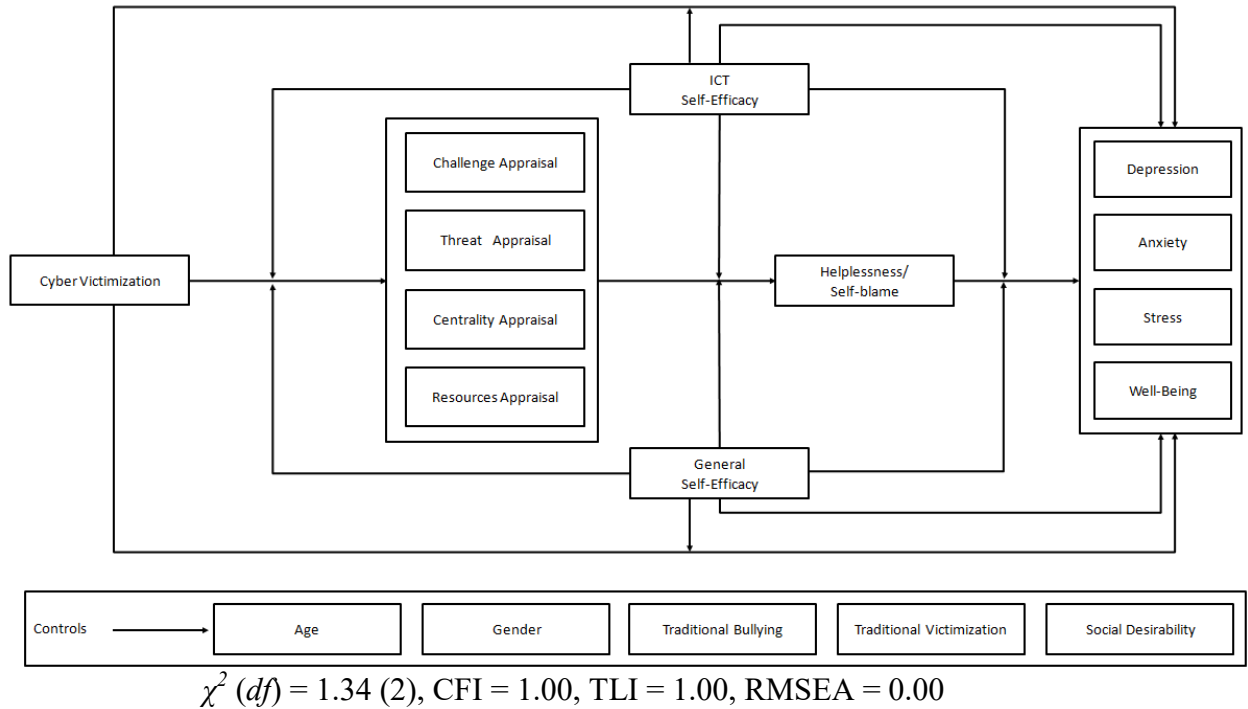


Figure 28. Serially mediated moderation by General and ICT self-efficacy for the effect of Cyber victimization on Depression, Anxiety, Stress and Mental well-being through four types of Appraisal and Helplessness/Self-blame coping.

Table 39

Serially mediated moderation analysis by Helplessness/Self-blame coping for the effect of Cyber victimization on Mental health problems and Mental well-being (N = 1314)

Category	Variables	Mediator-L2	Dependents			
		Helplessness / Self-blame	Depression	Anxiety	Stress	Well-Being
		β	β	β	β	β
Controls	Age	.03	-.07**	-.06*	-.11**	.06*
	Gender	-.10**	-.04	-.04	.01	-.01
	Traditional Victimization	-.01	.07*	.14**	.10**	-.01
	Traditional Bullying	.03	.01	-.03	-.01	-.01
	Social Desirability	.05	-.01	.02	-.01	.06*
	Predictor	Cyber Victimization	.15**	.13**	.17**	.15**
Mediators-L1	Challenge	-.11**	-.01	-.01	-.01	.08*
	Threat	.20**	.07*	.09*	.14**	-.04
	Centrality	.16**	.08*	.05	.07*	-.01
	Resources	-.12**	-.02	-.02	.03	.05
Mediator-L2	Helplessness/Self-blame		.26**	.24**	.22**	-.01
Moderators	ICT self-efficacy	.04	.01	.08*	.09**	.30**
	General Self-Efficacy	-.09**	-.08*	-.08*	-.05	.28**
Interactions	ICT-SE*Cyber Victimization	.04	-.03	-.01	-.01	-.01
	ICT-SE*Challenge	-.07	.04	.03	.02	.07
	ICT-SE*Threat	-.05	-.08	-.04	-.05	.05
	ICT-SE*Centrality	-.10*	.16**	.16**	.15**	-.01
	ICT-SE*Resources	-.05	-.10**	-.07	-.06	-.01
	ICT-SE*Helplessness/Self-blame		.01	-.05	-.02	.02
	GSE*Cyber Victimization	-.02	-.10**	-.08*	-.10**	.06
	GSE*Challenge	-.04	-.10**	-.10*	-.11**	-.05
	GSE*Threat	.11*	.06	.06	.11*	-.03
	GSE*Centrality	.01	-.09	-.16**	-.17**	-.06
	GSE*Resources	-.03	.03	.01	.03	.02
	GSE*Helplessness/Self-blame		-.01	.08	.04	-.06
	R^2	.25	.22	.25	.27	.33

Note. L1 = Level1; L2 = Level 2; * $p < .05$, ** $p < .01$.

The moderation by both general and ICT self-efficacy were tested for direct and indirect effect of cyber victimization on four outcomes variables including depression, anxiety, stress, and mental well-being through four types of appraisal followed by

helplessness/self-blame coping. Results presented in Table 39 showed that only general self-efficacy was associated with a decrease in the use of helplessness/self-blame coping. Both general and ICT self-efficacy appeared to moderate the effect of appraisal on helplessness/self-blame coping. Results showed that centrality appraisal was associated with an increase in the use of helplessness/self-blame coping ($\beta = .16, p < .01$) yet for students with high level of ICT self-efficacy centrality appraisal appeared to decrease the use of helplessness/self-blame coping ($\beta = -.10, p < .05$). Similarly, threat appraisal appeared to be associated with an increase in the use of helplessness/self-blame coping ($\beta = .20, p < .01$) yet the increase was relatively less for the students having higher level of general self-efficacy ($\beta = .11, p < .05$).

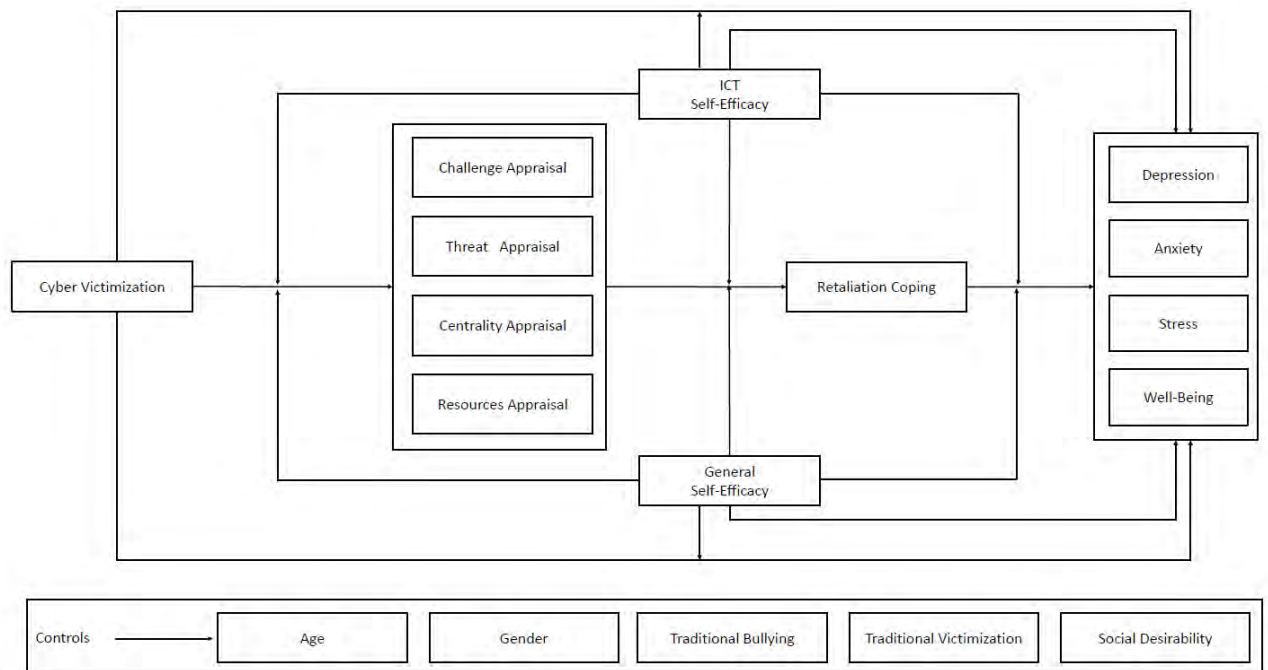
Serially mediated moderation for depression showed that ICT self-efficacy moderated the effect of cyber victimization mediated through centrality and resources appraisal followed by helplessness/self-blame coping but in opposite direction. Higher ICT self-efficacy was associated with a decrease in depression ($\beta = .10, p < .01$) for those who used resources appraisal leading to helplessness/self-blame coping. Furthermore, indirect effect of cyber victimization mediated through centrality appraisal and helplessness coping was moderated by ICT self-efficacy. The results showed that increase in depression was less for the students with higher level of ICT self-efficacy ($\beta = .16, p < .01$). General self-efficacy moderated the effect of cyber victimization on depression mediated through helplessness/self-blame ($\beta = -.10, p < .01$). General self-efficacy also moderated serially mediated effect of cyber victimization through centrality appraisal and helplessness/self-blame coping ($\beta = -.10, p < .01$). General self-efficacy

appeared to be a protective factor and associated with decreasing the effect of cyber victimization on depression.

Both ICT self-efficacy and general self-efficacy significantly associated with a decrease in anxiety ($\beta = -.08, p < .05$). ICT self-efficacy moderated the effect of cyber victimization through centrality appraisal and helplessness/self-blame coping ($\beta = .16, p < .01$) whereas general self-efficacy moderated the effect of cyber victimization ($\beta = -.08, p < .05$) through challenge ($\beta = .10, p < .05$) and centrality appraisal ($\beta = -.16, p < .01$) for students using helplessness/self-blame coping. Again general self-efficacy appeared as a protective factor to decrease the negative effect of cyber victimization through helplessness/self-blame coping on anxiety.

Helplessness coping also associated with an increase in stress ($\beta = .22, p < .01$). Only ICT self-efficacy significantly associated with a decrease in stress ($\beta = -.09, p < .01$) yet both ICT and general self-efficacy moderated serially mediated effect of cyber victimization on stress. Similar to depression and anxiety, indirect effect of cyber victimization mediated through centrality appraisal and helplessness coping was moderated by ICT self-efficacy. The results showed that increase in stress was less for the students with higher level of ICT self-efficacy ($\beta = .15, p < .01$). General self-efficacy on the other hand played role of protective factor particularly for the indirect effect of cyber victimization through challenge appraisal ($\beta = -.11, p < .01$) and centrality appraisal ($\beta = -.17, p < .01$) and decreased the indirect effect through threat appraisal ($\beta = .10, p < .05$).

Finally both ICT and general self-efficacy associated with an increase in mental well-being ($\beta = .30$, and $\beta = .28$ respectively; $p < .01$) yet no significant moderation was observed on serially mediated indirect effect of cyber victimization on well-being through any type of appraisal ($p > .05$), and helplessness/self-blame coping. The model explained 25% variance in helplessness/self-blame coping, 22% in depression, 27% in anxiety, 25% in stress and 33% in mental well-being.



$$\chi^2 (df) = 3.49 (2), CFI = .99, TLI = .96, RMSEA = 0.03$$

Figure 29. Serially mediated moderation by General and ICT self-efficacy for the effect of Cyber victimization on Depression, Anxiety, Stress and Mental well-being through four types of Appraisal and Retaliation coping.

Table 40

Serially mediated moderation analysis by Retaliation coping for the effect of Cyber victimization on Mental health problems and Mental well-being (N = 1314)

Category	Variables	Mediator-L2	Dependents			
		Retaliation	Depression	Anxiety	Stress	Well-Being
		β	β	β	β	β
Controls	Age	.03	-.06*	-.05	-.12**	.08**
	Gender	-.20**	-.08*	-.07*	-.02	.01
	Traditional Victimization	-.06	.03	.10**	.07*	.01
	Traditional Bullying	.13**	-.01	-.04	-.03	-.01
	Social Desirability	.01	.02	.03	.02	.05
Predictor	Cyber Victimization	.09*	.20**	.23**	.21**	-.06*
Mediators-L1	Challenge	.07	-.05	-.04	-.05	.05
	Threat	.05	.09*	.10*	.15**	-.06*
	Centrality	-.08*	.11**	.09*	.13**	-.01
	Resources	.04	-.04	-.04	.01	.06*
Mediator-L2	Retaliation		.09**	.08*	.06*	-.06*
Moderators	ICT self-efficacy	.04	.06	.13**	.14**	.28**
	General Self-Efficacy	.03	-.13**	-.12**	-.10**	.27**
Interactions	ICT-SE*Cyber Victimization	.05	-.03	-.01	-.02	.01
	ICT-SE*Challenge	.04	.02	.01	-.01	.06
	ICT-SE*Threat	-.01	-.04	.01	-.03	.05
	ICT-SE*Centrality	-.07	.13*	.07	.09	-.03
	ICT-SE*Resources	-.05	-.09*	-.05	-.03	-.02
	ICT-SE*Retaliation		-.07*	-.06	-.04	.08*
	GSE*Cyber Victimization	.02	-.08*	-.06	-.08*	.02
	GSE*Challenge	-.14**	-.08*	-.09*	-.10*	-.05
	GSE*Threat	-.03	.03	.04	.10*	-.06
	GSE*Centrality	-.10*	-.10*	-.13*	-.17**	-.06
	GSE*Resources	-.08*	.02	-.01	.02	-.01
	GSE*Retaliation		.06	.04	.05	-.03
		R^2	.13	.17	.19	.23

Note. L1 = Level1; L2 = Level 2; * $p < .05$, ** $p < .01$.

The moderation by both general and ICT self-efficacy were tested for direct and indirect effect of cyber victimization on four outcomes variables including depression,

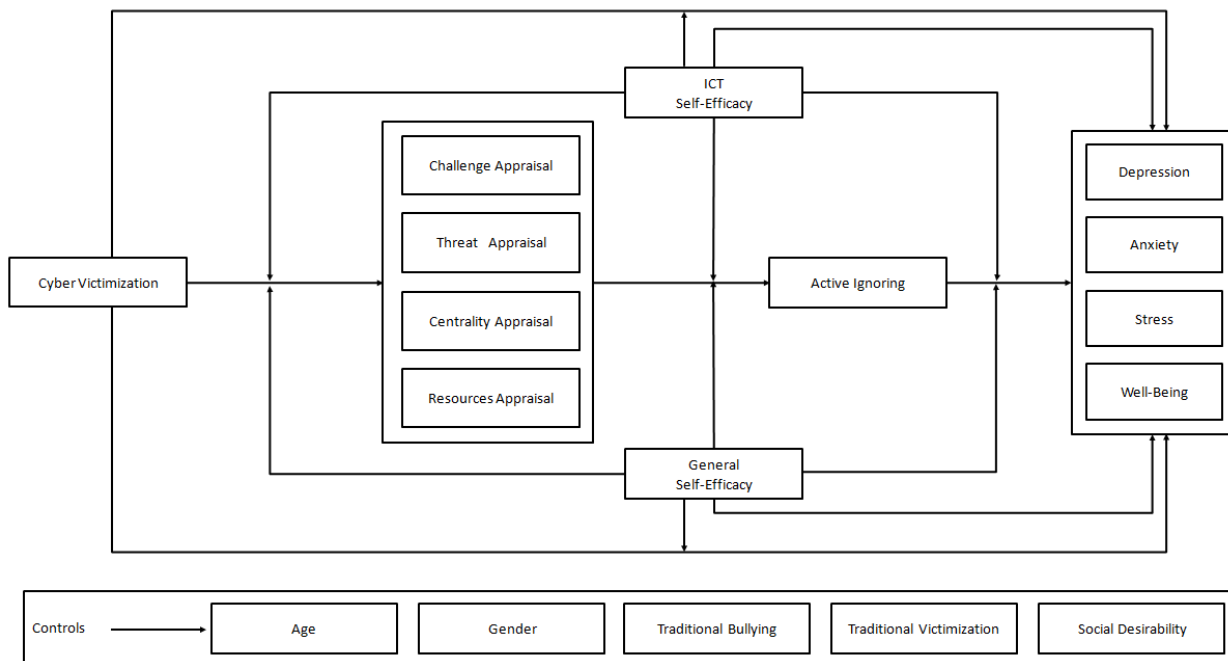
anxiety, stress, and mental well-being through four types of appraisal followed by retaliation coping. Results presented in Table 40 showed that centrality appraisal ($\beta = .08$, $p < .05$) significantly associated with a decrease in retaliation coping strategy as a result of cyber victimization. Neither ICT self-efficacy nor general self-efficacy predicted the use of retaliation coping yet general self-efficacy moderated the effect of challenge appraisal, centrality appraisal, and resources appraisal on retaliation coping. Being high on general self-efficacy also decreased the effect of challenge appraisal ($\beta = -.14$, $p < .01$), centrality ($\beta = -.10$, $p < .05$), and resources appraisal ($\beta = -.08$, $p < .05$) on retaliation coping. These results suggested that university students who are high on general self-efficacy and appraise cyber victimization either as challenge, centrality, or resources use less of the retaliation coping compare to students who have lower general self-efficacy.

Only general self-efficacy significantly decreased the effect of cyber victimization ($\beta = -.13$, $p < .01$) on depression yet both general ($\beta = -.10$, $p < .05$) and ICT self-efficacy ($\beta = .13$, $p < .01$) moderated the serially mediated effect of cyber victimization on depression through centrality appraisal and retaliation coping. ICT self-efficacy changed the direction of the effect of retaliation coping ($\beta = -.07$, $p < .05$) on depression suggesting that retaliation coping is associated with a decrease in depression for the students who are high on ICT self-efficacy. ICT self-efficacy also moderated serially mediated effect of cyber victimization on depression through resources appraisal ($\beta = -.09$, $p < .05$) leading to retaliation coping. General self-efficacy countered the negative effect of cyber victimization mediated through centrality appraisal and retaliation coping.

Both general ($\beta = -.12$, $p < .01$) and ICT self-efficacy ($\beta = -.13$, $p < .01$) associated with decrease in anxiety but only general self-efficacy moderated the serially

mediated effect of cyber victimization on anxiety through challenge ($\beta = -.09, p < .05$) and centrality ($\beta = -.13, p < .05$) appraisal. Being high on general self-efficacy was associated with a decrease in anxiety resulted from cyber victimization and mediated through both challenge and centrality appraisal leading to retaliation coping. Similar findings are evidenced for stress, results showed that both general ($\beta = -.10, p < .01$) and ICT self-efficacy ($\beta = -.14, p < .01$) associated with a decrease in stress but only general self-efficacy moderated the serially mediated effect of cyber victimization on stress through challenge ($\beta = -.10, p < .05$) and centrality ($\beta = -.17, p < .05$) appraisal. Additionally, general self-efficacy also moderated the effect of cyber victimization mediated through threat appraisal ($\beta = .10, p < .05$) and leading to retaliation coping yet, the moderation was in reverse direction. In other words the moderation by general self-efficacy is associated with a decrease in depression when mediated through challenge and centrality appraisal yet, associated with an increase in depression when mediated through threat appraisal.

Both general and ICT self-efficacy was associated with an increase in the mental well-being but no serial mediation was observed except that ICT self-efficacy ($\beta = .08, p < .05$) moderated the path between retaliation coping and mental well-being. It suggested that students high on ICT self-efficacy and high on the use of retaliation coping have significantly better mental well-being. The model explained 13% variance in retaliation coping, 17% in depression, 19% in anxiety, 23% in stress and 32% variance in mental well-being.



$$\chi^2 (df) = 5.02 (2), CFI = .99, TLI = .93, RMSEA = 0.06$$

Figure 30. Serially mediated moderation by General and ICT self-efficacy for the effect of Cyber victimization on Depression, Anxiety, Stress and Mental well-being through four types of Appraisal and Active Ignoring coping.

Table 41

Serially mediated moderation analysis by Active Ignoring coping for the effect of Cyber victimization on Mental health problems and Mental well-being (N = 1314)

Category	Variables	Mediator-L2	Dependents			
		Active Ignoring	Depression	Anxiety	Stress	Well-Being
		β	β	β	β	β
Controls	Age	-.13**	-.04	-.05	-.09**	.08**
	Gender	.17**	-.08*	-.08*	-.05	-.01
	Traditional Victimization	-.03	.04	.11**	.09**	-.01
	Traditional Bullying	-.05	.01	-.01	-.01	-.01
	Social Desirability	.01	.02	.05	.04	.06*
Predictor	Cyber Victimization	.08*	.16**	.21**	.19**	-.04*
Mediators-L1	Challenge	-.07*	-.02	-.03	-.04	.06
	Threat	.04	.07*	.10*	.19**	-.07*
	Centrality	-.08*	.14**	.11**	.13**	-.01
	Resources	-.08**	-.06	-.06	-.01	.05
Mediator-L2	Active Ignoring		.07*	.07*	.12**	.03
Moderators	ICT self-efficacy	-.15**	-.01	-.10**	-.09*	.27**
	General Self-Efficacy	-.10**	-.15**	-.14**	-.11**	.31**
Interactions	ICT-SE*Cyber Victimization	-.08*	-.02	.01	-.02	.02
	ICT-SE*Challenge	-.06	-.01	-.02	-.01	.07*
	ICT-SE*Threat	.07	-.04	-.03	-.03	.06
	ICT-SE*Centrality	-.09*	.09	.08	.07	.02
	ICT-SE*Resources	-.03	-.07*	-.04	-.03	-.03
	ICT-SE*Active Ignoring		-.04	-.03	-.01	-.05
	GSE*Cyber Victimization	-.09**	-.10**	-.07*	-.08*	.06*
	GSE*Challenge	.01	-.06	-.05	-.07*	-.04
	GSE*Threat	-.02	.06	.08	.13*	-.07
	GSE*Centrality	.05	-.08	-.14*	-.16**	.10*
	GSE*Resources	-.01	.04	.01	.03	.02
GSE*Active Ignoring		-.09*	-.04	-.07	.06	
	R^2	.20	.16	.20	.24	.34

Note. L1 = Level 1; L2 = Level 2; * $p < .05$, ** $p < .01$.

The moderations by both general and ICT self-efficacy were tested for direct and indirect effect of cyber victimization on four outcomes variables including depression, anxiety, stress, and mental well-being through four types of appraisals followed by active

ignoring coping style. Results presented in Table 41 showed that cyber victimization was associated with an increase in active ignoring coping when appraised through centrality ($\beta = .08, p < .05$), and decreased when appraised through challenge and resources ($\beta = -.07$, and $-.08; p < .05$). This might be due to the fact that active ignoring is commonly practiced style to avoid complications and negative consequences in Pakistani society. ICT self-efficacy, however negatively moderated effect of cyber victimization on active ignoring mediated through centrality appraisal ($\beta = -.09, p < .05$). It suggested that students who are high on ICT self-efficacy use less of the active ignoring to cope with cyber victimization mediated through centrality appraisal. General self-efficacy negatively moderated the effect of cyber victimization on active ignoring coping ($\beta = -.09, p < .01$) suggesting that cyber victimization is associated with an increase in the use of active ignoring coping. General self-efficacy appeared as protective factor and showed that students who have higher level of general self-efficacy use less the active ignoring coping style to deal with cyber victimization.

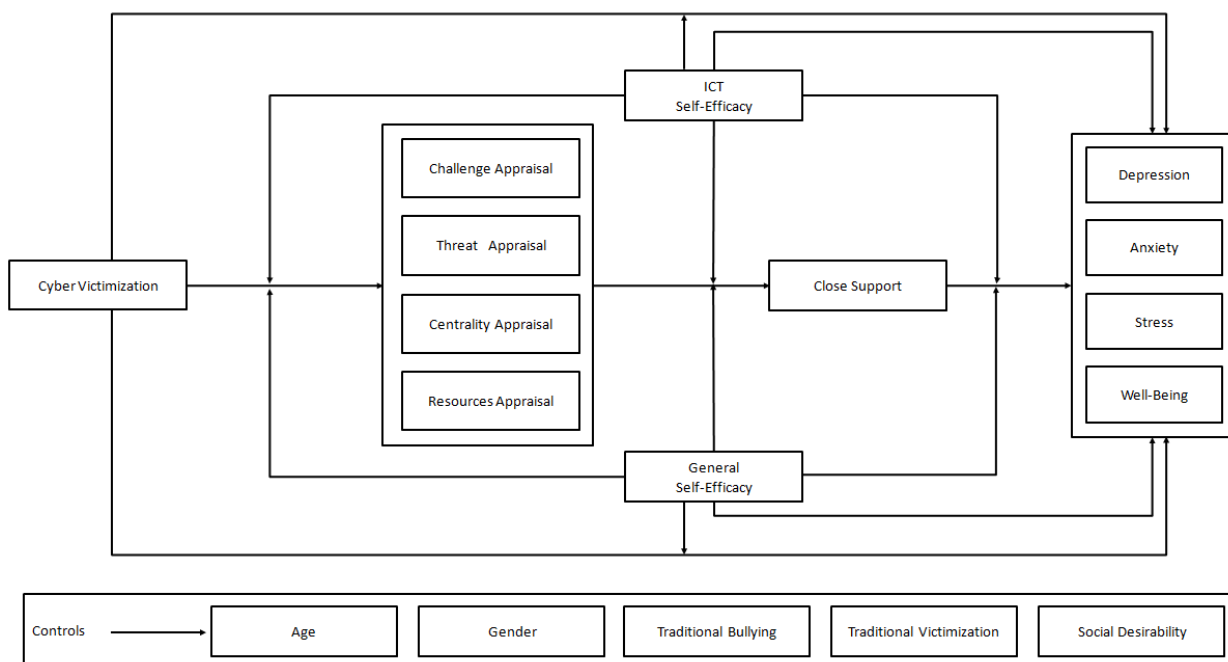
Only general self-efficacy significantly associated with a decrease in depression ($\beta = -.15, p < .01$) yet both ICT self-efficacy and general self-efficacy moderated serially mediated effect of cyber victimization through appraisal followed by active ignoring. ICT self-efficacy moderated indirect effect of cyber victimization on depression mediated through resources appraisal ($\beta = -.07, p < .05$). General self-efficacy moderated the direct effect of cyber victimization on depression ($\beta = -.10, p < .01$) as well indirect effect mediated through active ignoring coping ($\beta = -.09, p < .01$). These results suggested that both ICT and general self-efficacy worked as protective factors against negative impact

of cyber victimization on depression particularly when it is mediated through resources appraisal followed by active ignoring.

Both ICT self-efficacy and general self-efficacy associated with a decrease in anxiety ($\beta = -.09, p < .05$; and $-.11, p < .01$ respectively). ICT self-efficacy did not moderate serially mediated effect of cyber victimization on anxiety ($p > .05$). General self-efficacy moderated the direct effect of cyber victimization on anxiety ($\beta = -.07, p < .01$) as well as indirect effect mediated through centrality appraisal ($\beta = -.14, p < .01$). It suggested that being high on general self-efficacy resulted in a significant decrease in anxiety caused by cyber victimization and mediated through centrality appraisal. Similarly, both general ($\beta = -.11, p < .01$) and ICT self-efficacy ($\beta = -.09, p < .05$) associated with a decrease in stress. However, only general self-efficacy moderated the direct effect of cyber victimization on stress ($\beta = -.08, p < .05$) as well serially mediated effect of cyber victimization on stress through challenge ($\beta = -.09, p < .05$) and centrality ($\beta = -.13, p < .05$) appraisal. Moderation results suggested that being high on general self-efficacy was associated with a decrease in stress when mediated through challenge and centrality appraisal. General self-efficacy also moderated the effect of threat appraisal and decreased the direct effect of threat appraisal on depression from $\beta = .19$ to $\beta = .13$. It suggested that threat appraisal has serious negative consequences in increasing depression even for students with higher level of general self-efficacy.

Both general and ICT self-efficacy were associated with an increase in mental well-being and ICT self-efficacy moderated indirect effect of cyber victimization on mental well-being serially mediated through challenge appraisal ($\beta = .07, p < .05$). These results suggested that university students who are high on ICT self-efficacy have higher

mental well-being when the effect of cyber victimization is mediated through challenge appraisal. General self-efficacy moderated the direct effect of cyber victimization on mental well-being ($\beta = .06, p < .05$) as well indirect effect mediated through centrality appraisal ($\beta = .10, p < .01$). It suggested that being high on general self-efficacy resulted in a significant increase in mental well-being both directly and indirectly mediated through active ignoring coping. The model explained 20% variance in active ignoring coping style, 16% in depression, 20% in anxiety, 24% in stress and 34% variance in mental well-being.



$$\chi^2 (df) = 6.12 (2), CFI = .98, TLI = .94, RMSEA = 0.06$$

Figure 31. Serially mediated moderation by General and ICT self-efficacy for the effect of Cyber victimization on Depression, Anxiety, Stress and Mental well-being through four types of Appraisal and Close Support coping.

Table 42

Serially mediated moderation analysis by Close Support coping for the effect of Cyber victimization on Mental health problems and Mental well-being (N = 1314)

Category	Variables	Mediator-L2	Dependents			
		Close Support	Depression	Anxiety	Stress	Well-Being
		β	β	β	β	β
Controls	Age	-.10**	-.04	-.04	-.08**	.09**
	Gender	.11**	-.08*	-.08**	-.04	-.03
	Traditional Victimization	.14**	.05	.14**	.09**	-.01
	Traditional Bullying	-.11**	.03	-.02	.02	-.02
	Social Desirability	.01	.01	.03	.01	.06*
Predictor	Cyber Victimization	.01	.20**	.23**	.20**	-.05*
Mediators-L1	Challenge	-.01	-.02	-.03	-.03	.07*
	Threat	-.04	.079*	.10**	.14**	-.05
	Centrality	.16**	.13**	.10*	.12**	-.04
	Resources	.18**	-.04	-.04	-.02	.05
Mediator-L2	Close Support		-.07*	-.08*	-.17**	.10**
Moderators	ICT self-efficacy	.22**	-.04	.05	.04	.26**
	General Self-Efficacy	.09*	-.16**	-.15**	-.12**	.27*
Interactions	ICT-SE*Cyber Victimization	.05	0.00	.01	-.01	-.03
	ICT-SE*Challenge	-.10*	.05	.04	.02	.05
	ICT-SE*Threat	-.02	-.05	-.03	-.05	.07
	ICT-SE*Centrality	-.06	.14**	.15**	.15**	-.01
	ICT-SE*Resources	.01	-.07*	-.05	-.04	-.02
	ICT-SE*Close Support		-.12**	-.12**	-.09**	.02
	GSE*Cyber Victimization	-.06	-.10**	-.08*	-.08**	.07*
	GSE*Challenge	-.02	-.08*	-.08*	-.09*	-.04
	GSE*Threat	-.04	.07	.08	.13*	-.04
	GSE*Centrality	.06	-.09*	-.14*	-.16**	-.09*
GSE*Resources	-.04	.04	-.01	.02	.04	
GSE*Close Support		-.07*	-.03	-.04	.02	
	R^2	.26	.19	.23	.27	.33

Note. L1 = Level1; L2 = Level 2; ICT-SE = ICT Self-Efficacy; GSE = General Self-Efficacy. * $p < .05$, ** $p < .01$.

The moderation by both general and ICT self-efficacy were tested for direct and indirect effect of cyber victimization on four outcomes variables including depression,

anxiety, stress, and well-being through four types of appraisal followed by close support coping style. Results presented in Table 42 showed that cyber victimization lead to increased use of close support coping through centrality ($\beta = .16, p < .01$) and resources ($\beta = .18, p < .01$) appraisals. Only ICT self-efficacy moderated the indirect effect of cyber victimization on close support coping mediated through challenge appraisal ($\beta = -.09, p < .05$) suggesting that students who are high on ICT self-efficacy relied less on close support coping when cyber victimization is appraised as challenge. This might be due to the fact that students high on ICT self-efficacy and perceiving act of victimization as challenge may be more eager to counter it by their own rather relaying on support from others.

Only general self-efficacy associated with a decrease in depression ($\beta = -.16, p < .01$) yet, both general and ICT self-efficacy moderated the indirect effect of cyber victimization serially mediated through various types of appraisal followed by close support coping. ICT self-efficacy moderated the indirect effect of cyber victimization mediated through centrality ($\beta = .13, p < .05$). Results showed that centrality appraisal was associated with increased use of close support coping which further led to a decrease in depression ($\beta = -.07, p < .05$). Further ICT self-efficacy changed the non-significant indirect effect of cyber victimization on depression through resources appraisal to significant negative effect ($\beta = -.07, p < .05$).

These results suggested a decrease in depression for the students who have higher level of ICT self-efficacy and higher in the use of resources appraisal followed by close support coping. General self-efficacy worked as a protective factor against negative impact of cyber victimization both directly ($\beta = -.10, p < .01$) and indirectly by

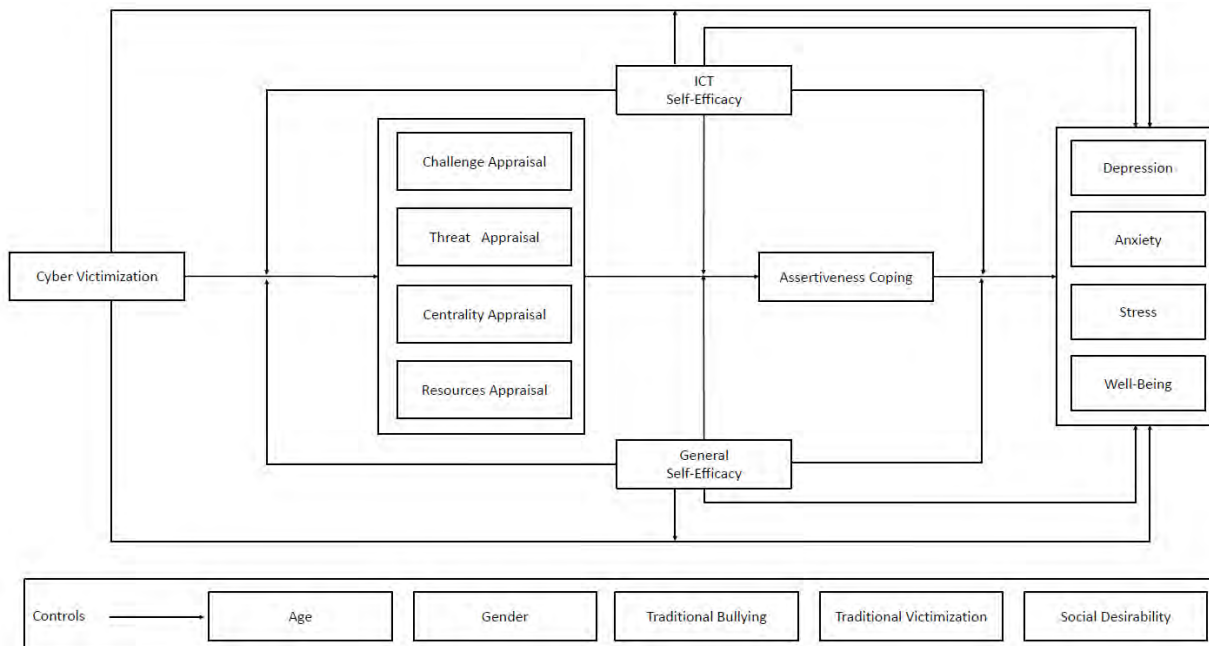
moderating the serially mediated effect of cyber victimization on depression through challenge ($\beta = -.08, p < .05$), and centrality ($\beta = -.09, p < .05$) appraisal followed by close support coping ($\beta = -.07, p < .05$). These results suggested that higher levels of general self-efficacy is associated with a decrease in depression of students resulted from cyber victimization mediated through both challenge appraisal and centrality appraisal followed by close support coping.

Similar to depression, only general self-efficacy was significantly associated with a decrease in anxiety ($\beta = -.15, p < .01$). Both ICT self-efficacy and general self-efficacy moderated the indirect effect cyber victimization on anxiety serially mediated through various type of appraisal followed by close support coping. Results shows that centrality appraisal is associated with an increase in anxiety ($\beta = .10, p < .05$). But with the use of close support coping, indirect effect of cyber victimization on anxiety mediated through centrality appraisal is decreased ($\beta = -.12, p < .01$) for the students with higher level of ICT self-efficacy. General self-efficacy moderated both direct effect of cyber victimization on anxiety ($\beta = -.08, p < .05$) and indirect effect of cyber victimization on anxiety mediated through challenge ($\beta = -.08, p < .05$) and centrality appraisal ($\beta = -.14, p < .05$). These results suggested that general self-efficacy worked as a protective factor and associated with a decrease in anxiety indirectly caused by cyber victimization mediated through challenge and centrality appraisal.

General self-efficacy also associated with a decrease in stress ($\beta = -.12, p < .01$). ICT self-efficacy has no direct effect on stress yet moderated indirect effect of cyber victimization on stress serially mediated through centrality appraisal followed by close support. Results showed that centrality appraisal is associated with an increase in stress (β

= .12, $p < .01$). But indirect effect of cyber victimization on stress mediated through centrality appraisal is decreased ($\beta = -.09$, $p < .01$) for the students with higher level of ICT self-efficacy particularly when they use close support coping. Similar to depression and anxiety outcome, general self-efficacy also appeared to serve as protective factor against stress resulted from cyber victimization. General self-efficacy moderated both direct effect of cyber victimization on stress ($\beta = -.08$, $p < .01$) and indirect effect of cyber victimization on stress mediated through challenge ($\beta = -.09$, $p < .05$) and centrality appraisal ($\beta = -.16$, $p < .05$). These results suggested that general self-efficacy worked as protective factor and associated with a decrease in stress indirectly caused by cyber victimization mediated through challenge and centrality appraisal. Additionally, general self-efficacy also moderated indirect effect of cyber victimization on stress mediated through threat appraisal. Appraisal of cyber victimization as threat was associated with an increase in anxiety ($\beta = .14$, $p < .01$) in university student but the increase was less ($\beta = .13$, $p < .05$) for the students who have higher level of general self-efficacy.

Both general and ICT self-efficacy is linked to an increase in mental well-being. Only general self-efficacy moderated the direct effect of cyber victimization on well-being ($\beta = .06$, $p < .05$). General self-efficacy also moderated indirect effect mediated through centrality appraisal ($\beta = -.09$, $p < .05$). These results suggested that being high on general self-efficacy significantly associated with an increase in mental well-being. The model explained 26% variance in close support coping, 19% in depression, 23% in anxiety, 27% in stress, and 33% variance in well-being.



$$\chi^2 (df) = 4.36 (2), CFI = .98, TLI = .96, RMSEA = 0.04$$

Figure 32. Serially mediated moderation by general and ICT self-efficacy for the effect of cyber victimization on depression, anxiety, stress and well-being through four types of appraisal and Assertiveness coping.

Table 43

Serially mediated moderation analysis by Assertiveness coping for the effect of cyber victimization on Mental health and Mental well-being (N = 1314)

Category	Variables	Mediator-L2	Dependents			
		Assertiveness	Depression	Anxiety	Stress	Well-Being
		β	β	β	β	β
Controls	Age	-.04	-.04	-.04	-.09**	.08**
	Gender	-.05	-.07*	-.06*	-.02	-.01
	Traditional Victimization	-.01	.05	.11**	.08*	-.02
	Traditional Bullying	.04	.01	-.03	.00	-.02
	Social Desirability	.04	.01	.02	.02	.07*
Predictor	Cyber Victimization	.04	.18**	.24**	.21**	-.05*
Mediators-L1	Challenge	.06	-.05	-.03	-.05	.07*
	Threat	.04	.07*	.10**	.14**	-.05
	Centrality	-.16**	.13**	.10**	.13**	-.02
	Resources	.03	-.04	-.04	-.01	.08**
Mediator-L2	Assertiveness		.06	.10**	.05	.04
Moderators	ICT self-efficacy	.11**	.03	-.11**	-.11**	.27**
	General Self-Efficacy	.09*	-.15**	-.16**	-.10**	.29**
Interactions	ICT-SE*Cyber Victimization	.05	-.04	-.03	-.03	.01
	ICT-SE*Challenge	-.06	.01	-.02	-.01	.08*
	ICT-SE*Threat	-.01	-.05	-.02	-.02	.07
	ICT-SE*Centrality	-.03	.14**	.11*	.12**	-.03
	ICT-SE*Resources	-.04	-.07	-.02	-.02	-.02
	ICT-SE*Assertiveness		-.09**	-.09*	-.09*	.09**
	GSE*Cyber Victimization	.08*	-.08*	-.07*	-.09*	.04
	GSE*Challenge	-.02	-.05	-.04	-.08*	-.06
	GSE*Threat	.03	.04	.07	.09*	-.06
	GSE*Centrality	-.06	-.09*	-.13**	-.16**	-.06
	GSE*Resources	.03	-.01	-.04	.01	.03
	GSE*Assertiveness		-.03	.01	.01	-.05
	R^2	.10	.19	.23	.25	.33

Note. L1 = Level1; L2 = Level 2; ICT-SE = ICT Self-Efficacy; GSE = General Self-Efficacy. * $p < .05$, ** $p < .01$.

The moderation by both general and ICT self-efficacy were tested for direct and indirect effect of cyber victimization on four outcomes variables including depression, anxiety, stress, and well-being through four types of appraisal followed by assertiveness coping.

Results presented in Table 43 showed that cyber victimization indirectly associated with an increase in the use of assertiveness coping through challenge appraisal ($\beta = .07, p < .05$), and decreased through centrality appraisal ($\beta = -.16, p < .01$). Both ICT self-efficacy ($\beta = .11, p < .01$) and general self-efficacy ($\beta = .09, p < .05$) also positively predicted use of assertiveness coping style. But only general self-efficacy moderated direct effect of cyber victimization on assertiveness coping ($\beta = .08, p < .05$) suggesting that students who are high on general self-efficacy use more assertiveness coping when counter with cyber victimization. Only general self-efficacy negatively predicted depression ($\beta = -.15, p < .01$) and both general and ICT self-efficacy moderated serially mediated effect of cyber victimization on depression. Moderation of ICT self-efficacy for the relationship between assertiveness coping and depression showed a significant decrease in depression ($\beta = -.09, p < .01$). These results suggested that cyber victimization increases depression directly as well indirectly through centrality appraisal. Results suggested that students with higher level of ICT self-efficacy have a decrease in depression caused by cyber victimization and mediated through centrality appraisal followed by use of assertiveness coping. General self-efficacy also appear to be a protective factor by decreasing depression caused by cyber victimization directly ($\beta = -.08, p < .05$) and mediated through centrality appraisal ($\beta = -.09, p < .05$).

Both ICT self-efficacy ($\beta = -.11, p < .01$) and general self-efficacy ($\beta = -.16, p < .01$) negatively predicted anxiety as well as moderated the effect of cyber victimization on anxiety. ICT self-efficacy decreased the effect of cyber victimization on anxiety mediated through assertiveness coping ($\beta = -.09, p < .05$). These results suggested that cyber victimization increases depression through centrality appraisal. However ICT self-efficacy decreased the effect of cyber victimization on anxiety mediated through assertiveness coping. Moderation by general self-efficacy also associated with a decrease in depression caused by cyber victimization directly ($\beta = -.07, p < .05$) and indirectly mediated through centrality appraisal ($\beta = -.07, p < .05$).

Both ICT self-efficacy ($\beta = -.11, p < .01$) and general self-efficacy ($\beta = -.16, p < .01$) associated with a decrease in stress and moderated indirect effect of cyber victimization on stress serially mediated through appraisal followed by assertiveness coping. Similar to anxiety, results for stress suggested that ICT self-efficacy decreased effect of cyber victimization on depression mediated through assertiveness coping ($\beta = -.09, p < .05$). Results showed that cyber victimization increases stress through centrality appraisal. However ICT self-efficacy decreased the effect of cyber victimization on stress mediated through assertiveness coping. Moderation by general self-efficacy is associated with a decrease in stress caused by cyber victimization directly ($\beta = -.09, p < .05$) and indirectly mediated through challenge appraisal ($\beta = -.16, p < .01$), and centrality appraisal ($\beta = -.09, p < .05$). General self-efficacy also moderated the effect of threat appraisal ($\beta = .14, p < .01$) by decreasing stress.

Both general self-efficacy ($\beta = .29, p < .01$), and ICT self-efficacy ($\beta = .27, p < .01$), is associated with an increase in mental well-being. However, only ICT self-efficacy

moderated the indirect effect of cyber victimization on mental well-being mediated through assertiveness coping ($\beta = .09, p < .01$). The model explained 10% variance in assertiveness coping, 19% in depression, 23% in anxiety, 25% in stress, and 33% variance in mental well-being.

In conclusion, these results suggested that ICT self-efficacy guarded against negative consequences of cyber victimization in particular scenarios with specific type of appraisal and in combination with specific type of coping yet general self-efficacy appeared as a protective factor against the negative consequences of cyber victimization regardless of type of appraisal and coping.

DISCUSSION

Prior studies have noted that a significant amount of bullying and cyberbullying occurs at university campuses. However, less attention has been given to examine bullying and cyberbullying in the university context compared to elementary and secondary levels (Cassidy et al., 2018; Cowie & Myers, 2016; Jenaro et al., 2018; Watts et al., 2017). In view of this, the present study examined bullying and cyberbullying among Pakistani university students.

The present research comprised of three studies. Study I was exploratory in nature and was conducted by employing qualitative modes of enquiry. The objectives of this study were to identify the terms used by university students to describe the cyberbullying phenomenon, to investigate their experiences of cyberbullying victimization, and to examine the coping strategies they use to cope with cyber victimization. Study II was divided into two phases. The first phase aimed to develop the Cyberbullying and Cyber Victimization scales (CBCVS), while the second phase was conducted as a pilot study in order to pre-test and evaluate the psychometric properties of the measures. Study III was the main study and aimed to confirm the factor structures and to examine the convergent validity of a newly developed Cyberbullying and Cyber Victimization Scales (CBCVS) and test the various hypotheses of this research.

Findings of study I indicated that although the experiences described by the participants meet the definition of cyberbullying, the term “cyberbullying” itself was unfamiliar. The use of the term “cybercrime” and “cyber harassment” was more common

among Pakistani university students. With reference to the experiences of cyber victimization, almost all forms of cyber victimization reported by students had been mentioned in the prior literature. Hence, there were a few unique culture-specific findings found within the rich descriptions of experiences of these forms of cyber victimization along with coping responses, causes and social impacts. Findings indicated that university students reported a wide range of coping strategies to deal with cyber victimization including technical solutions, confrontation or retaliation, avoidance, helplessness reactions, assertiveness responses, seeking support and advice. Additionally, findings showed that break-ups either in engagement, romantic relationship, or friendship were the most common reasons for cyber victimization. Other reasons reported by students were risky sharing of private information, academic competition, and ethnic, religious, political and sectarian prejudices. Moreover, students reported that cyber victimization has devastating impacts on their social reputation, relationships and academic lives.

Study II was conducted to develop Cyberbullying and Cyber Victimization Scales (CBCVS) to investigate the experiences of cyberbullying and victimization among Pakistani university students. The uni-factorial structure was found for each newly developed Cyberbullying and Cyber Victimization Scale through Exploratory Factor Analyses. Pilot study was conducted to examine the psychometric properties of various measures. Confirmatory factor analyses of various scales which were selected to use in study III showed that factorial structures were in line with the original measures. Items that showed loadings below the cut off criteria were removed to improve the validity of the scales. Moreover, the correlation matrix indicated that the relationships of variables

were in the expected directions. The findings of the pilot study provided evidence of the adequate psychometric properties of all measures of the study.

The study III (main study) was conducted to confirm the factor structures of and examine the convergent validity of Cyberbullying and Cyber Victimization Scales (CBCVS). Additionally, main study was aimed to test the proposed hypotheses as well as the proposed conceptual framework based on TMSC (Lazarus, 1984). The stress experienced by victims of cyberbullying leads to negative mental health outcomes including depression, anxiety, stress and poor mental well-being (Bottino et al., 2015; Perren et al., 2010). Therefore, it is necessary to develop a thorough understanding of the negative effects of cyberbullying on the victims. Further, it is important to find how victims cope with these negative effects. The TMSC provides an explanatory framework (Raskauskas & Huynh, 2015) for studying stress-related consequences of cyber victimization, and coping mechanisms along with covariates, mediators, and moderators of these associations. An extensive review of the literature was conducted to identify factors related to cyberbullying victimization and its effect on mental health and mental well-being. Following the theoretical framework of TMSC, the conceptual model of the study was developed to test the effect of cyberbullying victimization on the mental health and mental well-being. The model incorporated the mediating role of cognitive appraisals and coping strategies. Furthermore, the model was extended by incorporating the moderating role of general self-efficacy and ICT self-efficacy.

As the factor structures of the newly developed Cyberbullying and Cyber Victimization Scales (CBCVS) were validated in the main study. Factorial validity provided evidence of the uni-factor structures of the scales of cyberbullying and cyber

victimization. Prior research has also supported that cyberbullying and cyber victimization constructs are distinct although highly correlated (Çetin, Yaman, & Peker, 2011). Moreover, findings demonstrated sufficient evidence of a high level of internal consistency (see table 19). The convergent validity of CBCVS was established by examining the association of the CBCVS with other measures of aggression (such as traditional bullying and traditional victimization) which are assumed to be related to cyberbullying and cyber victimization. A moderate level of convergent validity was found by examining significant positive associations of cyberbullying/cyber victimization with traditional bullying/traditional victimization (see table 20). Prior literature also supported these positive associations (Erdur-Baker, 2010; Raskauskas & Stoltz, 2007; Riebel et al., 2009). These findings suggest that CBCVS is a valid and reliable measure for the assessment of cyberbullying and cyber victimization.

Taken together, the development of the CBCVS was preferred over the use of existing measures that constructed and validated in western cultural context. An adequate number of items were included in the scale that reflect cyberbullying/victimization behaviors in the Pakistani university students and phrased on the basis of semi-structured interviews with Pakistani university students. It is important to consider that every culture has unique differences that influence how respondents understand the items of a scale, more particularly, with reference to bullying research, it is imperative that all participants fully understand the nature of the assessed bullying acts with a clear distinction of random aggressive behaviors or playfulness (Antoniadou, Kokkinos, & Markos, 2016).

Correlation analyses indicated the strength and direction of relationships among study variables (see Table 20). The majority of the relationships were in the expected

direction and in line with the existing research. For instance, higher ICT usage was associated with higher self-reported cyber victimization and cyberbullying. These findings are in line with existing research which found that a higher level of ICT usage is associated with a higher level of online risks including online harassment and cyberbullying/victimization (Leung & Lee, 2012; Livingstone & Helsper, 2010). Similarly, findings of the present study indicated that time spent online on normal routine day, weekend/off days, and time spent on SNS were positively associated with both cyberbullying and cyber victimization. These findings are consistent with the existing studies which found that greater amount of time spent online and frequency of Internet use is associated with more cyberbullying behaviors (Balakrishnan, 2015; Chen et al., 2016; Guo, 2016; Lee et al., 2017) and more experiences of cyber victimization (Balakrishnan, 2015; Park, Na, & Kim, 2014).

Further, ICT usage was positively correlated with the challenge and resources dimension of appraisal, suggesting that greater ICT usage is associated with the appraisal of cyberbullying victimization as more challenging and having more resources to deal with cyberbullying victimization. With reference to coping strategies, ICT usage was significantly positively associated with retaliation coping in response to the experience of cyber victimization. Likewise, significant positive associations of ICT usage were also found with general and ICT self-efficacy including all dimensions of ICT self-efficacy.

Finally, ICT usage was significantly positively associated with anxiety and stress as well as mental well-being, suggesting that high usage of ICT is associated with an increase in anxiety and stress yet, it also associated with an increase in the mental well-being of university students. These findings corroborate existing research that has had

mixed findings. For example some studies indicated that higher and maladaptive usage of ICT is positively associated with mental health problems (Beranuy, Oberst, Carbonell, & Chamarro, 2009; Sánchez-Martínez & Otero, 2009; Thomée, Dellve, Härenstam, & Hagberg, 2010). On the contrary, ICT usage was also found to contribute to positive outcomes and is often utilized as escape from negative situations and emotional experiences (Demirci, Akgönül, & Akpınar, 2015), and to improve well-being (Ganju, Pavlou, & Banker, 2015; Graham & Nikolova, 2015). Further, Panova and Lleras (2016) explain that it is more important to note the basic purpose of ICT usage, whether it is to avoid negative feelings and experiences or to avoid boredom. Their study indicated that usage of ICT may contribute to lowering the initial negative responses to stress (Panova & Lleras, 2016), and thus may enhance mental-wellbeing.

Findings showed that cyber victimization has a significant positive correlation with cyberbullying. This also accords with the existing research that provided evidence for the co-occurrence of cyberbullying and cyber victimization (Wright & Li, 2013; Ybarra & Mitchell, 2004b). These findings can be interpreted in the light of General Strain Theory (Agnew, 1992), positing that the experience of cyber victimization results in feelings of strain in individuals and this strain subsequently triggers frustration and anger and evokes retaliatory revenge in victims (Patchin & Hinduja, 2011).

Furthermore, cyber victimization and cyberbullying both were positively associated with traditional victimization and traditional bullying. This is consistent with the broad literature of victimology and criminology that observed that crime victims being more likely to be victims of the same crime and of other crimes and bullying behaviors are often associated with other antisocial acts (Spalek, 2016). Further,

associations between cyber and traditional bullying/victimization, found in the present study were similar to those observed in earlier studies at a simple bivariate level (Erdur-Baker, 2010; Raskauskas & Stoltz, 2007; Riebel et al., 2009).

Regarding coping strategies, cyber victimization was significantly positively associated with helplessness/self-blame, retaliation, and assertiveness coping. Significant negative associations of cyber and traditional victimization were also found with general self-efficacy suggesting that students with low self-efficacy experience higher levels of both traditional and cyber victimization. Both cyber victimization and cyberbullying were significantly positively associated with the communication dimension of ICT self-efficacy. Additionally, cyberbullying was significantly positively associated with the privacy and security dimension of ICT self-efficacy. Finally, cyberbullying/victimization as well as traditional bullying/victimization were significantly positively associated with depression, anxiety, and stress. However, these variables significantly negatively associated with mental well-being, suggesting that greater experiences of cyber and traditional victimization as well as greater involvement in both cyber and traditional bullying behaviors are associated with higher level of mental health problems and a lower level of mental well-being among university students. General self-efficacy was further significantly negatively correlated with depression and anxiety and positively correlated with mental well-being, suggesting that students with higher general self-efficacy are less likely to develop depression and anxiety and they have higher levels of mental well-being.

With respect to ICT usage, 98.2% of students reported that they own a mobile phone, while 86.8% of them reported smart phone ownership. Additionally, 95.6% of

respondents reported that they had a social network account. Further, concerning time spent online, responses ranged from 0 to 11.80 hours daily, on a university day ($\bar{x} = 2.46$, $SD = 2.04$), on a day off ($\bar{x} = 5.02$, $SD = 3.10$), and on SNS ($\bar{x} = 2.74.00$, $SD = 2.28$). These findings are consistent with the prior research on university students with regard to ICT usage (Gasaymeh et al., 2017), having social network accounts (Eke & Odoh, 2014), average time spent online and on social media (Aljomaa, Qudah, Albursan, Bakhiet, & Abduljabbar, 2016; Alwagait, Shahzad, & Alim, 2014; Kittinger, Correia, & Irons, 2012; Owusu-Acheaw & Larson, 2015).

To examine the prevalence of cyberbullying/victimization concerning different participants' roles, criteria of behavior participation and repetition were considered (see pp. 224-225 for details). The findings of the present study indicated 27.5% of students were cyber victims, 7.20% were cyber bullies, and 26.20% were involved in the dual role as cyber victim-bullies. Overall, 60.90% of students were involved in cyberbullying/victimization and only 39.10 % students were not involved in any of the role of cyberbullying/victimization.

It is important to note that concerns have been raised concerning methodological and measurement issues within the research on cyberbullying/victimization (Jenaro et al., 2018; Menesini et al., 2016; Smith et al., 2013). More specifically, the estimated prevalence rate of cyberbullying/victimization is likely to be influenced by the variations in the operationalization of the construct, whether cyberbullying/victimization is being measured by a global item or multiple-item approach, either short or long time frames used to report cyberbullying/victimization, implementation of lenient versus strict cut-off criteria for classification with reference to specific roles such as cyber-victims, cyber-

bullies or mixed cyber victim-bullies, and whether or not traditional bullying/victimization has been measured along with cyberbullying/victimization (Betts, 2016; Langos, 2012; Menesini et al., 2016). Therefore, consideration should be given to these factors when comparing the prevalence rates drawn from the various studies. As there are no set standards for measuring prevalence rate of cyberbullying/victimization, it is challenging to make meaningful comparisons between the rates reported in the existing studies and found in the current study. Further, most of the existing studies on university students investigated the prevalence rate for only cyber-victims and less consideration has been given to other participants' roles such as cyber-bullies and mixed cyber victim-bullies (Jenaro et al., 2018; Yubero et al., 2017).

The prevalence rates found in the current study for the involvement in cyberbullying/victimization with reference to different participant's roles are consistent with the existing studies in the higher education context. For example studies from western countries such as USA, Europe, Australia, and Canada reported the prevalence rates ranged from 21.9% to 68.9% for cyber victimization (Ballard & Welch, 2017; Caravaca-Sanchez et al., 2016; Crosslin & Crosslin, 2014; Elipe et al., 2015; Faucher et al., 2014; Francisco et al., 2015; Gibb & Devereux, 2016; Hoff & Mitchell, 2009; MacDonald & Roberts-Pittman, 2010; Whittaker & Kowalski, 2015), 7.5% to 35% for cyberbullying perpetration (Alhabash et al., 2013; Ballard & Welch, 2017; Brack & Caltabiano, 2014; Crosslin & Golman, 2014; Francisco et al., 2015; Gibb & Devereux, 2016; Kokkinos et al., 2014; Kokkinos et al., 2016; MacDonald & Roberts-Pittman, 2010; MartiNez-Monteagudo et al., 2019; Schenk & Fremouw, 2012; Schenk et al., 2013; Slovak et al., 2015; Washington, 2014; Webber & Ovedovitz, 2018; Whittaker &

Kowalski, 2015; Wozencroft et al., 2015) and 33 to 62% for the mixed role as cyber victim/bullies (Brack & Caltabiano, 2014; Kokkinos et al., 2016).

In contrast to our findings, several studies reported a low prevalence rates ranging from 4.3% to 9.8% for cyber victimization, and 2.2% to 3.6% and 2.4% for the mixed role (Cunningham et al., 2015; Molluzzo & Lawler, 2012; Poullet & Pinchot, 2014; Schenk & Fremouw, 2012; Tomša et al., 2013; Webber & Ovedovitz, 2018; Yubero et al., 2017).

There is no other study concerning the prevalence of cyberbullying/victimization in higher education in Pakistan except one based on study II data of this research (for details see Musharraf & Anis-ul-Haque (2018a)) that found the rates of 25%, 4%, and 39% for the involvement of students as cyber victims, cyber bullies and mixed cyber victim/bullies respectively.

. Our findings are consistent with those few studies conducted in Asian higher education institutions. For example, various studies from Turkey found 36.7% to 60% students were involved in cyber victimization (Akbulut & Eristi, 2011; Arıcak, 2009; Dilmac, 2009; Turan et al., 2011) and 17.7% reported that they had performed cyberbullying behaviors (Arıcak, 2009).

The rates of the cyber victimization observed in studies from Malaysia and India (Balakrishnan, 2018; Blaya et al., 2018), 18.6% and 15.2% respectively, are relatively lower than the rates of cyber victimization found in the current study (27.5%). However, the rates we found in the current study for the perpetration of cyberbullying (7.20%) are in line with (8%) reported by Balakrishnan (2018) from Malaysia, but significantly

higher than (2.1%) found in India (Blaya et al., 2018). Further, the rates found in the current study for mixed cyber victim/bullies (26.20%) are also higher than 15.9% and 20.9% found in Malaysia and India respectively (Balakrishnan, 2018; Blaya et al., 2018).

There can be several reasons for the variations in findings. First, as noted earlier, conceptualization, operationalization, method of measurement, sample characteristics and time frame are likely contributed to the variations in rates observed in various studies in comparison to the current study (Rivers & Noret, 2010). For example, Balakrishnan (2015) measured cyberbullying in Malaysian young adults using the time frame of the past six months. Further, Blaya et al. (2018) in India measured online negative experiences in the previous 12 months rather than cyberbullying with traditional criteria. Additionally, the questionnaire used in this study was based on previous research on school students (Livingstone, Haddon, Görzig, & Ólafsson, 2011a; Smith et al., 2008) and less attention has been given to measuring sexual nature of cyberbullying/victimization that can be more prevalent and relevant with reference to adult university students.

Second, it is also worth noting that the data for the current study was collected from September 2015 to February 2016 while Prevention of Electronic Crimes Bill was passed in Pakistan on April 13, 2016. Before this, there was no legislation to deal with cyberbullying. Therefore the findings of the present study found a relatively higher prevalence of cyberbullying/victimization in comparison to other South Asian countries such as India. Third, Pakistan is an underdeveloped country and existing research indicated that prevalence of bullying/victimization is extremely high in poor countries (Del Rey & Ortega, 2008; Zych et al., 2015). For example, Sam et al. (2018) observed an

alarming high prevalence of cyber victimization (93.3%) in university students in Ghana.

Olweus (2012b) cautioned researchers to study cyberbullying in the larger context of traditional bullying. He asserts that prevalence data on cyberbullying reported by sensational media and research reports are generally exaggerated. Such higher prevalence can be attributed to measurement issues, such as examining cyberbullying “in isolation.” Therefore, considering the value of meaningful comparisons of behaviors across traditional and cyber context, the prevalence of both traditional and cyberbullying/victimization were investigated in this study. The same criteria such as “intention to harm,” “repetition” and the time frame for the measurement of bullying victimization “past 12 months” were used to estimate the prevalence figures for both traditional and cyberbullying/victimization in the present study.

Similar to cyberbullying/victimization, to examine the prevalence of traditional bullying/victimization in different participants’ roles, same categorization criteria was used. Findings indicated 18% of the university students were found to be traditional victims while 3.30% were involved as traditional bullies and 14.10% as traditional victim-bullies. Overall, 35.4% of students were involved in traditional bullying/victimization, while, a large proportion of 64.70% of students were not involved in any role of traditional bullying/victimization. Data from the present research extends and adds to the small number of existing studies about the prevalence of traditional bullying/victimization among university students in Pakistan.

As noted earlier, it is challenging to compare different prevalence rates in various studies and to draw meaningful comparisons due to the methodological differences such as variations in the definitions, measurement, and time frame to report bullying/victimization used in individual studies (Cowie & Myers, 2016; Sánchez et al., 2016). Previous studies in higher education institutions in different countries suggest that prevalence rates vary highly. For example, a cross-cultural study by Pörhölä, Cvancara, Kaal, Tampere, and Torres (2016) found substantially lower occurrence rates of victimization such as (11%) in USA; Finland (5%) and Estonia (2%); in comparison to the findings of the present study (18%). Likewise, a large-scale survey at a Finnish university indicated that 5% students reported being victimized (Lappalainen et al., 2011). Further, most of the research among university students reported prevalence figures for victimization only and there are only a few studies that examined perpetration of bullying or dual role as bully/victim.

The findings of the present study are similar to those observed by Chapell et al. (2004) in the USA that indicated 18.5% of undergraduate students experienced victimization once or twice and 5% experienced it occasionally at college, while 13.4% reported that they have bullied their college fellows once or twice and 3.2% indicated bullying others at college occasionally. Similarly, 25% of students in Argentina reported traditional victimization at least occasionally (Pörhölä et al., 2016).

The majority of the research on bullying has been conducted in developed countries. However, earlier observations indicated the prevalence of bullying is extremely high in poor countries (Del Rey & Ortega, 2008; Zych et al., 2015). Higher prevalence rates of traditional bullying/victimization among Pakistani university students were found

in comparison to developed countries such as USA or Europe. Besides variations in measurement, this might be attributed to issues that exist in developing countries such as economic and political instability in Pakistan.

For example, research indicated that societies with high economic inequality have high prevalence rates of bullying victimization (Due, et al., 2009). A probable explanation is that acceptance of status differences and larger economic inequalities while living in a polarized society clearly reflect in the behaviors of people. The widespread acceptance of these economic inequalities becomes a societal norm that may further lead to the approval of acts associated with differences in status such as discrimination and bullying.

These findings can be attributed to high violence rate that prevails in Pakistani society (Zaman & Sabir, 2013). Existing research noted that exposure to community violence lead to more bullying behaviors towards classmates. The underlying mechanism may be that those who exposed to violence learn that aggression is an acceptable way to achieve personal goals (Schwartz & Proctor, 2000). Likewise, Political violence is usually vindicated by the belief that violence is an acceptable way to attain socio-political goals. Individuals in the context of political violence might learn these beliefs which later applied to their peer relationships that ultimately lead to high prevalence of bullying in countries with high level of political violence (Chaux, Molano, & Podlesky, 2009).

Findings concerning prevalence of traditional bullying/victimization are also comparable with the existing studies conducted in Pakistan. A study by Khawar and Malik (2016) investigated bullying among school students and found 19.3% of students

as victims, 17.3% perpetrators and 28.8% in dual roles as victims and perpetrators. Likewise, Shaikh (2013) demonstrated a higher prevalence and indicated 41.3% of school students experienced victimization in the past month. Further, our findings corroborate the existing studies in the Pakistani higher education context. For example, Ahmer et al. (2008) found 11% of final year medical students reported being bullied once in a week, 15.9% once in a month, and more than half (52%) of students reported experiencing bullying victimization less than once in a month. Likewise, Mukhtar et al. (2010) observed that 66% of the sample of medical students has experienced some form of bullying victimization in the past six months. Similarly, Qudsia and Asma (2011) indicated that 57.14% university students reported bullying victimization in the past 12 months.

The findings of the present research also consistent with the previous research (Chapell et al., 2004; Pörhölä et al., 2016), that indicate that students report traditional victimization more frequently than traditional bullying. It suggests that bullying behaviors often being under-reported due to social desirability.

Overall, comparing the prevalence rates of the two forms of bullying/victimization among university students, it is evident that more students were involved in cyberbullying/victimization (60.9%) in comparison to traditional bullying/victimization (35.4%). Further, the proportion of students who fit in all three participant roles in cyberbullying/victimization was higher in comparison to traditional bullying/victimization.

Our findings are in contrast to existing research on adolescents and school students (Bannink, Broeren, van de Looij–Jansen, de Waart, & Raat, 2014; Kowalski & Limber, 2013; Schneider et al., 2012; Hesapcioglu & Ercan, 2017) that observed cyberbullying/victimization is less prevalent than traditional bullying/victimization. However, it is difficult to find information especially with reference to the comparison of traditional and cyberbullying among university students. The findings are in agreement with existing research (Caravaca-Sanchez et al., 2016; Myburgh, 2018) that found higher rates for cyber-teasing and cyber bullying/victimization in comparison to traditional bullying/victimization among university students.

There are several possible explanations for these findings. First, university students may have a higher tendency of cyberbullying /victimization in comparison to other age-groups due to 24/7 unmonitored access to online spaces, heavy ICT usage, frequent online display of personal lives and forming competitive political and social online cliques (Jones & Scott, 2012; Kokkinos & Antoniadou, 2019). Second, the perception of accountability and the norms of face-to-face interactions in traditional contexts may embolden university students to bully others in the online context in comparison to offline. Third, as noted by several researchers (Butler et al., 2009; Kiriakidis & Kavoura, 2010; Mark & Ratliffe, 2011), cyberbullying increases with age, therefore with respect to adult university students, this variable may contribute to higher prevalence of cyberbullying victimization than traditional bullying/victimization.

With respect to gender, findings of the current study demonstrated that more female students were involved as both traditional and cyber victims than male students. On the other hand, more male students were involved as traditional and cyber bullies and

in the mixed role as traditional and cyber bully-victims. Further, using continuous scores, a significantly higher mean score was observed for female students on both traditional and cyber victimization than male students. On the other hand, male students scored significantly higher than female students on both traditional and cyberbullying perpetration.

Regarding, traditional bullying/victimization, findings are in line with the existing research (Whitney & Smith, 1993; Yang, Kim, Kim, Shin, & Yoon, 2006) that observed male students were more frequently involved in bullying in comparison to female students. Similar to adolescents' samples, there are mixed findings in the literature concerning cyberbullying/victimization and gender with reference to university students. Our findings are in contrast to prior research (Gibb & Devereux, 2016; MacDonald & Roberts-Pittman, 2010; Schenk & Fremouw, 2012; Wozencroft et al., 2015) that found no gender differences and research by Wensley and Campbell (2012) who observed greater victimization of male students than female students. However, our findings corroborate the existing research on university students that reported greater cyber victimization of female students than male students (Caravaca-Sanchez et al., 2016; Faucher et al., 2014; Pullet & Pinchot, 2014; Webber & Ovedovitz, 2018; Zalaquett & Chatters, 2014), and male students outnumbered female students for cyberbullying (Ballard & Welch, 2017) who were involved more as bullies and mixed victim-bullies (Cunningham et al., 2015; Kokkinos et al., 2016) in comparison to female students.

Additionally, findings are in agreement with the previous research in Asian countries that noted that male university students were more frequently involved in cyberbullying perpetration than female students (Akbulut & Eristi, 2011; Dilmac, 2009).

Findings regarding gender differences may be explained in terms of deeply rooted patriarchal values in Pakistani society, where men hold the primary power and dominate in all aspects of life and mistreatment and abuse of women is common in Pakistani society (Magsi et al., 2017; Tarar & Pulla, 2014).

With reference to prevalence by residence type, findings demonstrated that students residing in hostels were more frequently involved as cyber victims, cyber bullies, and mixed cyber victim-bullies in comparison to students residing in their homes (See table 24). Similar trends were observed in the prevalence of traditional bullying-victimization across student's residence type (hostel versus home); however, the differences in the prevalence rate were non-significant (See table 24). Further, students living in hostels reported a significantly higher level of both traditional and cyber victimization and perpetration in comparison to students residing in their homes, however, the Cohen's *d* effect size indicated small practical significance (see table 24).

More frequent involvement of hostelers as cyber victims, cyber bullies, and cyber victim bullies may be attributed to significant higher usage of ICT and greater time spent on social media in comparison to students residing in their homes (see table 24). This is not surprising because student's residence halls in Pakistani universities have 24/7 free internet access. On the other hand there are fewer opportunities for outdoor recreational activities. Therefore students may spend more time online on social media for online interaction and recreational purposes. Prior research demonstrated that a higher probability of involvement in cyberbullying/victimization is associated with greater time spent on social media and heavier use of SNS (Navarro, Clevenger, Beasley, & Jackson,

2017; Zhou et al., 2013). Another possible explanation for this might be that students in hostels live more independently and subject to less monitoring.

Besides this, the higher involvement of hostellers in both traditional and cyberbullying victimization may be due to the fact that they live independently and deal with more pressure in comparison to those students live with their families at home. Such pressure and strain lead to frustration and consequently bullying provides them opportunity to vent their frustrations on other mates. Another reason may be that too much authority and responsibility associated with hostel life provide them an unrealistic perception of control and power that may further lead to bullying behaviors in hostellers. Prior research noted that a significant amount of victimization and violence occurs in campus residential halls (Palmer, 1993). It is possible that hostel students who have been victims of any form of bullying to look for ways to seek revenge or retaliate that may provide them vindication or a sense of relief for what they have experienced. All these can be the possible reasons for the greater involvement of hostellers in both traditional and cyberbullying perpetration and victimization. Future research may confirm these findings and explore the causes of higher involvement of hostellers in bullying/victimization.

It is important to note that a discrepancy exists regarding gender-wise proportion of the sample (59.3% female students versus 40.7% male students), residence type (38% living in hostels versus 62% living in homes), and academic major wise (25% natural sciences versus 75% arts and social sciences). These discrepancies may affect the results; therefore, caution must be used when interpreting these findings.

With respect to overlap in behaviors between online and offline contexts, the finding of the present study indicated that 5.9% of the sample was identified as both traditional and cyber victims. Contrary to this, only 0.8% of the sample (11 students) was identified as both traditional and cyber bullies. Further, a greater overlap was observed in the mixed role as 9.5% of the sample was involved as both traditional victim-bullies and cyber victim-bullies. Additionally, 34.2% of the sample was not involved in either traditional or cyber bullying/victimization.

These findings are in contrast to existing research that observed a high degree of overlap even up to 80% in school students (Campbell, 2005; Riebel et al., 2009) and 65.7% among university students (Caravaca-Sanchez et al., 2016). However, it is noteworthy that the majority of these studies are correlational nature. There are only a few studies that examined the overlap of traditional and cyberbullying/victimization with respect to involvement in different roles in bullying/victimization. The overlap figures observed in the current study are comparable with those reported by Brown et al. (2017) who found a small overlap using a latent class analysis between traditional and cyber forms of victimization among high school students such as 10%, 3%, and 1% at a low, moderate, and high level of victimization respectively. Further, the overlap figures we found in the current study are lower than reported by Kubiszewski, Fontaine, Potard, and Auzoult (2015). Their findings indicated (26%, 22% and 13% overlap for both forms of victims, bullies, and mixed victim-bullies respectively) by examining junior and high school students after taking into account the modality of involvement in different roles in bullying/victimization. This variation in findings can be attributed in part by the measurement issues such as Kubiszewski et al. (2015) using a lenient criteria “once or

twice” to classify participants into different participants’ roles. Further, it seems possible that a very little overlap exists with respect to university students in comparison to school students particularly after considering modality of involvement in a particular role in bullying. Thus, future research regarding overlap between traditional and cyberbullying should be conducted on university students to confirm these findings.

In contrast to the notions (Juvonen & Gross, 2008; Olweus, 2012b; Wolke, Lee, & Guy, 2017) that cyberbullying is an overrated phenomenon, an extension of traditional bullying that creates very few new victims, findings of the current study found 18.4% cyber victims, 4.7% cyberbullies, and 7.4% cyber victim-bullies had a neutral profile with respect to traditional bullying/victimization as they were un-involved in any role of traditional bullying/victimization. This finding supports the idea of Hinduja and Patchin (2008) that suggested cyberbullying can occur “in isolation” and some students do not perpetrate in traditional context or face to face but they do in cyberspace.

Further, our findings indicated 0.8% (11 cases) of traditional victims were also cyber bullies, while 7.7% of traditional victims reported themselves in the mixed role in the cyber world as cyber victim-bullies. Thus, the present study extends the previous research that reported links between traditional victimization and cyberbullying perpetration (Jang et al., 2014; Ybarra & Mitchell, 2004a) and reported the frequency of students that are simultaneously victims in traditional context and victim-bullies in cyber context. Researchers such as (Jang et al., 2014) explain this phenomenon through the lens of general strain theory and assert that traditional victimization leads to develop feelings of strain that further combine with the anonymity in online spaces and subsequently trigger the emotions of anger and frustration and ultimately enhance the victim’s desire to

seek revenge. Due to anonymity, even physically weaker or shy students persecute to seek revenge (Mishna, McLuckie, et al., 2009). Further, findings of the current study showed traditional bullies also reported themselves as cyber victims or cyber victim-bullies. A possible explanation might be that anonymity of online spaces allows students who would not normally stand up against bullies and thus seek revenge fearlessly.

Findings of the present study showed that male students were higher than female students on ICT usage (online activities). In contrast to this, no significant differences were found on average time spent online or specifically on SNS. These findings are in line with prior evidence that reported no gender difference in terms of spending greater time online (Odell, Korgen, Schumacher, & Delucchi, 2000).

Further, this is the first study that examined gender-related differences regarding different types of appraisals of cyber victimization among university students. Findings found female students were higher than male students on threat and centrality appraisal in response to cyber victimization, while male students were higher than female students on challenge and resources appraisal in response to cyber victimization. Prior research has indicated that socio-cultural context influences an individual's interpretation of the personal and threatening events (Stark, Tousignant, & Fireman, 2019).

Further, higher challenge and resources appraisals by male students in response to cyber victimization in comparison to female students can be explained by existing research on gender socialization that revealed that male students were more accustomed to express strength and resilience in response to challenging situations (Smith, Shu, &

Madsen, 2001), and more likely evaluate such situations as the growth opportunities (Stark et al., 2019).

Findings of the present study demonstrated that significant gender differences exist for coping in response to cyber victimization. Male students scored higher in comparison to female students on retaliation coping. On the other hand, female students showed significantly higher scores than male students on technical coping, distal advice, helplessness/self-blame, active ignoring and close support coping. A small number of studies exist on gender and coping in response to cyber victimization, particularly in the higher education context. Our findings are in line with prior literature on high school and university students that demonstrated that male students were higher on revenge-seeking (Erişti & Akbulut, 2018), and more likely use retaliation coping in comparison to female students (Machmutow et al., 2012).

As male students were found to be higher on ICT usage, we assumed they were higher on using technical coping in response to cyber victimization. Contrary to our hypothesis, female students were higher on technical coping in comparison to male students. A possible explanation for this finding may be that female students often choose indirect ways of coping in response to unpleasant events (Archer & Coyne, 2005) and are inclined to avoid aggression (Björkqvist & Österman, 2018). Another possible explanation to this finding might be that female students have been given more advice in the past since they are thought to be more at risk of becoming victims. Further, findings corroborate the prior research on school and university students that indicated that female students reported a greater tendency to use help-seeking (Q. Li, 2006; Orel, Campbell, Wozencroft, Leong, & Kimpton, 2015), support-seeking and advice-seeking (Sittichai &

Smith, 2018) and were higher on ignoring coping and restricting contact with the bully (Orel et al., 2017; Schenk & Fremouw, 2012; Sittichai & Smith, 2018). In contrast to our hypothesis and prior research that suggests that female students are less assertive than male students (Adejumo, 1981), findings of the present study found no significant differences in assertiveness coping in response to cyber victimization. Thus, contrary to gender role stereotypes in Pakistani culture, it seems that female students and male students are equally skilled to show assertive responses (asking the bully to stop or why he is doing this) to cope with cyber victimization. These findings can also be attributed to distinct features of online spaces that allow individuals to express themselves more openly (Alvarez, 2012).

Gender differences in general self-efficacy and ICT self-efficacy revealed male students were significantly higher on general self-efficacy than female students. This is consistent with the previous research in Asian culture such as Hong Kong (Ralf Schwarzer, Bäßler, Kwiatek, Schröder, & Zhang, 1997) and in Pakistan (Akram & Ghazanfar, 2014). In contrast to this, no significant differences were found in the overall score on ICT self-efficacy; however, male students were high on only the communication dimension of ICT self-efficacy.

Regarding gender differences in symptoms of depression, anxiety and stress, findings of the current study showed female students were significantly higher on stress and non-significant differences observed on symptoms of depression and anxiety. This is in line with the prior normative data regarding the gender differences on symptoms of depression, anxiety, and stress that showed inconsistent findings (Crawford & Henry, 2003; Lovibond & Lovibond, 1995; Taouk, Lovibond, & Laube, 2001) and also

accordant with the past evidence from Pakistan which reported women higher on experiencing stress symptoms than men (Aslam & Kamal, 2017).

Further, contrary to our hypothesis, the present study found no gender differences on mental well-being in university students. This also in contrast to the normative data that demonstrated men were slightly higher on mental well-being than women (Fat, Scholes, Boniface, Mindell, & Stewart-Brown, 2017; Waqas et al., 2015). Moreover, there were no significant gender differences in social desirability found in the present study, which strengthens the significance of these findings by ruling out the gender bias in reports.

Findings of the present study indicated that students in all three categories of involvement as cyber victims, cyber bullies and cyber victim-bullies were higher on ICT usage (online activities) as well as higher on time spent online on normal university day, off day and time spent on SNS in comparison to those un-involved in any role of cyberbullying/victimization. These findings are in accord with our hypothesis and confirm the existing research on children and adolescent's samples that observed that cyber victimization was linked to greater use of technology and spending more time online (Mesch, 2009).

Similarly, those who were identified as cyber-victims, cyber-bullies, and mixed cyber victim-bullies spent a larger amount of time online for social purposes (Twyman et al., 2010), and cyberbullying perpetration was associated with more time spent online (Zhou et al., 2013), and heavier use of SNS (Navarro et al., 2017). Further, consistent findings have been reported for college and university students that found that time spent

on SNS predicts involvement in cyberbullying (Lindsay & Krysik, 2012; Walker et al., 2011), and cyberbully/victims more frequently use the internet in comparison to uninvolved students (Kokkinos et al., 2014). It might be attributed to simple exposure effect that spending more time online increases the probability for greater involvement in cyberbullying/victimization. (Betts, 2016).

Turning to the findings related to the appraisal of cyber victimization, it was found that cyber-victims were significantly lower on challenge appraisal than the cyber bully-victims and not-involved group. In contrast to this, cyber victims were higher on threat appraisal than cyber-bullies and un-involved students. Additionally, cyber victim-bullies were found to be significantly higher on threat appraisal than pure cyber-bullies and un-involved categories. Further, all three involvement groups were higher on centrality appraisal in comparison to an un-involved group of students.

Similar to our findings, Na et al. (2015) reported a significant negative association between challenge appraisal and cyber victimization among college students. There is a scarcity of research on cognitive appraisals regarding cyber victimization. Prior research on face-to-face peer victimization among children and adolescents noted that threat appraisal was positively associated with the indirect form and verbal victimization (Anderson & Hunter, 2012) and overall peer victimization (Catterson & Hunter, 2010; Giannotta et al., 2012; Hunter & Boyle, 2002). Cyber victimization has also been considered an indirect and relational form of victimization because it involves rumors, social exclusion, verbal victimization, threats, and name-calling (Mark & Ratliffe, 2011). TMSC highlights the role of threat appraisal that involves the potential for loss and harm in the future and may threaten well-being. As expected, cyber-victims were high on threat

as experiencing victimization is undoubtedly a painful and unpleasant experience that evokes fear in victims (Stark et al., 2019). The experience of cyber victimization may be evaluated by cyber-victims as indicative of future escalation of cyber victimization or widespread distribution of compromising content to a global audience. Higher mean scores of mixed cyber victim-bullies and un-involved participants on challenge appraisal in response to the hypothetical situation of cyber victimization indicated that they perceive that they can positively deal with cyber victimization and such experiences help them to make stronger. A possible explanation for this might be that cyber victim-bullies retaliate in response to cyber victimization. They justify their retaliatory actions as a form of protection against further victimization and therefore appraise cyber victimization more as challenging (Frey, Pearson, & Cohen, 2015).

Interestingly, all students involved as cyber victims, cyber bullies and cyber victim-bullies were high on centrality appraisal (perceived importance of an event) that indicate that all involved participants perceive that cyber victimization has long term impacts including serious negative outcomes for their lives. Further, contrary to our hypothesis, no significant differences on resources appraisal were observed in cyber-victims, mixed victim-bullies and pure bullies in comparison to un-involved students. This result may be explained by the fact that in the current study resources appraisal was measured in terms of general perceived available help and social support. Future research may include a scale based on pertinent technological based help such as anti-cyberbullying helplines, or availability of technically skilled staff available on campus or online for immediate response.

Regarding coping strategies, the present study found significant mean differences between cyber-victims, cyber-bullies, and cyber victim-bullies in comparison to un-involved students on helplessness, retaliation, active ignoring, close support, and assertiveness coping. Further, group-wise comparisons demonstrated that cyber-victims and mixed cyber victim-bullies were significantly higher on helplessness coping in comparison to un-involved students. Prior research supported this finding that demonstrated cyber victims used more depressive coping than un-involved (Völlink et al., 2013). Our findings extend the previous literature by also providing the comparison of cyber victim-bullies with un-involved students. Vandebosch and Van Cleemput (2009) assert that in cyberbullying/victimization, perpetrator and victims often don't know each other, and this may increase their insecurity and sense of helplessness to cope with cyber victimization. Further, a higher level of helplessness coping in cyber-victims and cyber victim-bullies can be explained partly by the availability of wider audience in the cyber context. Harmful online posts often go viral and thus might increase the feeling of helplessness and shame in victims (Kowalski & Limber, 2007).

Additionally, as expected, pure cyber-bullies and mixed cyber victim-bullies were higher on retaliation coping than cyber-victims and un-involved. This finding is not counterintuitive as cyber victim-bullies and pure cyber-bullies use more retaliation coping (aggressive approach) to cope with their cyber victimization and this is consistent with existing research on adolescents (Chan & Wong, 2017).

In contrast to this, no significant difference was found for active ignoring between cyber-victims, cyber-bullies, and cyber victim-bullies. However, cyber-victims were higher on active ignoring coping in comparison to un-involved students. This is

consistent with the prior literature on adolescents that revealed that cyber-victims used more passive coping strategies such as active ignoring (Whelan, 2016), and cyber victims more frequently recommend using the ignoring coping strategy in comparison to un-involved youth (Sittichai & Smith, 2018). Similar to our findings, Chan and Wong (2017) found that cyber victim-bullies (aggressive victims) more frequently used passive coping, and (palliative) avoidant coping (Völlink et al., 2013) than non-victims.

Similar trends were observed in findings regarding close support coping that partially supported our hypothesis. Cyber-victims were higher on close support coping than un-involved participants. Although, cyber victims have the highest mean score among three categories of involvement, no significant differences were found between cyber-victims, cyber-bullies, and cyber victim-bullies on close support coping. These findings are in line with prior research (Völlink et al., 2013) that found no significant differences between these three groups. In contrast to research on children and adolescents demonstrating that involved students in all categories scored relatively low on social support than un-involved (Demaray & Malecki, 2003; Völlink et al., 2013), our findings indicate that scores on close support ranging from 5-20, while, cyber victims had a mean score of 15.82, cyber-bullies scored 15.37, cyber victim-bullies scored 15.54, and un-involved students scored 14.89. These high scores in all categories suggest that university students involved in cyberbullying/victimization seek emotional support and discuss their feelings more in comparison to child and adolescents samples.

As hypothesized, findings of the present study found that cyber-bullies and cyber victim-bullies were significantly higher on assertiveness coping than the not-involved participants. Further, though the difference is insignificant, cyber victims had the lowest

mean score on assertiveness coping. Prior research indicated assertiveness as most recommended coping by adolescents (Tenenbaum, Varjas, Meyers, & Parris, 2011). An empirical investigation in the context of cyber victimization showed that it is associated with an increase in depressive symptoms (Machmutow et al., 2012). Assertiveness coping (such as asking the bully to stop and asking about the perpetrator's motive behind bullying) involves contact with the bully. Therefore a possible explanation might be that due to the involvement of contact, this coping may provoke the victims and then transform victims into victim/bullies and contribute to a vicious cycle. Further, cyber-bullies were considered higher on power and so on assertiveness coping that fosters a personal sense of mastery in bullies that protect them against cyber victimization.

One unanticipated finding is that no significant differences were found on general self-efficacy between students involved in three categories of cyberbullying/victimization in comparison to un-involved students. These findings contradict prior evidence which indicated that a lower level of self-efficacy was found in cyber victims than un-involved participants (Olenik-Shemesh & Heiman, 2014). However, findings of the past research on self-esteem and cyberbullying/victimization among young adults were similar to our findings that observed no significant differences in the level of self-esteem between cyber-victims, cyber-bullies, mixed cyber victim-bullies and un-involved students (Brack & Caltabiano, 2014). Researchers such as Yubero et al. (2017) asserts that the relationship between self-esteem and bullying/victimization could be weaker in young adulthood in comparison to adolescence in which peer relationships are of utmost importance. Another possible explanation might be that self-esteem or self-efficacy can operate differently in online peer relationships.

In relation to ICT self-efficacy, findings showed cyber-victims were significantly lower than cyber-bullies. Further, cyber-victims were also lower on the privacy and security dimension of ICT self-efficacy. These findings are consistent with the prior literature that indicated that cyber victims are not well aware of the skills related to online safety (Mishna et al., 2012). Further, a higher level of ICT self-efficacy in cyber-bullies than cyber-victims seems to be consistent with the past evidence that reported the positive association between the perpetration of cyberbullying and ICT self-efficacy (Xiao & Wong, 2013), and also in line with those which found a significant positive association of cyberbullying perpetration with online expertise (Livingstone, Haddon, Görzig, & Ólafsson, 2011b), and computer skills (Walrave & Heirman, 2011). A possible explanation for this might be that those who choose to cyberbully others need digital skills and ICT self-efficacy may facilitate in performing their online aggression. For instance, cyber-aggressors can remove digital traces of their negative online behaviors and may fabricate their true identities by using such skills. Besides this, they may feel safe against the fear of being caught and get punished if they think that their target does not possess such skills to seek revenge.

With respect to mental health problems, findings of the present study found that students in all three categories of involvement were higher on mental health problems (i.e., depression, anxiety, and stress) in comparison to un-involved students. These results concurs well with the past evidence that demonstrated that a wide range of negative impacts on mental health for cyber-victims (Bottino et al., 2015), cyber-bullies (Campbell et al., 2013), and mixed cyber victim-bullies (Sourander et al., 2010) in comparison to un-involved students. Additionally, in accordance with previous research (Chang et al.,

2013), findings of the present study demonstrated cyber victim-bullies scored highest on mental health problems than students involved in any other participant role and those uninvolved in cyberbullying/victimization. These findings would seem to suggest that cyber victim-bullies are the most vulnerable participants in terms of experiencing mental health problems and thus require attention, counselling and psychological support. It could be argued that they enter into a vicious never-ending cycle of retaliation and counter-retaliation that prolong their experiences of cyber victimization and subsequently lead to severe negative impacts on their mental health (Betts, 2016). Further, as hypothesized, we found that cyber victims and cyber victim-bullies reported significantly lower levels of mental well-being than uninvolved students and these findings are consistent with prior literature that indicated similar findings (Przybylski & Bowes, 2017).

These findings contribute to the small existing literature by comparing students in the three categories of involvement in cyberbullying/victimization to uninvolved students. This is the first study on university students that particularly examined cognitive appraisals, coping strategies, ICT self-efficacy, and mental health of cyber-victims, cyber-bullies and mixed cyber victim-bullies in comparison to uninvolved students.

Overall, findings indicated several important differences that emerged between those involved in cyberbullying/victimization and uninvolved students. Involved students reported higher use of ICT, more time spent online and on SNS than uninvolved. Similarly, involved students appraise cyber victimization as a threat that has serious negative outcomes for their lives in comparison to uninvolved. Further involved students reported higher use of helplessness and retaliation coping in response to cyber victimization than uninvolved students. Moreover, involved students were found higher

on mental health problems (i.e., depression, anxiety, and stress) and lower on mental well-being in comparison to un-involved students.

However, we did not examine the role of gender and age while comparing students in different categories of involvement; it is plausible that gender differences in appraisals and cognitive strategies could have influenced these findings. Future research may test these findings separately for men and women.

Another objective of the present study was to investigate whether involvement in cyberbullying/victimization would have an incremental effect on the mental health and mental well-being of university students above and beyond traditional bullying/victimization. In contrast to the arguments raised by Olweus (2012a, 2012b) who suggested that negative consequences of cyberbullying/victimization are actually due to the overlap of cyberbullying/victimization with traditional bullying/victimization, findings of the current study found that although both types of bullying/victimization are related, their associations to negative consequences are unique.

Findings partially supported the assumption that after controlling for demographics, confounding variables, and traditional bullying/victimization, only cyber victimization (not cyberbullying perpetration) significantly positively predicted symptoms of depression, anxiety, and stress over and above traditional bullying/victimization among university students. Further, both cyber victimization and cyberbullying perpetration significantly negatively predicted mental well-being over and above traditional bullying/victimization. These findings suggest that experiencing cyber victimization is a greater risk factor for the development of symptoms of anxiety, stress,

and depression and lower mental-wellbeing than traditional bullying/victimization. These findings are consistent with the past evidence on high school and college students that demonstrated unique impact of cyber victimization over and above traditional victimization (Bonanno & Hymel, 2013; Tennant et al., 2015).

Furthermore, moderation analyses revealed that after controlling the effect of traditional bullying/victimization, age, social desirability, general self-efficacy, and ICT self-efficacy, gender appeared to moderate the effect of cyber victimization on the symptoms of anxiety, stress, and depression (see figs. 24, 25, 26). These findings indicate that notwithstanding cyber victimization associated with an increase in depression, anxiety and stress symptoms in both female and male students, female students can be more at risk of developing these symptoms due to cyber victimization.

Prior research on adolescent sample substantiates these findings, demonstrating that female cyber victims are more likely to feel frustrated in comparison to male cyber victims (Hinduja & Patchin, 2007). Likewise, Bauman et al. (2013) found that that cyber victimization significantly predicts depression but only for female students. Similar findings were found in study II of the present research (for details see (Musharraf & Anis-ul-Haque, 2018b)). Wright (2017) asserts that most of the explanations to understand cyberbullying/victimization are rooted in the cultural context. Therefore these findings can be interpreted in view of socio-cultural factors concerning gender roles and power structures (Barlett & Coyne, 2014). Overall in the social-cultural milieu, men hold the primary power and dominate in all aspects of the society. Issues related to honor, shame, and humiliation are of utmost significance in Pakistani society. The “honor” is generally tied with the conduct of a woman (Tarar & Pulla, 2014). On account of cultural

taboos and stigmas, victimized women are generally judged by certain segments of the society as immoral and accountable for their own victimization. Furthermore, reporting mistreatment and harassment by women is considered as humiliation and threat to the honor of the family (Magsi et al., 2017). These factors may lead women to have a greater tendency to experience depression, anxiety, and stress symptoms in response to cyber victimization.

The findings of the current study demonstrated the moderating role of age for the effect of cyberbullying perpetration on depression controlling for gender, social desirability, general self-efficacy, ICT self-efficacy, and traditional bullying/victimization. Findings suggest that for younger university students, cyberbullying appeared to have a negative effect on depressive symptoms (associated with a decrease in depressive symptoms), whereas for older university students cyberbullying is associated with an increase in their depressive symptoms. Thus, cyberbullying perpetration has more negative consequences for older university students in terms of developing depressive symptoms. Besides, this no moderating role of age was found for the relationship of cyberbullying perpetration and anxiety and stress. Similarly, no significant moderation of age was found for the relationship of cyberbullying victimization and symptoms of depression, anxiety, and stress.

Age as a moderator for the relationship of cyberbullying perpetration and depression has not been tested in previous studies. Prior criminological literature suggests that sensory rewards of thrill and adventure-seeking explain the relationship between delinquency, crime, and age (Baldwin, 1985). As thrill and adventure-seeking is more rewarding in an earlier age, therefore it seems possible that younger perpetrators feel less

internal conflict and guilt and consequently experience less depressive symptoms. Furthermore, Lennon and Eisenberg (1987) indicated a positive association between age and empathy. It is very likely that older students perpetrate as a retaliatory response but due to high empathic feelings, they experience more internal conflict, psychological distress, and guilt that consequently led them to experience more depressive symptoms than younger students who may feel less sympathy towards the victim (Betts, 2016). Another possible explanation might be that younger students perceive their bullying behavior more as fun whereas older student bullying behavior may have feelings of envy hence resulting in development of depressive symptoms.

It is also possible that older students are usually more digitally literate than younger students and aware that web-based history of digital footprints can track their actions. Thus cyberbullying perpetration may evoke fear and threat of being caught and getting punished that ultimately lead them to experience more depressive symptoms. On the other hand, younger students are more prone to risk-taking and even if they are aware, they might easily convince themselves that it's worth the risk.

The TMSC posits that an individual's reaction to a stressful event (such as the experience of cyber victimization) is a result of the individuals' cognitive appraisals and the subsequent selection of coping strategies. Further, self-efficacy is an important variable that may affect the cognitive appraisals, coping, and mental health. Model testing was performed to examine the role of cognitive appraisals, coping strategies, and self-efficacy to understand the relationship between cyber victimization and mental health after controlling for the effect of age, gender, traditional bullying/victimization, and social desirability. The model fit indices showed a good fit of the models to the data.

Theoretically, cognitive appraisals affect a person's response to a harmful situation and may function as mediators in the relationship between victimization and mental health (Cohen & Wills, 1985; Gruen, Folkman, & Lazarus, 1988). In view of this, we assumed that appraisal of cyber victimization as threat (concerns about loss/harm) and centrality (perceived significance of the victimization for one's well-being) positively mediate the effect of cyber victimization on mental health problems (i.e. depression, anxiety, and stress). Findings of this study indicated that experiences of cyber victimization predict the threat and centrality appraisals which, in turn, lead to higher level of depression anxiety, and stress symptoms. Thus threat and centrality appraisals mediate between experiences of cyber victimization and mental health problems. This is consistent with the existing research on peer victimization among adolescents that demonstrated threat appraisal worked as a mediator between peer victimization and depression (Giannotta et al., 2012).

TMSC posits, appraisals not only function in the relationship between victimization and mental health outcomes, they also determine the selection of coping strategies to deal with the stressful situations (Lazarus, 1984). The model indicates that positive appraisals (i.e. challenge and resources) are more likely to result in problem-focused coping strategies, while negative appraisals are more likely to result in avoidant/emotion-focused coping. In view of this, the researcher assumed that appraisal of cyber victimization as challenge (perception of resourcefulness to deal with cyber victimization and expecting positive outcomes or growth) increases the use of technical coping, distal advice coping and assertiveness coping.

Findings provided partial support to assumption and indicted that appraisal of cyber victimization as a challenge lead to greater use of problem-focused coping strategies such as technical coping and assertiveness coping. These findings are in line with past research on school children in the context of traditional bullying victimization that found that those who appraised their experiences of victimization as a challenge were more likely used problem-focused coping (Hunter & Boyle, 2004). However, the data of the present study did not support that challenge appraisal leads to greater use of distal advice coping that has been considered problem-focused coping and involves informing a teacher, seeking advice online, or calling a helpline. This might be because when one may feel capable to handle the situation and expect positive outcomes from that experience seek less advice and cope by using one's own skills. Further, consistent with the assumption of this study, findings demonstrated appraisal of cyber victimization as challenge decreases the use of helplessness/self-blame and active ignoring coping. Similar to our findings, prior research suggest that those who appraised victimization as challenge used less wishful thinking (Hunter & Boyle, 2004).

Further, it was assumed that appraisal of cyber victimization as threat increases the use of helplessness/self-blame coping and results of the study support this assumption. Moreover, threat appraisal decreases the use of distal advice coping. These findings indicate that threatened individuals in the situation of cyber victimization find it difficult to seek advice and use effective coping strategies. These findings are consistent with the existing research that demonstrated that individuals were more likely to inhibit effective coping actions when faced with fear-arousing situations (Beaver, 1997), and threat appraisal predict the emotion focused coping (Peacock, Wong, & Reker, 1993).

Centrality appraisal is an important component of primary appraisal that reflects the perceived significance of cyber victimization for one's well-being in terms of its long-term consequences and negative impacts on victim's life. There is scarcity of systematic research with reference to centrality appraisal and coping. Prior research indicated significant positive association between centrality appraisal and the emotion focused coping in response to a stressful situation (Peacock et al., 1993), therefore we assumed that appraisal of cyber victimization as centrality increases the use of helplessness/self-blame, active ignoring, and close support coping. It is important to note that close support was measured in terms of seeking emotional support instead of tangible support and thus can be considered as emotion-focused coping. Results provided support to our assumption and indicated that centrality appraisal lead to higher use of helplessness/self-blame, active ignoring, and close support coping. This is in line with past evidence that demonstrated positive link between centrality appraisal and emotion-focused coping in response to a stressful situation (Peacock et al., 1993). Further, it was assumed that appraisal of cyber victimization as centrality decreases the use of technical coping, distal advice, and retaliation coping. Findings did not support this assumption and indicated that centrality appraisal led to an increase the use of technical coping, distal advice, and retaliation coping.

These findings suggest that students use seemingly different coping strategies and indeed cope in a complex way when they appraise cyber victimization through centrality appraisal. For example, in this study, subjects used both emotion-focused and problem-focused coping when they appraised cyber victimization high on centrality. This is in line with the previous research (Folkman & Lazarus, 1985) demonstrating that majority of the

participants use both emotion-focused and problem-focused coping strategies in response to a stressful situation (college examination), and both functions of coping are evident in high stressful encounters (Lazarus & Folkman, 1984). Findings can be interpreted in the light of past evidence that indicated that ignoring coping is limited to short-term instances of cyber victimization, however, as the associated harm and threat of victimization increase, the use of active coping also increase (Tokunaga, 2010).

As expected, findings of the present study showed that resources appraisal in response to cyber victimization is associated with an increase in the use of technical coping, distal advice, and close support coping and associated with a decrease in the use of helplessness/self-blame and active ignoring coping. Support seeking has been considered as mixed problem-focused and emotion-focused coping to the extent that individual tends to seek emotional support or tangible support (Lazarus & Folkman, 1984). As described earlier, resources appraisal was measured in terms of availability of help and supportiveness of one's social network; therefore it is expected to lead to close support along with problem-focused strategies. Findings are in line with the notion that resources appraisal would presumably lead to the selection of effective coping (Compas, 1987). It is also possible that perception of the access to help and support (resources appraisal) further assist students to the selection of other problem-focused coping to manage cyber victimization.

Self-efficacy can be an important variable that may affect the way an individual appraises the experience of cyber victimization. Self-efficacy also influences the selection of coping strategies (Gist & Mitchell, 1992) and the effect of cyber victimization on mental health. In view of this, the current study examined the

moderating role of general self-efficacy and situation-specific (ICT) self-efficacy for the effect of cyber victimization on appraisals, coping strategies, and mental health.

Findings revealed that general self-efficacy positively moderated the effect of cyber victimization on challenge appraisal suggesting that students with higher levels of general self-efficacy tend to appraise cyber victimization as a challenge compared to students with low levels of general self-efficacy. The findings further showed that general self-efficacy negatively moderated the effect of cyber victimization on threat and centrality appraisal suggesting that students with higher levels of general self-efficacy tend to use less of the centrality and threat appraisal compared to students with low levels of general self-efficacy.

These findings are consistent with the Bandura's (1997) notion that self-efficacy is a determinant of cognitive appraisals in response to a stressful situation. Additionally, both epidemiological and experimental studies provided support to our findings, indicating that individuals high on general self-efficacy appraise stressful situations as more challenging in comparison to threat (Leganger & Kraft, 2003; Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005). Thus, our findings suggest that general self-efficacy as a personal resource factor can promote resilience by increasing the use of positive cognitive appraisals and decreasing the use of negative cognitive appraisal in response to cyber victimization.

Further, no moderation of general self-efficacy was found for the effect of cyber victimization on resources appraisal. This might be because resources appraisal was measured by only two items in the present study that assessed the availability of help in

response to cyber victimization. The availability of general help would not represent the whole domain of resources.

Moreover, contrary to the assumption of the study, ICT self-efficacy did not moderate the effect of cyber victimization on any cognitive appraisal. These findings highlighted the importance of general self-efficacy in comparison to situation-specific self-efficacy such as ICT self-efficacy with respect to the appraisal of cyber victimization.

Findings showed that though both general and ICT self-efficacy positively predicted the use of technical coping, only ICT self-efficacy further positively moderated the effect of cyber victimization on technical coping. These findings suggest that university students who are high on ICT self-efficacy use more of the technical coping in response to cyber victimization. This accord with the prior research (Erişti & Akbulut, 2018) that demonstrated that perceived computer self-efficacy was positively associated with countermeasure coping including technical solutions such as blocking and changing username and passwords.

Findings of the present study demonstrated that neither ICT self-efficacy nor general self-efficacy moderated the direct effect of cyber victimization on distal advice coping. In contrast to the findings demonstrated by Bamberger (2009) that individuals with high self-efficacy more likely to seek help, result of the study did not support any moderating role of general and ICT self-efficacy in use of distal advice coping. This might be rationalized that victimized students who are high on ICT self-efficacy respond

more quickly and better cope themselves by using their ICT related skills rather than seeking advice from teachers, police or online forums.

Contrary to the assumption that both general and ICT self-efficacy negatively moderate the direct effect of cyber victimization on helplessness coping, we found no significant interactions. These findings suggest that students who experienced cyber victimization equally used helplessness/self-blame coping regardless of being high or low on general or ICT self-efficacy. This might be related to the unique nature of cyber victimization in online space. As cyber victimization often occurs anonymously, spreads quickly and may be witnessed by a global audience that may lead to greater humiliation (Kernaghan & Elwood, 2013), consequently leading to helplessness/self-blame coping responses in victims.

Further, no moderation of general and ICT self-efficacy was found for the effect of cyber victimization on retaliation coping. There is no prior research demonstrating the moderating role of self-efficacy for the relationship between cyber victimization and retaliation coping. According to our knowledge only one study investigated self-efficacy with reference to victimization and retaliation coping and the authors reported that self-efficacy was significantly negatively related with both cyber victimization and revenge-seeking (Wong et al., 2014).

Results of the present study showed that both general and ICT self-efficacy negatively moderate the direct effect of cyber victimization on the active ignoring coping strategy. These findings suggest that the link between cyber victimization and active ignoring coping is weak for those students who are high on both general and ICT self-

efficacy. These findings provided support for the protective role of self-efficacy that impedes the use of avoidance or active ignoring and promotes adaptive coping in response to cyber victimization. These findings are in line with the past evidence that indicates that ignoring and avoidance coping is used as response to a threatening situation when there are scarce personal and contextual resources (Haan, 2013), and highly self-efficacious individuals are less likely to report avoidance coping (Holahan & Moos, 1987).

Further, contrary to our expectation, no moderating role of general or ICT self-efficacy was found for the direct effect of cyber victimization on close support coping. Close support coping was measured in the present study as seeking emotional support and thus can be an emotion-focused coping. It might be possible that victimized students who are high on self-efficacy are more likely to use problem-focused coping strategies to counter cyber victimization rather than emotion-focused strategies which help to deal with the emotional impacts of victimization. Consistent with prior research that indicated a link between general self-efficacy and assertiveness (Weitlauf, Smith, & Cervone, 2000), findings of the current study showed that general self-efficacy positively moderated the direct effect of cyber victimization on assertiveness coping. These findings highlight the role of general self-efficacy for the increased use of assertiveness coping in cyber victims.

Furthermore, only general self-efficacy negatively moderated the direct effect of cyber victimization on depression, anxiety, and stress and positively moderated on the mental well-being. These findings provided partial support to our assumption and consistent with Bandura's (1997) notion that self-efficacy beliefs affect an individual's

vulnerability to emotional distress and depression. Our findings are in line with the past evidence that demonstrated a positive association of general self-efficacy with well-being (Wong et al., 2014).

Model testing was further conducted to address the conditional indirect effect for the serial mediations by appraisal and coping. Several of the indirect paths for the effect of cyber victimization on mental health and mental well-being were tested for moderation by both general self-efficacy and ICT self-efficacy. These indirect paths consisted of serial mediations by appraisals followed by coping to examine the effect of cyber victimization on mental health and mental well-being. It was hypothesized that indirect effect of cyber victimization serially mediated through challenge appraisal and technical coping and negatively moderated by ICT self-efficacy and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The findings showed partial support for the hypothesis by confirming the moderating role of general self-efficacy for the serially mediated relationship between cyber victimization and stress only. Results showed that university students with a higher level of general self-efficacy have a decrease in stress symptoms when they appraise cyber victimization as a challenge and use technical coping. These findings suggest that general self-efficacy is more important than ICT self-efficacy for students who appraise cyber victimization as challenge. In other words, the use of technical coping is more effective to decrease stress symptoms for students with a higher level of general self-efficacy when they appraise cyber victimization as challenge.

Considering that technical coping is a type of active coping/problem focused coping, the findings are in confirmation with literature suggesting that problem-focused

coping is used when the stressful situation is interpreted as controllable (Carver et al., 1989; Newman et al., 2011), and challenging. For example, Hunter and Boyle (2004) reported that those who appraised their experiences of victimization as a challenge (expecting positive outcomes) were more likely used problem-focused coping strategies. Further, it was hypothesized that indirect effect of cyber victimization serially mediated through threat appraisal and technical coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The hypothesis is partially accepted as the results confirmed the moderating role of general self-efficacy for the serially mediated relationship between cyber victimization and anxiety, as well as stress. Results suggest the importance of general self-efficacy for the effective use of the technical coping in situations when cyber victimization is appraised as threat. These findings are in accord with earlier research showing that a higher level of general self-efficacy can work as a protective factor to deal with the negative impacts of cyber victimization (Álvarez-García et al., 2015).

The hypothesis addressing the centrality appraisal in serial mediation is also partially accepted by confirming six out of the eight interactions. It was assumed that the indirect effect of cyber victimization serially mediated through centrality appraisal and technical coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The findings confirmed moderation by ICT self-efficacy for mental health problems (i.e., depression, anxiety, and stress) and moderation by general self-efficacy for anxiety and stress only. In contrast to challenge and threat appraisal, results

showed that both general and ICT self-efficacy are important determinants of the effective use of technical coping for the students who use centrality appraisal. The hypothesis regarding resources appraisal and technical coping in the serially mediated moderation is not supported as none of the interactions were significant. As pointed out earlier, this could be due to the measurement issue as resources appraisal is measured only with two items. A more comprehensive measure of resources appraisal may produce different results.

It is concluded that technical coping helps in decreasing mental health consequences (i.e., depression, anxiety, and stress) of cyber victimization more effectively when victimization is appraised as challenge in comparison to threat or centrality particularly for students with higher levels of general self-efficacy.

With reference to distal advice coping, findings partially supported the hypothesis by showing moderation of general self-efficacy for the mediating effect of challenge appraisal followed by distal advice coping on stress only. Similar to technical coping, the results showed that stress is significantly decreased in students who have higher level of general self-efficacy, appraise cyber victimization as challenge, but used distal advice coping in response to cyber victimization. These findings are supported by past evidence that indicated that those who appraised their experiences of victimization as a challenge (expecting positive outcomes) were more likely used problem-focused coping (Hunter & Boyle, 2004).

The hypothesis concerning the moderating role of general and ICT self-efficacy for the serially mediated effect of cyber victimization on mental health and mental well-

being through threat appraisal followed by distal advice coping was completely rejected. This suggests that students who appraise cyber victimization as threat less frequently use the distal advice coping strategy. Therefore, there is no decrease in the negative impact of cyber victimization on the mental health of students. Tokunaga (2010) indicates that the threat of harm leads to noticeable differences in coping strategies. In contrast to our findings, other studies demonstrate that victims seek active coping strategies to thwart encounters of cyber victimization (Aricak et al., 2008; Patchin & Hinduja, 2006). One of the things that stop university students from seeking advice (with high threat appraisal) might be the shame associated with the sharing the experience of cyber victimization to seek advice. These findings can be interpreted in collectivist cultural context such as Pakistan where people hide their experiences of humiliation for face-saving and protecting their family members from being worried (Hu et al., 2016). Another reason might be the fear of the bully or fear of serious harm in the future by the bully when the incident is being reported following the advice.

Further, it was hypothesized that indirect effect of cyber victimization serially mediated through centrality appraisal and distal advice coping and negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The result partially supported the assumption showing that ICT self-efficacy moderated the serially mediating effect for mental health problems mainly (i.e., depression, anxiety, and stress) whereas general self-efficacy moderated the serially mediating effect for both mental health problems (i.e., anxiety and stress), and mental well-being. These results suggest that when students use centrality appraisal and seek distal advice coping, they

subsequently experience fewer mental health problems. Additionally, this combination of appraisal and coping is more effective for students having higher levels of both general and ICT self-efficacy. Although, no prior study examines the particular link between centrality appraisal and distal advice coping, past evidence showed that appraisal of potentially stressful situations as high in centrality was related to negative outcomes such as physical complaints and psychological stress (Gruen et al., 1988; Lazarus & Smith, 1988). Additionally, King (2005) demonstrated that centrality appraisal mediates the effect of ethnic and gender discrimination on stress. Thus cyber victimization appraised as highly significant for one's well-being (Centrality) are more likely to increase mental health problems among students. It is also possible that when students appraise cyber victimization having greater impact on their lives, they more likely seek distal advice. Our findings showed that distal advice coping even with centrality appraisal leads to a decrease in mental health problems among students and a high level of general and ICT self-efficacy provide more buffering role against the negative impacts of cyber victimization for those students.

Finally, the results indicated support only for depressive symptoms for the moderating effect of ICT self-efficacy on the serial mediation of cyber victimization through resources appraisal followed by distal advice coping. This suggest that being high on ICT self-efficacy helps in decreasing depression of the university students who used resources appraisal followed by distal advice coping. The effectiveness of this combination seems logical for the students having resources to tackle stressful situation while being high on ICT skills. As mentioned earlier, resources appraisal was measured as only the perception of the availability of help without any indication of the nature or

source of help. Further, ICT self-efficacy is also a kind of resource when one is confident on their technical skills to deal with cyber victimization. Therefore, students who use resources appraisal and seek distal advice coping, while they are also high on ICT self-efficacy have a decrease in depressive symptoms in response to cyber victimization.

Overall, distal advice coping is most effective in combination with the centrality appraisal and least effective in combination with threat appraisal. Further both general and ICT self-efficacy enhance the effectiveness of the combination for centrality appraisal and distal advice coping whereas general self-efficacy is effective for challenge appraisal followed by distal advice coping and ICT self-efficacy is effective for resources appraisal followed by distal advice coping.

Concerning helplessness/self-blame coping, It was hypothesized that the indirect effect of cyber victimization serially mediated through challenge appraisal and helplessness coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The results showed that only general self-efficacy moderated this serial mediation for mental health problems (i.e., depression, anxiety, and stress). These findings suggest that even though students appraise cyber victimization as challenge the use of helplessness/self-blame coping associated with an increase in their mental health problems (i.e., depression, anxiety, and stress). This is in line with previous research demonstrating that helplessness/self-blame coping predicted a higher level of depressive symptoms (Machmutow et al., 2012). Further, findings of the present study showed that an increase in the mental health problems (i.e., depression, anxiety, and stress) was less for those who have higher levels of general self-efficacy. In other words,

general self-efficacy worked as a protective factor even for those students who use helplessness/self-blame coping but with challenge appraisal. This is supported by the notion that self-efficacy can enhance resilience in difficult situations (Bandura, 2006).

Furthermore, general self-efficacy appeared to be effective in decreasing only stress symptoms when the effect of cyber victimization serially mediated through threat appraisal followed by helplessness/self-blame coping. The explanation lies in the fact that both threat appraisal and helplessness coping associated with an increase in the negative consequences of cyber victimization by contributing to mental health problems. Hence, in this situation, general self-efficacy may have a limited role as a protective factor. Contrary to this, general self-efficacy is more effective to counter the negative consequences of cyber victimization when cyber victimization is appraised as challenge.

The hypothesis regarding the moderating role of general and ICT self-efficacy for the serial mediation by centrality appraisal followed by helplessness/self-blame coping was supported for mental health problems (i.e., depression, anxiety, and stress). The results showed that both general and ICT self-efficacy worked as protective factors and decrease the negative consequences of cyber victimization for students who used centrality appraisal followed by helplessness/self-blame coping. In other words, both centrality appraisal and helplessness coping increased the effect of cyber victimization on mental health problems yet the increase was less for the students who were high on general and ICT self-efficacy.

Centrality appraisal is the extent to which experiences of cyber victimization are appraised as important or central to a person's life and well-being, and general self-

efficacy is one's belief in handling a difficult life situation. It is logical to expect that being high on general self-efficacy may counter the negative impacts of centrality appraisal. Furthermore, being high on ICT self-efficacy also increases one's belief in self to handle serious consequences of cyber victimization. Hence both general and ICT self-efficacy appeared to be effective protective factors for students using centrality appraisal followed by helplessness/self-blame coping. Finally, findings confirmed the protective role of ICT self-efficacy for the serially mediating effect of cyber victimization on depression through resources appraisal followed by helplessness/self-blame coping.

The model addressing helplessness/self-blame coping is summed with the conclusion that this coping is associated with an increase in the negative consequences of cyber victimization and this increase was highest for the students using centrality appraisal. Hence, both general and ICT self-efficacy work as protective factors for this serially mediated path. These findings showed that negative consequences of cyber victimization are more effectively managed with higher general and ICT self-efficacy particularly when the effect is serially mediated through centrality appraisal followed by helplessness/self-blame coping. Additionally, general self-efficacy is effective in decreasing mental health problems when effect of cyber victimization is mediated through challenge appraisal followed by helplessness/self-blame coping and ICT self-efficacy is effective for the serial mediation through resources appraisal followed by helplessness/self-blame coping.

With reference to retaliation coping, it was hypothesized that the indirect effect of cyber victimization serially mediated through challenge appraisal and retaliation coping is negatively moderated by ICT self-efficacy and general self-efficacy on mental health

problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The results showed support for the moderating role of general self-efficacy. Similar to our previous findings, general self-efficacy protected against negative consequences of cyber victimization when mediated through challenge appraisal followed by retaliation coping. Retaliation coping involves reactive responses such as seeking revenge from the perpetrator by fighting or bullying back (Juvonen & Gross, 2008; Perren, Corcoran, Cowie, et al., 2012; Smith et al., 2008; Sticca et al., 2015). Retaliation coping is an emotional reaction against stress evoking incident of cyber victimization yet it further escalates mental health problems (anxiety, stress, and depression). This is in line with the existing longitudinal research on adolescents that indicated that a higher level of retaliation coping is associated with a higher level of depressive symptoms (Machmutow et al., 2012).

Further, findings showed that the increase in mental health problems was less for students with higher level of general self-efficacy. For the serial mediation by threat appraisal followed by retaliation coping, general self-efficacy moderated the effect only for stress symptoms. The explanation lies within the serial mediation path. Both the threat appraisal and retaliation coping predominantly influence mental health problems. Hence, general self-efficacy has a limited role as a protective factor in this context.

Interestingly, the hypothesis addressing the serial mediation by centrality appraisal followed by retaliation coping showed support for moderation by ICT self-efficacy on depression whereas general self-efficacy moderated the path for depression, anxiety and stress. As discussed earlier, it may be rationalized that being high on general self-efficacy counters the negative impact of centrality appraisal and hence works as a

protective factor against negative consequences of cyber victimization. Further, findings indicated the moderating role of ICT self-efficacy for the serial mediation by resources appraisal followed by retaliation coping. It seems reasonable that being high on ICT self-efficacy and having resources to counter cyber victimization may motivate students to seek revenge by using retaliation coping.

Taken together, findings indicated the protective role of general and ICT self-efficacy for the serial mediating path by centrality appraisal followed by retaliation coping. Further, general self-efficacy is associated with a decrease in stress when the effect of cyber victimization was mediated through challenge appraisal followed by retaliation coping, and ICT self-efficacy is associated with a decrease in depression when effect of cyber victimization was mediated through resources appraisal followed by retaliation coping.

With reference to active ignoring coping, it was hypothesized that indirect effect of cyber victimization serially mediated through challenge appraisal and active ignoring coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The results showed partial support for the moderating role of both general and ICT self-efficacy on the serial mediations. General self-efficacy moderated the serially mediated path leading to stress, whereas ICT self-efficacy moderated the serially mediated path leading to mental well-being. Further, these findings suggest that even though students appraise cyber victimization as challenge the use of active ignoring coping is associated with an increase in their mental health problems (i.e., depression, anxiety, and stress). This is consistent with previous research demonstrating that active

ignoring coping is associated with higher levels of depressive symptoms (Machmutow et al., 2012), and in line with the findings of Holahan, Moos, Holahan, Brennan, and Schutte (2005) that ignoring or avoidance coping leads to more chronic and acute life strain which, in turn, predicts higher level of depressive symptoms. Our findings indicate the protective role of general efficacy in decreasing stress and ICT self-efficacy for increasing mental well-being for those students who use challenge appraisal followed by active ignoring coping.

The hypothesis on serial mediation of threat appraisal followed by active ignoring coping showed support only for moderation by general self-efficacy for the serially mediated effect on stress symptoms only. Results indicated that students who appraise cyber victimization as a threat and use active ignoring coping to deal with cyber victimization have high depression and stress and low mental well-being. However, the increase in stress symptoms was less for those students who have a higher level of general self-efficacy. Further, the hypothesis regarding the serial mediation of centrality appraisal followed by active ignoring coping showed that general self-efficacy moderated this path for both anxiety and stress. These findings indicated that mental health problems (anxiety, stress, and depression) were high for the students who use centrality appraisal followed by avoidance coping. However, the impact of cyber victimization was low for those students who have a higher level of general self-efficacy. Finally, the hypothesis addressing the serial mediation by resources appraisal followed by active ignoring coping showed moderation by ICT self-efficacy to decrease stress only. A combination of resources appraisal and self-confidence in skills may decrease stress symptoms even when students are using active ignoring coping. It might be that students use avoiding or

ignoring coping considering cyber victimization as short term victimization and are confident that they have enough resources and technical skills to deal with the situation.

Overall, these findings highlight the role of general self-efficacy as a strong protective factor for dealing with mental health consequences of cyber victimization. Most of the indirect paths regarding serial mediations by appraisals followed by active ignoring coping resulting in a decrease in stress for the students with higher levels of general self-efficacy. ICT self-efficacy, on the other hand, associated with an increase in mental well-being for serial mediation by challenge appraisal followed by active ignoring coping and associated with a decrease in stress for serial mediation by resources appraisal followed by active ignoring coping.

With reference to close support coping, it was hypothesized that the indirect effect of cyber victimization serially mediated through challenge appraisal and close support coping is negatively moderated by ICT self-efficacy and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The findings showed support for the moderating effect of general self-efficacy on the serial mediations mainly for mental health problems (i.e., depression, anxiety, and stress). The results showed the effectiveness of close support coping particularly when victimization is appraised as challenge. The effectiveness is further enhanced for students who are high on general self-efficacy. These results are aligned with earlier studies suggesting that seeking social support in response to cyber victimization has been considered an effective coping strategy (DeHue et al., 2008; Mishna, Saini, et al., 2009). The hypothesis addressing threat appraisal followed by close support coping didn't get much support. The serial mediation was moderated by general

self-efficacy only for stress symptoms suggesting a relatively less important role of general self-efficacy in increasing effectiveness of close support coping when victimization is appraised as a threat. The threatened individuals may have less benefit when using close support coping as compared to those who appraise victimization as challenge and seek close support.

The serial mediation hypothesis concerning centrality appraisal followed by close support coping showed support for moderation by both general and ICT self-efficacy. Both general and ICT self-efficacy were associated with a decrease in mental health problems (i.e., depression, anxiety, and stress) while only general self-efficacy was associated with an increase in mental well-being for the students using centrality appraisal followed by close support coping. As centrality appraisal enhanced the effect of cyber victimization on mental health and thus people try to seek support to cope with cyber victimization as well as its negative impacts on mental health. Further general self-efficacy and ICT self-efficacy increased the effectiveness of close support coping. Finally, the hypothesis addressing resources appraisal followed by close support coping showed support for the effectiveness of ICT self-efficacy to reduce symptoms of depression only. The effectiveness of resources appraisal was more enhanced for students with a higher level of ICT self-efficacy.

These findings suggest that both general and ICT self-efficacy work as protective factors when close support coping is used in combination with centrality appraisal. General self-efficacy, on the other hand, is also an effective protective factor for challenge appraisal followed by close support coping, whereas, the effectiveness of ICT self-efficacy is observed for resources appraisal followed by close support coping.

Further, It was hypothesized that indirect effect of cyber victimization serially mediated through challenge appraisal and assertiveness coping is negatively moderated by ICT self-efficacy, and general self-efficacy on mental health problems (i.e., depression, anxiety, and stress) and positively moderated on mental well-being. The findings showed partial support for the moderating role of both general and ICT self-efficacy. General self-efficacy was associated with a decrease in stress and ICT self-efficacy was associated with an increase in mental well-being for the serial mediation by challenge appraisal followed by assertiveness coping. Assertiveness coping consist of behaviors such as having a dialogue or negotiation with the bully to stop the victimization (Erişti & Akbulut, 2018; Weinstein et al., 2016). Such dialogue or communication has been considered as a useful coping strategy (Perren, Corcoran, Mc Guckin, et al., 2012).

Our findings showed that general self-efficacy in combination with challenge appraisal and assertiveness coping was associated with a decrease in depression whereas ICT self-efficacy in combination with challenge appraisal and assertiveness coping was associated with an increase in mental well-being. Past evidence indicated that assertiveness coping is associated with an increase in depression (Machmutow et al., 2012). Our findings indicated that these coping strategies can be effective when used with positive appraisals and a higher level of self-efficacy. These findings are supported with the notion that use of specific coping strategies mostly depends on the context and severity of the cyberbullying incident (Machackova et al., 2013).

Further, only general self-efficacy moderated the serially mediated effect of cyber victimization through threat appraisal followed by assertiveness coping. The threat appraisal was associated with an increase in the use of assertiveness coping. This is

consistent with existing research demonstrating that victims seek active coping strategies in response to cyber victimization (Aricak et al., 2008; Patchin & Hinduja, 2006).

Threat appraisals also lead to an increase in negative consequences of cyber victimization yet the increase was less for the students who have a higher level of general self-efficacy. Further, our findings supported the hypothesis addressing serial mediation by centrality appraisal followed by assertiveness coping for both general and ICT self-efficacy. Centrality appraisal was associated with an increased use of assertiveness coping resulting in an increase in mental health problems yet, both general and ICT self-efficacy countered this negative effect. It was demonstrated that higher levels of general and ICT self-efficacy were associated with a decrease in mental health problems (i.e., depression, anxiety, and stress). Finally, the hypothesis addressing resources appraisal followed by assertiveness coping was not supported for the moderating role of general and ICT self-efficacy on the serial mediations.

Findings indicated that assertiveness coping is mostly employed when individuals perceive long term impacts (centrality) of cyber victimization. Further both general and ICT self-efficacy are protective factors and associated with a decrease in mental health problems for the serial mediating path involving centrality appraisal and assertiveness coping. Both general and ICT self-efficacy were associated with a decrease in stress in the serial mediation by challenge appraisal followed by assertiveness coping whereas only general self-efficacy was associated with a decrease in stress for serial mediation by threat appraisal followed by assertiveness coping.

Overall these findings support that the TMSC (Lazarus, 1984) provides a useful framework to understand the impact of cyber victimization on mental health and mental well-being of students. Integrating the general and ICT self-efficacy facilitates the investigation of personal resource factor with reference to the impacts of cyber victimization. The investigation of cognitive appraisals and coping strategies provided more in-depth understanding of the relationship between cyber victimization and negative impacts on the mental health.

Theoretical implications

There are several theoretical implications of the study.

1. The present research contributed to the literature by providing the understanding that how individual appraise and cope with cyber victimization. It helped to understand the individual variation in the outcomes which distinguish those who experience negative outcome and those who are resilient against the negative impacts of cyber victimization.
2. Findings of the current study expand the TMSC model by providing an understanding that how cognitive appraisals of cyber victimization lead to the selection of specific coping strategies which are based on specific actions (for instance, technical coping) instead of employing the higher-order categories of coping strategies such as problem-focused or emotion-focused.
3. Although self-efficacy is not explicitly included in the TMSC, however, the present research examined the role of General self-efficacy and ICT self-efficacy in determining cognitive appraisals in response to cyber victimization and subsequent selection of coping strategies to deal with cyber victimization. Thus, the inclusion of these variables contributed to the expansion of TMSC.
4. The current study supported the partial significance of a serially mediated moderation model to understand the impacts of cyber victimization on the mental health and mental well-being of university students.
5. Findings contributed to international literature by investigating the role of several factors such as cognitive appraisals, coping, and self-efficacy, with reference to the experience of cyber victimization.

6. Findings contributed to a small number of studies conducted in the context of higher education and particularly within the context of developing countries such as Pakistan.
7. Findings indicated that use of positive appraisals in response to cyber victimization lead to a low level of mental health impacts on students.
8. Findings showed that negative appraisals of cyber victimization lead to an increase in mental health consequences.
9. Findings of the study indicate that experiences of cyber victimization predict the threat and centrality appraisals which, in turn, lead to higher level of depression anxiety, and stress symptoms.
10. Findings show that appraisal of cyber victimization as challenge and resources lead to greater use of problem focused coping strategies such as technical coping, distal advice, close support and assertiveness coping and decrease the use of helplessness/self-blame and active ignoring.
11. Negative appraisals such as threat and centrality appraisals in response to cyber victimization increases the use of helplessness/self-blame, active ignoring and decreases the use of distal advice coping.
12. Findings indicate that high levels of general self-efficacy lead to high use of positive appraisals such as challenge appraisal, and less use of negative appraisals such as threat and centrality appraisals.
13. Findings suggest that high levels of general self-efficacy lead to high use of assertiveness coping and technical coping and decrease the use of active ignoring coping.

14. ICT self-efficacy increases the use of resources appraisal in response to cyber victimization and leads to high use of technical coping.
15. Findings supported the TMSC as a useful framework to understand the relationship between cyber victimization and its impacts on the mental health and mental well-being. Therefore, it could be used as a base to develop theoretically sound and evidence-based cyberbullying intervention programs designed to buffer the impact of cyber victimization on mental health.

Practical implications

1. Scales to assess cyberbullying and cyber victimization can be utilized in future studies.
2. Findings indicate that traditional and cyberbullying victimization occurs in Pakistani universities at the alarming rates and with serious impacts on the mental health and well-being of students. Therefore, anti-bullying and cyberbullying efforts to curb traditional and cyberbullying victimization targeted at university students are necessary.
3. Information about the nature of bullying and cyberbullying and its prevention could be incorporated into the regular curriculum. Students should be taught ethical and safe use of internet and social media tools.
4. University administrations could arrange workshops and awareness-raising seminars to deal with aggression and bullying victimization in both online and offline spaces.
5. Gender-related findings indicate that female students reported greater involvement as traditional and cyber victims, while male students reported greater involvement as traditional and cyber perpetrators in comparison to female students. Additionally, findings indicate female students are more at risk of developing depression, anxiety and stress as a consequence of cyber victimization. These findings highlight the need for the inclusion of some gender specific strategies for developing counseling programs for university students to save them from bullying/victimization and its associated negative psychological and emotional impacts.

6. Findings indicate male students use more retaliation coping than female students and female students use higher level of helplessness coping than male students in response to cyber victimization. These findings highlight the need to teach aggression management skills to male students and the use of effective coping strategies especially to female students to deal with cyber victimization.
7. Findings show that although some overlap exists between traditional and cyberbullying victimization, however, cyberbullying/victimization occurs “in isolation” among university students and some students do not perpetrate in traditional context or face to face but do so in cyberspace. Findings indicate higher prevalence of cyberbullying/victimization in comparison to traditional bullying/victimization among university students. These findings highlight the importance of additional efforts to reduce the prevalence of cyberbullying/victimization. Institutions of higher education could extend their abuse and harassment related policies to include online aggression and cyberbullying/victimization.
8. Findings show that experiencing cyber victimization is a greater risk factor for the development of symptoms of anxiety, stress, and depression and lower mental-wellbeing than traditional bullying/victimization. Therefore, student counselors, university teachers, and personnel working in ICT resource labs should be trained to guide students to effectively manage cyberbullying victimization.
9. Findings indicate that students living in university hostels are more vulnerable to experience cyberbullying victimization; therefore, an integrated approach is required to provide safe environment in hostels. Specific policies should be

implemented in hostel to deal with bullying and cyberbullying/victimization. Student activities should be arranged on regular basis that include sports and recreational activities. Counselling services should be provided in hostels. Further, hostel staff could be trained to detect early signs of bullying victimization among students. More specifically, fostering a healthy and supportive environment with the inclusion of social support programs.

10. Findings of the present study suggest enhancing the level of ICT self-efficacy of students to save them from cyber victimization. Further, students should be taught internet safety and security related skills, deciding how and when to post private information on social media and how to report cyber victimization.
11. University administrations should inform students about the potential consequences of cyberbullying perpetration. By communicating well-documented consequences and legal actions of engaging in traditional or cyberbullying, university administrations may help to prevent or reduce bullying/victimization.
12. Anonymous reporting of bullying and cyberbullying should be ensured in university polices.
13. Negative cognitive appraisals particularly threat and centrality appraisals in response to cyber victimization should be assessed precisely and this information can be further utilized to develop interventions to reduce the emotional impact of cyber victimization.
14. Intervention efforts could involve building the capacity of students through teaching the enhanced use of positive appraisals such as challenge and resources appraisals that further lead to the selection of effective coping strategies i.e.

technical coping and assertiveness coping and subsequently buffer the negative impacts on mental health. Moreover, positive appraisals decrease the use of emotion-focused coping such as helplessness/self-blame and active ignoring coping.

15. Findings highlight the need to enhance general self-efficacy of students as a personal resource factor that can promote resilience by increasing the use of positive cognitive appraisals and problem-focused coping strategies and decreasing the use of negative cognitive appraisal and emotion-focused coping in response to cyber victimization.

Taken together, the findings of the present study provide insight to counselors, mental health professionals, and policymakers to adopt an integrated approach to protecting university students from cyberbullying victimization and its negative impacts on mental health. More specifically, developing interventions to ensure a safe environment and promote mental health should include building the capacity of students through the enhanced use of positive cognitive appraisals and effective coping strategies.

Limitations and Future directions

The findings of the present study should be interpreted in the light of these limitations and suggestions are provided that can be incorporated in future studies.

1. This study was cross-sectional in nature; therefore, it is not possible to determine whether the correlates of cyberbullying/victimization are its consequences or antecedents. In other words, a cross-sectional study can provide evidence of associations between cyberbullying/victimization and negative mental health consequences; however, it's not clear whether involvement in cyberbullying/victimization lead to the development of depression, anxiety, and stress or whether students are depressed, anxious, and stressed, and that's why they are involved in cyberbullying/victimization. To investigate the direction of influence requires additional investigation such as employing longitudinal research designs with multiple assessments points. Likewise, existing research suggest that prolonged experiences of victimization are likely to change cognitive appraisals. From analytical and theoretical perspective, examining the role of appraisal in the relationship between cyber victimization and mental health should be better investigated using longitudinal data.
2. Data of the present study obtained from a non-random convenience sample. It might possible that university students who volunteered for participation may have had experienced traditional and cyberbullying victimization and because of this they were more inclined to participate. Thus such a sample may impact the prevalence rates and limit the generalizability of findings. Moreover, previous research noted that volunteers differ in many characteristics (e.g. social

desirability responding) from those who do not volunteer for taking part in research, so this might have had an effect on the results. Future research may be conducted using a random sample. Additionally, though the sample was fairly large and representative of the general population, the data were collected from six universities of Punjab province and Islamabad, hence findings may not be generalized to universities that exist in other providences in Pakistan or non-university students such as college or high school students. Future research may be conducted with a more diverse sample from all four providences of Pakistan including college and high school students to better understand the nature of cyberbullying victimization in Pakistan.

3. Further, there is a discrepancy in the proportion of sample concerning gender (39.05% male students versus 60.95% female students) and this discrepancy may affect the findings. Therefore, future research may include sample with equal proportion of both male and female students.
4. Although, the scales used to measure traditional and cyberbullying/victimization in the present study did include the criteria of “intention to harm” and “repetition,” it did not include the third criterion of traditional and cyberbullying i.e. “imbalance of power”. Therefore, it could be argued that these scales measured traditional and cyber aggression instead of traditional and cyberbullying (Smith et al., 2013). Future studies may include all three criteria for the measurement of bullying/victimization.

5. Further, factorial invariance across genders was not evaluated for the Cyberbullying and Cyber victimization Scales. Future research on this measure should include analyses of factorial invariance across male and female students.
6. Another limitation regarding measurement of cyberbullying victimization is the lack of more detailed information about the experiences of cyber victimization such as the level of publicity, anonymity of the cyberbully, and the associated medium used in cyberbullying. These details may contribute to the severity of the experiences of cyber victimization and subsequently affect the cognitive appraisals, coping strategies and mental health consequences.
7. The items used to measure bullying and cyberbullying refers to a general context. In other words, we did not exclude bullying at home or other places by specifying the reports of bullying and cyberbullying that occur within peer groups or in the university context. Future studies may specify bullying that occurs only within peer groups or in the university context.
8. The present study relied on self-report measures which are often criticized as prone to under or over reports of bullying/victimization. To reduce this bias in self-reporting we made some efforts such as anonymous surveys administration and controlling the social desirability in responding through statistical analysis. The researcher believe that self-report is the best method instead of peer reports for this type of study because the individual is the only one who can report about their internal processes such as cognitive appraisals and experiences of victimization. Peers may not aware of the certain aspects of the given incident, may not observe or may misinterpret the situation (Volk, Veenstra, & Espelage,

2017). Therefore, future research on bullying/victimization may consider self-reports along with most rigorous efforts to reduce social desirability.

9. Another limitation stems from an overlap between items of appraisal and coping measures. One item of threat appraisal was similar in wording to helplessness coping item. Therefore, the observed relationship between appraisal and coping may be confounded due to overlap between the two constructs. Future research can avoid the overlapping in items that often exists between the measures of appraisal and coping.
10. With reference to the measurement of cognitive appraisals and coping strategies, the definition of cyberbullying victimization was provided along with a hypothetical scenario and participants were asked to indicate what they would do in that situation. Their experience of cyber victimization can be different from that described in the hypothetical scenario. Thus their responses may be based on their intentions rather than their actual response. Future studies can be designed to measure actual appraisal and coping strategies in response to the experience of cyber victimization. It would be also beneficial to investigate how the cognitive appraisal and selection of coping strategies change in response to different nature and forms of cyber victimization such as public, semi-public or private victimization.
11. It is plausible that gender differences in appraisals and cognitive strategies could have influenced the findings of the present study. It is recommended that future research may test separately these mediated moderation models for male and female students.

12. Moreover, measurement of predictor and criterion variables was made at the same time in this study that may introduce the common method bias. Future studies may control common method bias by introducing time lag between the measurement of predictor and criterion variables and help to reduce the salience of predictor variable or its accessibility in memory (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

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APPENDIXES

Question guide for semi-structured interviews

Question Number	Question
1.	All five scenarios (see Table 2) were presented to each participant and asked How you will label each scenario by providing the most appropriate term?
2.	How you label collectively these behaviors by keeping in mind all five scenarios?
3.	Have you ever heard about cyberbullying?
4.	What does cyberbullying mean to you?
5.	Have you experienced something like this? (If so, describe the experience in detail)
6.	Who was the perpetrator (known/unknown), (male/female)?
7.	Have any of your friends experienced something like this or describe if you ever witnessed anywhere?
8.	How did you or your friend react to that?
9.	What can be the best coping strategy to deal with cyberbullying?
10.	Why did this happen to you?
11.	If you were cyber victimized, What type of socio-cultural issues you faced as a result of this experience?
12.	Why this happened to you?
13.	If you were cyber victimized, What type of socio-cultural issues you faced as a result of this experience?

ICT Use Scale

	Yes	No
1. Do you own a mobile phone?		
2. Do you own a Smartphone?		

	Never	Rarely	Some-times	Often	Always
3. If you own a phone, how often do you use it during school hours?					

	Yes	No
4. Do you have a social network account, e.g., Facebook?		
5. Do you use the Internet at home?		
6. If yes, do you use the Internet in your room?		

7. How many hours do you spend on the Internet each day? (Please write a number in the space provided)

- a. On a normal school day I spend _____ hours online.
- b. On a day off (e.g., Sunday) I spend _____ hours online.

8. How often have you done the following activities during the last three months?

	Never	Once or twice	About once a month	About once a week	(Almost) daily
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

ICT Use Scale

	Yes	No
1. Do you own a mobile phone?		
2. Do you own a Smartphone?		
3. Do you have a social network account, e.g., Facebook, Twitter etc.?		

4. How many hours do you spend on the Internet each day? (Please write a number in the space provided)

a. On a normal school day I spend _____ hours _____ minutes online.

b. On a day off (e.g., Sunday) I spend _____ hours _____ minutes online.

5. Time spent each day on social networking site e.g. Facebook, Twitter etc.

1. I spend _____ hours _____ minutes.

6. How often have you done the following activities during the last twelve months?

	Never	Once or twice	About once a month	About once a week	(Almost) daily
1.	Use the computer/laptop				
2.	Make phone calls				
3.	Receive or send text messages with a mobile phone				
4.	Receive or send pictures or videos with a mobile phone (i.e., through MMS/WhatsApp/Viber etc.)				
5.	Use mobile phone to capture photos				
6.	Receive or send emails				
7.	Communicate with others via chat (e.g., Facebook/WhatsApp/Viber/Skype, etc.)				
8.	Post information about yourself or others on websites (e.g., Facebook, blogs, forums, etc.)				
9.	Read others' news (e.g., Facebook, blogs, forums, etc.)				
10.	Use a webcam				
11.	Watch or download pictures or videos from the Internet				
12.	Download music from the Internet				
13.	Play computer or video games				
14.	Play online games (e.g., multiplayer)				
15.	Look for information on the Internet				
16.	Surf the net (Surfing is moving from site to site on the internet usually without a definite objective)				

Re: Permission to use The netTEEN questionnaire (ICT Use Scale)

Sticca Fabio <fabio.sticca@phtg.ch>

Mon 2/9/2015 1:21 PM

To: Sadia Musharraf <sadia_musharraf@hotmail.com>

Dear Sadia

We would be honored if you would use our scale and adapt it for your purposes.

All the best

Fabio

Dr. Fabio Sticca
Fachgruppe Empirische Bildungsforschung
Universität Konstanz
Lehrstuhl Entwicklung und Bildung in der frühen Kindheit
Pädagogische Hochschule Thurgau

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www.uni-konstanz.de/fg-erz
www.fruehekindheit.ch

Am 08.02.2015 um 19:28 schrieb Sadia Musharraf <sadia_musharraf@hotmail.com>:

Dear Fabio,

I am writing to seek your permission to use and adapt The netTEEN questionnaire to examine 'university students' use of ICT, including hours spent on the Internet and online activities engaged in.

I want to use the adapted version by Corcoran (2013) after adding an item "Use mobile phone to capture photos"

Corcoran, L. (2013). *Traditional Bullying and Cyberbullying at Post-Primary School Level in Ireland: Countering the Aggression and Buffering its Negative Psychological Effects* (Unpublished doctoral thesis). Trinity College Dublin, Dublin, Ireland.

Could you please allow me to use and adapt The netTEEN questionnaire "Use of ICT"?

With thanks and very best wishes,
Sadia

**California Bully Victimization Scale (CBVS)
(Bullying Victimization Form)**

The following are some things that can happen at school. Please answer how often each of these things has happened to you at school during past month.	Not in the past month	Once in the past month	2 or 3 times in the past month	About once a week	Several times a week
How often have you....					
1. Been teased or called names in a mean or hurtful way?					
2. Had rumors or gossip spread in a mean or hurtful way behind your back?					
3. Been left out of a group or ignored on purpose in a mean or hurtful way?					
4. Been hit, pushed, or physically hurt in a mean or hurtful way?					
5. Been threatened in a mean or hurtful way?					
6. Had sexual comments, jokes, or gestures made to me in a mean or hurtful way?					
7. Had your things stolen or damaged in a mean or hurtful way?					
8. Been teased, had rumors spread, or threatened through the Internet (like MySpace or e-mail) or text messaging in a mean or hurtful way by a student at your school?					

California Bully Victimization Scale (CBVS)

(Bullying Perpetration Form)

Now, please answer some questions about how you treat others at school during the past month.	Not in the past month	Once in the past month	2 or 3 times in the past month	About once a week	Several times a week
How often have YOU...					
1. Teased or called another student names in a mean or hurtful way?					
2. Spread rumors of gossip behind another student's back in a mean or hurtful way?					
3. Left another student out of a group or ignored another student on purpose in a mean or hurtful way?					
4. Hit, pushed, or physically hurt another student in a mean or hurtful way?					
5. Threatened another student in a mean or hurtful way?					
6. Made sexual comments, jokes, or gestures to another student in a mean or hurtful way?					
7. Stole or damaged another student's things in a mean or hurtful way?					
8. Teased, spread rumors, or threatened others through the internet (like MySpace or email) or text messaging in a mean or hurtful way?					

**California Bully Victimization Scale (CBVS)
(Bullying Victimization Form)**

The following are some things that can happen at school. Please answer how often each of these things has happened to you at university during past twelve months. How often have you....	Never	Once or twice	About once a month	About once a week	About more times a week
1. Been teased or called names in a mean or hurtful way?					
2. Had rumors or gossip spread in a mean or hurtful way behind your back?					
3. Been left out of a group or ignored on purpose in a mean or hurtful way?					
4. Been hit, pushed, or physically hurt in a mean or hurtful way?					
5. Been threatened in a mean or hurtful way?					
6. Had sexual comments, jokes, or gestures made to me in a mean or hurtful way?					
7. Had your things stolen or damaged in a mean or hurtful way?					

California Bully Victimization Scale (CBVS)

(Bullying Perpetration Form)

Now, please answer some questions about how you treat others at university during past twelve months.	Never	Once or twice	About once a month	About once a week	About more times a week
How often have YOU...					
1. Teased or called another student names in a mean or hurtful way?					
2. Spread rumors of gossip behind another student's back in a mean or hurtful way?					
3. Left another student out of a group or ignored another student on purpose in a mean or hurtful way?					
4. Hit, pushed, or physically hurt another student in a mean or hurtful way?					
5. Threatened another student in a mean or hurtful way?					
6. Made sexual comments, jokes, or gestures to another student in a mean or hurtful way?					
7. Stole or damaged another student's things in a mean or hurtful way?					

Re: Felix, E. D., Sharkey, J. D., Green, J. G., Furlong, M. J., & Tanigawa, D. (2011). Getting precise and pragmatic about the assessment of bullying: The development of the California Bullying Victimization Scale. *Aggressive behavior*, 37(3), 234-247.

Erika Felix <efelix@education.ucsb.edu>

Tue 2/03/2015 12:58 AM

To: Sadia Musharraf <sadia_musharraf@hotmail.com>

 4 attachments (1 MB)

CBVS(5-12)-Gate1- with Agression Items Mar72011.doc; CBVS Combined Manual 10-16-06.pdf; GreifGreen et al Identifying Bully victims.pdf; CBVS Article.pdf;

Hi Sadia,

You are welcome to use the CBVS. I have attached it, the manual, and two articles on it. Let me know if you have any questions.

Best,

Erika

On 2/02/15 5:18 AM, Sadia Musharraf wrote:

Dear Dr. Erika D. Felix,

I am a PhD student at National Institute of Psychology, Quaid-i-Azam University, Islamabad (Pakistan) and conducting a research entitled as "Traditional and cyberbullying among university students: Role of appraisal, self-efficacy and coping strategies". I would be very interested in receiving a copy of the Florence California Bullying Victimization Survey (secondary version) for possible use in the proposed study (questionnaire items along with the instructions).

I would be grateful if you would grant me permission to use and adapt (for sample of university students) the above scale for my research project.

I look forward to receiving your reply.

With thanks and best wishes,

Sadia Musharraf

National Institute of Psychology,

Quaid-i-Azam University,

Islamabad.

--

Erika Felix, Ph.D.

Assistant Professor

Department of Counseling, Clinical, and School Psychology

Gevirtz Graduate School of Education

University of California, Santa Barbara

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Appendix D

Stress Appraisal Measure (SAM)

Please indicate your thoughts or feelings about each cognitive appraisal item on a 5-point Likert Scale (not at all = 0; a little bit = 1; about half the time = 2; the majority of the time = 3; a great amount = 4).

Challenge	1	I have the ability to overcome stress	1	2	3	4
	2	I can positively attack stressors				
	3	I have what it takes to beat stress				
	4	I am eager to tackle problems				
	5	I feel I can become stronger after experiencing stress				
	6	I have the skills necessary to overcome stress				
	7	I am excited about the potential outcome				
Threat	8	I perceive stress as threatening				
	9	I feel totally helpless				
	10	I feel anxious				
	11	Stressful events impact me greatly				
	12	It is beyond my control				
Centrality	13	The outcome of stressful events is negative				
	14	The event has serious implications for my life				
	15	Stress has a negative impact on me				
	16	There are long-term consequences as a result of stress				
Resources	17	There is someone I can turn to for help				
	18	There is help available to me				
	19	No one has the power to overcome stress				

Stress Appraisal Measure (SAM)

Measure of Appraisal of Cyberbullying Victimization

This section asks you to imagine yourself experiencing cyberbullying victimization situation.

“Imagine that you have experienced cyberbullying (Cyberbullying is an aggressive act or behaviour that is carried out using electronic means (through email, instant messaging, social media, in a chat room, on a website, in an online game, or through a text message sent to a cell phone) by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself). For example, someone sent you mean messages in an email or posted negative comments or information about you via social media, like Facebook.”

Please imagine the situation and rate each item on a 5-point Likert Scale (not at all = 0; a little bit = 1; about half the time = 2; the majority of the time = 3; a great amount = 4).

			1	2	3	4
Challenge	1	I have the ability to overcome such situations				
	2	I can positively attack (deal) such situations				
	3	I have what it takes to beat (overcome) such situations.				
	4	I am eager to tackle such situations				
	5	I feel I can become stronger after experiencing such situations				
	6	I have the skills necessary to overcome such situations				
	7	I am excited about the potential outcome				
Threat	8	I perceive such situations as threatening				
	9	I feel totally helpless				
	10	I feel anxious				
	11	Such situations impact me greatly				
Centrality	12	Such situations are beyond my control				
	13	The outcome of such situation is negative				
	14	Such situations have serious implications for my life				
	15	Such situations have a negative impact on me				
	16	There are long-term consequences as a result of				

		such situations				
Resources	17	There is someone I can turn to for help				
	18	There is help available to me				
	19	No one has the power to overcome such situations				

Appendix D2

Measure of Appraisal of Cyberbullying Victimization

This section asks you to imagine yourself experiencing cyberbullying victimization situation.

“Imagine that you have experienced cyberbullying (Cyberbullying is an aggressive act or behaviour that is carried out using electronic means (through email, instant messaging, social media, in a chat room, on a website, in an online game, or through a text message sent to a cell phone) by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself). For example, someone sent you mean messages in an email or posted negative comments or information about you via social media, like Facebook.”

Please imagine the situation and rate each item on a 5-point Likert Scale (not at all = **0**; a little bit = **1**; about half the time = **2**; the majority of the time = **3**; a great amount = **4**).

Challenge	1	I have the ability to overcome such situations	1	2	3	4
	2	I can positively attack (deal) such situations				
	3	I have what it takes to beat (overcome) such situations.				
	4	I am eager to tackle such situations				
	5	I feel I can become stronger after experiencing such situations				
	6	I have the skills necessary to overcome such situations				
	7	I am excited about the potential outcome				
Threat	8	I perceive such situations as threatening				
	9	I feel totally helpless				
	10	I feel anxious				
	11	Such situations impact me greatly				
	12	Such situations are beyond my control				
Centrality	13	The outcome of such situation is negative				
	14	Such situations have serious implications for my life				
	15	Such situations have a negative impact on me				
	16	There are long-term consequences as a result of such situations				
Resources	17	There is someone I can turn to for help				

	18	There is help available to me				
--	----	-------------------------------	--	--	--	--

Re: Roesch, S. C., & Rowley, A. A. (2005). Evaluating and developing a multidimensional, dispositional measure of appraisal. *Journal of Personality Assessment*, 85(2), 188-196.

Scott Roesch <jordank675@gmail.com>

Fri 2/6/2015 10:26 PM

To: Sadia Musharraf <sadia_musharraf@hotmail.com>

You have my blessing to use it.

Scott

Sent from my iPhone

On Feb 6, 2015, at 8:45 AM, Sadia Musharraf <sadia_musharraf@hotmail.com> wrote:

Dear Scott C. Roesch,

I am a PhD student at National Institute of Psychology, Quaid-i-Azam University, Islamabad (Pakistan) and conducting a research entitled as "Traditional and cyberbullying among university students: Role of appraisal, self-efficacy and coping strategies". I would be grateful if you would grant me permission to use and adapt (appraisals of cyberbullying situation) the "Dispositional measure of appraisal" for my research.

I look forward to receiving your reply.

With thanks and best wishes,

Sadia Musharraf

National Institute of Psychology,

Quaid-i-Azam University,

Islamabad.

Coping with Cyberbullying Questionnaire (CWCBQ)

Item No.	Subscale	Item Label (Response Options: 1 Definitely Not, 2 Probably Not, 3 Probably, 4 Definitely Yes, 5 No Answer)
1	TC	report the incident to the website owner or to the telephone company (e.g., YouTube)
2	DA	go to the police
3	TC	change my contact details (phone number, email address, chat name, profile on social networking sites)
4	HS	be totally desperate
5	RE	write mean and threatening things to the bully
6	AI	avoid any further contact with the bully
7	DA	seek advice on an online platform
8	CS	go to someone who listens to me and comforts me
9	AS	tell the bully to stop it
10	AI	keep out of the bully's way
11	CS	spend time with my friends to take my mind off it
12	HS	think that it is my fault
13	AI	pretend that it does not bother me at all
14	CS	talk to my friends about it
15	HS	accept the situation as it is because there is nothing you can do to stop bullying

16	AS	tell the bully that this is not ok at all
17	DA	inform a teacher or the principal
18	RE	get back at the bully in the real world (offline, e.g., at school)
19	AI	ignore all messages/pictures so that the bully would lose interest
20	HS	ask myself why this is happening exactly to me
21	HS	not know what to do
22	AS	tell the bully that I don't think this is funny at all
23	DA	seek professional advice
24	TC	pay more attention to who has access to my data
25	AS	tell the bully that his behaviour is hurting me
26	RE	get back at the bully personally
27	CS	go to someone who accepts me the way I am
28	TC	block the bully to prevent him from contacting me again
29	RE	get back at the bully together with my friends
30	AI	try not to think about it
31	TC	post less personal information on the Internet
32	DA	call a helpline (e.g. Kids Helpline, CyberBullyHotline)
33	RE	get back at the bully in cyber space (online, e.g., text message, email)
34	AS	ask the bully why he/she is doing this

35	CS	go to someone I can trust
36	TC	save messages/pictures as evidence (e.g., copies or screenshots)

Notes: DA = distal advice; CS = close support; RE = retaliation; AS = assertiveness; AI = active ignoring;

HS = helplessness/self-blame; TC = technical coping.

Appendix E1

Coping with Cyberbullying Questionnaire (CWCBQ)

“Imagine that you have experienced cyberbullying (Cyberbullying is an aggressive act or behaviour that is carried out using electronic means (through email, instant messaging, social media, in a chat room, on a website, in an online game, or through a text message sent to a cell phone) by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself). For example, someone sent you mean messages in an email or posted negative comments or information about you via social media, like Facebook.”

Item No.		I definitely don't agree	I probably don't agree	I probably agree	I definitely agree	No answer
1TC	I would report the incident to the website owner or to the telephone company (e.g., Facebook, YouTube etc.)					
2DA	I would go to the police					
3TC	I would change my contact details (phone number, email address, chat name, Profile on social networking sites).					
4HS	I would be totally <u>desperate</u> (hopeless).					
5RE	I would write mean and threatening things to the <u>bully</u> (offender/perpetrator).					
6AI	I would avoid any further contact with the <u>bully</u> (offender/perpetrator).					
7DA	I would seek advice on an online platform.					
8CS	I would go to someone who listens to me and comforts me.					

9AS	I would tell the <u>bully</u> (offender/perpetrator) to stop it.					
10AI	I would keep myself <u>out of the bully's way</u> (avoid the bully).					
11CS	I would spend time with my friends to take my mind off it.					
12HS	I would think that it is my fault.					
13AI	I would pretend that it does not bother me at all.					
14CS	I would talk to my friends about it.					
15HS	I would accept the situation as it is because there is nothing you can do to stop such things.					
16AS	I would tell the <u>bully</u> (offender/perpetrator) that this is not ok at all.					
17DA	I would inform a teacher or Head of the department/Director.					
18RE	I would <u>get back at the bully</u> (to take revenge/ retaliate) in the real world (offline, e.g., at university etc.).					
19AI	I would ignore all messages/pictures so that the <u>bully</u> (offender/perpetrator) would lose interest.					
20HS	I would ask myself why this is happening exactly to me.					
21HS	I would not know what to do.					
22AS	I would tell the <u>bully</u> (offender/perpetrator) that I don't think this is funny at all.					
23DA	I would seek professional advice.					
24TC	I would pay more attention to who has access to my data.					
25AS	I would tell the <u>bully</u> (offender/perpetrator) that his behaviour is hurting me.					
26RE	I would get back at the bully (to take revenge) personally.					
27CS	I would go to someone who accepts me the way I am.					
28TC	I would block the <u>bully</u> (offender/perpetrator) to					

	prevent him from contacting me again.					
29RE	I would get back at the <u>bully</u> together with my friends (to take revenge).					
30AI	I would try not to think about it.					
31TC	I would post less personal information on the Internet.					
32DA	I would call a helpline (e.g. National Response Centre for Cyber Crime etc.).					
33RE	I would get back at the bully (to take revenge/retaliate) in cyber space (online, e.g., text message, email).					
34AS	I would ask the bully (offender/perpetrator) why he/she is doing this.					
35CS	I would go to someone I can trust.					
36TC	I would save messages/pictures as evidence (e.g., copies or screenshots).					
37DA	I would inform my family (to seek help or to take family into my confidence).					
38DA	I would seek advice from my friends.					
39HS	I would try to hide the situation from my family.					

Notes: DA = distal advice; CS = close support; RE = retaliation; AS = assertiveness; AI = active ignoring;

HS = helplessness/self-blame; TC = technical coping.

Appendix E2

Coping with Cyberbullying Questionnaire (CWCBQ)

“Imagine that you have experienced cyberbullying (Cyberbullying is an aggressive act or behaviour that is carried out using electronic means (through email, instant messaging, social media, in a chat room, on a website, in an online game, or through a text message sent to a cell phone) by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself). For example, someone sent you mean messages in an email or posted negative comments or information about you via social media, like Facebook.”

Item No.		I definitely don't agree	I probably don't agree	I probably agree	I definitely agree	No answer
1TC	I would report the incident to the website owner or to the telephone company (e.g., Facebook, YouTube etc.)					
2DA	I would go to the police					
3TC	I would change my contact details (phone number, email address, chat name, Profile on social networking sites).					
4HS	I would be totally <u>desperate</u> (hopeless).					
5RE	I would write mean and threatening things to the <u>bully</u> (offender/perpetrator).					
6AI	I would avoid any further contact with the <u>bully</u> (offender/perpetrator).					
7DA	I would seek advice on an online platform.					
8CS	I would go to someone who listens to me and comforts me.					

9AS	I would tell the <u>bully</u> (offender/perpetrator) to stop it.					
10AI	I would keep myself <u>out of the bully's way</u> (avoid the bully).					
11CS	I would spend time with my friends to take my mind off it.					
12HS	I would think that it is my fault.					
13AI	I would pretend that it does not bother me at all.					
14CS	I would talk to my friends about it.					
15HS	I would accept the situation as it is because there is nothing you can do to stop such things.					
16AS	I would tell the <u>bully</u> (offender/perpetrator) that this is not ok at all.					
17DA	I would inform a teacher or Head of the department/Director.					
18RE	I would <u>get back at the bully</u> (to take revenge/ retaliate) in the real world (offline, e.g., at university etc.).					
19AI	I would ignore all messages/pictures so that the <u>bully</u> (offender/perpetrator) would lose interest.					
20HS	I would not know what to do.					
21AS	I would tell the <u>bully</u> (offender/perpetrator) that I don't think this is funny at all.					
22DA	I would seek professional advice.					
23TC	I would pay more attention to who has access to my data.					
24AS	I would tell the <u>bully</u> (offender/perpetrator) that his behaviour is hurting me.					
25RE	I would get back at the bully (to take revenge) personally.					
26CS	I would go to someone who accepts me the way I am.					
27TC	I would block the <u>bully</u> (offender/perpetrator) to prevent him from contacting me again.					
28RE	I would get back at the <u>bully</u> together with my friends (to take					

	revenge).					
29AI	I would try not to think about it.					
30TC	I would post less personal information on the Internet.					
31DA	I would call a helpline (e.g. National Response Centre for Cyber Crime etc.).					
32RE	I would get back at the bully (to take revenge/retaliate) in cyber space (online, e.g., text message, email).					
33AS	I would ask the bully (offender/perpetrator) why he/she is doing this.					
34CS	I would go to someone I can trust.					
35TC	I would save messages/pictures as evidence (e.g., copies or screenshots).					
36DA	I would inform my family (to seek help or to take family into my confidence).					
37DA	I would seek advice from my friends.					
38HS	I would try to hide the situation from my family.					

Notes: DA = distal advice; CS = close support; RE = retaliation; AS = assertiveness; AI = active ignoring; HS = helplessness/self-blame; TC = technical coping.

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Sticca, F., Machmutow, K., Stauber, A., Perren, S., Palladino, B. E., Nocentini, A., ... & Guckin, C. M. (2015). The Coping with Cyberbullying Questionnaire: Development of a New Measure. *Societies*, 5(2), 515-536.

Report message · Block user



Sadia Musharraf

Feb 25, 2015

Dear Dr. Fabio Sticca,

I am a PhD student at National Institute of Psychology, Quaid-i-Azam University, Islamabad (Pakistan) and conducting a research entitled as "Traditional and Cyberbullying among university students: Role of appraisal, self-efficacy and copying strategies". I would be grateful if you would grant me permission for possible use "The Coping with Cyberbullying Questionnaire: Development of a new measure" in the proposed study and also allow me to adapt the measure for Pakistani university students (as originally this measure has been developed for adolescent sample).

I look forward to receiving your reply.

With thanks and best wishes,

Sadia Musharraf

National Institute of Psychology,

Quaid-i-Azam University,

Islamabad.



Fabio Sticca to you

Mar 1, 2015

Dear Sadia Musharraf,

thank you very much for your interest in our work.

We would be honoured if you translate and use our scale and would be very grateful if you could let us know about the results and its psychometric properties in the Pakistani version. If you are looking for cooperation on a potential publication on Coping with Cyberbullying, please let me know and I'll be happy to contribute with my theoretical and in particular with my methodical expertise.

If you have any further questions, please do not hesitate to contact me.

All the best
Fabio



Sadia Musharraf

Mar 1, 2015

Dear Fabio,

Thank you very much for your helpful response. I will be happy to seek your guidance for Pakistani version and to work with you for subsequent publication. I will proceed and update you about my progress. I want to follow the same method for adaptation that has been utilized in your study. kindly provide me your email ID for future correspondence.

With thanks and very best wishes,
Sadia



Fabio Sticca to you

Mar 4, 2015

Dear Sadia,

my email address is fabio.sticca@phtg.ch

All the best
Fabio



Sadia Musharraf

Mar 5, 2015

Dear Fabio Sticca, Thank you. Best wishes, Sadia

Reply

Mark as unread

More ▾

Re: Sticca, F., Machmutow, K., Stauber, A., Perren, S., Palladino, B. E., Nocentini, A., ... & Guckin, C. M. (2015). The Coping with Cyberbullying Questionnaire: Development of a New Measure. *Societies*, 5(2), 515-536.

Sticca Fabio <fabio.sticca@phtg.ch>

Tue 04/28/2015 7:36 PM

To: Sadia Musharraf <sadia_musharraf@hotmail.com>

That sounds great!

Dr. Fabio Sticca
Fachgruppe Empirische Bildungsforschung
Universität Konstanz
Lehrstuhl Entwicklung und Bildung in der frühen Kindheit
Pädagogische Hochschule Thurgau

Bärenstrasse 38
CH-8280 Kreuzlingen
Tel: +41 (0)71 678 57 45
fabio.sticca@phtg.ch
www.uni-konstanz.de/fg-erz
www.fruehekindheit.ch

On 28 Apr 2015, at 15:34, Sadia Musharraf <sadia_musharraf@hotmail.com> wrote:

Dear Fabio,

Thank you for your helpful and prompt response. I didn't show them your scale. I asked about their experiences and then the coping strategies they have used. I analyzed major themes. Almost all items are already available in measure except these few I have discussed.

This is better idea. I will include them and then will decide based on empirical analysis.

Best wishes,
Sadia

From: fabio.sticca@phtg.ch
To: sadia_musharraf@hotmail.com
Subject: Re: Sticca, F., Machmutow, K., Stauber, A., Perren, S., Palladino, B. E., Nocentini, A., ... & Guckin, C. M. (2015). The Coping with Cyberbullying Questionnaire: Development of a New Measure. *Societies*, 5(2), 515-536.
Date: Tue, 28 Apr 2015 14:25:30 +0000

Dear Saida,

thank you for the information. Did you also show our scale to the interviewees? That would be interesting.

I am also not sure where to place that item but I guess I would go for helplessness coping. I guess you could just go ahead and add these items and then decide based on correlations.

Best wishes
Fabio

Dr. Fabio Sticca
Fachgruppe Empirische Bildungsforschung
Universität Konstanz
Lehrstuhl Entwicklung und Bildung in der frühen Kindheit
Pädagogische Hochschule Thurgau

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Tel: +41 (0)71 678 57 45
fabio.sticca@phtg.ch
www.uni-konstanz.de/fg-erz
www.fruehekindheit.ch

On 28 Apr 2015, at 15:19, Sadia Musharraf <sadia_musharraf@hotmail.com> wrote:

Dear Fabio,

I hope all is well with you. Following our earlier conversation, I have conducted semi structured interviews with 50 Pakistani university students. Based on this qualitative data I want to add few items

1. inform my family (to seek help or to take family into my confidence) '**Distal Advice**'
2. seek advice from my friends '**Distal Advice**'

3. 'try to hide the situation from my family'

Few students reported that they tried to solve the issue with the help of their friends and tried to keep it secret from their family members (especially when x boy friend was blackmailing her or when girls belonged to uneducated background. They are scared that family will ask them to leave university and stay at home) I am not sure under which subscale I place this item?

Helpless is appropriate?

with thanks and best wishes,
Sadia

_____ . - - _____

_____ . - - _____

The Social Desirability Scale

Instructions

Below you will find a list of statements. Please read each statement carefully and decide if that statement describes you or not. If it describes you, check the word "true"; if not, check the word "false".

Item no.	Statements	True	False
1.	I sometimes litter.		
2.	I always admit my mistakes openly and face the potential negative consequences.		
3.	In traffic I am always polite and considerate of others.		
4.	I always accept others' opinions, even when they don't agree with my own.		
5.	I take out my bad moods on others now and then.		
6.	There has been an occasion when I took advantage of someone else.		
7.	In conversations I always listen attentively and let others finish their sentences.		
8.	I never hesitate to help someone in case of emergency.		
9.	When I have made a promise, I keep it--no ifs, ands or buts.		
10.	I occasionally speak badly of others behind their back.		
11.	I would never live off other people.		
12.	I always stay friendly and courteous with other people, even when I am stressed out.		
13.	During arguments I always stay objective and matter-of-fact.		
14.	There has been at least one occasion when I failed to return an item that I borrowed.		
15.	I always eat a healthy diet.		
16.	Sometimes I only help because I expect something in return.		

The Social Desirability Scale

Instructions

Below you will find a list of statements. Please read each statement carefully and decide if that statement describes you or not. If it describes you, check the word "true"; if not, check the word "false".

Item no.	Statements	True	False
1.	I sometimes <u>litter</u> (throw rubbish/waste on surroundings or public places).		
2.	I always admit my mistakes openly and face the <u>potential</u> (possible) negative consequences.		
3.	In traffic I am always polite and <u>considerate</u> (cooperative/accommodating) of others.		
4.	I always accept others' opinions, even when they don't agree with my own.		
5.	I take out my bad moods on others now and then.		
6.	There has been an occasion when I took advantage of someone else.		
7.	In conversations I always listen attentively and let others finish their sentences.		
8.	I never hesitate to help someone in case of emergency.		
9.	When I have made a promise, I <u>keep it</u> (fulfil the promise)-- <u>no ifs, ands or buts</u> (without excuses).		
10.	I occasionally speak badly of others behind their back.		
11.	I would never <u>live off</u> (depend on someone for the money or food) other people.		
12.	I always stay friendly and courteous with other people, even when I am stressed out.		
13.	During arguments I always stay objective and <u>matter-of-fact</u> (realistic).		
14.	There has been at least one occasion when I failed to return an item that I borrowed.		
15.	I always eat a healthy diet.		
16.	Sometimes I only help because I expect something in return.		

The Social Desirability Scale

Instructions

Below you will find a list of statements. Please read each statement carefully and decide if that statement describes you or not. If it describes you, check the word "true"; if not, check the word "false".

Item no.	Statements	True	False
1.	I sometimes <u>litter</u> (throw rubbish/waste on surroundings or public places).		
2.	I always admit my mistakes openly and face the <u>potential</u> (possible) negative consequences.		
3.	In traffic I am always polite and <u>considerate</u> (cooperative/accommodating) of others.		
4.	I always accept others' opinions, even when they don't agree with my own.		
5.	I take out my bad moods on others now and then.		
6.	There has been an occasion when I took advantage of someone else.		
7.	In conversations I always listen attentively and let others finish their sentences.		
8.	I never hesitate to help someone in case of emergency.		
9.	When I have made a promise, I <u>keep it</u> (fulfil the promise)-- <u>no ifs, ands or buts</u> (without excuses).		
10.	I occasionally speak badly of others behind their back.		
11.	I would never <u>live off</u> (depend on someone for the money or food) other people.		
12.	I always stay friendly and courteous with other people, even when I am stressed out.		
13.	During arguments I always stay objective and <u>matter-of-fact</u> (realistic).		
14.	I always eat a healthy diet.		
15.	Sometimes I only help because I expect something in return.		

RE: Stöber, J. (2001). The Social Desirability Scale-17 (SDS-17): Convergent validity, discriminant validity, and relationship with age. *European Journal of Psychological Assessment*, 17(3), 222.

Sadia Musharraf <sadia_musharraf@hotmail.com>

Sat 2/14/2015 7:05 PM

To: Joachim Stoeber <j.stoeber@kent.ac.uk>

Cc: Sadia Musharraf <sadia_musharraf@hotmail.com>

Dear Joachim Stoeber,

Thank you for your prompt and helpful response. Sample for this research is University students so I will use the English version and will just make slight modifications regarding cultural adaptation and simple wording if required.

With best wishes,

Sadia

From: J.Stoeber@kent.ac.uk

To: sadia_musharraf@hotmail.com

Subject: RE: Stöber, J. (2001). The Social Desirability Scale-17 (SDS-17): Convergent validity, discriminant validity, and relationship with age. *European Journal of Psychological Assessment*, 17(3), 222.

Date: Sat, 14 Feb 2015 12:26:33 +0000

Dear Sadia Musharraf,

Permission granted but please make sure that you use standard backtranslation procedures (eg. Brislin; see references below) to make sure your translation corresponds to the original SDS-17.

Many thanks & all best,

Joachim Stoeber

References:

islin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185-216.

islin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner & J. W. Berry (Eds.), *Field methods in cross-cultural research* (pp. 137-164). Thousand Oaks, CA: Sage.

islin, R. W., Lonner, W. J., & Thorndike, R. M. (1973). *Cross-cultural research methods*. New York: Wiley.

Joachim Stoeber, PhD | Professor of Psychology | School of Psychology

Keynes College, University of Kent, Canterbury, Kent CT2 7NP, United Kingdom

Phone: +1227 824196 | **Fax:** +1227 827030 | **E-mail:** J.Stoeber@kent.ac.uk

Internet: <http://www.kent.ac.uk/psychology/people/stoeberj/>

From: Sadia Musharraf [mailto:sadia_musharraf@hotmail.com]

Sent: 13 February 2015 15:18

To: Joachim Stoeber

Cc: Sadia Musharraf

Subject: FW: Stöber, J. (2001). The Social Desirability Scale-17 (SDS-17): Convergent validity, discriminant validity, and relationship with age. *European Journal of Psychological Assessment*, 17(3), 222.

Dear Joachim Stoeber,

I am a PhD student at National Institute of Psychology, Quaid-i-Azam University, Islamabad (Pakistan) and conducting a research entitled as "Traditional and cyberbullying among university students: Role of appraisal, self-efficacy and coping strategies". I also want to use measure of social desirability along with variables of interest. I would be grateful if you would grant me permission to use and adapt "The social Desirability Scale" for this research.

I look forward to receiving your reply.

With thanks and best wishes,

Sadia Musharraf
National Institute of Psychology,
Quaid-i-Azam University,
Islamabad.

Appendix G

General Self Efficacy Scale

Below is a list of feelings dealing with general feelings about you. Indicate the amount of your agreement with each item. Please be open and honest in your responses.

Response format:

(1) not at all true, (2) barely true, (3) moderately true, (4) exactly true

Statements	1	2	3	4
1 I can always manage to solve difficult problems if I try hard enough.				
2 If someone opposes me, I can find the ways and means to get what I want.				
3 I am certain that I can accomplish my goals.				
4 I am confident that I could deal efficiently with unexpected events.				
5 Thanks to my resourcefulness, I can handle unforeseen situations.				
6 I can solve most problems if I invest the necessary effort.				
7 I can remain calm when facing difficulties because I can rely on my coping abilities.				
8 When I am confronted with a problem, I can find several solutions.				
9 If I am in trouble, I can think of a good solution.				
10 I can handle whatever comes my way.				

RE: Permission to use General Self Efficacy Scale

Schwarzer, Ralf <ralf.schwarzer@fu-berlin.de>

Tue 02/10/2015 4:52 AM

To: Sadia Musharraf <sadia_musharraf@hotmail.com>

YES

Prof. Dr. Ralf Schwarzer, Freie Universität Berlin, Psychology, Habelschwerdter Allee 45, 14195 Berlin, Germany
Email: ralf.schwarzer@fu-berlin.de Homepage <http://my.psyc.de> Blog: <http://theemeritus.wordpress.com/>

From: Sadia Musharraf [sadia_musharraf@hotmail.com]
Sent: Tuesday, February 10, 2015 00:33
To: Schwarzer, Ralf
Cc: Sadia Musharraf
Subject: Permission to use General Self Efficacy Scale

Dear Ralf Schwarzer,

I am a PhD student at National Institute of Psychology, Quaid-i-Azam University, Islamabad (Pakistan) and conducting a research entitled as "Traditional and cyberbullying among university students: Role of appraisal, self-efficacy and coping strategies". I would be grateful if you would grant me permission to use and adapt the General Self-Efficacy Scale for this research.

I look forward to receiving your reply.

With thanks and best wishes,

Sadia Musharraf
National Institute of Psychology,
Quaid-i-Azam University,
Islamabad.

ICT Self-Efficacy Scale

Instructions:

Indicate the amount of your agreement with each item. Please be open and honest in your responses. Please be open and honest in your responses.

No.		Disagree Strongly	Disagree	Not Certain	Agree	Agree Strongly
1.	I can easily express my point of view on any online discussion forum.					
2.	When I open any website, I can easily learn in a very short time that how to use its features/functions.					
3.	I can easily judge trustworthy information on social networking sites (i.e. Facebook, twitter, etc.)					
4	I can easily judge whether the information that someone has provided on social networking sites is correct.					
5.	I am fully aware of the consequences of my conduct on the Internet.					
6.	I can easily talk to others through the Internet using a webcam.					
7.	I can easily edit or modify any picture on the computer/mobile phone using different software (i.e. Photoshop etc.)					
8.	I can easily use chat rooms on the Internet.					
9.	I can easily control privacy settings of social networking sites that I mostly use (i.e. Facebook, twitter, Skype, WhatsApp, Viber etc.)					
10.	I can easily report any ID, post, image or video as abusive/spam content on					

	social networking sites that I mostly use (i.e. Facebook, twitter, Skype, WhatsApp, Viber etc.)					
11.	I can easily block or restrict anyone on social networking sites that I mostly use (i.e. Facebook, twitter, Skype, WhatsApp, Viber etc.)					
12.	I can easily unfriend anyone on social networking sites that I mostly use (i.e. Facebook, twitter, Skype, WhatsApp, Viber etc.)					
13.	I can easily hide any post that someone shared/tagged on my profile on social networking sites that I mostly use (i.e. Facebook, etc.)					
14.	I can easily report a fake account pretending to be me.					
15.	I can easily set pins/password on my mobile phone to keep it secure.					
16.	I can easily change password of my email/ social networking account that I mostly use.					
17.	I can easily recover my email /social networking account if I forget the password.					
18.	I can easily handle spams that I received through email or posted on my wall on social networking site (i.e. Facebook, etc.)					

Depression Anxiety and Stress Scale (DASS) 21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

Statements	0	1	2	3
1 I found it hard to wind down				
2 I was aware of dryness of my mouth				
3 I couldn't seem to experience any positive feeling at all				
4 I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)				
5 I found it difficult to work up the initiative to do things				
6 I tended to over-react to situations				
7 I experienced trembling (eg, in the hands)				
8 I felt that I was using a lot of nervous energy				
9 I was worried about situations in which I might panic and make a fool of myself				
10 I felt that I had nothing to look forward to				
11 I found myself getting agitated				
12 I found it difficult to relax				
13 I felt down-hearted and blue				
14 I was intolerant of anything that kept me from getting on with what I was doing				
15 I felt I was close to panic				
16 I was unable to become enthusiastic about anything				
17 I felt I wasn't worth much as a person				
18 I felt that I was rather touchy				
19 I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)				
20 I felt scared without any good reason				
21 I felt that life was meaningless				

Depression Anxiety and Stress Scale (DASS) 21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past twelve months*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 Did not apply to me at all
- 1 Applied to me to some degree, or some of the time
- 2 Applied to me to a considerable degree, or a good part of time
- 3 Applied to me very much, or most of the time

Statements	0	1	2	3
1 I found it hard to <u>wind down</u> (cool down/relax)				
2 I was aware of dryness of my mouth				
3 I couldn't seem to experience any positive feeling at all				
4 I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)				
5 I found it difficult to work up the initiative to do things				
6 I tended to over-react to situations				
7 I experienced trembling (eg, in the hands)				
8 I felt that I was using a lot of nervous energy (nervous energy is arousal caused by stress)				
9 I was worried about situations in which I might panic and make a fool of myself				
10 I felt that I had nothing to look forward to				
11 I found myself getting agitated				
12 I found it difficult to relax				
13 I felt down-hearted and blue				
14 I was intolerant of anything that kept me from getting on with what I was doing				
15 I felt I was close to panic				
16 I was unable to become enthusiastic about anything				
17 I felt I wasn't worth much as a person				
18 I felt that I was rather touchy				
19 I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)				
20 I felt scared without any good reason				
21 I felt that life was meaningless				

Appendix J

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

Below are some statements about feelings and thoughts.
Please tick the box that best describes your experience of each over the last 2 weeks

Response format:

(1) None of the time, (2) Rarely, (3) Some of the time, (4) Often, (5) All of the time

Statements	1	2	3	4	5
1 I've been feeling optimistic about future.					
2 I've been feeling useful.					
3 I've been feeling relaxed.					
4 I've been feeling interested in other people.					
5 I've had energy to spare.					
6 I've been dealing with problems well.					
7 I've been thinking clearly.					
8 I've been feeling good about myself.					
9 I've been feeling close to other people.					
10 I've been feeling confident.					
11 I've been able to make up my own mind about things.					
12 I've been feeling loved.					
13 I've been interested in new things.					
14 I've been feeling cheerful.					

Appendix J1

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

Below are some statements about feelings and thoughts.
Please tick the box that best describes your experience of each over the past twelve months.

Response format:

(1) None of the time, **(2)** Rarely, **(3)** Some of the time, **(4)** Often, **(5)** All of the time

Statements	1	2	3	4	5
1 I've been feeling optimistic about future.					
2 I've been feeling useful.					
3 I've been feeling relaxed.					
4 I've been feeling interested in other people.					
5 I've had energy to spare (feeling energetic).					
6 I've been dealing with problems well.					
7 I've been thinking clearly.					
8 I've been feeling good about myself.					
9 I've been feeling close to other people.					
10 I've been feeling confident.					
11 I've been able to make up my own mind about things.					
12 I've been feeling loved.					
13 I've been interested in new things.					
14 I've been feeling cheerful.					

RE: Permission to use Mental Well-being Scale.

Parkinson Jane (NHS HEALTH SCOTLAND) <jane.parkinson@nhs.net>

Tue 02/10/2015 1:08 PM

To: Sadia Musharraf <sadia_musharraf@hotmail.com>

Dear Sadia

Thank you for your email and good to hear that you are interested in using WEMWBS.

Both WEMWBS and SWEMWBS are freely available, but prospective users should seek permission to use the scales, as you are doing. This is obtained by registering to use the copyrighted scale by completing the online registration form on the University of Warwick WEMWBS webpage at www2.warwick.ac.uk/fac/med/research/platform/wemwbs/researchers/register/.

If the scale is reproduced, it must remain unaltered and include the copyright statement that appears with it. All the information you require about using the scale is available on the Warwick University webpage for WEMWBS.

I hope that the above answers your question.

Best wishes

Jane

Dr Jane Parkinson

Public Health Adviser (Mental Health Indicators)
Public Health Observatory Division
NHS Health Scotland
Meridian Court
5 Cadogan Street
Glasgow
G2 6QE

phone 07500 854571 email: jane.parkinson@nhs.net website: www.healthscotland.com
mental health indicators <http://www.healthscotland.com/scotlands-health/population/mental-health-indicators.aspx>

Our team is part of the ScotPHO collaboration, providing public health information for health improvement:
www.scotpho.org.uk

From: Sadia Musharraf [mailto:sadia_musharraf@hotmail.com]
Sent: 09 February 2015 22:20
To: Parkinson Jane (NHS HEALTH SCOTLAND) <jane.parkinson@nhs.net>
Cc: Sadia Musharraf <sadia_musharraf@hotmail.com>
Subject: Permission to use Mental Well-being Scale.

Dear Dr Jane Parkinson,

I am a PhD student at National Institute of Psychology, Quaid-i-Azam University, Islamabad (Pakistan) and conducting a research entitled as "Traditional and cyberbullying among university students: Role of appraisal, self-efficacy and coping strategies". I would be grateful if you would grant me permission to use and adapt the Mental Well-being Scale for this research.

I look forward to receiving your reply.

With thanks and best wishes,

Sadia Musharraf
National Institute of Psychology,
Quaid-i-Azam University,
Islamabad.

sender that you have received the message in error before deleting it.
Please do not disclose, copy or distribute information in this e-mail or take any
action in reliance on its contents:
to do so is strictly prohibited and may be unlawful.

Thank you for your co-operation.

NHSmail is the secure email and directory service available for all NHS staff in
England and Scotland
NHSmail is approved for exchanging patient data and other sensitive information with
NHSmail and GSi recipients
NHSmail provides an email address for your career in the NHS and can be accessed
anywhere

Cyber Bullying Scale

Item No.	How often have you done any of the following things in the past twelve months?	Never	Once or twice	About once a month	About once a week	About more times a week
1.	I said nasty (rude/insulting/abusive) things to someone or called them by bad names in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).					
2.	I said nasty (rude/insulting/abusive) things about someone to other people in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).					
3.	I threatened someone in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).					
4.	I blackmailed someone in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).					
5.	I hacked into someone's account and stole personal information (e.g. through email or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.					
6.	I hacked into someone's account and pretended to be them (e.g. through instant messaging or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.					
7.	I created a fake account, pretending to be someone else (e.g. on Facebook etc.) in a mean or hurtful way.					
8.	I posted personal information about someone online in a mean or hurtful way.					
9.	I posted embarrassing videos or pictures of someone online in a mean or hurtful way.					
10.	I altered (changed) pictures or videos of someone in a in a mean or hurtful way.					
11.	I excluded or ignored someone on a social networking sites (e.g. on Facebook etc.) or internet chat rooms in a mean or hurtful way.					
12.	I spread rumors about someone in a mean or hurtful way using mobile phone (call/text) or					

	internet (web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).					
13.	I ignored someone's comments on social media (Facebook etc.) in a mean or hurtful way.					
14.	I made a cell phone picture or video of someone without his/her permission in a mean or hurtful way.					
15.	I posted someone's private pictures or videos online (on Facebook, WhatsApp, chat groups etc.) in a mean or hurtful way.					
16.	I lied to someone on electronic media (internet, mobile) in a mean or hurtful way.					
17.	I saved an electronic conversation (messages, chat history, images) with someone and then showed to others in a mean or hurtful way.					
18.	I sent someone unwanted sexual messages or nude/semi-nude images using mobile phone or internet.					
19.	I gave someone silent phone calls with heavy breathing to harass him/her.					
20.	I gave someone anonymous/unknown phone calls in a mean or hurtful way.					

Cyber Victimization Scale

Item No.	How often any of the following things happened to you in the past twelve months?	Never	Once or twice	About once a month	About once a week	About more times a week
1.	Someone said nasty (rude/insulting/abusive) things to me or called me by bad names in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).					
2.	Someone said nasty (rude/insulting/abusive) things about me to others in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).					
3.	Someone threatened me in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).					
4.	Someone blackmailed me in a mean or hurtful way through mobile phone (call/text) or internet (e.g. web sites, chat-rooms, messenger, Facebook, Twitter, WhatsApp, etc.).					
5.	Someone hacked into my account and stole personal information (e.g. through email or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.					
6.	Someone hacked into my account and pretended to be me (e.g. through instant messaging or social networking accounts e.g. Facebook etc.) in a mean or hurtful way.					
7.	Someone created a fake account, pretending to be me (e.g. on Facebook etc.) in a mean or hurtful way.					
8.	Someone posted personal information about me online in a mean or hurtful way.					
9.	Someone posted embarrassing videos or pictures of me online in a mean or hurtful way.					
10.	Someone altered (changed) pictures or videos of me in a mean or hurtful way.					
11.	I was excluded or ignored by others on a social networking sites (e.g. on Facebook etc.) or internet chat rooms in a mean or hurtful way.					
12.	Someone spread rumors about me in a mean or hurtful way using mobile phone (call/text) or internet (web sites, chat-rooms, blogs, messenger, Facebook, Twitter, WhatsApp, etc.).					

13.	Someone ignored my comments on social media (Facebook etc.) in a mean or hurtful way.					
14.	Someone made a cell phone picture or video of me without my permission in a mean or hurtful way.					
15.	Someone posted my private pictures or videos online (on Facebook, WhatsApp, chat groups etc.) in a mean or hurtful way.					
16.	Someone lied to me on electronic media (internet, mobile) in a mean or hurtful way.					
17.	Someone saved an electronic conversation (messages, chat history, images) with me and then showed to others in a mean or hurtful way.					
18.	Someone sent me unwanted sexual messages or nude/semi-nude images using mobile phone or internet.					
19.	Someone gave me silent phone calls with heavy breathing to harass me.					
20.	Someone gave me anonymous/unknown phone calls in a mean or hurtful way.					

Re: Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., ... & Plichta, P. (2015). Structural validation and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire. Computers

José Antonio Casas <m22caboj@uco.es>

Sun 5/4/2015 4:10 PM

To: Sadia Musharraf <sadia_musharraf@hotmail.com>

Dear Sadia, I think that the changes in the questionnaire are very suitable. The only change I suggest is adding the app Whatsapp, in the description of web sites out there in the questionnaire (Facebook, WhatsApp ...) and deletes the word MSN.

I feel very good your work.

All the best

2015-4-3 11:47 GMT+01:00 Sadia Musharraf <sadia_musharraf@hotmail.com>:

Dear José A. Casas,

I hope that all is well with you. Following our earlier conversation, I have modified few existing items and added more nine items after conducting interviews from 93 Pakistani university students regarding their experiences of cyberbullying.

I have also added "intention to harm" with every item.

Before collecting data for empirical analysis, I would be most grateful if you could go through the questionnaire attached with this email and provide me your suggestions for any further modification.

Your cooperation will be highly appreciated.

With thanks and very best wishes,
Sadia

From: sadia_musharraf@hotmail.com

To: m22caboj@uco.es

CC: sadia_musharraf@hotmail.com

Subject: RE: Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., ... & Plichta, P. (2015). Structural validation and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire. Computers

Date: Wed, 2 April 2015 18:37:49 +0500

Dear José A. Casas,

Thank you for your prompt and detailed response. I will keep you updated as I proceed.

With thanks very best wishes,
Sadia

Date: Mon, 30 Mar 2015 14:12:53 +0200

Subject: Re: Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., ... & Plichta, P. (2015). Structural validation and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire. Computers

From: m22caboj@uco.es

To: sadia_musharraf@hotmail.com

Dear Sadia, we did not include the phrase "intent to harm" since someone can upload a picture without intent to harm, but can be used by others to make offensive comments. As we measure the

cyberbullying and other associated behaviors, we decided to remove the phrase "intent to harm". It is a decision you must make.

There are many situations of cyberbullying that begin as a joke, but will also affect the victim. That is a discussion that we have to keep asking ourselves, to enhance the scale.

Keep me informed of your progress, and if I can help you, would be happy to cooperate.

All the best

2015-03-30 13:29 GMT+02:00 Sadia Musharraf <sadia_musharraf@hotmail.com>:

Dear José A. Casas,

Many thanks for taking the time out of your busy schedule to respond my email. Your response is indeed very helpful for my work.

Sure, I will run CFA after data collection.

In response to query 3, would you suggest me to add another criteria of cyberbullying "intention to harm"

3. I want to add "intention to harm" in every item of the questionnaire like "Someone said nasty things to me using texts or online messages.....to upset me/to damage my reputation/to embarrass me etc."

With thanks and very best wishes,
Sadia Musharraf

Date: Sun, 29 Mar 2015 15:03:13 +0200

Subject: Re: Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., ... & Plichta, P. (2015). Structural validation and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire.

Computers

From: m22caboj@uco.es

To: sadia_musharraf@hotmail.com

Dear Sadia, First I apologize, but I've been outside of the university for a marriage license.

As to your question, we do not provide any definition of cyberbullying, not to impose conditions on the responses of the participants.

Conducting focus groups/interviews must make before taking the scale, and then incorporate the results into new items.

Finally, when data collection is complete, you must perform exploratory and confirmatory factor analysis to verify that the psychometric properties of the scale are held in university population.

Good luck in your work.

All the best,

José A. Casas

2015-03-28 18:15 GMT+02:00 Sadia Musharraf <sadia_musharraf@hotmail.com>:

Dear José A. Casas,

I would be most grateful if you could respond my email.

I hope this email finds you well.

With thanks and very best wishes,
Sadia Musharraf

From: sadia_musharraf@hotmail.com

To: m22caboj@uco.es

CC: sadia_musharraf@hotmail.com

Subject: RE: Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., ... & Plichta, P. (2015). Structural validation and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire. Computers

Date: Tue, 17 Mar 2015 22:54:38 +0500

Dear José A. Casas,

First of all, I must appreciate your work. I reviewed multiple scales and found measurement issues regarding cyberbullying has been appropriately addressed in your study.

I would be most grateful if you could respond to my queries about the Questionnaire.

1. Have you provided any definition of cyberbullying with this questionnaire to respondents?

2. I want to add "intention to harm" in every item of the questionnaire like "Someone said nasty things to me using texts or online messages.....to upset me/to damage my reputation/to embarrass me etc."

I look forward to hear you.

With thanks and best wishes,

Sadia Musharraf
PhD Scholar,
National Institute of Psychology,
Quaid-i-Azam University, Islamabad,
Pakistan.

Lecturer in Psychology,
The Women University,
Multan.

Visiting Researcher,
Glyndwr University,
Wales, UK.

From: sadia_musharraf@hotmail.com

To: m22caboj@uco.es; sadia_musharraf@hotmail.com

Subject: RE: Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., ... & Plichta, P. (2015). Structural validation

and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire. Computers
Date: Th, 12 Feb 2015 12:18:59 +0500

Dear José A. Casas,

Many thanks for your prompt and helpful response.

Best wishes,
Sadia Musharraf

Date: Th, 12 Feb 2015 08:27:07 +0200
Subject: Re: Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., ... & Plichta, P. (2015). Structural validation and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire. Computers
From: m22caboj@uco.es
To: sadia_musharraf@hotmail.com

Dear Sadia, of course you can use the items of the instrument. Best wishes for your doctoral thesis.

Best Regards

2015-02-11 1:43 GMT+02:00 Sadia Musharraf
<sadia_musharraf@hotmail.com>:

Dear José A. Casas,

I am a PhD student at National Institute of Psychology, Quaid-i-Azam University, Islamabad (Pakistan) and conducting a research entitled as "Traditional and cyberbullying among university students: Role of appraisal, self-efficacy and coping strategies". I would be grateful if you would grant me permission to use the items of Cyberbullying Intervention Project Questionnaire for construction of a Cyberbullying and Cyber Victimization Scale in Pakistani context.

I look forward to receiving your reply.

With thanks and best wishes,

Sadia Musharraf
National Institute of Psychology,
Quaid-i-Azam University,
Islamabad.

--

Dr. José Antonio Casas Bolaños
Dpto. Psicología
Universidad de Córdoba
Avda. San Alberto Magno s/n
tfn. +34 957212604

Laboratorio de Estudios sobre Convivencia
y Prevención de la Violencia
www.uco.es/laecovi

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Appendix L

Demographic Information

1. Age	_____years	
2. Gender	Male	Female
3. Currently Living in the	Hostel	Home
4. Educational Program		
5. Discipline		

Informed Consent Form

This questionnaire will ask you about your use of mobile phones and the Internet, your feelings and experience dealing with others. You will also be asked to imagine what you would do if you found yourself in different situations online.

Your participation in this research is optional and you have the right to stop at any time. Your anonymity will be protected. This means that your answers will not be shared with your teachers, or class fellows and your name will not appear anywhere in the research.

There might be few words/terms in a questionnaire that are less familiar to you, so, researcher has explain these words/terms in parenthesis/brackets in more simple words to give you complete understanding of the questions. If there is anything that you are not sure about, please feel free to ask the researcher.

Thank you for your participation.

➤ **To give your consent to participate in this study please tick the box below.**

I consent to participating in this research study