Mindful Eating and Emotional Regulation among Obese and Non-Obese University Students

By

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The research report submitted in Partial Fulfillment of The Degree of Master of Science in Psychology

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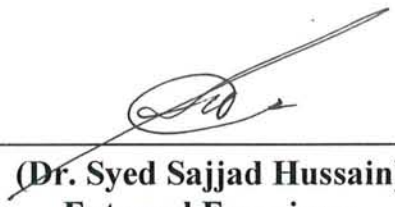

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It is certified that M.Sc. Research report entitled **"Mindful eating and Emotional regulation among Obese and Non-obese university students"** prepared by Maira Zahid has been approved for submission to Quaid-i-Azam University, Islamabad..

Dr. Irum Naqvi
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Abstract

The present study aimed to investigate the relationship between mindful eating and emotional regulation among Obese and Non Obese university students. A purposive sample of Obese (n=76) and Non Obese (n =139) university students participated in the research with their full consent. The age of participants ranged from 18 to 25 years. The self-report instrument of Mindful Eating Questionnaire (Framson, 2009) and Emotional Regulation Questionnaire (Gross & John, 2003) were used to study variables. The result of the research confirmed positive relationship between mindful eating and emotional regulation among obese and non obese university student. It also indicated that non-obese students score higher on mindful eating and emotional regulation as compared to obese students. Women were reported to score higher on mindful eating and emotional regulation as compared to men in both obese and non-obese university students. The high socioeconomic status has been found strongly and positively related and revealed as a major predictor of emotion regulation and mindful eating. Implication and limitation of the present study were also discussed. So this research will help as an intervention which can be used to reach students in a variety of way because it is quick, easily used in group setting, and effective.

INTRODUCTION

Chapter I

INTRODUCTION

The prevalence of obesity is increasing worldwide, with the condition predicted to affect more than one billion people by 2030 (Kelly, Yang, & Chen, 2005). Obesity is declared as a global epidemic by the World Health Organization (WHO) and has presented itself as a public health challenge across the globe. It is intimately linked with various psychological and physical health risks, and renders the person exposed to develop a range of associated disorders further affecting the well-being of an obese person (WHO, 1998).

Obesity has become one of the most pressing health issues in the United States. According to the 2007–2008 National Health and Nutrition Examination Study (as cited in Flegal et al., 2010), 33.8% of adults in the United States are obese. The prevalence of obesity has more than doubled over the past three decades. (Ogden & Carroll, 2007) and recent evidence indicates that this trend could continue if weight control interventions do not become consistently successful gravity of this problem is underscored by the fact that obesity is linked with chronic diseases and decreased life expectancy (Peeters, 2003). The growth of the obesity epidemic has been met with attempts to intervene at many levels; however, most interventions for weight loss do not have successful long-term outcomes. Obese individuals who lose weight typically regain approximately one-half of the weight within the first year after weight loss, and an estimated 80% of individuals who lose weight return to or exceed their initial weight within three to five years (Byrne, Cooper & Fairburn, 2003).

Nutrition researchers and practitioners have recently adopted the construct of "mindfulness" to better understand and modify dietary behaviour. Mindfulness, which is well described in the scientific literature by Brown and Ryan (2003), can be defined succinctly as an astute, non-judgmental awareness of the present moment Mindfulness is a learned skill that is linked to many positive health outcomes, including increased immune function and decreased anxiety and chronic pain (Allen & Gillooly, 2006). When considered in the context of nutrition, "mindful eating" can be used to describe a non-judgmental awareness of physical and emotional sensations while eating or in a food-related environment. Because mindful eating engenders awareness of why one

eats, it may be a helpful weight loss or maintenance skill. For example, mindful eating skills could help clients to recognize and respond to satiety, or to recognize but not respond to inappropriate cues for eating such as advertising, boredom or anxiety. Mindfulness skills are different from the cognitive skills most commonly taught for weight management, such as meal planning, record keeping and portion control. Indeed, some scientists have hypothesized that "mindless eating" explains the poor long-term success of most weight loss interventions (Wansink, 2004).

Contemporary psychology considers emotion regulation a central component of mental health, and its imbalances might underlie several mental disorders (Mennin & Farach, 2007). Emotion regulation includes all of the conscious and non-conscious strategies we use to increase, to maintain or decrease one or more components of an emotional response (Gross, 1998). Originally, trying to bring together ideas from psychoanalysis and the field of stress and coping behaviours. Gross (1998) developed a process or time model of emotion regulation, in which emotions can be modulated in five different stages: selecting a situation, modifying a situation, deployment of attention, changing cognition (cognitive reappraisal), and modulating the experience, behavior or physiological response (Gross, 2001). Gross and John in a correlational study demonstrated that individual differences in the usage of these strategies (more cognitive reappraisal) were related to better emotional health, well-being and interpersonal functioning (Gross & John, 2003).

Mindful eating has gained some awareness in recent years and it is not hard to see why when considering the global epidemic of overweight and obesity that the WHO (2017) refers to as globesity. Although mindful eating programs include a meditation component in addition to mindful activities and discussion, others successfully use only hands-on mindful eating exercises. A study that examined mindful eating in restaurants showed a significant reduction in weight, calories consumed, fat intake, and increases in self-confidence among subjects who participated in a six-week mindful eating program (Timmerman & Brown, 2012). Mindfulness-based therapies are increasingly being adopted to treat an array of psychological disorders (Allen & Gillooly, 2006; Baer, 2003). At the same time, it is being recognized that many psychological disorders have, at their core, disordered emotion regulation (Gross & Munoz, 1995; Repetti, Taylor & Seeman, 2002). Thus,

in order to promote mental health, it is imperative to better conceptualize, and thus learn to maximize, adaptive emotional regulation. Given that, at some level, mindfulness-based therapies have as a goal promotion of adaptive emotional regulation, this review examines specific ways in which such therapies may impact upon emotional regulation capacities.

Obesity

Obesity is defined as an abnormal or excessive fat accumulation that may lead to impairment of health of a person (WHO, 2012). The term obesity is used for the body weight which exceeds the healthy weight limits. When used with reference to a person, it signifies the extra or unhealthy body fat of that individual. Obesity is declared as a global epidemic by the World Health Organization (WHO) and has presented itself as a public health challenge across the globe. It is intimately linked with various psychological and physical health risks, and renders the person vulnerable to develop a range of associated disorders further affecting the well-being of an obese person (WHO, 1998).

Jawad (2005), on behalf of the International Diabetes Federation reported that an estimate of 1.1 billion people is overweight and 320 billion is obese based on a worldwide calculation. Obesity is identified as cause of more than 2.5 million deaths per year. This estimate is expected to double in size by the year 2030.

Worldwide obesity is one of the fastest growing problems in developing countries (El-Hazmi & Warsy, 1997; Mokdad et al., 2003) especially in the US, Russia, European countries and Saudi Arabia.

Obesity is a state if an individual has disproportionate body fat than his or her ideal body weight, deviation of 20% above the normal range is considered overweight while deviation of 50% from the ideal weight is obesity. For normal weight near 12% of the total body weight is fat while the level more than 20% is considered obesity, and in normal female about 26% of the total body weight is fat and more than 30 % is considered obesity (Davidson, 1975).

McElroy et al. (2004) finds that obesity, overweight and abdominal obesity are recurrent problems in individuals seeking treatment for certain mood disorders, but

also that mood disorders (in particular depressive disorder) are common in individuals seeking treatment for obesity. The authors also concluded that obesity and mood disorders share other similarities such as overeating, physical inactivity and weight gain; both conditions are associated with stigma; both respond to medications that selectively enhance central serotonin, norepinephrine, and/or dopamine function; and both respond better to combinations of psychological and pharmacological treatments than to either of these modalities alone.

Robert et al. (2003) conducted an interesting study using prospective data of the Alameda County Study (from the 1994 and 1999 surveys) to explore the possible associations between depression and obesity, namely if: obesity increases the risk of depression; depression increases the risk of obesity; there is a reciprocal relation between depression and obesity; and there is no association between depression and obesity. In this study they found evidence only for the first hypothesis - i.e. obesity at baseline was associated with being depressed at follow-up 5 years later-, confirming the adverse effects of obesity on mental health.

Klinitzke et al. (2013) performed a systematic literature review on the relationship between obesity and suicide risk in adults is an attempt to understand what they call an "ambiguous research field". Eight of the epidemiological and ecological studies analyzed revealed a negative association between obesity and completed suicide – i.e. obese patients are less likely to commit suicide than individuals with low or normal weight; one of the studies concluded that there is no association between weight and committing suicide; and another showed a positive association between these two variables. Distinct results were found when suicide attempts and suicidal ideation were considered, revealing that obese women reported more suicide attempts and suicidal ideation, while men showed less attempts and less suicidal thoughts.

Research is relatively consensual in considering that overweighed individuals and people with obesity are at particular risk of developing depressive mood and anxiety disorders, which are, in its turn, a factor that may contribute to weight regain in patients integrated in weight-loss treatments (Rohde et al., 2008).

Obesity increases day by day. In many cultures people are "Weight conscious", in United States individuals have a great concern about the weight in

childhood, because if they are overweight they are teased and rejected by other social groups (Brownell, 1991). Many researches has been conducted to check the relationship between physical activities and body weight, a cross sectional study showed inverse relationship between physical activity and body weight where in those individual who are more physical active have lower body weight (Dipietro, 1995).

Mindful eating has gained some awareness in recent years and it is not hard to see why when considering the global epidemic of overweight and obesity that the World Health Organization (WHO) refers to as 'globosity' (2017). The WHO conveys that despite obesity being visible; it is an issue that is neglected. There are concerns that serious health detriments will arise if the issue of obesity is not auctioned, as obesity is going hand-in-hand with under nutrition (as cited in O'Reilly et al., 2014)

Alarmingly, in 1995 there were 200 million obese people worldwide and by the year 2000 there were 300 million. Whilst men are more prone to being overweight, women are more likely to be obese. Obesity poses a major risk for serious diet-related non infectious diseases, including diabetes mellitus, cardiovascular disease, hypertension and stroke, and certain forms of cancer. Its health consequences range from increased risk of premature death to serious chronic conditions that reduce the overall quality of life (WHO, 2017).

Obesity is primarily a social and environmental disease and therefore the University of Auckland (New Zealand) aims to uncover socioeconomic, political, cultural and physical contributors to obesity. WHO is also working with Australia's University of Sydney to establish the economic impact of globosity and global weight gain. In Australia alone, 63% of adults and one quarter of children are obese or overweight. People living in remote or 'outer regional' Australia are 15% more likely to be overweight or obese than those from Australia's main cities (Gard & Wright, 2005).

WHO (2016) raises the interesting and unfortunate point that obesity is preventable and 'most of the world's population live in countries where overweight and obesity kills more people than underweight'. O'Reilly et al.'s (2014) review of 21 papers found that 18 of them (86%) indicated that mindfulness-based interventions

(MBIs) effectively improved eating behaviours such as binge-eating, emotional eating and external eating.

Deficits in emotion regulation processes are a common and widely used explanation for the development and maintenance of binge eating disorder (BED). It is assumed that BED patients – as they have difficulty regulating their negative emotions – use binge eating to cope with these emotions and to find relief (Wallace, 2013)

Emotion-regulation strategies are understood to influence food intake. This study examined the neurophysiological underpinnings of negative emotion processing and emotion regulation in individuals with excess weight compared to normal-weight controls. Findings support contentions that excess weight is linked to an abnormal pattern of neural activation and connectivity during the experience and regulation of negative emotions. Ineffective regulation of emotional states contributes to the acquisition and preservation of excess weight (Steward et al., 2016).

Emotion regulation in the relation between parental rejection and emotional eating of obese youngsters was studied. Results revealed that the use of maladaptive emotion regulation strategies mediated the relation between maternal rejection and emotional eating. The findings highlight the importance of assessing the emotional bond between mother and child and the emotion regulation of the youngster in the treatment of pediatric obesity (Vandewalle, Moens, & Braet, 2014).

Mindful Eating

Mindful eating is defined as food consumption that is driven by appropriate cues for eating. It involves high levels of eating inhibition, awareness of personal eating behaviour, and awareness of external cues to eat as well as low emotional responses to eating and engagement in distractive activities while eating (Framson et al., 2009).

"Mindful Eating" although a seemingly unremarkable topic for many, food and eating are a major part of every human being's life. Mindfulness in its most basic form is the practice of paying attention to the activity at hand. By experts it has been

described as bringing one's complete attention to the present experience on a moment to moment basis (Marlatt & Kristeller, 1999) or even as "an open-hearted, moment-to-moment, non-judgmental awareness" (Kabat-Zinn, 2005). However, here 'paying attention' means focusing on what one is doing while simultaneously being aware of thoughts, feelings, and memories that come up in that moment, and also noticing when the mind wanders so that it can be refocused (Baer & Krietemeyer, 2006). This is in contrast to when one's state of mind is such that attention is not focused on the present. Rather, it is fixed upon day dreaming, worries, plans, etc., which is what, causes humans to act mechanically, with mindless habits and behaviour patterns which are unhealthy, and a general unawareness (Brown & Ryan, 2003). It is based on traditional mindful meditation but as a psychological concept is independent of spiritual beliefs and Buddhist practices (Kabat-Zinn, 1982). Mindful eating is conceptualized as being aware in the present moment when one is eating; paying close attention to the senses, including physical and emotional sensations (Albers, 2008).

Although mindful eating is the approach being introduced to dieting, it focuses on the process of eating, not what is eaten and there are no rules to be followed. As stated by Albers (2008), the first step involves noticing all of the senses, tastes, smells, and textures to the food eaten. The second is recognizing repetitive habits such as eating while multitasking and eating on autopilot without being aware consciously. The third is being aware of what triggers the initiation and stopping of eating.

Hanh and Cheung (2010), in their book "Savor, mindful eating, mindful life" explain how cultural, economic and marketing practices are inherent to the way we consume and buy food. With technological improvements and lifestyle changes we have become increasingly sedentary, which in turn affects our eating habits. Their teachings show that the principal factors that change people's eating habits involve particular emotions, the environment and individual levels of awareness. Similar studies have revealed a negative correlation between mindful eating and obesity (Dalen et al., 2010; Daubenmier et al., 2011; Framson et al., 2009). Accordingly, people suffering from obesity have demonstrated a reduced consciousness of what and how they consume.

Dieting in the United States has become a high-revenue market and yet the prevalence of obesity keeps climbing (Cole & Horacek, 2010). Although there are hundreds of diets designed to aid in weight loss, they are not always successful. By determining why food choices are made and teaching individuals to make the best choices, healthy eating can become a way of life. Currently much of the mindful eating research being conducted involves placing participants in various eating situations and measuring the volume of food consumed. This is followed by questions about the amounts they ate such as: was the portion size large enough, do they know the amount of food they ate, and what influenced the quantity eaten (Wansink, 2004). Also, a popular area of mindful eating research asks participants if they know appropriate portion sizes, and if they can distinguish appropriate portion sizes from portions served (Hetherington, 2007; Leone, Pliner, & Herman, 2007). Most individuals do not realize how much the environment and the amount eaten by companions can influence the amount they consumed (Hetherington, 2007; Vartanian, Wansink, & Herman, 2008)

The mindful eating questionnaire comprises five subscales (awareness, distraction, disinhibition, emotional, and external subscales), the mean of which represents a mindful eating summary. These subscales assess mindfulness in the context of eating which are following.

Awareness. The Mindfulness Based Eating Awareness Training Program is designed to increase mindful awareness of experiences related to eating and to decrease mindless or habitual reactivity. In particular, mindful awareness exercises focus on physical hunger and satiety cues, overall food intake, and physical, cognitive, social–environmental, and emotional triggers of bingeing. Three forms of meditation are used: general (breath/open awareness) mindfulness meditation, guided eating meditations, and "mini-meditations" to be used at mealtime and throughout the day modelled on the Mindfulness-Based Stress Reduction (MBSR) program (Kabat-Zinn, 1990). Mindfulness-based treatment approaches are increasingly recognized as having value in addressing a wide range of dysregulation disorders, including anxiety and depression, and addictions (Davis & Hayes 2011; Grossman et al., 2004; Hofmann et al., 2010; Kabat-Zinn, 1992; Keng, Smoski & Robins, 2011; Marlatt & Kristeller, 1999; Walsh & Shapiro, 2006). In addition, while mindfulness based

interventions have been applied clinically to eating related issues (Bays, 2009; Kabatznick, 1998), limited empirical work has been reported (Dalen et al., 2010; Kristeller & Hallett, 1999; Miller et al., 2012; Tapper et al., 2009). Mindfulness Based Eating Awareness Training appears to have value as an intervention for binge eating and warrants further investigation as an approach to weight loss (Kristeller & Hallett 1999) and adds evidence to the growing interest in applying mindfulness-based approaches to managing eating issues and obesity (Bays, 2009; Kabatznick, 1998; Kristeller et al., 2006; Tapper et al., 2009; Wolever & Best, 2009).

Distraction. Distraction is generally understood as the conscious or unconscious effort to divert attention from unpleasant experiences. Persistent distraction, particularly in the form of avoidance of thoughts, feelings or stimuli associated with a trauma according to the Diagnostic and Statistical Manual of Mental Disorders. Distraction is generally understood as the conscious or unconscious effort to divert attention from unpleasant experiences (American Psychiatric Association, 2013). Over two thousand years ago, the Buddha pointed out that human suffering is due to the tendency to cling to thoughts, feelings, biased perceptions of reality, and habitual ways of acting. Unable or unwilling to remain in contact with negative private experiences in a direct, open, and unguarded manner, we react with habitual emotional and cognitive avoidance routines, e.g. rumination or distraction (Hayes, Strosahl, & Wilson, 1999). Greater avoidance has been associated with the development of PTSD symptoms in several traumatized populations, including rape victims (Ulman, Filipas, Townsend, & Starzynski, 2000), persons suffering severe motor vehicle accidents (Dorfel, Rabe, & Karl, 2008), and veterans of operation desert storm (Sutker, Davis, Uddo, & Ditta, 1995). Although distraction may be effective in reducing anxiety and arousal in the short-term. Linehan (1993) argues that it is likely to be ineffective in the long run as it diverts attention from the development of more effective coping strategies.

Disinhibition. Disinhibition is the tendency to overeat in response to different stimuli, and can occur in a variety of circumstances such as when an individual is presented with an array of palatable foods or is under emotional distress (Drapeau, Provencher, & Lemieux, 2003). Consistent self-monitoring of eating behaviour "despite competing internal and external demands seems particularly

critical" to the control of weight in the long-term (Baker & Kirschenbaum, 1993). Attempting to lose weight by reducing energy intake paradoxically increases the probability of dietary lapses or overeating, broadly referred to as disinhibited eating (Polivy & Herman, 1985). Individuals who are prone to disinhibited eating have decreased awareness of their level of satiety (Hadigan et al., 1990). Both escape theory and the limited capacity model suggest that disinhibited eating is more likely to occur when self-awareness is attenuated by upsetting or distracting events. Research that manipulated self-awareness in an eating situation clearly indicated that increasing self-focused awareness during eating limits the amount of food individuals will consume (Sentyrz & Bushman, 1998).

Emotional Response. The notion that people have emotional responses to their immediate environment is widely accepted in psychology. It is proven that the first response level to any environment is affective, and that this emotional impact generally guides the subsequent relations within the environment (Ittelson, 2004).

Emotional states can have major effects on eating behavior and result in either overeating or under eating. There have been several reviews of studies concerning emotional eating in relation to body weight (Allison & Heshka, 1993 ; Faith, Allison & Geliebter, 1997, Ganley, 1989; Van Strien, 1995). These studies have almost always dealt with negative emotions such as depression or fear and have mainly compared obese and normal-weight subjects. The findings have been conflicting, but most indicate relative overeating in obese individuals during negative emotional states a psychosomatic interpretation has been that eating by obese individuals in response to negative emotions is a learned behavior to reduce the negative state (Kaplan & Kaplan, 2000).

External Cues. External cues involve anything and everything in your environment that influences food and eating. External cues are also heavily influenced by behavior patterns. Social settings are also a trigger for eating – if others are eating, you will likely feel pressure to eat. Even certain colours have been shown to influence one's hunger and food consumption. Food cues thus appear to be an important influence on both eating and body weight particularly in overweight and dieting individuals who are most concerned with food and weight. Even the presence of photographs or other images of food (such as television commercials) appears to

stimulate eating in humans. It is thus not surprising that in a society saturated with food cues at home and in the community, dieters have difficulty losing weight, and obesity is on the rise (Boon, Stroebe, Schut, & Jansen, 1998). As Brownell has pointed out, the super-abundance of food cues in our society has created a "toxic environment" that promotes overeating and overweight, not under eating and weight loss. Even when people are successful at losing weight, the long-term outcome for the vast majority is that they regain the weight they lost (Wilson, 2002).

Mindful Eating vs. Mindless Eating

While the concept of mindful eating has been shown to be effective and is growing in popularity, so are techniques to reduce mindless eating. The mindless eating concept involves making adjustments to avoid triggers that may compel individuals to eat unhealthy foods, eat too much, or both. Strategies include eating on smaller plates, drinking from smaller cups, repackaging or purchasing single-serving sizes, placing unhealthy foods out of sight, and ordering smaller portions at restaurants (Wansink, 2006).

"Mindless eating is looking at environmental cues and triggers around eating," Fletcher says. "Mindful eating is about awareness of internal and external cues that trigger eating." She adds that the two concepts do overlap when hunger sensations are triggered by the sight or smell of food (Wansink, 2006).

As the growing fast food culture in our society, we don't have enough time to sit properly for our main and mid meals. It's too common to hear of people, grabbing breakfast on the run or attending a lunch meeting. The speed of eating isn't the only problem, eating while multitasking such as working during lunch, watching television or driving a car is actually resulting in the consumption of large number of food unconsciously but not feels full. Without self-awareness, people eat without regard to the quality and quantity of food that passing their lips. The whole phenomenon is called Mindless eating or eating without awareness (Lillis, Hayes, Bunting, & Masuda, 2009).

Mindless Eating Consequences

This mindless behaviour can have many negative health consequences and Obesity is one of them. There is also a need to understand the precise mechanism of hunger and fullness and the signals of our central nervous system, when food is desired or needed. Eating too quickly and mindlessly also disturbed the communication between gut and brain which can cause many GI problems like gas and bloating (Lillis, Hayes, Bunting, & Masuda, 2009).

People who have obesity, compared to those with a normal or healthy weight, are at increased risk for many serious diseases and health conditions, including the following (Kasen et al., 2008).

All-causes of death (mortality), High blood pressure (Hypertension), High LDL cholesterol, low HDL cholesterol, or high levels of triglycerides (Dyslipidemia), Type 2 diabetes, Coronary heart disease, Stroke, Gallbladder disease, Osteoarthritis (a breakdown of cartilage and bone within a joint), Sleep apnea and breathing problems, Some cancers (endometrial, breast, colon, kidney, gallbladder, and liver), Low quality of life, Mental illness such as clinical depression, anxiety, and other mental disorders, Body pain and difficulty with physical functioning.

Theoretical Framework of Mindful Eating

Temporal Self-Regulation Theory. Self-regulation theory proposes that regulation of internal physiologic processes, e.g., heart rate, blood pressure, depends on the ability to observe internal responses (Schwartz & Malliani, 1975). Hunger is an internal physiologic process, but overeating may be a failure to self-regulate (Smith et al., 2006). Overeating contributes to obesity and may be driven by emotions, not hunger (Heatherton & Baumeister, 1991), when overeating is used to block out painful emotions. That is, emotionally-driven overeating may involve using food as relief or distraction (Wiser & Telch, 1999). Ignoring or suppressing emotional signals may result in dysregulation and lead to automatic thoughts and behaviors (Smith et al., 2006). Emotional eaters may not be able to differentiate automatic, emotion-driven eating and physical hunger (Smith et al., 2006). Restoring balance between internal physical cues (hunger) and emotional cues is integral to eating behavior and ultimately to weight regulation.

Mindfulness-based interventions have successfully treated disorders of self-regulation, e.g., depression, pain, and self-injury (Baer, 2003; Greeson, 2008), because they emphasize observation, acceptance, tolerance, and regulation of unpleasant emotions, allowing inhibition of impulsive eating behavior and more rapid restoration of equilibrium (Gupta et al., 2008). Being mindful focuses attention on automatic thoughts and emotions and promotes development of new, more adaptable responses (Greeson, 2008). Mindful eating approaches increase awareness of emotions and hunger, and help the individual to balance eating responses (Kristeller & Wolever, 2011). As they became more mindful, participants were expected to report greater ability to self-regulate their eating.

Information-Motivation-Behavioural Skills Model. "Information" targets the cognitive domain, by offering knowledge to support the behaviour change. "Motivation" addresses the affective domain. It provides the opening to develop a favourable attitude toward the new behaviour, and taps into existing support systems to enhance motivation. "Behaviour" addresses the psychomotor domain, with return demonstrations and practice.

The IMB model assumes that health-related information, motivation, and behavioural skills are necessary to adopt health behaviours. Individuals who are well informed, motivated to act, and have the fundamental skills to perform behaviour, are very likely to adopt health behaviours and obtain beneficial health outcomes. On the other hand, individuals who are not well informed, are not motivated to act, and do not possess the skills needed to perform a behavior, are very likely to engage in risky behaviors and thus experience unfavourable health outcomes (Fisher & Harman, 2003).

Mindful eating is a theory-based, anti-obesity behavioural skill intervention. Practicing this behavioural skill may enhance adoption of healthy eating behaviour. Mindful eating, a behavioural skill, reconnecting eating to satiety cues, and has potential as an anti-obesity intervention which lowers BMI, while promoting health. Behavioural treatment is an approach used to help individuals develop a set of skills to achieve a healthier weight. It is more than helping people to decide what to change; it is helping them identify how to change. The behaviour change process is facilitated through the use of self-monitoring, goal setting, and problem solving. Studies suggest

that behavioural treatment produces weight loss of 8–10% during the first 6 months of treatment. Structured approaches such as meal replacements and food provision have been shown to increase the magnitude of weight loss. Most research on behavioural treatment has been conducted in university-based clinic programs. Although such studies are important, they tell us little about the effectiveness of these approaches in settings outside of specialized clinics. Future research might focus more on determining how these behavioural techniques can be best applied in a real-world setting (Fisher & Fisher, 1992; Fisher & Fisher, 1993). The model specifies a set of causal relationships among these constructs as well as a set of operations (Fisher & Fisher, 1993) that may be used for translating the IMB approach into health promotion interventions.

Mindfulness as a Treatment

As world-renowned meditation teacher Jon Kabat-Zinn, PhD, once said, "Mindfulness means paying attention in a particular way; on purpose, in the present moment, and non-judgmentally." Research shows how mindfulness benefits patients with cardiovascular disease, depression, chronic pain, and cancer, and studies report decreased stress levels and increased quality of life (Praissman, 2008).

One of the most researched mindfulness programs is Kabat-Zinn's Mindfulness-Based Stress Reduction (MBSR). His mindfulness model involves guided mindful meditation practices, gentle stretching, and the discussion of strategies to incorporate mindfulness into daily life. Participants are encouraged to begin meditating daily outside of sessions.

Several other programs have adopted this model to help treat eating disorders such as binge-eating disorder (BED), type 2 diabetes, weight loss, and promote positive dietary changes in cancer survivors. The Mindfulness-Based Eating Awareness Training (MB-EAT) program by Jean Kristeller, PhD, combines mindful eating experiences, meditation, and discussion on how awareness can help inform participants about their behaviors and experiences surrounding food (Kristeller, Baer, & Quillian-Wolever, 2006).

One study that examined MB-EAT reported that the number of binge-eating episodes among participants decreased from slightly more than four per week to about

1.5, and that many patients no longer met the diagnostic criteria for BED (Kristeller & Hallett, 1999). A National Institutes of Health-funded study of 140 subjects who used MB-EAT techniques also experienced reductions in binge-eating episodes and improvements in depression.

The Mindful Eating and Living Program by Brian Shelley, MD, used the Mindful Based Reduction Stress Model (MBSR) model. Participants experienced significant weight loss and improvement in mood and inflammatory markers, such as C-reactive protein, after six weeks (Dalen et al., 2010).

Carmody et al. (2012) studied prostate cancer survivors showed that a combination of nutrition information, cooking classes, mindfulness, and mindful eating training led to dietary changes linked to lower risk of prostate cancer recurrence. A significant correlation existed between meditation habits at six months and increased vegetable and lower animal product consumption. The authors hypothesized that mindfulness may help support necessary dietary changes in these patients.

Although mindful eating programs include a meditation component in addition to mindful activities and discussion, others successfully use only hands-on mindful eating exercises. A study that examined mindful eating in restaurants showed a significant reduction in weight, calories consumed, fat intake, and increases in self-confidence among subjects who participated in a six-week mindful eating program (Timmerman & Brown, 2012).

Mindfulness effect Emotional Regulation

From a phenomenological and cognitive perspective, authors have argued that mindfulness elicits a "Mindful emotion regulation" strategy; however, from a clinical perspective, this construct has not been properly differentiated from other strategies and interventions within Mindful Based Interventions (MBIs). Some of the main neurocognitive mechanisms implicated in mindfulness meditation include attention control, emotion regulation, and self-awareness (Lutz et al., 2015)

Although we have extensively shown that emotion regulation is (somehow) enhanced by mindfulness practice, we argue that the notion of "mindful emotion

regulation" has not been accurately and properly defined. "Mindful emotion regulation" entails as well a variety of emotion regulation strategies, in accordance with the different strategies taught within MBIs and EMs trainings (Thompson, 1990).

Emotion Regulation

Emotional Regulation refers to the things we do to influence which emotions we have, when we have them, and how we experience and express them (Gross, 1998). Emotion regulation involves both conscious and unconscious processes, positive and negative emotions, and may include generating, reducing as well as sustaining emotions (Gross & Thompson, 2007). According to Thompson (1994), the term emotion regulation (ER) refers to the processes, both extrinsic and intrinsic, that are responsible for recognizing, monitoring, evaluating and modifying emotional reactions. Emotion Regulation processes involve the initiation, enhancement and reduction of both positive and negative emotions.

Emotional Regulation Strategies

Gross (2001) asserted that although emotions seem to appear and disappear by their own will yet it is also seen that we actually hold considerable power over our own emotions. We are able to, with considerable success, influence the emotions we have and the way we experience and express the emotions we have and the way we experience and express these emotions. It is also observed that the regulatory strategies that act early in the emotion-generative process seem to have quite different outcomes than strategies that act later. In his study he focused on two widely used strategies for down-regulating emotion. Two major emotion regulation strategies that have been particularly studied are cognitive reappraisal and expressive suppression (Gross & John, 1998).

Cognitive Reappraisal. In particular, cognitive reappraisal is defined as the attempt to reinterpret an emotion-eliciting situation in a way that alters its meaning and changes its emotional impact (Lazarus & Alfert, 1964; Gross & John, 2003). The first and most researched, reappraisal comes early in the emotion-generative process which consists of changing how we think about a situation in order to lessen its emotional impact. Theory and research suggest that reappraisal is more effective than

suppression. Reappraisal decreases the experience and behavioural expression of emotion, and has no impact on memory. Emotion reappraisal is seen to be positively correlated with problem and emotion focused coping (Williams & Hasking, 2009).

Expressive Suppression. Expressive suppression is defined as the attempt to hide, inhibit or reduce on-going emotion-expressive behaviour (Gross & Levenson, 1993; Gross & John, 2003). The second, suppression which comes later in the emotion-generative process and it involves inhibiting the outward signs of emotion. By contrast, suppression decreases behavioural expression, but fails to decrease the experience of emotion, and actually impairs memory. Suppression also increases physiological responding in both the suppressors and their social partners while emotion expression is seen to be negatively correlated with problem and emotion focused coping (Williams & Hasking, 2009).

Schutte, Manes, and Malouff (2009) examined the full range of emotion regulation strategies proposed by Gross and John in 2007. These strategies have been described in Handbook of emotion regulation, a complete book on emotions Gross (2007) where he gave a complete process model of emotional regulation. Schutte and Malouff (2009) also observed the individual differences in emotion regulation. Seventy three participants from Australia provided information on their use of emotion regulation strategies, wellbeing, and emotional intelligence. As predicted by the process model of emotion regulation, antecedent focused regulation strategies were associated with greater wellbeing. Response modulation strategies predicted to additional variance in wellbeing beyond antecedent-regulation strategies. Individual higher in emotion intelligence showed more antecedents-focused regulation, a finding congruent with model based predictions. Antecedents focused emotion regulation was associated with significantly more life satisfaction, more positive mood, and less negative mood. General response modulation were associated with greater life satisfaction and more positive mood, but not with negative mood.

Kneddy and Kramer (2008) studied that during the toddler period, children learn to shift from being primarily dependent on parents to regulate their emotions to dealing with their emotions independently. They analysed how children's inclination towards negative emotional arousal interrelates with mothers' efforts to socialize emotion regulation. They took observational assessments measuring mother's

socialization of emotion regulation, children reactivity propensity, and child's skill of emotion regulation. Results showed that, mother with less creative children who used more soothing had children who were more likely to use interactive, distraction-based regulatory behaviours during a frustration situation.

Carstensen, Fung, and Charles (2003) were of the view that far more attention had been paid to emotion regulation in childhood than in other age groups. However, a growing body of empirical research suggests that the emotion domain reflects to developmental gains in later life. They argued that with the growing age an increase in motivation to derive emotional meaning from life is seen.

Kokkonen and Pulkkinen (1999) studied the relationship between adult's emotion regulation strategies and personality characteristics. They indicated that low and high self-control of emotions in adulthood were most significantly for men. For women, the correlations were in the same direction as far men for the most part but were not statistically significant. For men, anxiety which indicates low self-control of emotion correlated negatively with all three emotions regulation strategies. In addition, emotional ambivalence and unsuccessful control, which are also seen as indicators of low self-control of emotions, seemed to be related negatively to the intertwined emotion regulation strategies. Significant six differences were seen in manifestations of the strategies. And contrast to above, socialization, a sign of high self-control of emotions, correlated positively with all three emotions regulation strategies. Impulsivity, which signifies low behavioural self-control, did not correlate with emotion regulation strategies, the result showed that emotion regulation strategies such as repair and dampening correlated negatively with such signs of low self-control of emotion as anxiety, emotional ambivalence and unsuccessful control in men. Their findings suggested that low use of emotions regulation strategies and adulthood as related to characteristics indicating low self-control of emotion in adulthood. Similarly, adult's high use of emotions regulations strategies as associated with the characteristics indication high self-control of emotions in adulthood.

Gross Model of Emotion Regulation

There are number of classifications via which individual mainly late adolescent and emerging adults can rheostat or regulate their emotions. This classification can be further divided into further subdivisions. Two core categories

that an individual can adopt to regulate their emotion are: cognitive reappraisal and expressive suppression.

The working of emotion regulatory strategies works in the following way: Selection of situation, Modification of situation, Deployment of attention, Cognition change, and Response modulation.

Situation selection. Situation selection involves taking way to increase the possibility that we will be in a situation that will most likely give rise to the emotion we would like to have and vice versa. Thus, it considered as the most forward-looking approach to regulating ones emotions. Some examples may include avoiding an unpleasant and offensive co-worker, renting a funny film to upgrade positive mood, or being with a friend with whom we have a good cry (Gross & Thrompson, 2007).

Situation modification. Situation modification involves efforts to modify a situation so as to change its emotional impact (Gross, 1998). Situation modification refers specifically to altering one's external, physical environment. Altering one's "internal" environment to regulate emotion is called cognitive change (Gross, 1998).

Attention deployment. Attention deployment involves directing one's attention towards or away from an emotional situation (Gross, 1998).

Thought suppression. Thought suppression, an example of attention deployment, involves efforts to redirect one's attention from specific thoughts and mental images to other content so as to modify one's emotional state (Campbell-Sills & Barlow, 2007). Although thought suppression may provide temporary relief from undesirable thoughts, it may ironically end up spurring the production of even more unwanted thoughts (Wegner & Zanakos, 1994). This strategy is generally considered maladaptive, being most associated with obsessive-compulsive disorder (Campbell-Sills & Barlow, 2007).

Emotion suppression encompasses efforts to lessen any of the three emotional reactions, deeds, individual understanding, and functional arousal after they have been triggered. Mostly experimental researcher examined the effects of different emotion regulation strategies on non-clinical samples. Their finding suggested that suppression of negative consequences arise sympathetic activity, weakening in memory related

functioning, and disturbance in societal affiliations and relationships (Gross & John, 2003).

Cognitive change. Cognitive change involves changing how one appraises a situation so as to alter its emotional meaning (Gross, 1998).

Reappraisal. Reappraisal, an example of cognitive change, is a late selection strategy, which involves reinterpreting the meaning of an event so as to alter its emotional impact (Gross, 1998). For example, this might involve reinterpreting an event by broadening one's perspective to see "the bigger picture (Schartau, Dalgleish, & Dunn, 2009). Reappraisal has been shown to effectively reduce physiological, subjective, and neural emotional responding. As opposed to distraction, individuals show a relative preference to engage in reappraisal when facing stimuli of low negative emotional intensity because these stimuli are relatively easy to appraise and process (Sheppes & Gross, 2011).

Reappraisal is generally considered to be an adaptive emotion-regulation strategy. Compared to suppression, which is correlated negatively with many psychological disorders, it is associated with better interpersonal outcomes and positively related to wellbeing (Gross & John, 2003). However, some researchers argue that context is important when evaluating the adaptiveness of a strategy, suggesting that in some contexts reappraisal may be maladaptive (Tamir, 2009).

Response modulation. Response modulation involves attempts to directly influence experiential, behavioural, and physiological response systems (Gross, 1998).

Expressive suppression. Expressive suppression, an example of response modulation, involves inhibiting emotional expressions. It has been shown to effectively reduce facial expressivity, subjective feelings of positive emotion, heart rate, and sympathetic activation. However, the research is mixed regarding whether this strategy is effective for down regulating negative emotion (Gross, 2011). Research has also shown that expressive suppression may have negative social consequences, correlating with reduced personal connections and greater difficulties forming relationships (Butler et al., 2003).

Expressive suppression is generally considered to be a maladaptive emotion-regulation strategy. Compared to reappraisal, it is correlated positively with many psychological disorders, associated with worse interpersonal outcomes, is negatively related to wellbeing, and requires the mobilization of a relatively substantial amount of cognitive resources. However, some researchers argue that context is important when evaluating the adaptiveness of a strategy, suggesting that in some contexts suppression may be adaptive (Tamir, 2009).

Relationship between Mindful Eating and Emotional Regulation

Mindful eating is eating with awareness. Awareness of how you are feeling before, during and after you eat. Mindful eating describes a "non-judgmental awareness of physical and Mindful emotional sensations while eating" (Framson et al., 2009). Awareness of how the food feels in your body, your emotions and your thoughts. Eating mindfully is an approach to eating that supports health and well-being as well as eating with the intention of deriving pleasure from the experience (Wallace & Shapiro, 2006).

Eating virtually always entails some level of conscious decisions, yet most of them are highly conditioned, if not automatic, and are sensitive to emotional states (Kristeller & Epel, 2014). Mindfulness manipulations lead to reduced negative emotional responses. Mindfulness manipulations lead to enhanced positive emotional responses. Mindfulness-based treatments lead to decreases in emotion regulation difficulties (Roemer ,Williston, & Rollins, 2015).

Study designed to establish the role of specific mechanisms underlying the putative relationship between mindfulness and reward motivated eating. And it predicted that mindfulness would be negatively related to features of reward motivated eating and that this association would be mediated by emotion regulation and habitual negative self-thinking. Difficulties in emotion regulation significantly mediated the mindfulness-uncontrolled eating relationship. Habitual negative self-thinking significantly mediated the mindfulness-emotional eating relationship. Participants with meditation experience reported greater levels of dispositional mindfulness, fewer difficulties with emotion regulation and habitual negative self-thinking and reduced uncontrolled eating tendencies, compared to non-meditators.

The findings suggest that MBIs designed to change reward motivated eating and weight control should focus on emotion regulation and mental habits as underlying mechanisms (Fisher, Mead, Lattimore, & Malinowski, 2017).

Researchers and practitioners of Western clinical psychology have long noted problems with emotion regulation arising across the spectrum of mental pathology (Gross & Munoz, 1995; Repetti, Taylor, & Seeman, 2002). The DSM-IV (American Psychiatric Association, 1994) includes disturbances in regulatory processes as diagnostic criteria for several Axis I and Axis II disorders. Examples of psychological symptoms associated with emotion dysregulation include inappropriate affect, extreme emotional lability, and constriction of emotion, sustained negative affect, chronic worry, and avoidance. People who have difficulty managing their emotions are at increased risk for mental disorders, physical illness, and social problems (John & Gross, 2004). More specifically, problems with emotion regulation have been associated with an array of mental disorders ranging from depression and anxiety, termed "distress disorders" to personality disorders eating disorders and substance use disorders (Tice, Bratslavsky, & Baumeister, 2001; Linehan, 1993).

Emotion regulation has been defined as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994, pp. 27-28). The term can refer to the down-regulation of negative emotions or the up-regulation of positive emotions, though less research has been dedicated to the latter (Nelis et al., 2011). Successful emotion regulation has been associated with positive health outcomes and improvements in relationships, academic, and work performance (John & Gross, 2004). People who demonstrate an ability to maintain and up-regulate positive emotions appear to reap even greater benefits across life domains including marriage, friendship, income, work performance, and health (Lyubomirsky, King, & Diener, 2005). However, disruptions in normal regulatory processes are thought to result in the onset, maintenance, and reoccurrence of depression and anxiety (Schaefer, Fiske, Wetherell, & Gatz, 2009). Hence many western psychotherapeutic interventions aim to help people manage their emotions with emotion regulation skills.

Though numerous mindfulness interventions have been designed and implemented in Western clinical practice, the efficacy of mindfulness as an emotion regulation strategy, especially in relation to other cognitive-behavioral emotion regulation strategies, has yet to be determined. Therefore, this review aims to examine and evaluate the efficacy of mindful emotion regulation. Peer-reviewed, empirical studies published within the past 3 years comparing mindfulness with other emotion regulation strategies are summarized and general conclusions are subsequently drawn regarding the efficacy of mindfulness as an emotion regulation strategy (Wiswall, 2011).

Research on eating regulation shows that people who eat compulsively are generally less aware of hunger and satiety cues, including feelings of fullness. We are simply lost in our thoughts and do not pay attention to our bodily sensations. Mindfulness gives you the ability to see how your thoughts, emotions, and bodily feelings are influencing your behaviour. Until you become aware of this, you're on autopilot, mindlessness cruising through life, victimized by your thoughts, feelings, and behaviours. Mindfulness allows you to develop your ability to pause and make better choices. These skills are crucial if you want to end compulsive eating and achieve permanent weight loss.

The ability to regulate overeating has been recognised as integral to healthy weight management and an alternative approach to dieting in addressing excess weight, yet it has received limited examination. Young Individuals reporting greater ability to regulate overeating reported better emotion regulation and mindfulness. The most important skills for regulating overeating include emotional awareness, the ability to act with awareness, being able to refrain from instinctively reacting to inner experiences, and being able to pursue goals in the face of difficult emotions (Kerin, Webb, & Zimmer-Gembeck, 2017).

Role of Demographic Variables in Obesity, Mindful Eating and Emotional Regulation

Gender. The prevalence of obese and overweight cases among women is high (Kishawi et al., 2014). In 2003–2004, among men and women aged 20 years or

older, approximately two thirds (66.3 %) were overweight or obese, 32.42% were obese, and 4.8% were extremely obese (BMI ≥40 kg/m²). The combined prevalence increased with age. Of persons in the United States aged 60 years or older, more than 70% were overweight or obese, and the trend was similar for men and women. However, there was no such clear trend with respect to obesity. More men than women were overweight or obese (68.8% vs. 61.6% in 2001–2002).

The implications of excess weight gain on health may also vary by sex (Mittendorfer, 2009). In females, the biological factor of menopause affects fat distribution that may increase risk or exacerbate negative effects of obesity on health (Morita et al., 2006). Yet, despite these biological differences related to the sex-specific differences in excess weight gain, gender disparities and related sociocultural factors are largely absent from the public health (obesity) discourse and therefore from potential policies and solutions (Frye, 2008).

In other developed countries, such as Greece and Spain, cultural factors that associate obesity with social status among men, but place increasing pressure on women to be thin are attributed to the gender disparities in overweight and obesity. As a result, these or similar cultural factors that emphasize a thin body image among women may be part of the reason why there are substantially more overweight men than women in developed countries (Garcia-Alvarez et al., 2007).

More men than women are overweight; women are more likely than men to be obese, as well to suffer from chronic diseases related to obesity, especially if the women are poor. There is growing evidence that obesity in girls is fuelled by chemicals in the environment. 'Big food' targets women, who do most of the shopping and feeding, in order to sell fat-laden products. Overweight and obese women and girls face stigma, including workplace discrimination, and suffer far more than men and boys from eating disorders and body image issues (Raine, 2004).

Girls are more likely than Boys to describe themselves as fat to weigh themselves often and to diet frequently. They are generally more dissatisfied with their physical appearance than are men (Cooper & Fairbun, 1983; Furnham & Calnan, 1998). Dissatisfaction with their physical appearance is the major reason in girls to develop mindful eating.

Women reported using a wide range of strategies more than men, including rumination, reappraisal, active coping (or problem-solving), acceptance, and social support. Importantly, these gender differences were significant even when controlling for self-reported depressive symptoms, suggesting they are not simply a reflection of women's greater tendency toward depressive symptoms (Tamres, Janicki, & Helgeson, 2002).

Emotion regulation has been associated with perceived health in rheumatoid arthritis; Women reported more emotional orientation than men. Structural equation modelling showed that relationships between emotion regulation and perceived health were more frequent and stronger for women than men (Middendorp & Geenen, 2005). Women may use positive emotions in the service of reappraising negative emotions to a greater degree (McRae et al., 2008). The results show that mindfulness interacted with gender to predict performance. Specifically, the positive association between mindfulness and performance was stronger for women than for men (Shao, Ruodan, Skarlicki, & Daniel, 2009).

Age. Obesity rates increase as children grow older, and age is the single largest predictor of obesity in children (Long et al., 2012). 40–65 years showed high prevalence of obesity. The highest prevalence of overweight/obesity was found among women in the period of middle of age (Abdeen et al., 2012). The risk of obesity persisting into adulthood is higher among obese adolescents than among younger children (Whitaker et al., 1997). Observations suggest that up to 80 per cent of overweight adolescents will become obese adults (Daniels & Arnett, 2005).

Adolescent are found to be more vulnerable to develop eating disorder. Increasing awareness about body and figure at the puberty is the major reason to develop mindful eating. Framson et al. (2009), who found that as age increased so, did mindful eating. Although there is substantial evidence that emotional well-being improves with age in Western cultures, there is a dearth of research on aging and well-being in Eastern cultures. Karasawa et al. (2011) reported that positive affect increased from early adulthood to old age and that negative affect was lower among older adults in Japan.

Use of several emotion regulation strategies was lower among the older group than the middle and younger groups. The decline in use of social support across age groups is broadly consistent with Carstensen's (1993) socio-emotional selectivity theory. Carstensen (1993) argues that emotional interactions become more taxing with age. As a result, we become more selective with age in the people we invest emotional energy in and seek out for emotional support. Thus, the older age groups in this study may have been seeking and receiving emotional support from a narrower range of people than the younger age group, resulting in their lower reports of support seeking.

Many colleges in the United States provide nutrition-related courses for their students. Lockwood and Wohl (2012) studied the effectiveness of a lifetime wellness course on changing students' global self-efficacy, physical self-efficacy, and wellness behaviour. The participants reported that the 15-week course had a significant impact on their behaviour changes. More physical activity and exercise were initiated. Also, the students' food choices were more nutritious and healthier after the course.

Socioeconomic Status. Income significantly associated with BMI level, and the low rate of BMI level was seen in our participants with low monthly income. Obesity has been associated with high socioeconomic status in middle and low income countries, including those in transition (Goryakin, Fumagalli, & Suhrcke, 2012). In developed countries, children of low socio-economic status are more affected than their affluent counterparts (Strauss & Hajama, 2001). The opposite is observed in developing countries: children of the upper socio-economic strata are more likely than poor children to be obese (Salmon et al., 2005).

Environmental risk factors for overweight and obesity are very strong and inter-related. Sub-optimal cognitive stimulation at home and poor socio-economic status predict development of obesity (Strauss & Pediatrics, 1999). Children and adolescents of poor socio-economic status tend to consume less quantities of fruits and vegetables and to have a higher intake of total and saturated fat (Neumark-Sztainer, 1996). Early rebound of BMI is linked to glucose intolerance and diabetes in adults (Bhargava et al., 2004).

The socio economic factors are important determinants of human development. Research shows that socioeconomic status of family is associated with a

wide array of health, cognitive, and socio-emotional outcomes in children and its effects continuing into adulthood. Many empirical evidences have been found that better socioeconomic condition of family facilitate better emotion regulation abilities, cognitive functioning and well-being. The high socioeconomic status has been found strongly and positively related to use of functional ER strategies and well-being and negatively related to use of dysfunctional ER strategies. The socioeconomic status revealed as a major predictor of emotion regulation and well-being (Singh & Shankar, 2013).

Study investigated the relation between childhood socioeconomic status (SES) and adult emotion regulation. Main findings indicated that early access to community resources predicted emotion regulation difficulties in adulthood, when controlling for the effects of age, sex and current SES. No such effects were found for other indicators of childhood SES, such as parental education, occupation, or family income (Bilc, Cioară, & Miu, 2015).

Mindful Eating, Emotional Regulation and Obesity in Pakistan

Khan and Zadeh (2014) found that there is positive relationship between mindful eating and mental well-being. He also hypothesized that higher level of mindful eating will be significantly positively correlated with higher level of mental well-being. In Pakistan only one research is conducted on mindful eating.

Jabeen (2013) found parenting styles as a predictors of emotional regulation among adolescents. Results indicated that maternal authoritative parenting style had significant positive effect on emotion regulation. Maternal permissive parenting style had significant negative effect on emotion regulation. Similarly authoritative paternal parenting style had significant positive effect on emotional regulation whereas paternal permissive parenting style had significant negative effect on emotion regulation.

Butt (2013) found that there were significant impact on the demographical variable named gender on cognitive emotional just and all the others variables were excluded. The result revealed that gender was the only predictor of cognitive emotional regulation.

Shahid (2016) found that gender differences were found among spouses in the context of emotional regulation. Male spouses were found more emotionally regulated than the female spouses in their marital life.

Najam and Ashfaq (2012) have studied the differences in body shape and preferences of body figure across the gender. Carried out in Lahore, the study revealed women exhibited greater dissatisfaction with their actual body shape as it different from their ideal body shape. The differences between the actual and the ideal or desired body shape was higher in women as compared to men.

Research conducted by Suhail (2000) studied body shape and eating attitudes among postgraduate females and found the positive relationship between these two variables.

Minhas and Haris (1999) conducted and exploratory study on Pakistani girls students regarding their eating behaviours and concluded EAT is useful for diagnostic purpose.

Gender differences are so obvious with reference to eating attitudes. Naqvi (2017) studied eating attitudes and beliefs in food myths and found that boys were found more food myths believer as compared to girls.

Rationale of Present Research

The present study aims to determine the relationship between mindful eating and emotional regulation among obese and non-obese university students. Illnesses associated with obesity usually occur in adulthood, but adults rarely achieve sustained weight loss. Therefore, prevention of obesity in adulthood and effective treatment of overweight adult are essential (Clarke & Lauer, 2005). Today, only a relatively small number of studies has addressed the effectiveness of mindfulness in the domain of eating behaviour. So far, the findings are promising and suggest an inverse relationship between mindfulness and disordered eating behaviour. Mindfulness practice has been found to reduce BMI in obese individuals (Tapper et al., 2009). In addition to, or as part of, emotion regulation therapy and self-regulation therapy, there are techniques, such as meditation, mindfulness and stress management, that can help you take charge of your negative emotions and response to emotional situations.

These techniques can also provide other benefits, like improved mood and increased feelings of self-worth, compassion and empathy.

University life is a very challenging time in student academic as well as personal life. According to express Tribune (2014), Pakistan has been ranked 9th out of 188 countries with regard to obesity. This clearly shows how big of a problem it is now. Mindful eating is an intervention that is being adopted to treat obesity (Kristeller & Wolever, 2011). It is also being recognized that obesity has at their core disordered emotional regulation (Puhl & Heuer, 2010).

Literature (Guendelman, Medeiros, & Rampes, 2017; Tang et al., 2015) gave evidence that mindful eating is positively related to emotional regulation. As we know that mindful eating is not a simple phenomenon there are several demographic factors that affect it like age, gender, education and SES (Framson et al., 2009). Mindful eating is an emerging healthy weight regulation approach that has the potential to address the challenges clients and patients experience with healthy weight regulation, but additional research is needed to confirm which health outcomes will be consistently affected (Swinburn et al., 2011).

Mindfulness is comprised of two major components: acceptance without being judgemental and awareness of the present moment, as in the previous literature several authors have mentioned these components of mindfulness, both of these components that are helpful in regulation of emotions. The more mindful an individual will be the more he/she is aware of the present and accept the reality the more they have the ability to change their emotions with reference to situations. Person who is more mindful will never waste time living in the world of fantasy. Mindfulness and emotional regulations are both associated with well-being it is supported by a research (Teper & Inzlicht, 2012).

Usefulness of mindfulness and emotion regulation may be applied in all aspects of life - in the home, schools, workplaces, psychology, healthcare, and so on. Specifically, the focus is on the use of mindfulness to change people's connection to food with a view to influencing their eating-related behaviour. The food choices people make are based on culture, traditions, habits, environmental cues and appetite. This study will help to establish mindful eating as another tool for training clients to use in their quest for healthier eating choices.

Most of the previous researches on mindfulness and emotional regulation among university students had been conducted in western culture (McRae et al., 2008). There have been a lot of Western researches conducted of association among mindfulness and emotion regulation (Goldin & Gross, 2010; Gross & Thrompson, 2007) that come to the conclusion that mindfulness is deeply associated with emotion regulation. Previous research in Pakistan examined the relationship between mindful eating and its relationship with mental wellbeing. There is a literature gap on mindful eating. So, the present research would be helpful in determining the mindful eating and emotional regulation among university students in Islamabad and Rawalpindi.

METHOD

Chapter II

METHOD

Objectives

The present study explored the following objectives:

1. To see the relationship between mindful eating and emotional regulation among obese and non-obese university students.
2. To see demographics (age, gender, family monthly income and family system related differences among obese and non-obese university students.

Hypotheses

Following hypotheses were formulated to study mindful eating and emotional regulation among obese and non-obese university students.

1. Mindful eating is positively related with emotional regulation among university students.
2. Non-obese score higher on emotional regulation and mindful eating as compared to obese university students
3. Women score higher on emotional regulation and mindful eating as compared to men among university students.

Operational Definitions

Mindful Eating. Mindful eating is defined as food consumption that is driven by appropriate cues for eating. It involves high levels of eating inhibition, awareness of personal eating behaviour, and awareness of external cues to eat as well as low emotional responses to eating and engagement in distractive activities while eating (Framson et al., 2009).

In the present study it will be assessed with the help of Mindful Eating Questionnaire (Framson et al., 2009). High score signifies more mindful eating. Mindful Eating is assessed with the help of following subscales.

Awareness. Awareness is noticing the effects of food on the senses and how food affects internal states (Framson et al., 2009).

Distraction. Distraction is focusing on other activities while eating (Framson et al., 2009).

Disinhibition. Disinhibition measures the ability to stop eating when full (Framson et al., 2009).

Emotional response. Emotional response is defined as eating in response to negative emotions (Framson et al., 2009).

External cues. External cues measures eating in response to environmental triggers (Framson et al., 2009).

Emotional Regulation. Emotional Regulation refers to the things we do to influence which emotions we have, when we have them, and how we experience and express them (Gross, 1998). Emotion regulation involves both conscious and unconscious processes, positive and negative emotions, and may include generating, reducing as well as sustaining emotions (Gross & Thompson, 2007).

In the present study it will be assessed with the help of Emotional Regulation Questionnaire (Framson, 2009). The higher the scores the greater will be the use of the emotion regulation strategy. Emotional Regulation is explained with the help of following strategies.

Cognitive Appraisal. It involves varying a situation's connotation in such a way that there is an alteration in the person's emotional response to that situation (Gross & John, 2003).

Expressive Suppression. It refers to efforts to decline on-going emotion expressive behaviour (Gross & John, 2003).

Obesity. Obesity is defined as an abnormal or excessive fat accumulation that may lead to impairment of health of a person (WHO, 2012). In this study a BMI of < 29.9 indicated non obesity, including the categories of overweight, normal weight and underweight, and the BMI of > 30 indicated obesity in the sample (Deforche, 2012; Lindroos et al., 2012).

Instruments

Demographic sheet. A demographic sheet was used to obtain specific demographic information of the respondents. The sheet included information related to the respondents' gender, family monthly income, family system, height, weight and the current domain of the study.

Mindful Eating Questionnaire (MEQ). Mindful Eating Questionnaire has been developed by Framson , Kristal, Schenk , Littman , Zeliadt, and Benitez (2009). It is used in English. It is a 28-item self-report instrument that measures five domains of mindful eating:, awareness (n=7), distraction (n=3), disinhibition (n= 8), emotional response (n=4) and external cues (n=6) (Framson, et al., 2009). Respondents rated their level of agreement with each statement using scales ranging from 1 (*never/ rarely*) to 4 (*Usually/always*).

The awareness subscale includes item number 10, 12, 16, 20, 21, 22 and 26. The distraction subscale includes item number 1, 6 and 28. The disinhibition subscale includes item number 2, 5, 7, 9, 11, 15, 18 and 25. The emotional response includes item number 13, 17, 19 and 27. The external cues include item number 3, 4, 8, 14, 23 and 24.

The emotional and distraction subscales are reversed scored and 5 questions on the disinhibition are reverse scored. Each item is scored from 4-1, where higher scores signify more mindful eating. High score on the mindful eating questionnaire overall and all of the categories has been associated with lower body mass index (BMI), which suggests that mindful eating may play role in long-term weight maintenance.

Emotional Regulation Questionnaire (ERQ). It was developed by Gross and John (2003). Emotion Regulation Questionnaire was used to measure habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression. 10 item self-report questionnaire which consist of two scales corresponding to two different emotion regulation strategies: cognitive reappraisal (6 items) and expressive suppression (4 items). Items no 1, 3, 5 ,7, 8 and 10 measures the cognitive reappraisal; while item no 2, 4, 6 and 9 measures the expressive suppression. Items were rated on a 7-point Likert scale (*strongly agree - strongly*

disagree). The higher the scores the greater the use of the emotion regulation strategy. The test-retest reliability is .70 (Gross & John, 2003).

Body Mass Index (BMI). Body Mass Index (BMI) is an index of weight for height used to classify individuals as obese or non-obese. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2) (WHO, 2012). Specifically for the Asia Pacific Region, a BMI ratio of < 18.5 is categorized as underweight, from 18.5 to 24.9 is normal weight, 25 to 29.9 is overweight, and > 30 is obese (WHO, 2004). As Pakistan is also among the countries included in Asia Pacific Region, the sample of the present study followed the BMI categories as mentioned above. For this purpose of the present study, sample with BMI ratios that are > 30 are categorized as Obese whereas the sample with the BMI ratios < 29.9 are categorized as Non-obese (Nanan, 2002; Leung, 2008; Jaleel, 2009; Aslam et al., 2010). For this purpose of the present study, the respondents' self-reported weight and height is used to calculate their individual BMI.

Research Design

The present study used cross sectional research method to fulfil the objectives of the study.

Sample. The sample selected for the study in the present research is that of university students. The age of the sample was specified from 18 up to 25 years. The students fulfilling these criteria were made a part of the present study with their consent. A sample of 215 students was collected from five universities of Islamabad and Rawalpindi. The sample was collected through purposive sampling. Among the participant there were 93 men and 122 women. In the present study different demographic of gender, family system, and family monthly income and other were catered for.

Table 1

Demographic profile of the sample (N=215)

Demographic variables	Frequency *(f)*	Percentage (%)
Groups		
Obese	76	35.3
Non-Obese	139	64.7
Gender		
Men	93	43.3
Women	122	56.7
Family System		
Nuclear	128	59.5
Joint	87	40.5
Family Monthly Income		
Low (4000 to 20000)	24	11.2
Medium (21000 to 65000)	95	44.2
High (66000 to 250000)	96	44.7
Body Mass Index		
Underweight	12	5.6
Normal weight	68	31.6
Over weight	59	27.4
Obese	76	35.3

Table 1 represents the distribution of the sample of the university students on the basis of their gender, family system, family monthly income, body mass index. As seen in the Table the gender distribution of the sample, with boys contributing to43.3% of the sample and girls consisting of 56.7%. 59.5% student of university was from nuclear family system and 40.5% were from joint family system. As seen in table that students belonging to low socioeconomic class were 11.2% and middle were 44.2% and high were 44.7%. Classifying by weight and height, approximately 64.7% of the sample was non-obese and 35.3 was obese.

Procedure

As the MEQ and ERQ are copyrighted scales, permission from their authors was taken for their use. The survey method was used along with an explanation of the purpose of the research. The concept of confidentiality with respect to their responses was explained and assured to them. They were then directed to the MEQ and ERQ. Along with a thank you note for participation, the researcher's contact details were provided at the end of the questionnaire, in case of any questions the participants might have. After obtaining the questionnaires, the body mass index (BMI=kg/m^2) of each participant was calculated using their respectively height and weight as reported by them. On the basis each participant's BMI, they were categorized as obese or non-obese in the sample.

RESULTS

Chapter III

RESULTS

The present study aimed to study the relationship between mindful eating and emotional regulation among obese and non-obese university students. For both scales the cronbach's alpha coefficient were used to determine reliability. Descriptive statistics were showed the normality of data computed. To find out the relationship between variables, correlation coefficient, were computed. To check mean differences independent sample *t*-test was computed.

Reliability Estimates and Descriptive Statistics of Measures

The reliability was assessed for the Mindful Eating Questionnaire (MEQ) and Emotional Regulation Questionnaire (ERQ). The assessment was carried out by the Cronbach's alpha for the research sample. The results are presented in the following table.

Table 2

Alpha Reliability Coefficient and Descriptive Statistics on Mindful Eating Questionnaire and Emotional Regulation Questionnaire (N=215)

Scale	No. of Items	Range		*M*	*SD*	Alpha Reliability			Skew	Kurt
		Potential	Actual			Obese	Non-Obese	Total Uni Students		
MEQ	28	4-112	23-72	45.79	9.96	.66	.67	.82	-.00	-.40
Awr	7	7-28	8-24	13.34	3.80	.68	.71	.64	.15	-.32
Dis	3	3-12	4-9	5.34	1.85	.76	.77	.77	.03	-.83
Disin	8	8-32	10-26	14.72	4.71	.71	.68	.64	.15	-.73
Emr	4	4-16	5-13	7	2.39	.74	.75	.76	.09	-.62
Exc	6	6-24	7-18	10.97	3.27	.73	.68	.72	.07	-.72
ERQ	10	7-70	14-97	42.28	14.58	.93	.72	.84	-.02	.16
Reap	6	6-42	8-79	25.94	9.42	.80	.71	.72	.59	3.38
Sup	4	4-28	4-28	16.33	6.25	.84	.72	.80	-.06	-.91

Note. MEQ = Mindful Eating Questionnaire; Awr=Awareness; Dist=Distraction; Disin=Disinhibition; Emr=Emotional Response; Exc=External Cues; ERQ=Emotional Regulation Questionnaire; Reap=Reappraisal, Sup=Suppression.

Results in table 2 represent the alpha reliability of Mindful Eating Questionnaire and Emotional Regulation Questionnaire. The reliabilities were also computed according to the sample categories of obese and non-obese. The reliability of MEQ ranges from .66 to .67 across two sample groups. The reliability range of Emotional Regulation Questionnaire ranges from .72 to .93. The MEQ and ERQ are highly reliable according to Nunnally and Bernstein's (1994) criteria, that is 0.7 and above alpha value means highly reliable and internally consistent.

Table 2 illustrate the results of mean, standard deviation, skewness and kurtosis for the Mindful Eating Questionnaire and their subscales and Emotional Regulation Questionnaire and their subscales. Mean value on MEQ and ERQ reflect that individual scored normal on both scales. The value of *SD* indicates that responses are scattered from the mean of each variable. Among descriptive statistics, the scales and their subscales have their skewness value below 1 indicating that their distribution lies within normality (Miles & Shevlin, 2001). Positive values for skewness indicate presence of higher values and the tail points toward the right side while the negative value indicate the presence of lower values and the tail points toward the left side. Kurtosis range exists from +2 to -2. Negative value of kurtosis on scales and their respective domains indicates that the distribution curve is relatively flat and heavy tailed distribution of obtained sample scores, which indicates the entire sample, has variety of features evenly distributed revealing unique status (Kim & Karrila, 2013).

Table 3

Correlation between Mindful Eating and Emotional Regulation and their subscales for obese (N=76) non-obese (N=139) groups and overall sample of university students (N=215).

		Total University students								
S.No	Variables	1	2	3	4	5	6	7	8	9
1	MEQ	-	.83**	.30**	.77**	.44**	.72**	.51**	.48**	.48**
2	Awr		-	.10	.48**	.27**	.59**	.43**	.38**	.42**
3	Dist			-	.03	.03	.18**	.05	.10	.03
4	Disin				-	.48**	.25**	.40**	.36**	.38**
5	Emr					-	.16*	.27**	.23**	.28**
6	Exc						-	.42**	.39**	.39**
7	ERQ							-	.95**	.89**
8	Reap								-	.71**
9	Sup									-
	M	45.79	42.28	13.34	5.34	14.72	7	10	25	16
	SD	9.96	14.58	3.80	1.85	4.71	2.39	3.27	9.42	6.25
		Non-Obese University Students								
1	MEQ	-	.80**`	.19*	.66**	.34**	.67**	.41**	.36**	.38**
2	Awr		-	-.03	.32**	.18*	.52**	.35**	.28**	.34**
3	Dist			-	-.10	-.06	.04	-.11	-.03	-.20*
4	Disin				-	45**	.10	.40**	.34**	.38**
5	Emr					-	.01	.14	.09	.16
6	Exc						-	.22**	.18*	.22**
7	ERQ							-	.92**	.82**
8	Reap								-	.56**
9	Sup									-
	M	50.55	45.96	14.80	5.51	16.90	7.67	11.80	27.98	17.97
	SD	7.93	12.17	3.45	1.86	3.84	2.32	3.06	8.20	5.52

Continued..

Obese University Students										
S.No	Variables	1	2	3	4	5	6	7	8	9
1	MEQ	-	.69**	.52**	.49**	.09	.74**	.43**	.47**	.32**
2	Awr		-	.17	.02	-.11	.51**	.28*	.28*	.24*
3	Dist			-	.04	.09	.36**	.18	.22	.11
4	Disin				-	.05	-.04	04	.09	-.04
5	Emr					-	.08	.22	.22	.20
6	Exc						-	.51**	.52**	.45**
7	ERQ							-	97**	94**
8	Reap								-	85**
9	Sup									-
	M	37.07	35.55	10.69	5.03	10.75	5.75	9.44	22.21	13.34
	SD	6.95	16.21	2.87	1.80	3.38	1.99	3.12	10.38	6.43

Note. MEQ = Mindful Eating Questionnaire; Awr=Awareness; Dist=Distraction; Disin=Disinhibition; Emr=Emotional Response; Exc=External Cues; ERQ=Emotional Regulation Questionnaire; Reap=Reappraisal, Sup=Suppression. *$p<0.05$, **$p<0.01$

Table 3 represents the correlation among mindful eating and its subscales and emotional regulation and its subscales for obese non-obese and total university students. There is significant positive relationship between mindful eating and emotional regulation among obese, non-obese and total university students.. The findings supported with hypothesis 1 which is stated as "mindful eating is positively related with emotional regulation. Positive correlation exists when one variable decreases as the other variable decreases, or one variable increases while the other increases. The more mindful eater you will be the better emotion regulation will be.

Predictors of emotional regulation. Mindful eating and emotional regulation are closely related. Thus in light of past researches multiple linear regression analysis were conducted to study the predicting role of emotional regulation in mindful eating. Following table show the predicting role of mindful eating in emotional regulation.

Table 4

Multiple Linear Regression Analysis for the effect of mindful eating and its subscales on Emotional Regulation (N=215).

		Emotional Regulation		
		Model 2		
			95% CI	
Variables	Model 1 β	B	LL	UL
Constant	54.05	23.01	4.78	41.23
Gender	.174	.05**	-2.37	5.42
Family system	-.015	-.02	-4.28	2.58
Family Monthly Income	-.065	-.13	-6.07	.08
Body Mass Index	-.351	-.12***	-4.52	.64
Mindful Eating		.48***	.48	.95
Awareness		.10	-.216	1.05
Distraction		-.03	-1.17	.67
Disinhibition		.21**	.14	1.17
Emotional Response		.07	-.38	1.24
External Cues		.28***	.61	1.89
R^2	.16	.31		
ΔR^2		.14		
F	10.49***	10.16***		
ΔF^2		8.41***		

Note. *p<.05, **p<.0.01, ***p<.001.

It is observed from the results in Table 4 that all these variables included in the regression model have beta values with relatively less difference. Beta values indicate the direction of regression, positive coefficient mean these variables are positively related with mindful eating and with negative sign means these variable with negative sign predict the mindful eating negatively. Results indicated that mindful eating is the strongest predictor (.48***, p<.001) among all. Similarly, the external cues are formed to be strongest predictor as compared to other subscales of mindful eating.

Moderation of Gender for Mindful Eating in predicting Emotional Regulation

To determine the moderating role of gender in predicting emotional regulation. Interaction term of gender was generated separately. After developing the interaction term, variables were entered in multiple regression through enter block method. The results of an analysis are as follows.

Table 5

Moderating role of Gender for Mindful eating in predicting the Emotional Regulation.

	Emotional Regulation		
Variables	*B*	*S.E*	*B*
ME	1.38	.30	.94***
Gender	20.56	8.81	.70
ME*Gender	-.43	.19	-.96**
Constant	-21.65	13.35	-
R^2	.28		
Adjusted R^2	.27		
F	28.38***		
Slope(t-value)	1.38(3.87***)		

Note. ME=Mindful Eating

*p< .05, **p .0.01, ***p<.001.

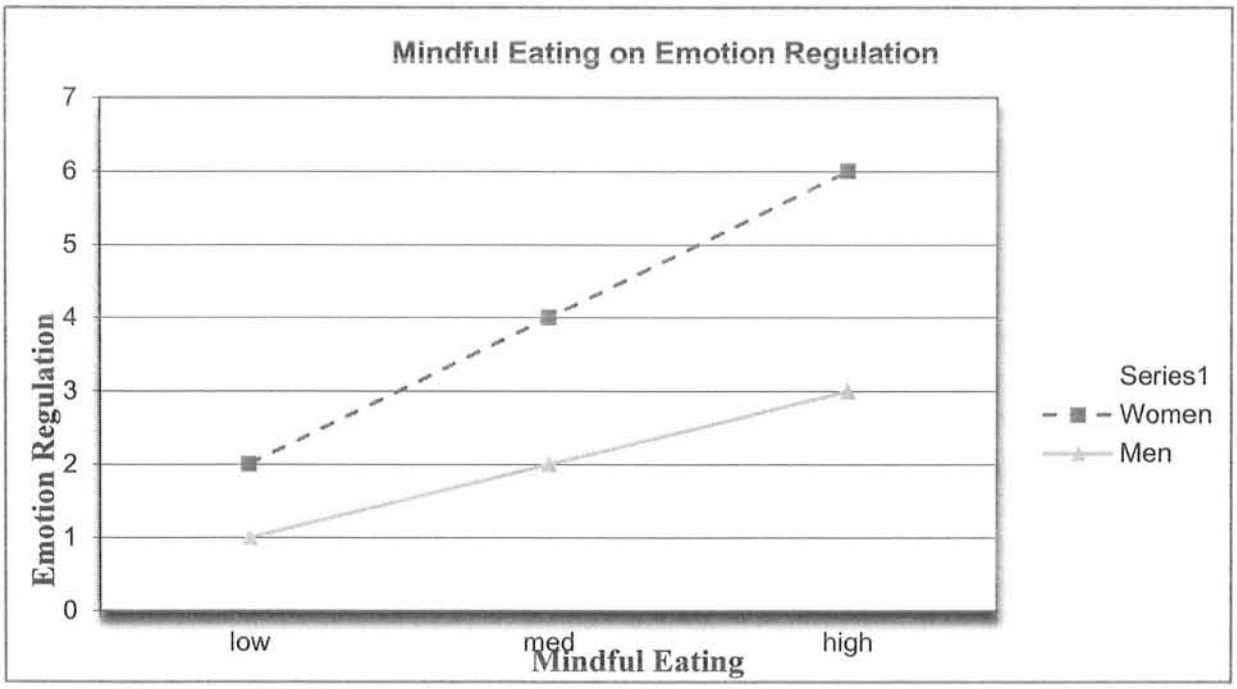

*Figure 1.*Role of Gender for Mindful Eating in predicting the Emotion Regulation

Table 5 showed significant interaction effect for emotional regulation and gender on mindful eating. Later slope computation through Modgraph in done to determine significance of gender in moderating role of emotional regulation. Modgraph was established and slope was computed. Figure 1 showed Modgraphs for moderating role for mindful eating. As it can been the relationship between emotional regulation and mindful eating is positive and gender is well as moderating this relationship and women are high on emotion regulation as compared to men.

Mean Differences across Sample Groups

Obese and non-obese. To investigate the primary objective of this study, mean scores of Mindful eating questionnaire and its subscales and Emotional regulation questionnaire and its subscales were compared for obese and non-obese sample.

Table 6

Mean, standard deviation and t-values scales of Mindful Eating Questionnaire and Emotional Regulation Questionnaire between obese and non-obese university students (N=215)

	Non-Obese (*n*=139)		Obese (*n*=76)						
							95%CL		
Scale	*M*	*SD*	*M*	*SD*	*t*(213)	*p*	*LL*	*UL*	Cohen's *d*
MEQ	50.55	7.93	37.07	6.95	12.42	.00	11.34	15.61	0.80
Awr	14.80	3.45	10.69	2.87	8.82	.00	3.19	5.02	0.29
Dis	5.51	1.86	5.03	1.80	1.81	.07	-.04	.99	0.26
Disin	16.90	3.84	10.75	3.38	11.66	.00	5.10	7.17	0.70
Emr	7.67	2.32	5.75	1.99	6.09	.00	1.30	2.54	0.88
Exc	11.80	3.06	9.44	3.12	5.38	.00	1.50	3.23	0.76
ERQ	45.96	12.17	35.55	16.21	5.31	.00	6.54	14.27	0.72
Reap	27.98	8.20	22.21	10.38	4.48	.00	3.23	8.31	0.61
Sup	17.97	5.52	13.34	6.43	5.54	.00	2.98	6.28	0.77

*Note.*MEQ = Mindful Eating Questionnaire; Awr=Awareness; Dist=Distraction; Disin=Disinhibition; Emr=Emotional Response; Exc=External Cues; ERQ=Emotional Regulation Questionnaire; Reap=Reappraisal, Sup=Suppression, Cl= Confidence Interval, LL=Lower limit, UL=Upper limit.

*$p<0.05$

In Table 6 the *t*-test for group based mean differences of obese and non-obese sample on the Mindful Eating Questionnaire (MEQ) and its subscales and Emotional Regulation Questionnaire (ERQ) and its subscales are presented. The results show that there are significant differences on mindful eating and its subscales and emotional regulation and its subscales. The result of table 6 supports the hypothesis 2 that is non-obese score high on mindful eating and emotional regulation as compared to obese. Means that non-obese do more mindful eating as compared to obese and that non-obese apply more emotional regulation strategies as compared to obese.

Gender. Gender differences were assessed between men and women on mindful eating and emotional regulation between Obese, Non-obese groups and overall men and women.

Table 7

Mean differences of gender on the mindful eating and emotional regulation and their subscales between Obese, Non-obese groups and overall university students.

	Men (n=93)		Women (n=122)				95%CL		
Scale	*M*	*SD*	*M*	*SD*	*t*(213)	*p*	*LL*	*UL*	Cohen's *d*
Total University Students									
MEQ	40.58	9.29	49.76	8.55	-7.50	.00	-11.58	-6.76	0.02
Awr	11.70	3.69	14.59	3.41	-5.94	.00	-3.85	-1.93	0.81
Dis	5.08	1.88	5.54	1.81	-1.81	.07	-.96	.03	0.24
Disin	12.35	3.65	16.54	4.63	-7.17	.00	-5.33	-3.0	1.00
Emr	6.08	2.31	7.69	2.21	-5.19	.00	-2.22	-1.00	0.71
Exc	10.22	3.32	11.54	3.13	-2.97	.00	-2.19	-.44	0.40
ERQ	37.77	16.12	45.72	12.28	-4.10	.00	-11.76	-4.12	0.55
Reap	23.47	11.07	27.82	7.46	-3.43	.00	-6.85	-1.85	0.46
Sup	14.30	6.46	17.89	5.63	-4.34	.00	-5.22	-1.96	0.59
Non-Obese University Students									
	(n=46)		(n=93)						
MEQ	46.39	8.28	52.61	6.92	-4.66	.00	-8.86	-3.58	0.81
Awr	13.37	3.69	15.40	3.12	-3.55	.00	-3.30	-.94	0.59
Dis	5.39	2.08	14.61	3.08	-.509	.61	-.83	.49	0.50
Disin	14.61	3.08	18.02	3.69	-5.40	.00	-4.66	-2.16	1.00
Emr	6.72	2.48	8.15	2.09	-3.53	.00	-2.21	-.62	0.62
Exc	11.65	3.22	11.88	2.99	-.41	.68	-1.32	.86	0.07
ERQ	44.60	14.52	46.63	10.85	-.92	.35	-6.63	2.31	0.15
Reap	27.71	10.90	28.11	6.53	-.27	.78	-3.33	2.53	0.04

Continued...

	Men		Women						
	(*n*=46)		(*n*=93)				95%CL		
Scale	*M*	*SD*	*M*	*SD*	*t*(213)	*p*	*LL*	*UL*	Cohen's *d*
Sup	16.89	6.03	18.51	5.20	-1.64	.10	-3.58	.33	0.28
Obese University Students									
	(*n*=47)		(*n*=29)						
MEQ	34.90	6.22	40.60	6.70	-3.77	.00	-8.72	-2.59	0.88
Awr	10.07	2.87	11.69	2.62	-2.46	.01	-2.93	-.31	0.58
Dis	4.77	1.63	5.45	2.01	-1.62	.10	-1.52	.15	0.37
Disin	10.14	2.69	11.76	4.12	-2.07	.04	-3.17	-.06	0.46
Emr	5.45	1.95	6.25	1.98	-1.71	.09	-1.72	.12	0.40
Exc	8.82	2.81	10.44	3.37	-2.25	.02	-3.04	-.19	0.52
ERQ	31.08	14.86	42.79	15.91	-3.24	.00	-18.89	-4.52	0.76
Reap	19.31	9.65	26.89	9.95	-3.28	.00	-121	-2.98	0.77
Sup	11.76	5.89	15.89	6.55	-2.84	.00	-7.02	-1.23	0.66

Note. MEQ = Mindful Eating Questionnaire; Awr=Awareness; Dist=Distraction; Disin=Disinhibition; Emr=Emotional Response; Exc=External Cues; ERQ=Emotional Regulation Questionnaire; Reap=Reappraisal, Sup=Suppression.

Table 7 shows the results of independent sample t-test for comparing the gender based mean differences on mindful eating and emotional regulation and their subscales. From the result it is revealed that there are significant ($p<.001$) gender differences on mindful eating, emotional regulation and their subscales in obese, non-obese group and total university students. Results indicated that women do more mindful eating as compared to men. And that women applies more emotional regulation strategies as compared to men.

Family System. Family system differences were assessed on mindful eating and emotional regulation in nuclear and joint family system in overall sample of university students. The results of the analysis are as follows.

Table 8

Comparison of Nuclear system and Joint family system on Mindful Eating Questionnaire and Emotional Regulation Questionnaire (N=215).

	Nuclear (n=128)		Joint (n=87)				95% CI		
Scale	*M*	*SD*	*M*	*SD*	*t*(213)	*P*	*LL*	*UL*	Cohen's *d*
MEQ	45.67	9.81	45.96	10.24	-.20	.83	-3.02	2.44	0.02
Awr	13.44	3.72	13.20	3.93	.45	.65	-.80	1.28	0.06
Dis	5.33	1.79	5.36	1.94	-.10	.91	-.53	.48	0.01
Disin	14.47	4.63	15.10	4.82	-.95	.33	-1.91	.66	0.13
Emr	7.04	2.40	6.93	2.37	.30	.76	-.55	.75	0.04
Exc	11.01	3.33	10.90	3.21	.23	.81	-.79	1.00	0.03
ERQ	42.68	13.70	41.68	15.84	.49	.62	-3.00	4.99	0.06
Reap	26.04	8.30	25.79	10.92	.19	.84	-2.33	2.84	0.74
Sup	16.64	6.10	15.89	6.47	.85	.39	-.97	2.45	0.11

Note. MEQ = Mindful Eating Questionnaire; Awr=Awareness; Dist=Distraction; Disin=Disinhibition; Emr=Emotional Response; Exc=External Cues; ERQ=Emotional Regulation Questionnaire; Reap=Reappraisal, Sup=Suppression.

Table 8 illustrates that there were no significant differences on Mindful eating, Emotional regulation and their subscales in overall sample university students.

Family Monthly Income. Family monthly income differences were assessed on mindful eating and emotional regulation in obese, non-obese and over all sample of university students through analysis of variance. The results of the analysis are as follows.

Table 9

One way analysis of variance (ANOVA) for comparison of the effect of family monthly income on study variable among total university students. (N=215)

	4000 to 20000 (*n*=24)		21000 to 65000 (*n*=95)		65000 to 250000 (*n*=96)							95%Cl	
Scale	*M*	*SD*	*M*	*SD*	*M*	*SD*	F	*p*	*i-j*	D=*i-j*	S.E	*LL*	*UL*
MEQ	36.92	6.78	43.16	10.06	50.61	7.87	30.74	.00	1<3	7.45*	1.27	4.44	10.46
Awr	10.70	2.95	12.57	3.96	14.77	3.24	16.68	.00	2>3	2.20*	.51	.99	3.4
Dis	5.01	1.94	5.30	1.81	5.46	1.87	.62	.53	-	-	-	-	-
Disin	10.12	2.91	13.70	4.59	16.89	3.99	30.41	.00	3>2	3.19*	.60	1.73	4.6
Emr	5.71	2.36	6.65	2.21	7.66	2.37	8.74	.00	2>3	1.01*	.33	.22	1.79
Exc	9.93	3.02	10.25	3.46	11.93	2.89	8.15	.00	3>2	1.68*	.45	.600	2.7
ERQ	41.62	19.64	38.81	14.26	45.88	12.60	5.90	.00	3>2	7.07*	2.06	-12.11	3.5
Reap	26.20	12.52	23.77	9.02	28.02	8.51	5.02	.00	3>2	4.24*	1.33	1.00	7.47
Sup	15.41	7.62	15.03	6.00	17.86	5.84	5.40	.00	3>2	2.83*	.88	.73	4.9

*Note.*MEQ = Mindful Eating Questionnaire; Awr=Awareness; Dist=Distraction; Disin=Disinhibition; Emr=Emotional Response; Exc=External Cues; ERQ=Emotional Regulation Questionnaire; Reap=Reappraisal, Sup=Suppression.

Table 9 showed the results of one way analysis of variance for tapping family monthly income based group differences on mindful eating and emotional regulation strategies. Individual with high family income (65000 to 250000) score high on mindful eating and emotional regulation strategies in total university students. The differences were non-significant only on distraction subscale of mindful eating. Results indicated that individual with high family income do mindful eating and they apply emotion regulation strategies more than other classes of family monthly income.

Table 10

One way analysis of variance (ANOVA) for comparison of the effect of family monthly income on study variable among obese and non-obese. (N=215)

	Non-Obese University Students							
	4000 to 20000 (n=2)		21000 to 65000 (n=43)		65000 to 250000 (n=94)			
Scale	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
MEQ	44.84	4.73	50.22	8.37	50.83	7.79	.61	.54
Awr	12.28	1.21	14.85	3.92	14.83	3.25	.53	.58
Dis	6.83	.70	5.46	1.86	5.50	1.87	.51	.60
Disin	13.18	5.74	16.86	3.60	16.99	3.92	.96	.38
Emr	9.37	3.00	7.62	2.18	7.67	2.38	.54	.58
Exc	10.66	2.12	11.51	3.43	11.96	2.90	.45	.63
ERQ	55.00	4.24	45.00	11.57	46.21	12.53	.70	.49
Reap	35.50	4.94	27.24	7.46	28.15	8.54	1.03	.36
Sup	19.50	.70	17.74	5.17	18.05	5.75	.12	.88

Continued...

Non-Obese University Students								
	4000 to 20000 (n=22)		21000 to 65000 (n=52)		65000 to 250000 (n=2)			
Scale	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
MEQ	36.20	6.54	37.32	7.22	40.28	4.96	.41	.66
Awr	10.55	3.02	10.68	2.87	12.28	1.21	.32	.72
Dis	4.84	1.94	5.16	1.77	3.66	.47	.82	.44
Disin	9.84	2.59	11.09	3.58	12.18	5.74	1.2	.29
Emr	5.38	2.07	5.85	1.92	7.37	3.00	1.1	.33
Exc	9.87	3.12	9.21	3.16	10.66	2.12	.49	.61
ERQ	40.40	20.07	33.69	14.34	30.50	2.12	1.44	.24
Reap	25.36	12.71	20.90	9.26	21.50	3.53	1.44	.24
Sup	15.05	7.87	12.78	5.74	9.00	1.41	1.43	.24

*Note.*MEQ = Mindful Eating Questionnaire; Awr=Awareness; Dist=Distraction; Disin=Disinhibition; Emr=Emotional Response; Exc=External Cues; ERQ=Emotional Regulation Questionnaire; Reap=Reappraisal, Sup=Suppression.

Table 10 showed the results of one way analysis of variance for tapping family monthly income based group differences on mindful eating and emotional regulation strategies. The results are non-significant.

DISCUSSION

Chapter IV

DISCUSSION

The main aim of the present study was to assess mindful eating and emotional regulation among obese and non-obese university students. Moreover influential effect of gender has been evaluated too. In order to fulfil the requirements data (n=215) was collected from the universities of Islamabad and Rawalpindi. The age range for the sample was 18 to 25 years, later on particular analysis have been done to assess the results in very objective and statistical means. The sample was selected on the basis of their respective body mass ratio (BMI) and was then divided into obese and non-obese categories to serve as groups across which results will be compared.

Descriptive Statistics of Mindful Eating and Emotional Regulation

Cronbach's alpha was computed to evaluate the reliabilities of measure for each of the measuring scale (see table 2). The reliabilities for mindful eating and emotional regulation scale indicate high reliability. Literature indicated the high reliabilities for mindful eating and emotion regulation (Framson et al., 2009; Gross, 2011). The reliability analysis indicated that reliability of both the measure for the present sample was quite satisfactory.

Relationship between Mindful Eating and Emotional Regulation

Keeping in view the objectives of the research, analysis was performed to explore the relationship between the variables. The first hypothesis stated that mindful eating is positively related with emotional regulation. Pearson correlation was computed between the subscales of mindful eating and emotional regulation.

These relationships were separately studied in the obese and non-obese sample of university students as well as of the total of university (see table). It has been confirmed that mindful eating is significantly positively related to emotional regulation in obese, non-obese and overall sample of university students. The strength of relationship between mindful eating and emotional regulation is greater in obese than non-obese students.

Existing literature (Sherlyn, 2010) a mindfulness model of affect regulation and depressive symptoms support this hypothesis. The reason for this relationship is that higher levels of dispositional mindfulness were associated with higher levels of positive emotions, mood regulation expectancies. The positive relationship between mindfulness and positive emotions is not surprising as mindful awareness may promote generation of positive emotions (Davidson et al., 2003; Fredrickson & Joiner, 2002).

The result is also supported by Roemer, Williston and Rollins (2015), as they reported that the practice of mindfulness is associated with healthy ER (e.g., reduced intensity of distress, enhanced emotional recovery, reduced negative self-referential processing, and/or enhanced ability to engage in goal-directed behaviours and may play a causal role in these effects. Mindfulness manipulations lead to enhanced positive emotional responses. Mindfulness-based treatments lead to decreases in emotion regulation difficulties.

Mindful Eating as a predictor of Emotional Regulation

In the present research the predictability of emotional regulation has been confirmed by controlling the effect of gender, family system, family monthly income, body mass index. Model represented awareness, distraction, emotional response are relatively weak predictors as compared to other and external cues are strong predictor and these results are according to existing literature (Chambers, Gullone & Allen 2009; Chiesa, Serretti & Christian, 2013).

According to Frab and Segal (2012) mindfulness predict a particular type of emotion regulation strategy often called "mindful emotion regulation". Mindful emotion regulation is conceived as a unique emotion regulation strategy that results from encountering diverse emotional states from a mindful mental state, which includes awareness and acceptance.

Moderation Role of Gender on Mindful Eating and Emotional Regulation

The moderating effect of gender was found significant which implies that gender have an impact on predicting emotional regulation. Women score high on

mindful eating and emotional regulation. Gender increase or decrease impact mindfulness in predicting emotional regulation (Roemer, Williston & Rollins, 2015).

Group differences on Mindful Eating and Emotional Regulation

Obese and non-obese groups. The present study hypothesized (Hypothesis 2) that non-obese group of university student will score higher on mindful eating and emotional regulation questionnaire. Independent sample t-test was applied on the sample to find out the difference of mean scores in the two groups across the constructs (see table 7). The result indicated that there were significant difference in mindful eating and emotional regulation in the obese and non-obese sample (p>0.05). The non-obese group of university students scores higher on mindful eating and emotional regulation as compared to obese group of university students. So, hypothesis 2 is accepted.

This result is supported by Steward et al (2016) they reported that excess weight is linked to an abnormal pattern of neural activation and connectivity during the experience and regulation of negative emotions. They posit that ineffective regulation of emotional states contributes to the acquisition and preservation of excess weight.

Existing literature on differentiation in emotions felt towards food between obese, overweight and normal-weight adolescents also support this hypothesis. The intensity of the negative emotions towards foods was higher in the obese than in the overweight and normal-weight participants (Barthomeuf, Drot_Volet & Rousset, 2008).

Consumption of available food while performing the task was measured. Self-report questionnaires indicate that obese consumed significantly more food than normal (Abramson & Stinson, 1977).

Existing literature negative emotions and unhealthy emotion processing may play a role in emotional eating, and it indicates the possible relevance of emotion processing and emotional regulation as initiating or perpetuating mechanisms in obesity (Mayne, 1999).

Gender. The present study further hypothesized that women will score higher on mindful eating and emotional regulation as compared to men in overall sample of university students. Independent sample t-test analysis was run to compare the means scores on mindful eating questionnaire and its subscale and emotional regulation questionnaire and its subscales (see table 5). The analysis was carried out separately for the obese and non-obese groups, as well as for the collective sample of university students. The results computed were in line with hypothesis that women will score high on mindful eating and emotional regulation as compared to men.

The results are supported by existing literature (Nolen-Hokema, Wisco, & Lyubmirsky, 2008) gender and age differences in emotion regulation strategies. This indicates that women report using more emotional regulation strategies than men.

Replicating previous studies women report using a wide range of strategies more than men including rumination, reappraisal, active coping and acceptance (Tames et al., 2002).

The results of this study show that females reported more mindful eating practices than males. This is similar to the findings by Framson et al. (2009) who found that compared to men, women had higher mean scores. These findings support the hypothesis that college aged women are more mindful then college aged men. LaCaille et al. (2011) found that male college students desired to gain weight, primarily lean body mass, whereas female students were fearful of gaining weight. Those two factors could explain why women were found to be more mindful eaters in the present study.

The result is also supported by Neff and Vonk (2009) that women's negative mood decreased more, and their mindfulness and self-compassion improved more, compared to men. Women's boosted mood was directly associated with enhancements in all five facets of mindfulness skills—the tendency to notice thoughts and emotions without judging or identifying with them as compared to men.

Family System. The objective of the study was to investigate the difference in family system i.e nuclear family system and joint family system. Independent sample t-test analysis was run to compare the means scores on mindful eating questionnaire and its subscale and emotional regulation questionnaire and its

subscales (see table 5).The results indicates that there are significant no difference in family system of joint and nuclear among sample of university students.

Family Monthly Income. The objective of the study was to investigate the significant difference in family monthly income i.e low, medium and high. One way anova analysis was run to compare the means scores on mindful eating questionnaire and its subscale and emotional regulation questionnaire and its subscales (see table 8). The analysis was carried out separately for the obese and non-obese groups, as well as for the collective sample of university students.

The high socioeconomic status has been found strongly and positively related to use of functional emotional regulation strategies and well-being and negatively related to use of dysfunctional emotional regulation strategies. The socioeconomic status revealed as a major predictor of emotion regulation and well-being (Côté, Gyurak, & Levenson, 2010).

It has been found that high socioeconomic status promotes effective emotion regulation, such as lower violence and less hostility. Studies also reveal that financial strain in the family may increase conflict and, in turn, conflict in the family is associated with lower ability to regulate emotions (Gallo & Matthews, 2003).

Conclusion

Present study explored the relationship of mindful eating and emotion regulation. Finding revealed that mindful eating was positively related to emotion regulation. Significant gender differences were also found. Women score high on mindful eating subscales and emotion regulation strategies than men. Non-obese score higher on mindful eating and emotional regulation strategies than obese group of university students. . Individual with high family income score high on mindful eating and emotional regulation strategies as compared to individual from low and middle family income.

Limitations and Suggestions

- First limitation of the study was the use of self-report measures. One of the major problems in using self-report measure is response set. It can affect the results of the study due to response bias. It is recommended that qualitative method should also be conducted.
- Participants may not have been truthful in their responses, especially when reporting their weights and heights. Trust building is an important factor that motivates the individual to share their personal or confidential information with the researcher.
- The current study includes students of university of Islamabad and Rawalpindi. So the generalizability of the research is limited. It is recommended to increase the generalizability of the research students of other universities or sample size should be increased.
- Another important drawback is that questionnaire was in relatively difficult English and could not be translated due to time constraints. So it is recommended that it should be translated in Urdu.

Implications

- Mindful eating intervention can be used to reach students in a variety of way because it is quick, easily used in group setting, and effective. The brief intervention can be done in presentations, general health lifestyle classes and even meditation classes at campus wellness center.
- Education can be provided on mindful eating in different styles. It can be taught directly in individual or group nutrition counseling. It can also be applied in settings as a brief reminder. It could discuss eliminating distraction, focusing on the body hunger cues, recognizing emotional hunger from physical hunger and paying careful attention to all of the senses while eating food.
- Mindful style of prevention intervention and education is appositive way to promote behavior changes. It is not about restricting items but rather paying closure attention to the enjoyment from them.
- Dietitians should be using these tools in a practice. There are large amount of opportunities for research on mindful eating to be conducted in different

settings and using different methods. We show that psychological coaching and body awareness therapy may be relevant to obesity treatment. Future studies should examine the different influences further.

- Mindful eating may have a greater influence on serving size than daily mindfulness. Serving size is a modifiable determinant of energy consumption, and an important factor to address in the prevention and treatment of obesity.
- Results provide strong evidence that mindfulness encourages healthier eating, even in the absence of specific instruction in mindful eating. These results suggest that generic mindfulness-based strategies could have ancillary benefits for encouraging healthier eating behavior.
- If psychiatric disorders, depression and anxiety symptoms are cause or consequence of obesity remains an open question. Emotion regulation has been pointed as having an important role in eating behaviour and weight management, but new efforts concerning theory development are needed, as well as to systematically replicate findings across studies..
- Future research should investigate the importance of the senses in mindful eating practice and how sensory awareness may differ from affective sensitivity. Interventions that focus solely on decreasing mindless eating or distraction and limiting use of food in response to emotions or environmental cues may be missing an important.
- . The practical implications of the study may include courses designed to teach effective coping and ER strategies tailored to specific groups of adults, considering their age, gender or educational specificities within specific contexts, addressing specific sources of stress and combining different methodological approaches could be applied.

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APPENDICES

Appendix A

Informed Consent

I, Maira Zahid, student of M.Sc at the National Institute of Psychology, Quaid-i-Azam University, Islamabad. I am conducting the research to see the relationship between occupational stress and anxiety among nurses serving in public and private sector hospitals and to find out which coping strategies are being used by nurses to deal with them.

I assure you that all the information given by you will be kept confidential and will only be used for the purpose of research.

Your participation in this research is voluntary, and you have right to quit while filling the questionnaire.

If you are agreeing to fill out the questionnaire, please provide your signature below.

_____

Signature

Thank you for your participation in the research!

National Institute of Psychology

Quaid-i-Azam University, Islamabad.

Appendix B

Demographic Sheet

Gender Male _____ Female _____

Age _____

Grade MA/M.SC BA/B.SC MPHIL/PHD

Family System Nuclear _____ Joint _____

Family Monthly Income _____

Height _____

Weight _____

Appendix C

Mindful Eating Questionnaire (MEQ)

Questions	N/A	Never/ Rarely	Sometimes	Often	Usually/ Always
1. I eat so quickly that I don't taste what I am eating.					
2. When I eat at "all you can eat" buffets, I tend to overeat.	I don't eat at buffets.				
3. At party where there is a lot of good food, I notice when it makes me want to eat more food than I should.					
4. I recognize when food advertisement make me want to eat.	Food ads never make me want to eat.				
5. When a restaurant portion is too large, I stop eating when I am full.					
6. My thoughts tend to wander while I am eating.					
7. When I am eating one of my favorite foods, I don't recognize when I've had enough.					
8. I notice when just going into movie theater makes me want to eat candy or pop corn.	I never eat candy or pop corn.				

Questions	N/A	Never/ Rarely	Sometimes	Often	Usually/ Always
10. I notice when there are subtle flavors in the foods I eat.					
11. If there are leftovers that I like, I take a second helping even though I am full.					
12. When eating a pleasant meal, I notice if it makes me feel relaxed.					
13. I snack without noticing that I am eating.					
14. When I eat a big meal, I notice if it makes me feel heavy or sluggish.					
15. I stop eating when I'm full even when eating something I love.					
16. I appreciate the way my food looks on my plate.					
17. When I'm feeling stressed at work, I'll go find something to eat.	I don't work.				
18. If there's good food at party, I'll continue eating even though I'm full					
19. When I'm sad I eat to feel better.					
20. I notice when foods and drinks are too sweet.					

Questions	N/A	Never/ Rarely	Sometimes	Often	Usually/ Always
22. I taste every bite of food I eat.	I never eat when I'm not hungry.				
23. I recognize when I'm eating and not hungry.					
24. I notice when I'm eating from a dish of candy just because its there.					
25. When I'm at restaurant, I can tell when the portion I have been served is too large for me.					
26. I notice when the food I eat affects my emotional state.					
27. I have trouble not eating ice cream, cookies, or chips if they are around the house.					
28. I think about things I need to do while I'm eating.					

Appendix D

Emotional Regulation Questionnaire (ERQ)

1. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree

2. I keep my emotions to myself.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

3. When I want feel less negative emotion (such as sadness or anger), I change what I'm thinking about.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

4. When I am feeling positive emotions, I am careful not to express them.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

5. When I'm faced with a stressful situation, I make myself think about in a way that helps me stay calm.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

6. I control my emotion by not expressing them.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

7. When I want to feel more positive emotion, I change the way I'm thinking about the situation.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

8. I control my emotion by changing the way I think about the situation I'm in.

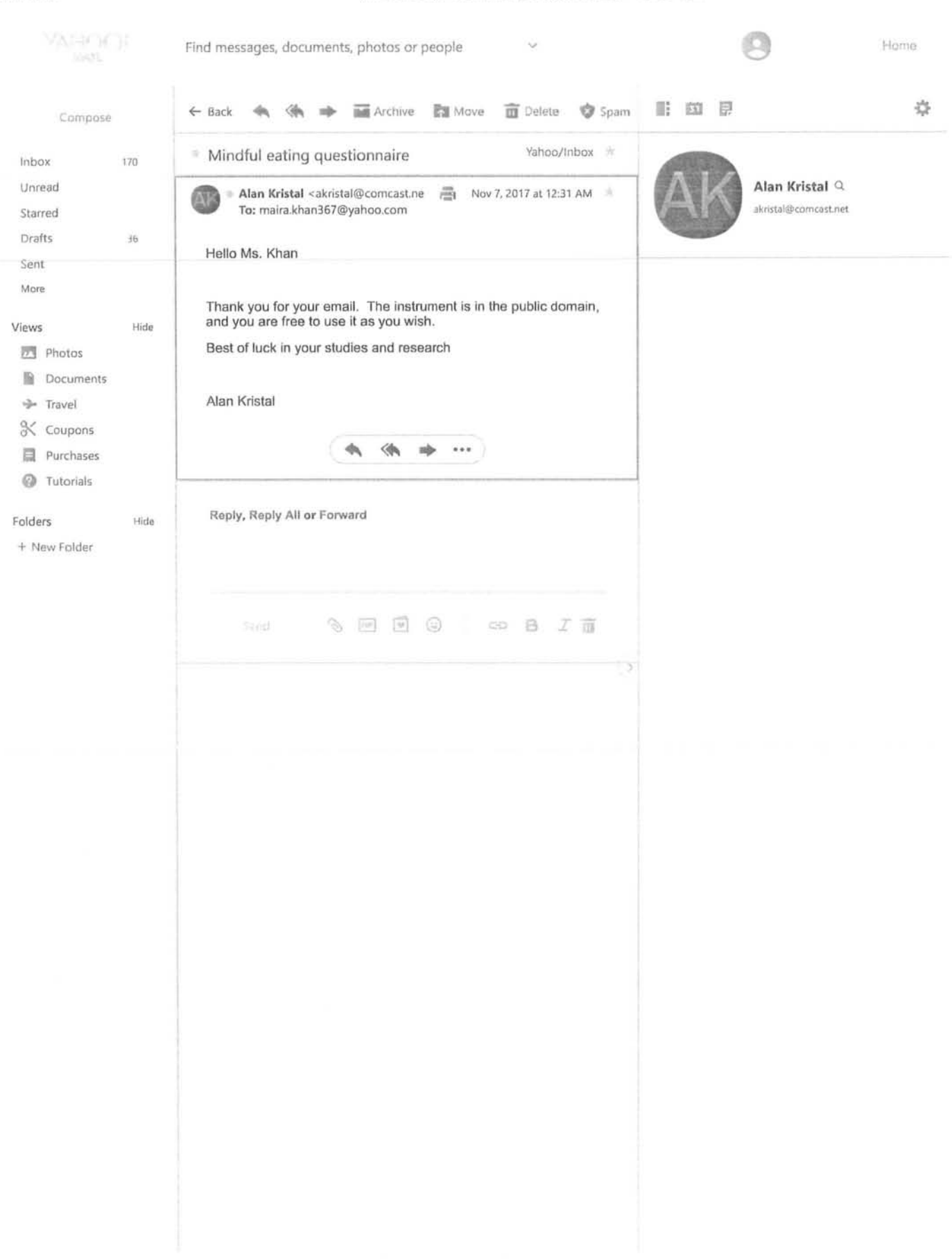
1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

9. When I am feeling negative emotions, I make sure not to express them.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree

10. When I want to feel less negative emotion, I change the way I'm thinking about.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	neutral	Somewhat agree	Agree	Strongly agree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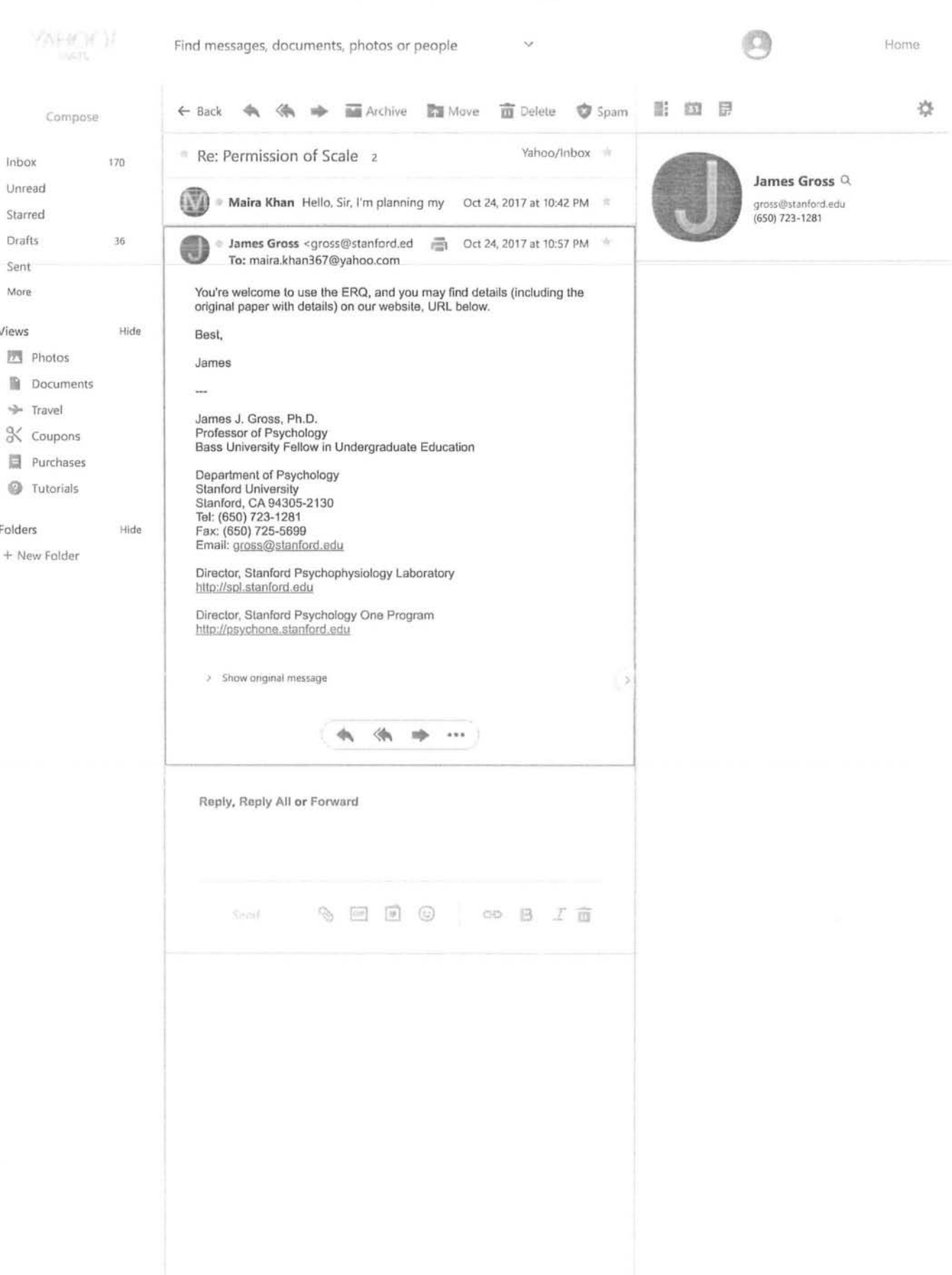
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Archive
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Yahoo/Inbox
Maira Khan Hello, Sir, I'm planning my Oct 24, 2017 at 10:42 PM
James Gross <gross@stanford.ed Oct 24, 2017 at 10:57 PM
To: maira.khan367@yahoo.com
You're welcome to use the ERQ, and you may find details (including the original paper with details) on our website, URL below.
Best,
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