CHAOS AT HOME AND ITS RELATIONSHIP WITH COGNITIVE ABILITY AND SOCIOEMOTIONAL ADJUSTMENT OF SCHOOL CHILDREN

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2010

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A dissertation submitted to the

Dr. Muhammad Ajmal
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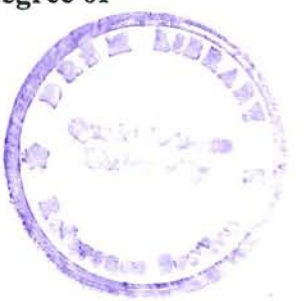
In partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

IN

PSYCHOLOGY

2010



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Dr. Nighat Gilani
Supervisor

Dedicated to

My Grand Parents, My Mom, Dad

&

To my Nephew Syed Saim Hasan Zeidi (Late)

Who lived with us only for one year
&
died during my stay in Karachi for data collection

CHAOS AT HOME AND ITS RELATIONSHIP WITH COGNITIVE ABILITY AND SOCIOEMOTIONAL ADJUSTMENT OF SCHOOL CHILDREN

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ACKNOWLEDGEMENT

All praise is due to Allah, The Most Beneficent, The Most Merciful, He Who taught the use of the pen, and taught man which he knew not (Quran 96:4-5). I am thankful to Allah who has given me the faith to believe in myself.

First of all I must express my gratitude to my knowledgeable supervisor Dr. Nighat Gilani under whose able guidance and sincere supervision I completed my research work. Her educational help, moral support and encouragement throughout my PhD research work always kept me energetic and punctual.

I must thanks to all my teachers for their assistance and support, especially the Director NIP Dr. Naeem Pervez, Dr. Anila Kamal, Dr. Anis-ul-Haq, Mr. M.Usman, Mr Arshad, Mr. Qayoom and Mr. Haideri. My thanks to the library staff for assisting me in getting access to the relevant material I needed during my research work.

In very hectic field work of my research I worked with F.G schools in different cities of Pakistan, their teachers, students and their families. With out their participation it was very difficult for me to achieve my objectives. I must mention here the unlimited support Federal Government Directorate provided me in Rawalpindi, Lahore, and Karachi. I am highly grateful to Brig. Muhammad Arif from Rawalpindi, Lt. Col Massod from Lahore, and Lt.Col Sajjad Nasir Toor from Karachi. They supported me in data collection and provided all the needed assistance during my stay in these cities.

I am also grateful to the principals and teachers who not only provided me facilities but spared time from their busy schedule to work with me and provided the information needed for research work.

It was nearly impossible for me to conduct my research with out very helpful and friendly attitude of parents who not only allowed their children to participate in the research but also spared time for interviews and filling the questionnaires. I visited 203 families in three cities and found almost all parents to be very cooperative and kind. They appreciated me, encouraged me, and also entertained me with snacks and tea.

I am grateful to my sincere friends Asia, Fazaila, Sadia, and Atifa for their selfless love and care and for their refreshing thoughts and ideas. From among these I have to offer special thanks to Asia for giving useful feedback regarding my thesis and Ms. Fazaila for her assistance in data collection during the first phase of my research.

I must also thank to Mr Nadeem Ahmed for providing me help in understanding Regression theory, to Mr. Salman Haider for providing guidelines during various stages of Research work and to Mr. Abdul Sattar, Research Officer, Ministry of Finance and PhD scholar at Economic Department of QAU for his assistance in developing socioeconomic index.

My profound thanks and appreciations for my beloved brother, Dr. Syed Nurullah Haider Ali, who supported me, provided timely help in terms of books and any other material I asked for. He encouraged me throughout my coursework by reinforcing me and sending me valuable gifts from North Carolina. Thanks to Mehro, my loving sister in-law who always prayed for my success.

A lot of thanks to my ever loving sister Syeda Huma Zedi and my brother in law Syed Hasan Shahid Zedi for their admiration, encouragement and support during my data collection in Karachi and also for my teenage niece Syeda Tehreem Hasan for her interesting sweet company, love and care during my stay in Karachi.

Words are not sufficient to thank parents, they are always a great asset for their children and so are mine. What they gave me is pure love and care and what they taught me was hard work, honesty, discipline, punctuality, and moral values and those were the things that guided me through out my research work and kept me moving forward despite various hardships on the way.

Let me also acknowledge against all traditions the enormous part the Transport Department of Quaid-e-Azam University, Islamabad, Pakistan has played in my pursuit of education. I am thankful to respectable *Chachas* (drivers and cleaners) who work 12 hours a day driving University buses on long routes through heavy traffic, in rain, and harsh weathers. It would have been really impossible for me to go to Quaid-e-Azam University, almost 45 miles away from my house without their support.

Shamama

ABSTRACT

The present research was designed to examine the relationship between home chaos and cognitive ability, socio-emotional adjustment, study skills and academic achievement of school children. The study relied on a sample of 203 children and their mothers. Primary school children (Boys=91, Girls = 112) with an age range of 8-11 years (4^{th} -6^{th} grade) were recruited from Federal Government schools. The teachers were also contacted to give their ratings of children's adjustment. The data was collected from three cities of Pakistan including Rawalpindi (N = 101), Lahore (N = 49), and Karachi (N = 53). Confusion, Hubbub, and Order Scale (CHAOS)-Urdu was administered to mothers to assess home chaos. Mothers were also interviewed to get detailed information of their home environment. It was hypothesized that home chaos will be positively associated with behavioral and study problems and will be negatively associated with cognitive ability and adaptive skills of children. To measure children's socio-emotional adjustment, study skills and cognitive ability Behavioral Assessment System for Children (Parent and Teachers Rating Forms)-BASC-2 and Ravens Standard Progressive Matrices were used respectively. Academic achievement of children was assessed by taking the average of their two consecutive examinations from the archival records of school examination branch. Results demonstrated CHAOS scale-Urdu as a reliable measure of home chaos in Pakistani culture. Behavioral Assessment System for Children (Parent and Teachers Rating Forms)-BASC-2 and Ravens Standard Progressive Matrices were also found reliable. Results indicated significant positive relationship between home chaos and externalizing and internalizing problems of children as reported by their parents and teachers. Significant negative relationship was found between home

chaos, adaptive and study skills of children as perceived by their parents and teachers. Children from chaotic families exhibited significantly low academic achievement. Regression analysis revealed home chaos as a significant predictor of children's socio-emotional adjustment and study skills in both home and school settings. However home chaos was not significantly related to children's cognitive ability. Moreover home chaos was not found as a significant predictor of cognitive ability among children. In line with previous findings boys were found to be more affected by home chaos as compared to girls. It is concluded that a) CHAOS Scale-Urdu version is an economical and reliable measure of home chaos in Pakistani culture b) home chaos is associated with multiple behavioral and adaptive problems among children as perceived by their parents and teachers c) home chaos is significantly associated with low academic achievement among children d) home chaos is not associated with cognitive ability of children, and e) boys from chaotic families exhibited more behavioral and adaptive problems as compared to the girls from similar families.

INTRODUCTION

Chapter I

INTRODUCTION

Child Development

Human development is a life long continuous process consisting of different stages. It has been observed that experiences in early stages of life set the stages for the development of the personality. It depends on one's individual experiences. For some it is a period of happiness while for others it evokes darker memories. The historical literature reveals that children were not treated and brought up as they are in the present century. Schaffer (2004) has quoted Lloyd DeMouse (as cited in Schaffer, 2004, p. 23) to explain the concept of childhood in ancient societies;

> *"The history of childhood is a nightmare from which we have only recently begun to awaken. The further back in history one goes, the lower the level of childcare, and the more likely children to be killed, abandoned, beaten, terrorized, and sexually abused"*

Today's child has a status of his/her own. They are not considered as miniature adults. They have rights to play, get education, learn, grow and, enjoy life. As a result of enriched theoretical perspectives and related scientific research in the 20th century, perspective of looking into childhood has changed dramatically. The ongoing research has shown that childhood is the most vital period that forms the basis for the later development in adulthood (Santrock, 2006; Schaffer, 2004).

There are varied ideas and theories about child development. Throughout the history philosophers have speculated about the nature and development of the

children and how they should be reared. "*Original Sin*", "*Tabula Rasa*" and "*Innate Goodness*" are some of the influential philosophical views presented during the 17th and 18th centuries. These conflicting views formed the historical bases for the study of child development and child rearing practices. Today, child development is viewed and conceived as highly eventful and unique period of life, a period that lays foundation for the later development in adult years and is highly differentiated from them (Pittman & Diversi, 2003).

Domains of Development

According to Berger (2001) human development can be divided into three domains. The biosocial domain includes the brain and body and the social influences that direct them. The cognitive domain includes thought processes, perceptual abilities, language mastery, and educational institutions that encourage them. The psychosocial domain includes emotions, personality, and interpersonal relationships with family, friends, and the wider community. All these domains are important at every age and at every stage of human development. For example understanding an infant involves studying his/her health (biosocial), curiosity (cognitive), and temperament (psychosocial), as well as other aspects of development from all the three domains.

Periods of Development

Development comprises different developmental periods, which refers to a time frame in a person's life characterized by certain features. Human beings pass through different developmental periods in their life span. Although every stage of life has its own special needs, middle childhood (6-11 years) is the period of interest

in the present research, which is the elementary school period of children. Children of this age are expected to master the fundamental skills of reading, writing, and arithmetic. A child during this period of 'middle childhood' is formally exposed to wider world and complex culture. Self-control increases and achievement becomes the central theme of a child's world (Santrock, 2006). These changes occur as a result of different factors including genetic contribution, environmental factors, maturation, learning and so on. Different theorists take different positions to address this issue that gives rise to an old debate of nature and nurture.

Nature and Nurture Issue of Development

Nature and Nurture has long been a debate in psychology. Nature refers to an organism's biological inheritance, where as nurture is based on its environmental experience. It is generally believed that development originates within a person as a result of genetic programming, physical maturation, cognitive growth, and personal inclination. However development is highly influenced by forces outside the person, by physical surrounding and social interaction that provide incentives, opportunities, and pathways for growth. All these external factors form the contexts or the systems or the environments, in which the development occurs. Starting from Kurt Lewin (1935), who explained the interplay of person and environment, Erikson (1968), Bandura (1986), Piaget (1952), and Vygotsky (1962) are some of the names who have emphasized the active role of children in developmental process along with the importance of social and environmental factors. Recent researches have acknowledged the importance of different contexts and systems in child development (Berger, 2001, Bronfenbrenner, 1979).

Regarding this debate, Anastasi (1958) three and a half decades ago posed a challenge to psychological science. She raised the question as how do heredity and environment contribute to human development. She urged scientific scholars to pursue that how much variance was attributable to heredity and how much to environment? How genotypes are transformed into phenotypes? Today after many years the challenge still stands. Extensive research that has been done relies on Behavioral Genetics. Advocates of Behavioral Genetics Model emphasize the importance of genes in developmental process. They argue that individuals' genes influence the type of environment to which they are exposed called "*heredity-environment correlation*"[1] (Santrock, 2006). Heredity directs the individuals to have specific environmental experiences and selects stimulating environment correlated with their genotypes. Similarly, genetically related parents provide rearing environment that is correlated with the genotype of the child (Plomin, DeFries, & Loehlin, 1977; Plomin, Reiss, Hetherington, & Howe, 1994; Scarr & McCartney, 1983). The classic Behavioral Genetics Model uses the concept of "*heritability*" to assess the actualization of genetic material. The concept is used to separate the effects of environment and heredity. Heritability (h^2) is defined as the fraction of variance in population that is attributed to genetics and is computed using correlational techniques. The highest degree of heritability is 1.00 and correlation of 0.70 and above expresses a strong genetic effect (Santrock, 2006). The most commonly used formula of heritability is: $h^2 = 2(r_{mz} - r_{dz})$, where r_{mz} & r_{dz} are the interclass correlation of a given developmental outcome between pairs of monozygotic (mz) and same sex dizygotic (dz) twins. On the other hand critics of Behavioral Genetics Model

[1] According to Scarr (1993), there are three ways that heredity and environment are correlated, *passive genotype-environment correlations*, *evocative genotype-environment correlations*, and *active genotype-environment correlations*

argue that heredity–environment correlation gives too much influence to heredity in determining the developmental process. The relative contributions of heredity and environment are not additive, one cannot give a particular percentage of nature and nurture separately. Moreover, it is a misconception to say that full genetic expression happens only at the time of conception or birth. Genes produce proteins throughout the life span in many different environments. However the production of proteins truly depends on whether they have given harsh or nourishing environments (McLearn, 2004). Similarly the concept of heritability is limited.

According to Bronfenbrenner (Bronfenbrenner & Ceci, 1994), the value of h^2 describes only the observed developmental differences between the individuals growing in the same environments and it varies from one population to the next for the same developmental outcome. Furthermore, it only explains the differences in *actualized genetic potential* and doesn't provide information about the extent of *non-actualized potential* which remains unknown.

Systems view of development gives importance to both heredity and environment. The concept of *genetic determination of traits* (Waddington, 1971) and *genetically determined reaction range* (Scarr, 1976) has been outmoded. They are replaced by a new concept of *'norm of reaction'* based on the systems view of development, which states that every new environment exert a different impact on development outcome and cannot be predicted in advance. Therefore, although genes remain an essential part of development but their expression may depend on the environment provided to the organism (Platt & Sanislow, 1988). According to the emerging view many complex behaviors may have some genetic loading that affects particular developmental process (Plomin, DeFries, McClearn, & McGuffin, 2001) however the actual development needs more and that is the role of environment.

Environmental influences range from nurture, which includes parenting, family dynamics, schooling, quality of neighborhood to biological encounters involving viruses, birth complications, and biological events in the cell (Greenough et al., 2001).

Bronfenbrenner and Ceci (1994) have acknowledged the contribution of the traditional Behavioral Genetics Model, which has helped to clarify the expression of genetic potential and to some extent the contribution of environment (Plomin & Daniels, 1987) but at the same time it is unable to explain the differences between individuals in their ability of realizing their talents and buffering against dysfunction. It is important to investigate those circumstances which help these talents and potentials to be expressed. Therefore, in his view the model is still incomplete as the Anastasi's question lies precisely: the need to identify the mechanism through which genotypes are transformed into phenotypes (how genes interact with the environment to get full expression). To answer this question and to answer the shortcomings of the traditional additive Behavioral Genetics Model he has proposed a Bioecological Paradigm of development. The model explains the environment in terms of systems and allows for non-additive, synergistic effects in genetic-environment interactions. According to him human development can be best understood by analyzing the heritability coefficient within the framework of Bioecological model. It will provide the best method not only to assess the role of heredity but also the extent of environmental and psychological process in fostering or impeding the individual differences in actualizing the genetic potential (Bronfenbrenner & Ceci, 1994). His model is one of many recent theories based on the systems view of development. These include transactional (Dewey & Bentley, 1949; Sameroff, 1983), contextual (Lerner & Kaufman, 1985), interactive (Jonhston, 1987; Magnusson, 1988), probabilistic epigenetic (Gottlieb, 1970) and individual-sociological (Valsiner, 1987).

These theories speculate human development as hierarchically organized into multiple levels such as genes, cytoplasm, cell, organ, organ system, organism, behavior and environment. These levels may mutually influence each other and the influence is bi-directional (Gottlieb, 1991a -see figure a).

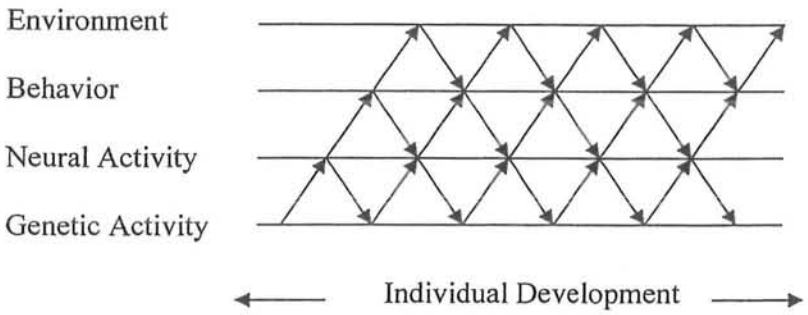


Figure a: Simplified scheme of systems view of development explaining the hierarchy of four mutually interacting components in which there are bi-directional influences (taken from Gottlieb, 1991a, p.6).

The important feature of the systems view of development is its recognition of genes as an integral part of the system and that the all levels of the system affect the genetic expression including the environmental events (Gottlieb, 1991a). For example it is an accepted fact that hormones while their circulation in the blood make their way both into the cell and nucleus of the cell. There, they activate DNA that results in the production of protein (Gorbman, Dickhoff, Vigna, Clark, & Ralph, 1983). During this process the flow of hormones themselves can be affected by different environmental events such as light, day length, nutrition, and behavior. Thus completing the whole circle of mutually influential events from genes to environment (Gottlieb, 1991a).

Bioecological model is based on the concept of *reaction range* first proposed by Woltereck (as cited in Bronfenbrenner & Ceci, 1994). It refers to the variety of alternative phenotypic outcomes set by a given genotype (Gottesman, 1963; Platt & Sanislow, 1988). More recently Gottlieb (1998, 2004) has proposed *Epigenetic view*, which explains the interplay of environment and genes in developmental process. According to this view development is a result of an ongoing, bi-directional interchange between heredity and environment. The term G×E refers to the interplay of both genes and environment which can modify the experience of an individual's genetic background. It does so either by strengthening the effects of genes or by weakening the effects of genes on phenotypes (Rutter, Moffitt, & Caspi, 2006). Moreover the evidence suggests that genetic material doesn't produce finished traits but rather interacts with the environmental experiences in determining the developmental outcomes (Albersch, 1983, Gottlieb, 1991b, 2004, Santrock, 2006).The contrasting views of Behavioral Genetics Model and Epigenetic View can be explained by the following Figure b:

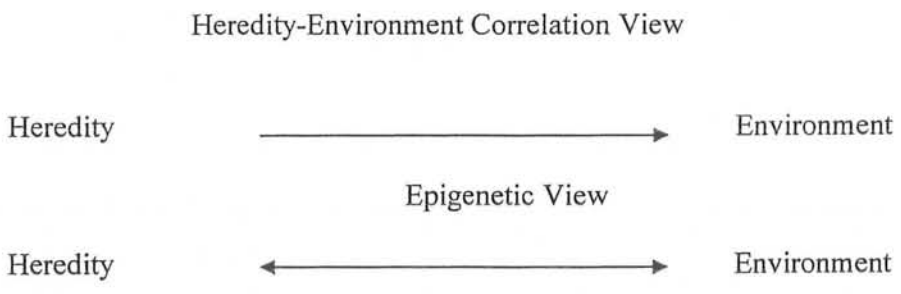


Figure b: Comparison of the Heredity- Environment correlation and Epigenetic Views (taken from Santrock, 2006, p.97).

On the basis of the evidences that support the contribution of environment in human development and to address the limitations of Behavioral Genetics Model,

Bronfenbrenner (Bronfenbrenner & Cecil, 1994) presents empirically assessable mechanisms called "*Proximal Processes*", through which genotypes are transformed into phenotypes. Proximal Processes are the reciprocal interactions between an active developing person and the persons, objects, and symbols in his/her immediate environment, for example mother-child interaction (Bronfenbrenner & Evans, 2000). It has been proposed that proximal processes raise the levels of effective development and strong proximal processes can lead to higher heritability. To support their argument they have mentioned a study by Riksen-Walraven (1978) showing that by increasing maternal responsiveness (a proximal process) higher level of cognitive development can be achieved. More recently Turkheimer, Haley, Waldron, D'Onofrio, and Gottesman (2003) have given evidence supporting Bioecological Model. Their study suggests that environmental differences of middle class adolescent from their upper class counterparts influence the genetic expression of intelligence.

Bioecological Model

In Bioecological model Bronfenbrenner (Bronfenbrenner & Cecil, 1994) has introduced a new perspective about developing person, its environment, and especially of the evolving interaction between the two. He has discussed the following distinctive properties of the Model:

1. It proposes assessment of "Proximal Process", mechanisms by which genetic potentials are actualized.
2. It gives a conceptual framework that explains the systematic variation in heritability as a result of interaction between proximal processes and characteristics of the environment in which these processes take place.

3. The model also explains the variation in heritability which occurs as a function of the nature of the developmental outcomes under consideration.
4. For each observed value of 'h' the model provides a way of assessing the individual differences occurring due to different levels of developmental functioning.
5. Finally it addresses the problem of measuring the non-actualized potential, which remains unknown, through the investigation of proximal processes and their developmental consequences under different environmental conditions.

Briefly, the model provides an indirect strategy to test the limits of the substantial role of both genetics and environment in contributing to individual differences in psychological growth. The model proposes three propositions, two of which will be discussed.

Proposition I

Bronfenbrenner (Bronfenbrenner & Evan, 2000) offers the following proposition:

> *"Throughout the life course, human development takes place through processes of progressively more complex reciprocal interaction between an active, evolving bio-psychological human organism and the persons, objects, and symbols in its immediate external environment. To be effective, the interaction must occur on a fairly regular basis over extended period of time. Such enduring forms of interaction in the immediate environment are referred to as proximal processes"* (p.117).

It is evident from this proposition that interactions that take place in immediate environment of the developing person are highly important and they must occur on regular basis to be more effective.

Proximal Processes

According to Bronfenbrenner (Bronfenbrenner & Evans, 2000), "Proximal process involves a transfer of energy between the developing human being and the persons, objects, and symbols in the immediate environment" (p.118). This transfer of energy may be in either direction or both, from the developing person to features of the environment or vice versa or in both directions separately or simultaneously, e.g. mother-child interaction. These proximal processes serve as engines of development. They can produce two types of outcomes, competence and dysfunction. Competence refers to the demonstrated or acquired learning and further development of knowledge, skills, or ability to direct one's own behavior in different situations. Dysfunction refers to the recurrent manifestations of problems and difficulties in maintaining control and integration of behavior across different situations and domains of development. The strength of the proximal processes depends on the exposure.

Exposure

"Exposure refers to the extent of contact maintained between the developing person and the proximal processes in which that person engages" (Bronfenbrenner & Evans, 2000, p.118). Exposure varies along five dimensions and proximal processes high in exposure produce competence and vice versa. These dimensions include (a) duration; that is related to the average length of the exposure (b) frequency; which

refers to the number of sessions per hour or day (c) interruptions; these refers to interruptions during exposure and explains that whether exposure is occurring on a predictable basis or is often interrupted (d) timing; timings of interactions are important. For example with infants the parents' response should be quick while with older children it can be delayed (e) intensity; it shows the strength of exposure. When exposure to proximal process is brief, infrequent, and unpredictable it is more likely to produce developmentally disruptive outcomes. The next proposition explains four interrelated elements that underlie the capacity of proximal processes to operate.

Proposition II

Bronfenbrenner's second proposition suggest that " the form, power, content, and the direction of the proximal processes producing development vary systematically as a joint function of the characteristics of the developing person, the environmental context—both immediate and more remote—in which the processes are taking place, and the social continuities and changes occur over time through the life course, and the historical period during which the person has lived; and, of course, the nature of the developmental outcomes under consideration" (Bronfenbrenner & Evans, 2000, pp.118-119). To simplify one can say that developmental outcome may vary as a joint function of a *process*, that includes characteristics of a developing person, the nature of the environmental context and setting in which the person is living and interacting with others, and the strength of the exposure (length of time and frequency of the exposure of the developing person to the process). Symbolically it can be expressed as D*f* PPT, where

D = developmental outcome

f = joint function

P = process

P = person's characteristics

C = nature of the immediate context

T = length and frequency of time interval of exposure

Bronfenbrenner (Bronfenbrenner & Cecil, 1994) has hypothesized that by increasing the exposure the indexes of competence and levels of *h* can be increased. To support his hypothesis he has given various research evidences along with the longitudinal study conducted by Drillien (1964) to study the factors affecting the development of children of normal birth weight from three socioeconomic classes (low, middle, high). The children were first assessed at the age of 2 years and than at the age of 4 years. The study revealed that the quality of mother-infant interaction (high level of proximal process) was related to the reduction of number of problem behaviors in children from all social classes. Furthermore it was found out that the difference of social class became much smaller under high levels of mother-child interaction. Recent evidence on Bioecological type G×E interactions comes from the studies conducted on Speech Sound Disorder (McGrath et al., 2007) and reading ability (Kreman et al., 2005) showing G×E interactions as an important aspect in the etiology of disorders. Among various environmental risks of speech or reading disabilities such as infections, genetic abnormalities certain home environmental factors have also been identifies as crucial factors. Evidence indicates mothers' education, home language/literacy environment, socioeconomic status, family beliefs, and home language stimulation as important variables in the development of both

speech/language and preliteracy/literacy skills (McGrath et al., 2007; Phillips & Lonigan, 2005).

Proximal processes for their effective functioning require stable and consistent environments. Environments characterized by instability, unpredictability, and inconsistencies in activities, routines, and relationships specifically in family, the immediate context in which the person lives produce disruptive developmental outcomes, e.g. many stepparent families exhibit lack of parental consistency and clarity of roles (Hetherington & Clingempeel, 1992; Pasley & Tallman, 1987; & Zimiles & Lee, 1991). Such conditions reduce the power of proximal processes to produce effective psychological functioning. Regarding intellectual development the Bioecological theory denies the presence of a general factor *g* rather supports the existence of multiple innate abilities (Bronfenbrenner & Ceci, 1993). The interaction of these abilities with environment plays a crucial role in their development and maintenance. The theory states that the efficient use of cognitive process depends on three environmental contexts, 1) the physical context 2) the social context and 3) the mental context. Along with the physical (the understanding of the child/person of a particular phenomenon) and social context (the social context in which the learning and performance occur) the elaborate knowledge (mental context) of the child/person help him/her to determine how they approach to the problem and what strategies will be used (Ceci & Bronfenbrenner, 1985; Ceci & Roazzi, 1994; Ceci, 1994; Ericsson & Lehmann, 1996). Motivation and level of expertise are other variables that also determine how actively individuals approach the particular problem (Bandura, 1986). The interaction between biology and ecological environment at each stage of development produces changes. These changes further permit or inhibit the possibility of future changes (Bronfenbrenner & Ceci, 1993). As intellectual development is

nonlinear any small change in the environment can lead to dramatic long-term effects (Ceci, 1994). Bronfenbrenner (1979) has introduced a new framework of ecological environment consisting of five environmental systems, ranging from the direct inputs of direct interaction to the broad based inputs of culture.

Ecological Environment

Ecological environment is seen as a set of different systems, embedded one after the other. In Bronfenbrenner's words "the ecological environment is conceived as a set of nested structures, each inside the next, like a set of Russian dolls" (Bronfenbrenner, 1979, p.3). There are five interlocking systems that shape individual's development (see figure c).

The Microsystem

Microsystem is the innermost level of ecological environment. It is the immediate setting containing the developing person. It can be the home, the school, the classroom, neighborhood, or laboratory or the testing room. It is the microsystem in which the child interacts directly with other social agents such as parents, peers, and teachers (Bronfenbrenner, 1979; Santrock, 2006). According to Bronfenbrenner (1979), "a microsystem is a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics" (p.22). Setting is a place such as home, school, daycare center where people can readily engage in face-to-face interactions. Roles, activities and interpersonal relations form the elements or building blocks of the microsystem. The basic unit of analysis of the microsystem is the *Dyad*, or two- person system. This dyad is characterized by reciprocal interactions, often disregarded in practice,

especially when dealing with subjects in laboratory. Bronfenbrenner (1979) has emphasized the reciprocal interaction of this dyad- 2person system that further allows the recognition and understanding of the fact that developmental changes not only occur in children but also in adults who serve as primary caregivers, such as fathers, mothers, grandparents, teachers and so on. This system extends and becomes N+2 systems-triads, tetras, and large interpersonal structures. Researches have shown that capacity of a dyad to serve effectively also depends on the participation of other people, such as spouses, friends, and neighbors. If they are absent or if they play a disruptive role rather being supportive developmental process breaks down. The same principal applies to other systems. Along with the settings and elements another important feature of this definition is its emphasis on the *physical and material features* of the environment. This stress on physical features shows that along with the reciprocal interaction and setting the physical features of that environment are necessary to get the whole picture of the microsystem.

The Mesosystem

Mesosystem involves relations between settings and such interconnections are as important and decisive for child development as the events taking place within a given setting e.g. the relationship between home experiences and school experiences.

The Exosystem

It refers to the settings in which the child/individual doesn't participate directly or not even present in them but they have profound effect on development, e.g., work experiences can affect a woman's relationship with her husband and her children.

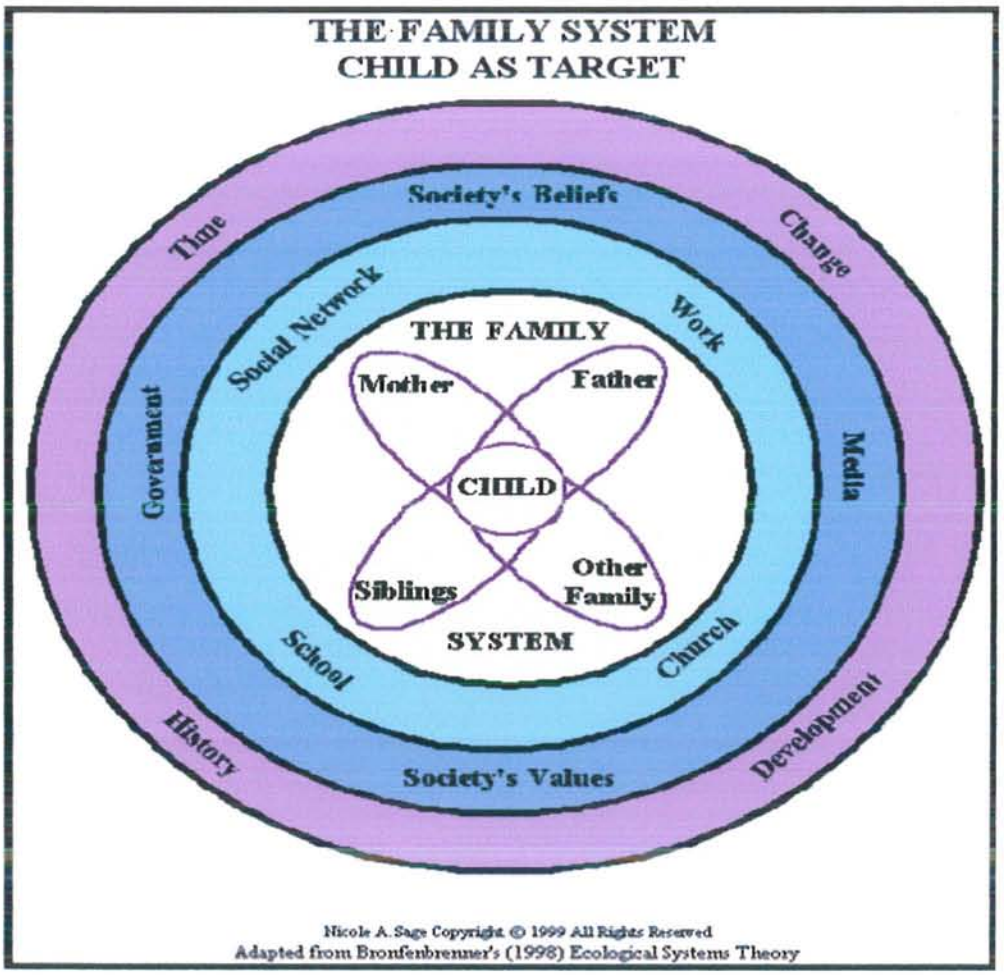


Figure c: Ecological systems which play important role in child development.

The Macrosystem

It refers to cultural settings in which an individual lives. Different settings such as home, streets, office within one culture and subculture tend to be alike but they are different between cultures. Cultural values act as blueprints for the organizations of every type of setting. Any change in the blueprint can alter and produce corresponding change in behavior and development.

The Chronosystem

It refers to the influences of historical times, patterning of environmental events and transitions over the life course on development e.g. in present days women are encouraged more to pursue career than they were 20 or 30 years ago (Bronfenbrenner, 1979; Santrock, 2006).

Bioecological Model makes it possible to examine different systems and their interrelationships along with the cultural and historical influences on development. By introducing an extended and broadened view of environment it also enables to study various systems and to perceive children as an active participant in constructing their environment as Lewin (1935) and Piaget (1952) pointed out. Its emphasis is not on the traditional psychological processes of perception, motivation, thinking, and learning but on the content –what is perceived, thought, desired, feared, or acquired as knowledge and how this material changes as a result of individual's exposure and interaction with the environment.

All the systems are important but in the present research the researcher is interested to examine the functional structure of the microsystem, specifically home. Mostly the research on influences of microsystem characteristics has focused on the role of social microenvironment. The social microenvironment refers to the transactions between children and their caregivers e.g., caregivers resposivity, sensitivity, vocalization, and control (Wohlwill & Heft, 1987). Similarly role of caregiver activities, beliefs, and interpersonal relations in child development is another well-researched area (Bradley, 1999; Wachs, 1992). Less emphasis has been given to the physical microenvironment and physical and material features of the child's context, which are also an important aspect of Bronfenbrenner's definition of microsystem (Wholwill & Heft, 1987; Bradley & Caldwell, 1984). Physical

microenvironment refers to the setting or stage on which caregiver-child transaction occurs (Wachs, 1989). There are three dimensions that define physical microenvironment,

- Spatial characteristics, such as open or closed space, or crowding
- Affordance characteristics, it refers to play materials that promote specific uses.
- Affordanceless environmental features, it includes non-specific background stimulation such as noise (Wachs & Corapci, 2003, p.3; Wachs, 1992).

Initially research on the role of physical microenvironment in development focused on the affordance aspects by emphasizing the role of objects that afforded the child specific uses such as play materials (Bradely, 1985; Ruff & Saltrelli, 1993). More recently, there has been an increasing interest in spatial and affordanceless features of physical microenvironment that collectively refers to environmental chaos (Matheny, Wachs, Ludwig, & Phillips, 1995). Available research has supported the developmental consequences of variation in both affordance aspects i.e. availability, and responsivity of stimulus objects in the child's environment (Bradley, Whiteside, & Mundfrom, 1994; Evans, Kliewer, & Martin, 1991), as well as spatial features such as proximity of physically dangerous objects or contexts such as open fire (Woodson & da Costa- Woodson, 1984).

Environmental Chaos

Environmental chaos is one aspect of physical microenvironment and refers to "microsystem contexts such as the home, day care center or school, which are

characterized by high noise levels, high levels of density or crowding, high context traffic patterns (many people coming and going) and a lack of physical and temporal structure; few regularities or routines in the environment, little is scheduled, nothing has its place" (Wachs & Corapci, 2003, p.3; Wachs, 1989; Matheny et al., 1995). Although chaos is considered as one aspect of physical microenvironment it includes both people and physical characteristics of the environment. The inclusion of people (animate features of the environment) is based on the reconceptualization of the concept which was originally defined only on the basis of inanimate features (Wohlwill & Heft, 1987). The integration of both spatial and affordanceless dimensions into the classification of environmental domains allowed animate objects (people) to contribute to the definition of environmental chaos. For example people can lead to environmental chaos if they are non-responsive in child's environment and serve as background rather than a source of stimulation. Evidence has shown the similar patterns of both inanimate, non-responsive background aspects of environment (noise) and animate, non-responsive background aspects of environment (crowding) on the parental behavior and child development which supports the inclusion of both aspects in the definition of chaos (Wachs & Corapci, 2003).

Environmental Chaos and Proximal Processes

Environmental chaos can affect various elements involved in exposure and has its role in Bioecological model in terms of 'chaotic systems'. Chaotic systems are characterized by frenetic activity, lack of structure, unpredictability in everyday activities, high ambient stimulation and background stimulation, and general lack of routine and structure in daily life (Bronfenbrenner & Evans, 2000). The environment in the form of residential crowding, noise, and classroom design is also a major source

of interruption of proximal processes (Evans, Hygge, & Bullinger, 1995; Evans, Lepore, Shejwal, & Palsane, 1998; Evans & Lovell, 1979; Evans, Maxwell, & Hart, 1999; Matheny et al., 1995).

Environmental chaos can produce adverse developmental outcomes and endanger competence by interfering with proximal processes. Moreover it can produce proximal processes that may lead to dysfunction (Bronfenbrenner & Evans, 2000). Evans, Lepore, Shejwal, and Palsane (1998) found crowding interfering with the development and maintenance of socially supportive relationships between parents and their elementary school children. These less supportive relationships which serve as proximal process in turn produce poor behavioral adjustment at school and lead to high vulnerability to learned helplessness in children. Similarly, chaotic home environments characterized by high levels of social and physical stimulation along with disorganization are associated with dysfunctional proximal processes such as less responsive parenting with preschool children (Matheny et al., 1995), which in turn produces psychological distress and negative social outcomes in children. Chaos has the potential to interfere with the development and maintenance of proximal processes that foster development and competence (Bronfenbrenner & Evans, 2000).

Family, Home Chaos and Child Development

Development consists of different stages and at every stage the importance of family and home environment can't be overlooked. Family is the most important setting of microsystem. According to Nunnally, Chilman, & Cox (1988), "family refers to two or more people in a committed relationship from which they devise a sense of identity as a family" (p.11). In early childhood, the family provides the most secure and significant attachment, care, and stimulation for children's growth and

development. The quality of physical, social, and affective care results from steady socioeconomic and psychosocial conditions (Andrade et al., 2005). Good health begins at early age and in healthy families children can count on their environment to provide for their social and emotional security, physical growth and psychological well-being. Such environments are healthy environments that can produce emotional security, social integration, and crucial social experiences necessary for their growth (Repetti, Taylor, & Seeman, 2002; Basic Behavioral Science Task Force of the National Advisory Mental Health Council, 1996). Familial risk factors have been studied widely in the etiology of psychological disorder. For example the casual links between parenting and depression among adolescent can be considered as a result of the interplay of genetic, cognitive, emotional, and interpersonal family environmental factors (Greszta, 2006).

Families of School Age Children

When the first child starts going to school, the family enters a new stage of its life cycle. It continues till the first child becomes teenager and at this stage the family is likely to have more young siblings. These are busy, full years of family living, with children running in and out of the house, having many incomplete projects, and the adults are busy keeping the household in good running order and trying to widen the range of social community of their youngsters. Needs and requirements of children differ according to their stage of development. In early childhood the focus of parenting remains on modesty, bedtime regularities, control of temper, fighting with peers and siblings, eating behaviors and manners, autonomy in dressing, and attention seeking. Although some of the issues like fighting and reactions to discipline remain

important in middle childhood, many of the new issues emerge by the age of 7, for example independence, school issues and emotional regulation (Maccoby, 1984). Similarly societal and structural changes in family may have different effects depending on the age of the child. Therefore for good parenting and family functioning it is necessary to have detailed knowledge of the child's developmental requirements.

Middle Childhood (School Age Children)

Elementary school children (middle childhood) differ considerably within a wide range of normal physical, mental, and social development. Growth in height is steady. Weight increases gradually and appetite varies from poor to good. They develop muscular strength and skills. Intellectually they are involved in 'concrete operations'. They develop concepts and begin to order the universe through their learning of mathematics and science. They learn appropriate roles. Peers become important throughout their school years (Duvail, 1977; Bloom, 1964; Baldigo, 1975; Harris & Tseng, 1957). Considerable changes occur in their social and emotional development. They start defining themselves in terms of social characteristics and social comparison (Harter, 1999). At this stage the development of high self esteem and a positive self-concept is considered important for children's well being. According to Erikson (1968), they are in the stage of Industry *Vs* Inferiority. They become interested in exploration and their encouragement leads to the sense of industry and vice versa. Important developmental changes also occur in emotional development. Elementary school children develop the ability to understand complex emotions, conceal negative emotions, and they become able to understand that more

than one emotion can be experienced in a particular situation. They also start using self-initiated strategies for redirecting emotions (Kuebli, 1994; Wintre & Vallance, 1994). The ability to view emotions objectively increases during middle childhood that enables children to discuss past emotional incidents and anticipate future events. Similarly they not only learn to think about their inner feelings but also give importance to others' emotions and understand how other people interpret various situations. Parents themselves and the relationship they develop with their children play a vital role in emotional and social development. The different messages conveyed by the parents about the acceptability of emotions are associated with different types of attachments. The lessons learned by children through these messages are then carried forward to later years. Children generalize them to other relationships and with the passage of time they become a part of an individual's affective style (Schaffer, 2004). Positive parenting leads to children's prosocial behavior and individual differences in children's prosocial behavior is the result of relative contribution of both genetic and environmental factors (Knafo & Plomin, 2006). Available evidence indicates that emotional competence is closely related to social competence. Social interactions highly depend on the effective management of emotions, which become evident in peer interactions (Halberstadt, Denham, & Dunsmore, 2001). Research shows that children having constructive way of managing emotions are more successful in their peer relationships (Calkins, Gill, Johnson, & Smith, 1999). Briefly stated, these are the years when children must move forward in many areas of their life.

Marcus et al. (as cited in Duvall, 1977) have pointed out certain developmental task of school age children, which they have to achieve during their

school age for positive social, emotional, and cognitive development. These include the following:

1. Learning the basic skills necessary for school children. Mastering the fundamental skills, i.e., reading, writing, extending understanding of cause and effect relationships, developing concept, etc.
2. Mastering the age appropriate physical skills. Learning the games, sports, developing family skills such as bathing, dressing, cleaning up after activities, etc.
3. Developing the practical understanding of the use of money.
4. Becoming an active and cooperative member of the family.
5. Extending the ability to relate effectively with others including adults and peers.
6. Continuing the learning involved in handling the feelings and impulses.
7. Learning appropriate sex roles and adjusting to bodily changes.
8. Continuing to find oneself worthy.
9. Developing conscience with inner moral controls.

Hindi (1992) has given importance to another task of children that is '*forming relationships*', the establishment of relationships with other individuals. The primary attachment and earliest relationships exert profound influence on subsequent close relationships in adulthood. Relationships provide the context for the development of psychological functions. These relationships do not exist independently but are embedded in a range of levels (see figure d). These are inter connected levels and therefore, according to Hindi (1992), to fully understand a relationship one has to pay attention to all other levels ranging from the group or family that provides the

immediate context of relationship, the individuality of each of the participant, society, culture to which the person belongs, and to the physical environment that forms the background of the relationship. Hindi's concept of levels of relationships supports the Bioecological Model that emphasizes the role of different systems and their interrelationship in the development of child's personality. The success of all these developmental tasks discussed above depends on the available opportunities in home, school, and community. It also largely depends on the skills of parents and teachers as to how do they provide growth opportunities to their children at crucial times.

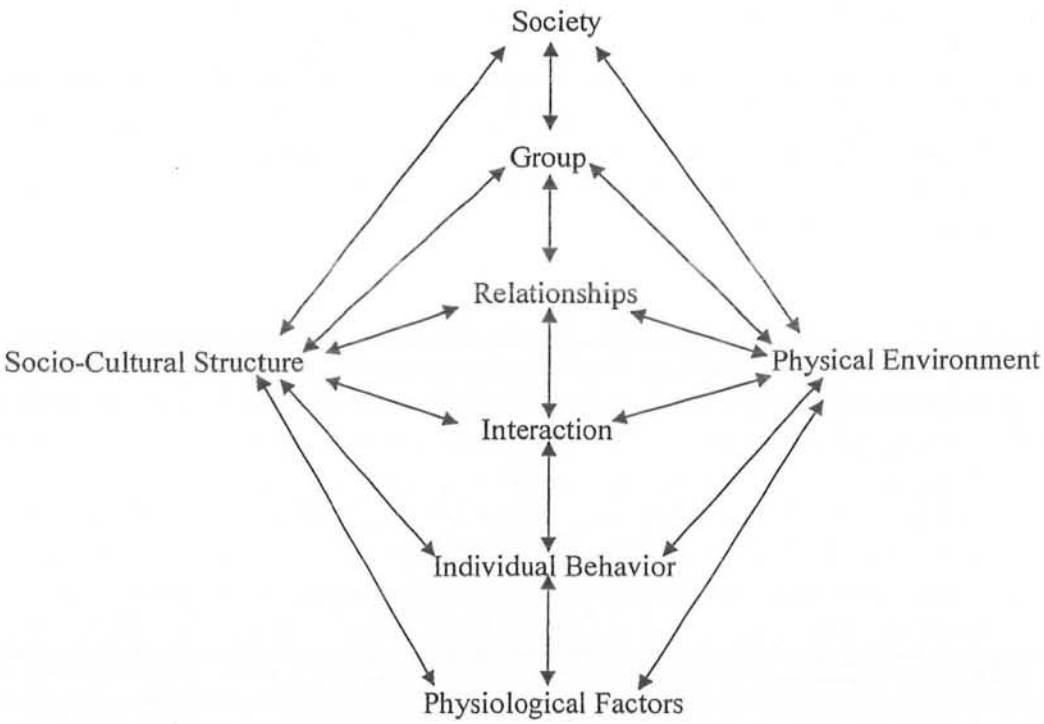


Figure d: Showing relationships between successive levels of social complexity (Hindi, 1992)

Families who provide the necessary stimulating environment and opportunities are healthy families. In healthy families children not only learn to trust their

environment to provide for their emotional security and physical safety but also acquire behaviors which help them to maintain their well being independently of their caregivers. In contrast risky families are characterized by aggression and conflict. They have cold and unsupportive relationships. Such family characteristics create vulnerabilities or interact with genetically based vulnerabilities to produce adverse outcomes in different systems including psychological functioning, biological regulatory system, and poor health behaviors (Repetti et al., 2002). To provide children with rich stimulating environment parents have to struggle hard to fulfill their responsibilities and related developmental tasks.

Parenting

The role of adults has changed over centuries because of technological, social, and economical adjustment but it has not affected the goal of parenting. It has remained the same; that is to enable children to be competent adults in their late life (Maccoby, 1992). According to Saegert and Winkel (1990), *optimal parenting*, a facilitative home environment refers to a set of regulatory acts and conditions produced by parents for children's successful adaptation and exploitation of opportunity structures. This framework is consonant with ecological developmental theories that consider human beings as phylogenetically advanced, self-constructing organisms and view environment as a regulator of complex developmental processes (Ford & Lerner, 1992). Bradley and Corwyn (1999, 2006) have identified six regulatory parenting tasks to deal with the individuality of children and to assure the best fit between the environmental inputs and child's needs.

Sustenance/Safety

It refers to the acts and conditions that are designed for the provision of nutrients, shelter, and conditions for the maintenance of health to assure biological integrity needed for physical and psychological development (Pollitt, 1988).

Stimulation

It refers to the task of providing stimulating environment (sensory data) that not only engages attention but also provides information. A bulk of literature supports the significance of stimulating environment for cognitive, social, and psychomotor development (Horowitz, 1987, Wachs et al., 1993).

Support

Providing supportive environment is another parenting task. Supportive environment involves acts of support performed not only in anticipation of unexpressed needs but also following expressed needs. Support also involves guidance and direction for adequate functioning in other environments (Pettit, Dodge, & Brown, 1988).

Structure

Structure refers to the arrangement of the inputs, sustenance, stimulation, and support. Receiving equal amounts of these inputs does not seem to result in equal amount of development. Their arrangement is as important and crucial as their amount. According to Bradley and Corwyn (1999, 2006) optimal parenting involves not only the acts of providing sufficient amounts of these inputs but also structuring

the child's encounter with those direct inputs. It is necessary to achieve the 'fit' between the child's need and the input that may differ from child to child.

Surveillance

It refers to keeping a track of child's activities, whereabouts, and surrounding environment and circumstances. For effective regulatory system it is important to monitor both the system and its context.

Social Integration

An important major task of parents is to connect their children to a wider social world, social groups and society (Weisner, 2002). Scoot-Jones (as cited in Bradley & Corwyn, 2006) has argued that parental expectations play a crucial role in children's engagement in school for high achievement. Therefore she values parental efforts to help their children in developing such engagements.

Research evidence supports the importance of these parenting tasks in promoting child's adjustment. Research conducted with 243 premature, low birth weight children living in chronic poverty indicates that availability of protective factors in home environment (low household density, the availability of a safe play area, parental acceptance and lack of punitiveness, parental responsivity, the availability of learning materials and a variety of experiences) increases the probability of resiliency. It was found out that resiliency of premature low birth weight children increased as the number of protective factors increased in home environment (Bradley et al., 1994; Dishion et al., 2008). Haskett and Willoughby (2007) have found quality of parenting as more central to children's adjustment in peer interaction than their social information processing. Moreover the quality of

parenting children received was closely related to parental beliefs about children and parent's mental health. In addition harsh discipline and low parental involvement have also been found out as important factors in explaining the association between marital conflict and maladjustment of children ages 2-11 years (Buehler & Gerard, 2002). Within the framework of Bioecological model, Riggens-Caspers, Cadoret, Knutson, and Langbehn (2003) have indicated harsh discipline and parental psychopathology as important contextual factors among adolescence adoptee, showing them at a higher risk of aggression and conduct disorder in the presence of two or more adverse contextual factors in adoptive home.

Marcus et al. (as cited in Duvall, 1977) have also discussed developmental tasks of the parents of school age children, which help them to enhance children's adjustment. Parents who provide their children opportunities to take part in family discussion, decisions and planning help them to get first hand experience and learn doing things in an orderly way. Children of school age may have some illness at times so it is parents' task to address children's special needs, such as, any illness, eye conditions needing specialist, emotional disturbances, handicap, mental retardation or any other condition. Research has indicated that school age children who tend to have more accidents are found to have emotional problems and have parents who are anxious, insecure, and nonassertive. The parents who enjoy life with children not only feel relaxed and find pleasure for themselves but they also show acceptance towards their children individuality. This helps children to experience unconditional love that ultimately help them to become autonomous individuals (Porter, 1954). As children move toward wider social community they need more assistance. It is parents' task to provide them opportunities to take part in different activities in schools, clubs, and with peers. It fosters the development of personality through increasing their

independence and widens the social experience of children (Marcus et al., as cited in Duvall, 1977). These activities of parents require stable and organized environments called parenting environment.

Parenting Environment

Parenting environment refers to the place where parenting occurs and is closely related to the parenting task. It includes the entire social and physical phenomenon within the child's home (Wachs, 1992; Wapner, 1987; Wohlwill & Heft, 1977). According to Korosec-Serafty (1985), the parenting environment can be best described in terms of its instrumentality for child rearing and care. Parents can achieve their parenting tasks successfully by providing good parenting environment. Parenting also influences the academic performance of school age children. During middle childhood, children move toward a wider social context that in turn exerts various social, emotional, and cognitive influences on them (Higgins & Parsons, 1983). Researches interested in the study and development of self-system of children have found a link between the feelings of competence and personal esteem to the child's psychosocial well being (Eccles, 1983; Harter, 1985; Rosenberg, Schooler, & Schoenbach, 1989). During elementary school years children who fail to develop positive self-perceptions of competence in the academic or social domains report more internalizing problems such as depression and social isolation (Asher, Hymel, & Renshaw, 1984; Cole, 1991), and externalizing problems such as anger and aggression (Parkhurst & Asher, 1992). Various findings suggest that during middle childhood children's academic success as one of major determinant of positive self-concept and motivational learning in school plays an important role to their successful

developmental trajectory. It helps children not only in this period but also in adolescent years (Eccles, Roeser, Wigfield, & Freedman-Doan, 1999; Eccles, Roeser, Vida, Fredrick, & Wigfield, 2006). This leads to the conclusion that parenting tasks and environment both play a very important role in childhood for their growth and personality development in various domains of life.

All developmental tasks of parents in creating good parenting environment require strong proximal process as Bronfenbrenner said 'on a fairly regular basis over an extended period of time' (Bronfenbrenner & Cecil, 1994, p. 576). Moreover they require organized and predictable environment. It is evident that reciprocal interaction between children and adults is the key to an adequate stimulation in the family environment. Various caregivers' characteristics are found to be related with mental and psychological well being of children, including stimulation, support, responsivity, acceptance and organized care and these characteristics also serve as protective factors against poor living conditions (Bradley & Caldwell, 1984; McCartney, Dearing, Taylor, & Bub, 2007). Similarly different family factors have also been found linked with school achievements of children. Chilman (as cited in Duvall, 1977) found many family factors conducive of school achievement such as, freedom of children within consistent limits, wide range of stimulation i.e. visual, kinesthetic, tactile from early infancy, goal commitment and belief in long range success potential, gradual training for independence, much verbal communication with flexible, conceptual style, high value placed on academic achievement, democratic child-rearing attitudes, collaborative attitudes towards the school system, value placed on abstraction, reliance on objective evidence, high achievement needs in parents. Family factors opposite to these (conducive factors) serve to limit the school achievement.

So far we have elaborated upon the importance of family interactions, stability, organization, child rearing practices, and parental attitude in producing healthy family and ultimately physically, socially, and emotionally healthy children. The families who fail to fulfill this challenge may be characterized as chaotic and risky families.

Home Chaos and Child Development

Chaotic home environments have long been associated with a range of adverse outcomes (McCord & McCord, 1959; Wohlwill & Heft, 1987). According to Dumas et al. (2005), disorganized and unsafe homes that don't offer predictable environment rich in opportunities to learn through routines, regularities and rituals generally limit child's adjustment. Chaos has been linked to family income and parental income, parental stress and emotional disturbances, parenting difficulties especially inappropriate discipline and lack of sensitivity and responsiveness, and child behavior problems, such as, impulsivity, conduct problems, and delinquency. These findings are well established and have been shown to minority and non-minority samples (Dumas, LaFreniere, & Serketich, 1995; Evans, Lepore, Shejwal, & Palsane, 1998; Farrington & Loeber, 1998; Smith, Prinz, Dumas, & Laughlin, 2001; Wachs, 1993).

As discussed earlier that chaos can interfere with the development of proximal processes by shortening their duration and increasing interruptions and making surroundings less predictable. This in turn reduces exchanges between the developing child and the environment. Research evidence shows that low interactions between adults and children, poor social attachment and control through restriction and punishment, low levels of family organization have been identified as risk factors and

potentially harmful environmental factors in child development (Zamberlan & Biasoli, as cited in Andrade et al., 2005). According to Atzaba-Poria, Pike, and Deater-Deckard (2004), risk factors act in cumulative manner. Children's behavioral problems increase with the increase in the cumulative effects of risk factors. They have supported systems view of Bronfenbrenner's model by giving evidence that different ecological levels predict different behavioral problems among children. They found microsystem-level cumulative risk as mainly predicting externalizing problems, and individual-level and exosystem-level cumulative risk as predicting internalizing problems among children of middle childhood from two ethnic groups (Indian and English). The results were same for both ethnic groups. Furthermore, family conflicts, recurrent episode of anger and aggression, deficit nurturing, and cold unsupportive and neglectful family relationships create vulnerabilities themselves or by interacting with genetically based vulnerabilities in off springs that produce disruptions in diverse areas of development, i.e., psychosocial functioning specially emotion processing and social competence, stress-responsive biological regulatory systems, including sympathetic-adrenomedullary and hypothalamic-pituitary-adrenocortical functioning, and poor health behavior specially substance abuse (Repetti et al., 2002). Research indicated that quality of stimulation present in the child's family environment plays important role in cognitive development and the best quality stimulation is given to those children who come first and live with less number of people (Andrade et al, 2005). This can be justified by the fact that as number of people increases noise, confusion and crowding increases. Environmental confusion may directly influence development by causing children to develop strategies which help them to filter out high levels of unwanted stimulation and unfortunately these strategies may result in filtering out the facilitative stimulation also (Evans, Kliewer, & Martin, 1991).

Socioeconomic Status and Parenting Style

Home chaos is related to socioeconomic status and parenting. Low-income families are more likely to face chaotic living conditions. Similarly low-income adolescents face higher levels of chaos as compared to their affluent counterparts (Evans, Gonnella, Marcynszn, Gentile, & Salpekar, 2005; Bradley et al., 1994, Evans & Seagert, 2000). Poor children experience less structure, routine, and predictability in their daily home life. They live in more noisy and crowded homes (Brody & Flor, 1997; Jensen, James, Boyce, & Hartnett, 1983; Matheny et al, 1995). More recently it has been investigated that chaos can act as a mediator in home environment even when controlling for socioeconomic status (Petrill, Pike, Price, & Plomin, 2004).

Research has identified an association between environmental chaos and parenting style (Coldwell, Pike, & Dunn, 2006). Baumrind (1971, 1977) has identified four types of parenting styles, authoritarian parenting, authoritative parenting, neglectful parenting, and indulgent parenting. Parenting that constrains, invalidates, and manipulates children's psychological and emotional experience and expression is related to both externalizing and internalizing symptoms (Barber, 1996). Reliable associations have been found out between unresponsive, rejecting parenting, lack of parental availability, lack of cohesion, warmth, and support within family and a broad array of mental health risks, including internalizing symptoms such as depression, suicide behavior, and anxiety disorders (Buehler, 2006; Chorpita & Barlow, 1998; Kaslow, Deering & Racusia, 1994), and externalizing symptoms such as aggression, hostile, oppositional, and delinquent behavior (Barber, 1996; Rothbaum & Weisz, 1994; Steinberg, Lamborn, Darling, Mounts, & Dornbusch. 1994). Casas et al. (2006) have indicated a significant relationship between young children's relational and

physical aggression and parenting style of both the partners. Similarly internalizing problems in early childhood have been shown related with over-involved /protective parenting, low warm-engaged parenting, parental anxiety, depression and family stressors (Bayer, Sanson, & Hemphill, 2006). Home chaos is shown to be associated with authoritarian style and neglectful parenting (Insel & Lindgren, 1978), with less effective discipline (Dumas et al., 2005), and with low levels of parental positive reaction towards their children's emotions (Valiente, Lemery-Chalfant, & Reiser, 2007). From the data of 57 infants and their parents Corapci and Wachs (2002) have concluded home chaos as related to lower parental efficacy perceptions however it was not related to the parental ratings of distressed mood. Furthermore noise and crowding, the two dimensions of home chaos were also found to be related to both less responsive and less stimulating parenting. Atzaba-Poria and Pike (2008) have found household chaos as playing a significant role in predicting father's differential treatment for sibling dyad characteristics in middle childhood where as single mothers were not at risk of using differential treatment except when coupled with higher level of anger.

The above discussion of the adverse effects of chaotic conditions leads to the conclusion that family environment including both social and physical aspects represent the vital source for understanding mental and physical health across the life span.

Home Chaos and developmental dysfunction: An Empirical Perspective

Various researches have been done to find out the relationship between chaotic living conditions and related outcomes. Overall the results suggest consistent

and negative impact of environmental chaos on child's development. While considering the available research it is important to note that developmental impact of chaos may vary as a function of either individual characteristics or other contextual factors. For example children with difficult temperament and behavioral problems may be more sensitive to chaos (Langemeier & Matjejeck, 1975; Loo, 1978; Matheny & Phillips, 2001; Wachs, 1987; Wachs & Gandour, 1983). Further, evidence suggests that males and females may exhibit different types of reaction patterns faced with environmental chaos (Evans, Lepore, Shejwal, & Palsane, 1998). The effects of chaos may also depend on the individual's level of access to non-chaotic environmental contexts (Draper, 1973; Fagot, 1977; Seagert, 1982).

Environmental chaos affects child development through both direct and indirect processes. It may directly influence child development by causing children to develop strategies that help them to filter out unwanted stimulation and unfortunately, these strategies may also result in children filtering out developmentally facilitative information and stimulation (Evans et al., 1991). It may affect indirectly by influencing caregiver's behavior. Caregivers in noisy and crowded environments are at higher risk to exhibit less resposivity, less vocalization, less scaffolding, and more interference which may inhibit child development (Wachs, 1989) and such behavior may be attributed to the interference created by the noisy and crowded environments in caregiver's ability to hear child's vocalization, or by increasing his/her fatigue, thus decreasing appropriate responsivity (Matheny et al., 1995, Wachs, 1989). Environmental chaos also leads to the deterioration of social support network that ultimately leads to more problematic outcomes for the individual (Evans, Palsane, Lepore, & Martin, 1989; Lepore, Evans, & Schneider, 1991; Evans & Lepore, 1993). In addition different aspects of chaos may combine to effect development rather

aspects of chaos taken in isolation. Evans and Seagert (2000) found that children from low socioeconomic status families were significantly more affected by high-density living conditions when family turmoil was high than when it was relatively low.

Chaos and Socioemotional Adjustment

Socioemotional adjustment is an important aspect of children's personality. High self-esteem, positive self concept, ability to manage emotions, understanding complex emotions and ability to perceive others emotional states leads to social and emotional adjustment (Santrock, 2006). Chaos not only affects child socioemotional adjustment directly but it can produce negative outcomes by affecting adult emotional well-being. Studies conducted in different countries show consistent evidence that objective crowding (persons per room) produce psychological distress through subjective crowding specifically through the perception or experience of being crowded (Cheung, Leung, Chan, & Ma, 1998; Evans et al., 1989; Fuller, Edwards, Vorakitphokatorn, & Sermsri, 1993; Mitchell, 1971; Ruback & Pandey, 1991). According to Wachs & Corapci (2003) psychological distress refers to feeling of unhappiness, irritability, and high vulnerability due to minor social problems. Environmental chaos may lead to increased levels of caregivers' stress and they have suggested a conceptual framework of how this stress translates into less effective parenting. According to Wachs and Corapci (2003) the resulting caregivers' stress in turn affects their child rearing practices directly through low involvement and indirectly through harsh discipline. This transformation of stress into caregivers' practices also depends on the child's behavior which also influences caregivers' reactivity patterns. This relationship of chaos with quality of parenting and child's adverse developmental outcome also explains its mediating process. Families higher

in marital conflict, anger and aggression have been found to be associated with variety of emotional and behavioral problems in children including aggression, conduct disorder, delinquency, and antisocial behavior, anxiety, depression, and suicide (Schoppe-Sullivan, Schermerhorn, & Cummings, 2007; Formoso, Gonzales, Barrera, & Dumka, 2007; Emery 1982, Grych & Fincham, 1990; Kaslow et al., 1994; Reid & Crisafulli, 1990; Wagner, 1997). Evidence indicates that home chaos is related to reduced ability to understand and respond to social cues in children, reduced accuracy and efficiency in a cooperative parent-child interactional task after controlling for potential confounds (Dumas et al., 2005), and also leads to psychological distress and learned helplessness in children (Evans et al., 2005).

Chaos and Cognitive Development

Cognitive processes involve many aspects such as thinking, memory, intelligence, creative thinking, critical thinking, language etc. (Santrock, 2006). Cognitive development is shown to be sensitive to environmental chaos. It is related to lower cognitive performance (Gottfried & Gottfried, 1984; Wachs, Uzgiris, & Hunt, 1971), poor performance on reading tasks (Bronzaft & McCarthy, 1975; Evans, Hygge, & Bullinger, 1995; Maxwell & Evans, 2000), altered attentional patterns (Cohen, Glass, & Singer, 1973; Heft, 1979), and reduced use of communication to gain adult attention (Wachs & Chan, 1986). Study conducted in Brazil by Andrade et al. (2005) has indicated that quality of stimulation in family environment is significantly associated with child's cognitive development. Supporting evidence comes from the studies showing an association between environmental chaos with caregivers who are less responsive, less involved, less vocally stimulating, less likely to show or demonstrate objects, and more likely to interfere with exploration

(Gottfried & Gottfried, 1984; Hannan & Luster, 1990; Wachs, 1986,1989,1993; & Wachs & Desai, 1993). Petrill et al. (2004) reported chaos as a significant mediator for verbal and non-verbal cognitive skills even when controlling for socio economic status.

Chaos and Temperament

Temperament refers to "biologically rooted individual differences in behavioral tendencies that are present early in life and are relatively stable across various kinds of situations and over the course of time" (Bates, 1989, p.4). The following list defines the major domains of temperament:

- Negative emotions such as fear and anger
- Difficultness for example high intense easily evoked negative moods
- Adaptability to new situations or people for example inhibition
- Activity level of an individual
- Self regulation such as soothability
- Reactivity for example how intense a stimulus is needed to evoke a response
- Sociability-positive emotionality such as pleasure in social interaction (Bates, 1989; Wachs, 1999).

Several studies provide evidence of the association of environmental chaos and child's temperament. Matheny, Wilson, & Thoben (1987) found that in home of 18th month's old toddlers high levels of environmental noise and confusing was associated to behavior showing less tractable temperament. Higher levels of home crowding was also found to be related to various behavioral consequences in 12 months infants, such as, lower in approach, less adaptive, and having more intense

negative moods, after statistically partialing out the influences of parental temperament (Wachs, 1988).

Chaos and Behavioral Problems

Behavioral problems in childhood are often explained as externalizing and internalizing behavioral problems. Externalizing symptoms involve aggression and hyperactivity. Internalizing behavioral problems include social withdrawal and negative emotion such as anxiety (Eisenberg et al., 1996). Research indicates that home chaos is associated with higher levels of externalizing behavioral problems specially aggression. Moreover caregivers who report high levels of chaos also describe their children as having elevated levels of behavioral problems (Dumas et al., 1995; Supplee, Unikel, & Shaw, 2007). Maxwell (1996) found that children from chaotic home environments were at higher risk of behavioral disturbances.

Chaos and Biomedical Consequences

Available research on the association of chaos with biomedical outcomes indicates that children from chaotic families are at increased risk of childhood injuries, elevated blood pressure, and have greater cardiovascular reactivity stressful situations (Matheny, 1986; Evans et al., 1998; Evans et al., 1995; Johnston-Brooks, Lewis, Evans, & Whalen, 1998).

Noise, Crowding and Chaos

Noise and crowding are two important aspects of environmental chaos and both are well-researched topics. Evans, Lepore, Shejwal, & Palsane (1998) have found chronic residential crowding to be associated with behavioral adjustment

problems at school, poor academic achievement, vulnerability to the induction of learned helplessness, high blood pressure and impaired parent-child interpersonal relationships among children of age 10-12 years living in urban India. Similarly crowded adults are found to be more psychologically distressed and experience deteriorated interpersonal relationships with their housemates (Baum & Paulus, 1987; Evans & Cohen, 1987; Gove & Hughes, 1983; Cicognani, Albanesi, & Zani, 2008). People living in crowded homes are less likely to seek social support. They use social withdrawal as a coping strategy to deal with the crowded living conditions and short term stress (Evans & Lepore, 1993; Evans, Lepore, & Allen, 2000). Aiello, Nicosia, and Thompson (1979) showed that crowding had physiological, social, and behavioral consequences for children of 4th (9 years), 8th (13 years), and 11th (16 years) graders. Children and adolescent reported discomfort, frustrated, annoyed, and felt crowded. Moreover boys were more affected by short–term crowding as compared to girls by displaying high stress-related arousal. Noise is also another aspect that produces negative outcomes. Considerable amount of literature has indicated that chronic noise exposure negatively influences the reading skills of elementary school children (Maxwell & Evans, 2000). Moreover chronic exposure to aircraft noise elevates psychophysiological stress and depresses quality-of-life indicators among children of 9-11 years (Evans, Bullinger, & Hugge, 1998).

Home Chaos and Different Cultures

Theoretically, it has been discussed that microsystem (family) and macrosystem (culture) form different levels of environment but they are linked to each other. Cultural values and practices differ across western and non-western

countries that may have effects on child rearing practices. It has been observed that culture acts to moderate the impact of parental or caregivers rearing practices on child development (Bronfenbrenner & Cecil, 1994). Cultural norms, parental belief system, preferences, coping strategies, and values can all influence the degree to which parents or caregivers perceive their environment as chaotic or not (Baldassare, 1981; Evans, Lepore, & Allen, 2000). Although studies have identified various culturally driven coping strategies, traditions (extended family system that allow multiple caregivers), and buffering strategies (emphasis on interpersonal cooperation, and reduced public display of emotionality) that can act as moderator between chaos and family functioning (Munore & Munore, 1971; Anderson, 1972; Hwang, 1979). Environmental chaos has been found negatively related to child development in both western and non-western cultures. Environmental chaos has been found negatively linked with cognitive, social, and emotional competence in South Africa (Goduka, Poole, & Aotaki-Phenice, 1992) Israel (Shapiro, 1974), Egypt (Wachs et al., 1993) and Nigeria (Ani & Gramtham-McGreegor, 1998). It shows that the impact of chaos on family functioning is same in spite of different cultural and social norms, coping strategies, and beliefs and it may indicate the presence of a similar pattern of relations between environmental chaos and child development in both western and non-western environments. For western cultures the available explanatory framework indicates that environmental chaos affects parent-child transaction that ultimately leads to greater family conflict or poor parental emotional well -being (Evans & Saegert, 2000). However for non-western cultures research has shown different linkage pattern between environmental chaos and parent-child transactions. The age of child serves as a potential moderator. Availability of multiple caregivers in high density households make it possible for an infant to be responded more quickly and serve as a

compensation for mother's lack of involvement. But this pattern does not extend after infancy. For preschoolers and school age children in non-western countries the linkage pattern is same as for western countries, indicating a relationship between harsher parental discipline and lower monitoring with environmental chaos. However research indicates an inconsistency regarding lower levels of hostility in more chaotic homes in non-western cultures than in western countries. Different explanations have been given regarding the relationship between environmental chaos and parent-child transactions in non-western cultures. Minturn and Lambert (1964) suggest that high-density households in non-western cultures use laissez faire policy as compared to nuclear ones. The lower level of hostility may be viewed as an index of lower parental involvement in chaotic homes. On the other hand according to Insel and Lindgren (1978) authoritarian parenting dominates in crowded homes and studies done in Egypt, Thailand, and India have supported the hypothesis (Wachs & Corapci, 2003). Although the results seem contradictory but evidence suggests that laissez faire permissiveness and authoritarian values co-exist in chaotic homes. Little evidence is available to explain the co-existence of two different parenting styles, however research has indicated low tolerance of parents toward child's behavior that disrupts family routines. To explain this Wachs and Corapci (2003) have hypothesized that in both cultures environmental chaos reduces the ability of parents /caregivers to monitor child's activities. They remain uninvolved, as long as children do not disturb their ongoing routine activities. This leads to an increased level of chaos at home. When children's activities start disturbing family functions parents/caregivers use overly punitive methods to restore order and to reduce chaos and stress.

Based on the above discussion it is evident that research has given contradictory results. In spite of the presence of moderators the association between

environmental chaos and developmental outcomes in both cultures are similar. This leads to the conclusion that the impact of chaos would be similar for non-western cultures. But the important question is how is it possible? This has been explained through a study done on different ethnic groups in United States. The ethnic groups were found to have different threshold for perceiving their homes as crowded. But according to the results higher household density was found to be related to high psychological distress among individuals of all ethnic groups, independent of their threshold /perception (Evans, Lepore, & Allen, 2000). Another possibility of the consistency of results in both cultures might be attributed to the same underlying processes through which environmental chaos affects child development. Environmental chaos not only inhibits children's capacity to pay attention to developmentally facilitative environmental cues but also reduces their discriminative ability to differentiate between meaningful and meaningless environmental cues (Deutsch, 1964; Evans & Cohen, 1987). Secondly it acts to inhibit the developmentally facilitative child-parent transactions that ultimately result in adverse developmental outcomes (Wachs, 1989).

Findings from various studies indicate similar patterns of association between environmental chaos, increased risk of adverse developmental out comes, and developmentally inhibiting parent-child transactions across different cultures. Moreover evidence does not show cultural moderation as predicted by ecological theory. This paradox actually opens up new avenues for further research. The requirement is to find out how cultures differ in perceiving, controlling, and coping environmental chaos and to find out the underlying processes that inhibit cultural moderation.

Rationale of the Study

The considerable discussion of negative impact of environmental chaos on child development including differential findings across cultures leads to a conclusion that very limited literature regarding impact of environmental chaos on child development is available from non-western societies; Pakistan being one of them. Therefore, the primary goal of this study was to extend the literature by determining if findings from developed western countries documenting that home chaos functions as a risk factor for children could be replicated in a non-western developing country?

Pakistan is a developing country. Various factors including the internal political disputes, low foreign investments, and a costly defense budget have made it difficult to achieve economic stability. The macro level economic constraints have also affected the life of common people in Pakistani society at a micro level. Although there is a little improvement, which has decreased the poverty level by 10% since 2001, still the population below poverty line is 24% (The World Fact Book, 2007).

Pakistan is a highly populated country with a growth rate of 2.09%. Increase in population has ultimately resulted in high-density households and urbanization. The urbanization rate is increasing reaching from 17.8% in 1951 to 32.52% in1998 that is relatively high. The unemployment rate in Pakistan is 19.68% (1998-2001 census) and the average household size is 6.8. Similarly the literacy rate is not increasing particularly in female population. All these factors may lead to economic imbalance not only at a macro level but also at micro level. Low literacy rate, urbanization and lack of resources might be considered to have resulted in more

crowded homes, little approach to health facilities, parents' inability to provide good environment and education to their children, and high level of noise in big cities.

In Pakistan little work has been done to investigate the effects of home environment on child development (Quaid, Khan, Anwar, & Mateen, 2001). However available evidence suggests that families that encourage verbal and emotional responsivity and provide growth-fostering materials have good emotional climate (Pervez & Anila, 1994; Shah, 1993; Malik, 2003; Bhogle, 2001). A similar research in India reported that greater family conflicts and early independence might increase type A behavior pattern in adolescents (Tung, 2003).

Keeping in mind the present conditions of Pakistan the researcher was interested in investigating the presence of home chaos in the families belonging to urban areas. Absence of literature regarding home chaos and its impact on child development in Pakistani culture highlighted the need to explore the area.

Literature has suggested contrasting results regarding the relationship between environmental chaos socioeconomic status of the families (Evans et al., 2005; Petrill et al., 2004). In order to explore it indigenously the present research was conducted to observe the relationship between environmental chaos, child's cognitive ability and socioemotional adjustment keeping in perspective their different socio-economic settings. Demographic variables such as income level of the family, parents' education, age of both parents and children were also studied to get the whole picture of the patterns of relationship between home chaos and child's adjustment. Research has also indicated that mother's education works as an important buffering factor in overcrowded homes (Shapiro, 1974; Von der Lippe, 1999). Based on the observation about low literacy rate of females in Pakistan researcher was also interested to explore

the relationship between mothers' education and home chaos along with other variables.

Gender difference among children regarding the adverse impact of home chaos was another important factor taken into consideration in the present research.

Briefly stated, the aim of the researcher was to take the initial step in exploring the culture specific patterns regarding the impact of environmental chaos upon children's adjustment and cognitive ability. This is done with the hope that it would contribute significantly towards understanding the concept of environmental chaos and the imprints that it may have on human personalities.

METHOD

Chapter II

METHOD

Objectives

The following objectives were formulated before conducting the study:

1. To study relationship between home chaos and cognitive ability of school children.
2. To study the relationship between home chaos and socioemotional adjustment of school children.
3. To investigate whether children from high chaotic and low chaotic families differ in their academic achievement.
4. To study gender differences in exhibiting behavioral problems among the children from chaotic families.

Hypotheses

The following hypotheses were formulated.

1. Home chaos will be associated with poor cognitive ability.
2. Elevated levels of home chaos will be associated with elevated levels of externalizing problems (hyperactivity, aggression, and conduct problems)
3. Elevated levels of home chaos will be associated with elevated levels of internalizing problems (anxiety, depression, and somatization).

4. High level of home chaos will be associated with low levels of adaptive skills (adaptability, social skills, leadership, activities of daily living, study skills functional communication) among school children.
5. High levels of home chaos will be associated with more school problems (attention and learning difficulties) and low academic achievement among children.
6. Boys will exhibit more behavioral problems as compared to girls belonging to chaotic families.
7. Home chaos will be a significant predictor of children's cognitive ability and socioemotional adjustment.

Operational Definitions of the Variables

Home Chaos

Home chaos was measured through a 15 items Confusion, Hubbub, and Order Scale (CHAOS; Matheny, Wachs, Ludwig, & Phillips, 1995) with true false format. The total score ranges from 0-15 and is derived by simply summing up the responses. High score shows high level of home chaos and vice versa. Furthermore detailed semi-structured interviews were conducted with mothers to assess various dimensions of home environment.

Cognitive Ability

The Ravens Standard Progressive Matrices (SPM- Ravens, Court, & Ravens, 1978) is a standard non-verbal test of intelligence that is designed to measure reasoning ability through organizing visual symbolic information into meaningful

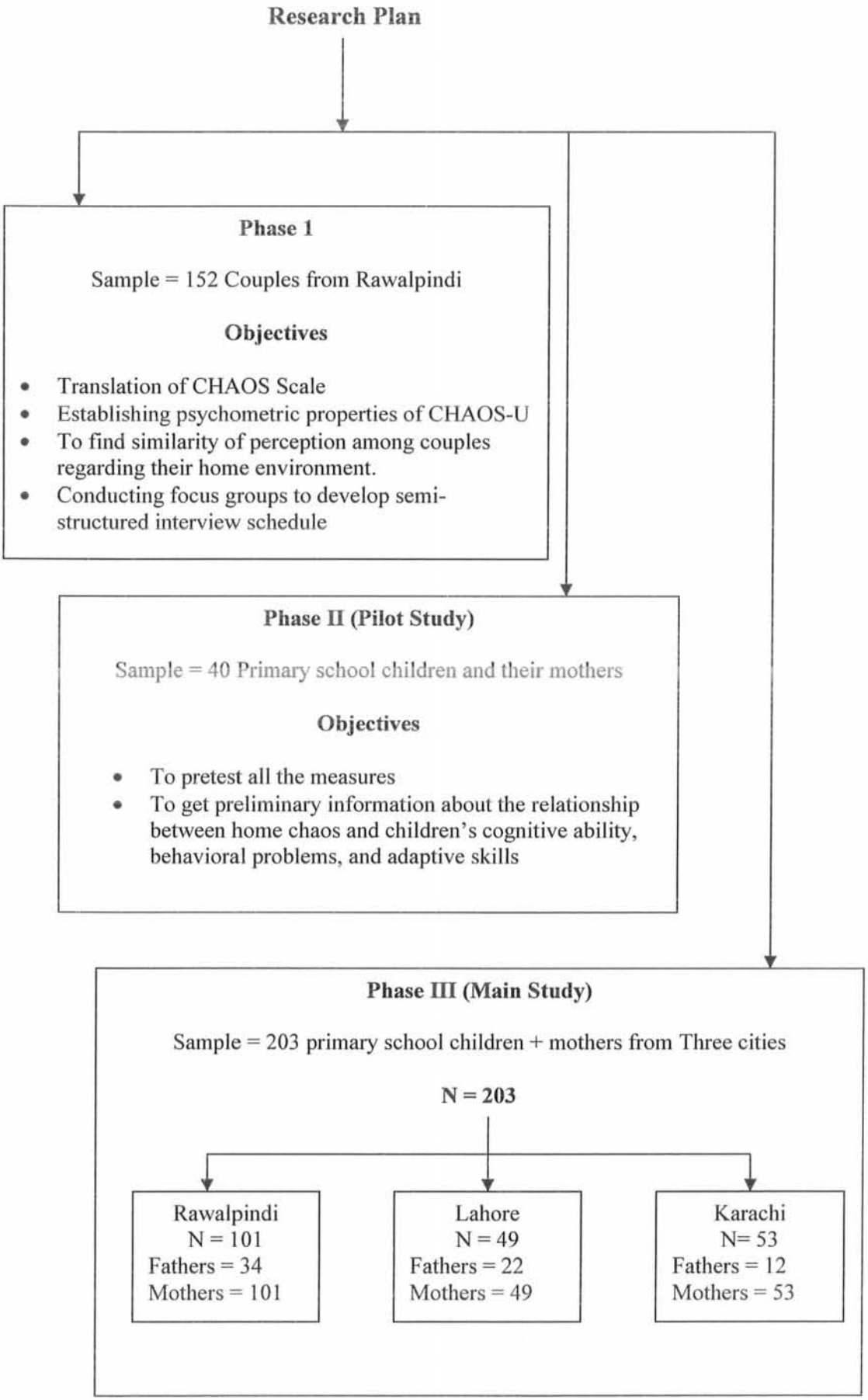
wholes and various aspects of cognitive ability (Flouri, Hickey, Mavroveli, & Hurry, 2010; Munaf, Ghaus-ur-Rehman, 1996; Rafnsson, Deary, Smith, Whiteman, Rumley, Lowe, & Fowkes, 2007; Valencia, 1979; Vanderpool, & Catano, 2008). It is consisted of 60 problems divided into five sets. The total score ranges from 0-60 and are converted into percentiles. High score indicates high cognitive ability and vice versa.

Socioemotional Adjustment

Socioemotional adjustment of school children was measured through Behavioral Assessment System for Children or BASC-2 (Reynolds & Kamphaus, 2004). Teacher Rating Scale (TRS) and Parent Rating Scale (PRS) were used. TRS assess Externalizing problems, Internalizing Problems, School problems, and Adaptive Skills. PRS includes all the TRS scales except School Problems and includes a dimension 'activities of daily living' in subscale of Adaptive Skills that the TRS does not measure (Reynolds & Kamphaus, 2004). High scores on Clinical Scales (Externalizing and Internalizing problems) and low scores on Adaptive Scale was taken as an indicator of low socioemotional adjustment of children.

Research Plan

Correlational Research Design was used to assess the above mentioned variables. The study was conducted in three phases, each having an independent sample and research objectives.


Research Plan
Phase 1
Sample = 152 Couples from Rawalpindi
Objectives
Translation of CHAOS Scale
Establishing psychometric properties of CHAOS-U
To find similarity of perception among couples regarding their home environment.
Conducting focus groups to develop semi-structured interview schedule
Phase II (Pilot Study)
Sample = 40 Primary school children and their mothers
Objectives
To pretest all the measures
To get preliminary information about the relationship between home chaos and children's cognitive ability, behavioral problems, and adaptive skills
Phase III (Main Study)
Sample = 203 primary school children + mothers from Three cities
N = 203
Rawalpindi
N = 101
Fathers = 34
Mothers = 101
Lahore
N = 49
Fathers = 22
Mothers = 49
Karachi
N= 53
Fathers = 12
Mothers = 53

Measures

The following measures were used in all the three phases of the study.

1. Confusion, Hubbub, and Order Scale-CHAOS

CHAOS scale (Matheny, Wachs, Ludwig, & Phillips, 1995) was used with mothers and fathers (available at the time of the study) to assess the level of chaos at home. It is 15-items forced choice scale with true false format i.e. "there is very little commotion in our home", "we almost always seem to be rushed". It was designed to measure confusion, disorganization, and noise in home environment (see Annex A). To offset response set seven items related to the organization of home were written to be reversed coded. A single score is derived from the questionnaire by simple sum of responses. The total score indicates the extent of home chaos, with higher score reflecting more disorganization, confusion, and noisy home environment. Satisfactory reliability and validity have been reported (Matheny et al., 1995). Validity has been reported in terms of correlation with the observed measures of home disorganization and parenting. Cronbach's alpha for 15 items is being reported 0.79 and 12-months test-retest stability for total CHAOS score is $r = 0.74$.

For the present research the CHAOS scale was translated and its psychometric properties were established (details will be provided in procedure of the phase I of the study).

2. Interview

An in depth semi-structured interviews were conducted with mothers to get the detailed descriptions of their home environment. Before deciding about the

structure of the interview, four focus groups were conducted to formulate the general categories related to home chaos (see Annex B). Based on the focus group discussions and the conclusions drawn from them, the researcher formulated five categories for the interview. These were 'communication pattern of the family', 'routines and regularities regarding meal timings, study timings/pattern of the children, and other recreational activities', 'situational traffic pattern', 'disorganization within the house regarding the household items, and 'relaxation time available to mother'. Semi structured questions were constructed on these categories (see Annex C). Content analysis was done to analyze the interviews.

3. Ravens Standard Progressive Matrices-SPM

Ravens Standard Progressive Matrices or SPM (Ravens, Court, & Ravens, 1978) was used to assess the non-verbal cognitive ability of children. It was designed to measure wide range of mental ability e.g. person's capacity to think clearly when allowed to work steadily at his/her own speed from the beginning to the end without interruptions, persons capacity at the time of testing to apprehend meaning less figures, to see the relation between them, conceive the nature of the figure, completing each system of relation presented and by so doing develop a systematic method of reasoning, along with the intellectual activity of the person. It was constructed to use equally with persons of all ages, whatever the education, nationality, and physical condition. It can be given either as an individual, a self administered, or as a group test. It is consisted of 60 problems divided in to five sets of 12 (A, B, C, D & E). Each set begins with easy problem and ends with difficult ones. A person's score on the scale is the total number of problems he/she solves correctly. The total score ranges from 0-60 and provides an index of his/her

intellectual capacity, with little influences from the culture and environment. Percentile norms are also given in the manual. In the present study it was administered in groups of 10-20 children in one setting. The test was administered in school premises.

Reliability and validity have also been reported from different studies. Internal consistency ranges from 0.83 with young adults up to 0.95 for subject aged 56-65 years (Bruke, 1958), and test-retest reliability is 0.85 (Laroche as cited in Raven, Court, & Raven, 1978). Burke (1958) has reviewed and reported satisfactory Concurrent validity with Binet and Wechsler scales for English speaking children and adolescents from +0.54 to +0.86 (Ravens, 1948; Banks & Sinha, 1951; Moran, 1972). Predictive validity with scholastic achievement as external criteria with English and non-English speaking children and adolescent has been reported as ranged up to +0.70 (Elley & MacArthur, 1962; Rao, 1963; Giles, 1964; Irvine, 1966). Content validity was assessed as biserial correlation between SPM items and the combined results of three IQ tests with children and is being reported as +0.45 and for different items it ranges from +0.2 to +0.8 (Banks & Sinha, 1951). Factorial construct validity was measured through factorial analysis. Investigation with British children revealed high loading of up to +0.83 on 'g' (Emmett, 1949; Gittins, 1952; Nisbet, 1953). Cross-cultural studies confirm the high 'g' saturation of SPM (Keehn & Prothro, 1955; Elley & MacArthur, 1962).

4. Behavioral Assessment System for Children 2nd Edition-BASC-2

Behavioral Assessment System for Children or BASC-2 (Reynolds & Kamphaus, 2004) was used to assess the socioemotional adjustment of school children. BASC-2 measures various aspects of behavior and personality including

positive (adaptive) as well as negative (clinical dimension). It also assesses behavioral and emotional problems and various disorders. It can be used with children and adults having age range from 2-25 years. It has five components:

- Two rating scales for different age groups, one for teachers (Teachers Rating Scale, TRS) and one for parents (Parent Rating Scale, PRS).
- Self-report scale (SRP).
- A Structural Developmental History (SDH) form.
- A form for classifying directly observed classroom behavior (Student Observation System, or SOS).

In the present research Parents Rating Scale for age group 6-11 years, and Teachers Rating Scale for age group 6-11 years was used.

Teachers Rating Scale (TRS)

TRS form (6-11years) was given to teachers to rate the children. It is designed to measure both positive and negative aspects of children's personality in school setting. It has both Clinical and Adaptive Scales. It consists of 139 statements. The form contains descriptions of behavior with four point scale (from Never to Almost always) on which the respondent rates the child i.e. complains about health, says, 'I hate my self'. TRS assess Externalizing Problems Composite (hyperactivity, aggression, and conduct problems), Internalizing Problems Composite (anxiety, depression, and somatization), School Problems (attention problems and learning problems), and Adaptive Skills Composite (adaptability, social skills, leadership, study skills, and functional communication).TRS also provides Behavioral Symptoms Index-BSI (hyperactivity, aggression, depression, atypicality, withdrawal, and

attention problems) which assesses the overall level of problem behaviors (see Annex F). Range of maximum score varies for each scale (see annex I). High score on Clinical and low score on Adaptive Scales indicates low socioemotional adjustment; where as low scores on Clinical Scales and high scores on Adaptive scales indicates high socioemotional adjustment.

Two types of normative scores, T scores and percentiles are also given in the manual. T scores indicate the distance of scores from the norm-group mean and they are standard scores with a mean of 50 and standard deviation of 10. Classification of T score of scales and composite scores taken from the manual (Reynolds & Kamphaus, 2004) is given in annexure I.

F-Index is also provided on TRS and PRS forms to measure the respondent's tendency to be excessively negative about the child's behavior. BASC-2 offers Clinical and General norms samples. Combined-sex and separate-sex norms are also available for each norm sample.

Satisfactory reliability and validity measures have been reported. Internal consistency for composite scales are high: in the middle 0.90s for BSI and for Externalizing Problems composite, in the low to middle 0.90s for the School Problems composite and Adaptive Skills composites, and in the high 0.80s to low 0.90s for the Internalizing Problems composite. Test –retest reliabilities for the composite scales are in the middle 0.80s to the low 0.90s except for Internalizing Problems on the adolescent level (0.78). Interrater reliability for the period ranges from 0-62 days has been reported as 0.65, 0.56, and 0.53 for the preschool, child, and adolescent levels, respectively. For Validity measures see manual (Reynolds & Kamphaus, 2004).

Parents Rating Scale (PRS)

PRS form (6-11years) was given to parents. It has 160 statements. PRS measures child's behavioral problems and adaptive skills in community and home settings. It uses the same four-choice response format (from Never to Almost always) as the TRS and consists of descriptions of behaviors i.e. eats too much, makes friends easily. It assesses Externalizing Problems Composite (hyperactivity, aggression, and conduct problems), Internalizing Problems Composite (anxiety, depression, and somatization), Adaptive Skills Composite (adaptability, social skills, leadership, activities of daily living, and functional communication), and Behavioral Symptoms Index-BSI (hyperactivity, aggression, depression, atypicality, withdrawal, and attention problems) which assesses the overall level of problem behaviors (see Annex G). The same scoring format as of TRS forms was used for PRS forms.

Composite scores reliabilities are high: in the low to middle 0.90s for adaptive Skills and the Behavioral Symptoms Index, and in the middle 0.80 to middle 0.90 for Externalizing Problems and Internalizing Problems. Test-retest reliability for the period ranging from 9-70 days has been reported for PRS. Reliabilities for the composite scales are high, generally in the low 0.80s to the low0.90s except for Internalizing Problems at the child level (0.78). Interater correlations are lower than those obtained in the coefficient alpha and test-retest reliability studies. Median interater reliabilities are 0.74, 0.69, and 0.77 for the preschool, child, and adolescent, respectively. For the composites, interater reliabilities are similar across PRS levels, but the pattern of the correlations differ across levels, as for found for the test-retest reliabilities. Satisfactory validity measures have been reported in the manual (Reynolds & Kamphaus, 2004).

5. *Academic Achievement*

Academic achievement of the children was assessed through their academic results by analyzing the archival records from the school. The average of percentages of two consecutive examination passed by children was calculated to assess their academic achievement.

6. *Demographic Sheet to develop Socioeconomic index*

To develop socioeconomic index of the families included in the sample demographic sheet was constructed which included information about parent's occupation, education, their separate income and total income including any other source other than monthly salary, family system, family size, total number of individuals living in home, total number of living rooms available in their home, number of individuals living in one room, information about house such as rented or owned, number of individual earning for the family, and number of basic household appliances available (see Annex D). Based on this information a socioeconomic index was developed with the help of economic department of Quaid-e-Azam University, Islamabad, Pakistan. Index was calculated by putting the subjective weights to each category and than the series was normalized by 100 index. The index ranged from 1-100, where 1 represents the poorest and 100 represents the richest.

Phase-I

To meet the objectives (see page 52) phase I study followed three steps. As a first step of phase-I the translation of the CHAOS Scale (Matheny et al, 1995) was done. Permission was sought from Prof. Theodore D. Wachs (see Annex H). Translation was done according to the procedure given by Brislin (1976). A sample of 4 bilinguals (3male and 1 female) was selected. Among them two had masters and PhD degree in Urdu with good command in English language, and the other two had masters degree in English with good understanding of Urdu language. First of all, the English CHAOS Scale was given to two bilingual experts individually who were requested to translate the scale in Urdu. After getting back the translated versions committee approach was used to select the closest translation. The committee consisted of five judges, who had educational qualification ranged from masters in Psychology to PhD in social sciences. On the basis of their evaluation the best translation was selected. The selected translated Urdu version of CHAOS Scale was then back translated. For this purpose the Urdu translated CHAOS Scales was given to other two bilingual experts individually who were unfamiliar with the original CHAOS Scale. They were requested to translate the Urdu version into English again. Finally a committee of Psychologist that evaluated the Urdu translations again evaluated the two versions of CHAOS Scale, i.e. the original English CHAOS scale and the one which was back translated (from Urdu to English). On their recommendation the Urdu translation was finalized to be used for the research. No changes and adaptation of any item was recommended in the scale.

The psychometric properties of the CHOAS Scale-Urdu version were established. While doing that it was also intended to explore the relationship between

the couple's scores on the Chaos Scale to observe their perception regarding home chaos.

The third step was to conduct focus groups to understand and elicit individuals' understanding regarding home chaos and the factors leading to home chaos. Four focus groups were conducted to develop the interview schedule for the main study and to find out the indigenous meaning of home chaos. Each group had 4-6 participants. The group participants were members of a family. The researcher acted as moderator and presented a set of questions (see Annex B). The discussion was coded by the researcher on separate sheet. Five categories emerged including communication pattern of the family, routines and regularities regarding meal timings, study timings of the children and other recreational activities of the family, situational traffic pattern, disorganization in home, and relaxation timings available to mother. Results indicated that nearly all members had an experience of chaos. They used Urdu word *Badintazami* to explain chaos. They regarded home chaos as a condition characterized by noise, disturbance, disorganization, having many visitors, and lack of peace. On the basis of these focus groups the categories for the interview were formed (see Annex C).

Sample

Sample of 152 couples was taken from Rawalpindi, Pakistan for the phase I. Their ages ranged from 20 to 60 years. Both working and non-working men and women were included. Their education level ranged from matric (10^{th} grade) to masters or equivalent.

Procedure

The 152 couples were contacted at their homes and CHAOS scale–Urdu version was given to them separately. They were requested to provide accurate information regarding their home environment. Demographic information about their age, education level, and occupational status was also collected.

Results

The total sample consisted of 152 couples. The mean age of the wives and husbands taking part in the study was 36.80 (*SD* = 9.53), and 42.53 (*SD* = 10.13) respectively. Their education ranged from Matric (10^{th} Grade) to Masters or equivalent. On average the wives had gone through 12.70 years (*SD* = 2.25) and husbands 13.80 years (*SD* = 2.36) of formal education (see tables 1 & 2).

Table 1

Mean, Standard Deviation and Standard Error of Education Level (number of years) of Wives and Husbands (N = 152)

Education Level	*Min.*	*Max.*	*M*	*SD*	*SE*
Wives	10	16	12.70	2.25	0.18
Husbands	10	16	13.80	2.36	0.19

Table 2

Mean, Standard Deviation and Standard Error of the Couples' Age (N = 152)

Age	*Min.*	*Max.*	*M*	*SD*	*SE*
Wives	20	58	36.80	9.53	0.77
Husbands	22	60	42.05	10.13	0.82

The first step of analyses based on determining the reliability and internal consistency of the CHAOS scale. It was done by determining alpha coefficient and item total correlation separately for husbands and wives CHAOS scores. Further alpha reliability was also calculated for the combined sample of wives and husbands (see table 3, 4, 5).

Table 3

Alpha Coefficient of CHAOS Scale-Urdu Version (N = 152)

Scale	Number of Items	Alpha Coefficient
CHAOS scale(Wives)	15	.75
CHAOS scale (Husbands)	15	.78

Table 4

Alpha Coefficient of Combined CHAOS Scale Urdu-Version (N = 304)

Scale	Number of Items	Alpha Coefficient
CHAOS Scale (Urdu) (Wives and Husbands)	15	.77

Table 5

Item-Total Correlations of CHAOS Scale-Urdu Version (N = 152)

Items	*r* (CHAOS Score-Wives)	*r* (CHAOS Score-Husbands)
1	.524**	.59**
2	.548**	.61**
3	.486**	.40**
4	.564**	.65**
5	.440**	.51**
6	.368**	.58**
7	.474**	.53**
8	.616**	.59**
9	.489**	.51**
10	.605**	.54**
11	.344**	.32**
12	.492**	.55**
13	.159*	.29**
14	.589**	.48**
15	.448**	.48**

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

The results indicate that CHAOS Scale-Urdu Version is an internally consistent and reliable instrument for measuring home chaos in Pakistani culture.

It was also intended to find out the similarity between husbands' and wives' perception of home chaos. Pearson Product Moment Correlation and was found out to

be significant ($r = 0.68$, $p<.01$, $N = 152$). It reveals the similarity of perception among couples regarding their home environment.

The main objective of the phase-I study was to establish psychometric properties of the CHAOS Scale-Urdu Version and to find out the similarity of perception among couples regarding home chaos. The results indicated that the CHAOS scale has high internal consistency and is a reliable measure of home chaos in Pakistani culture (see tables 3, 4, 5). These findings support earlier studies which have shown the CHAOS scale as an economical measure of home disorganization and confusion (Dumas et al., 2005). The significant correlation between the CHAOS scores of husbands and wives reveals their similarity of perception regarding home environment as being chaotic or non chaotic. Focus groups were conducted to develop the semi-structured interview. As discussed earlier five categories emerged and interview schedule was developed along these categories.

Phase-II (Pilot Study)

In phase II a pilot study was conducted and the objective were to pre test all the measures of the study and to get preliminary information about the relationship between predictor and outcome variables.

Sample

Sample of 40 children and their mothers was taken for pilot study. Children were recruited from Federal Government School, Rawalpindi, Pakistan. Their age ranged from 8-11years (4^{th} and 6^{th} grade). They were sampled from families with no case of divorce or separation and having the range of total children from 2-7. In addition those families were selected who had the ability to read and understand both

Urdu and English language. There were 22 boys and 18 girls. The parents' age ranged from 22-60 years and education ranged from 12th grade to 16th or equivalent. The class teachers of the children who know them from the last one year were also contacted. The sample was taken from different socioeconomic classes (SES). The demographic information of the sample included children's age, mothers' age and education and family income.

Measures

The following measures were used in the pilot study. The detail of these measures is given on pages 53-59.

- Confusion, Hubbub, and Order Scale-Urdu (CHAOS scale-Matheny, Wachs, Ludwig, & Phillips, 1995)
- Interview.
- Behavioral Assessment System for Children 2nd edition-BASC-2 (Reynolds & Kamphaus, 2004).
    1. Teacher Rating Scale (TRS)
    2. Parent Rating Scale (PRS)
- Ravens Standard Progressive Matrices-SPM (Ravens, Court, & Ravens, 1978).
- Academic Achievement.

Procedure

The school authorities were contacted to get permission for the study. The acceptance letters were sent to parents through children with a form to collect basic information according to the criteria of sample selection (see Annex E). After receiving acceptance letters from the parents who agreed to take part in the study the

sample of 40 children was selected. The children were contacted at their school. They were tested on Ravens Standard Progressive Matrices in a group of 10-15 students. The children were seated in separate room. After giving instructions they were asked to complete the test. The same procedure was repeated with each group and uniformity of procedure was maintained. After the completion of test gifts were given to them as reinforcement. Teachers Rating Scale was given to the class teachers of the children to rate them on behavioral descriptions with four point scale. They were given instructions by the researcher and were requested to provide accurate ratings. Mothers of the children were contacted at their homes. They were briefed about the rationale of the study. Instructions were given to them. They were asked to complete CHAOS Scale-Urdu and Parent Rating Form and were requested to provide accurate information. After completing the scales they were interviewed by the researcher to get detailed information about their home environment. Researcher also recorded the interviews of mothers who permitted to do so. The whole procedure took approximately one hour with each mother. Academic results of two examinations of the children were collected from the school records. After collecting data results were analyzed. Both parents and teachers were asked about the workability and difficulty level of the CHAOS Scale and BASC-2 forms.

Results

Pilot study was done to assess the workability of measures and to find out the correlation between home chaos and cognitive ability, adaptive skills, and problem behaviors of children. The results are as follows.

The sample consisted of 18 girls and 22 boys. Their average age at the time of data collection was 10.35 years (SD = 0.80). The mothers taking part in the study had

an average age of 40.65 (*SD* = 5.19) and they had completed an average of 12.80 years (*SD* = 1.71) of education (see table 6 & 7).

Table 6

Mean, Standard Deviation, and Standard Error of Age of *Children and Mothers (N = 40)*

Age	*Min.*	*Max.*	*M*	*SD*	*SE*
Children	8	11	10.35	0.80	0.13
Mothers	30	53	40.65	5.19	0.82

Table 7

Mean, Standard Deviation, and Standard Error of Education level (no. of years) of *Mothers (N = 40)*

Education Level	*Min.*	*Max.*	*M*	*SD*	*SE*
Mothers	12	16	12.90	1.28	0.20

Both the measures (i.e. SPM and BASC-2) were found workable and reliable. Both parents and teachers were able to complete CHAOS scale-Urdu Version, Parent rating scale (PRS) and Teacher rating scale (TRS) of BASC-2 respectively. Cronbach Alpha reliability was found out for CHAOS scale-Urdu, PRS and TRS scales and their subscales (see table 8, 9 & 10).

Table 8

Alpha Coefficient of CHAOS Scale-Urdu Version (N = 40)

Scale	Number of Items	Alpha Coefficient
CHAOS scale-mothers	15	.76

Table 9

Alpha Coefficient of Parent Rating Scale (PRS) and its Subscales (N = 40)

Sub Scales PRS	No. of Items	Alpha Coefficient
Hyperactivity	10	.74
Aggression	11	.75
Conduct problems	9	.73
Anxiety	14	.76
Depression	14	.60
Somatization	12	.74
Atypicality	13	.76
Withdrawal	12	.68
Attention Problems	6	.63
Adaptability	8	.51
Social Skills	8	.70
Leadership	8	.51
Activities of Daily Living	8	.52
Functional Communication	12	.78
Total	160	.74

Table 10

Alpha Coefficient of Teacher Rating Scale (TRS) and its Subscales (N = 40)

Sub Scale TRS	No. of Items	Alpha Coefficient
Hyperactivity	11	.73
Aggression	10	.87
Conduct Problems	9	.85
Anxiety	7	.73
Depression	11	.63
Somatization	9	.69
Atypicality	10	.84
Withdrawal	8	.67
Attention Problems	7	.83
Learning Problems	8	.87
Adaptability	8	.72
Social Skills	8	.76
Leadership	6	.59
Study Skills	7	.86
Functional Communication	10	.64
Total	139	.85

The results indicate PRS and TRS as reliable rating scales to measure children's socioemotional adjustment.

Split half (odd and even method) and test retest reliability was computed for Ravens Standard Progressive Matrices (SPM). Retest was taken after one year with 20 available children and was conducted within same school setting (see table 11 & 12).

Table 11

Split Half Reliability of Ravens Standard Progressive Matrices-SPM (N = 40)

	Spearman-Brown Coefficient
SPM	.69

Table 12

Test-Retest Reliability of Ravens Standard Progressive Matrices-SPM (N = 20)

SPM	*M* (Age of children)	*M* (Score)	*SD*	Retest Reliability
SPM	10.60	27.15	8.63	0.67*
SPM Retest	11.60	32.90	8.16	

*$p < .01$

The results indicate SPM as a reliable measure of cognitive performance of school children in Pakistani culture.

Descriptive analysis of all the measures was done (see table 13).

Table 13

Descriptive data of all the Measures (N = 40)

Measures	*M*	*SD*	*SE*
CHAOS-U score (Mothers)	5.30	2.94	0.46
SPM	27.35	8.79	1.39
Externalizing problems (PRS)	26.20	13.11	2.07
Internalizing problems (PRS)	24.48	10.95	1.73
Behavioral Symptoms Index (PRS)	44.30	15.04	2.38
Adaptive Skills (PRS)	92.60	11.47	1.81
Externalizing problems (TRS)	18.53	13.81	2.18
Internalizing problems (TRS)	13.58	8.18	1.29
Behavioral Symptoms Index (TRS)	32.05	19.41	3.07
Adaptive Skills (TRS)	63.28	17.71	2.80
School Problems (TRS)	13.73	9.28	1.47

To determine relationship between predictors and outcome measures Person Product Moment correlation was applied between chaos score and children's SPM scores, BASC-2 subscale scores and composite scores. Results indicated non significant correlation between home chaos and cognitive performance of children ($r = .16$, $p > .05$). However correlation between home chaos and children's behavioral problems were significantly positive and were in expected direction (see tables 14 & 15).

Table 14

Correlation between Home Chaos and Children's Composite Scores on Subscales of PRS and TRS (N = 40)

Subscales	Home chaos	
	PRS	TRS
Externalizing problems	.39*	.33**
Internalizing problems	.29	.56**
Behavioral Symptoms Index	.47**	.39*
Adaptive Skills	-.31	-.42**
School Problems	-	-.41**

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

Table 15

Correlations between Home Chaos and Children's Scores on Subscales of PRS and TRS (N = 40)

Subscales	Home chaos	
	PRS	TRS
Hyperactivity	.29	.19
Aggression	.36*	.32*
Conduct Problems	.44**	.42**
Anxiety	.01	.49**
Depression	.34*	.37*
Somatization	.43**	.51*
Atypicality	.19	.08

Continued...

Subscales	Home chaos	
	PRS	TRS
Withdrawal	.05	.09
Attention problems	.33*	.37*
Adaptability	-.03	-.29
Social Skills	-.33*	-.32*
Leadership	-.08	-.38*
Activities of daily living	-.21	-
Functional communication	-.24	-.18
Learning problems	-	.39*
Study skills	-	-.41**

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

Results indicate significant positive correlation between home chaos and children's problem behaviors and school problems as perceived by their parents and teachers. On adaptive skills results show significant negative correlation between home chaos and children's scores on its various subscales (see table 14 & 15). The overall pattern of results supports the presence of links between environmental chaos and children's behavioral and adaptive problems.

Interview

Interviews were conducted with mothers to pre test the interview schedule and to get detailed information about their home environment. Content analysis was carried out to analyze the interview responses. The interview schedule had five

categories i.e. communication pattern of the family, routines and regularities regarding meal timings, study timings of the children and other recreational activities of the family, situational traffic pattern, disorganization in home, and relaxation timings available to mothers. Each category had different number of questions. To analyze the responses the theme of each category of the interview schedule was analyzed. Categories in which each question indicated difficulties and problems were considered as *problem categories*. The sample was divided in two groups, high and low chaotic families by median split (*Mdn* = 5). Those interviews in which mothers reported problems on each question of the different categories were separated. The percentages of families on different problem categories were computed for both high and low chaotic groups. Results indicated that percentage of families reported more problem categories is high in high chaotic group as compared to low chaotic group indicating that chaotic families experience frequent problems in various aspects of their daily living (see table 16). They reported multiple problems in their communication patterns, routines, regularities, and report more disorganization in their daily routines. Some of the mothers stated that their husbands do not give attention and time to their children, are short tempered, and often speak loudly. They explained their routines as busy and tiring having very little time to rest and relax. Frequent visits from relatives and friends were also considered as an important reason of disturbing their budget and routines.

Table 16

Frequency and Percentages of Problem Categories Reported by High and Low Chaotic Families (N = 40)

Categories	High Chaotic families ($n = 16$)		Low Chaotic families ($n = 24$)	
	f	%	*f*	%
Communication Pattern	9	56.25	3	12.50
Routines/Regularities	9	56.25	6	25.00
Situational Traffic Pattern	8	50.00	4	16.67
Disorganization	10	62.50	5	20.83
Relaxation time available to mother	8	50.00	2	8.33

Pilot study was mainly done to find out the workability of the measures, interview schedule and also to have a glimpse of the relationship between home chaos and children's cognitive ability, externalizing problems, internalizing problems and adaptive skills. All the measures were found to be reliable in Pakistani culture (see tables 8, 9, 10, 11, & 12). It also helped the researcher to refine the interview schedule and have practice run for eliciting information required for the research objectives. The same format of the interview was retained for the main study.

Phase-III (Main Study)

In the third phase of the research, the main study was conducted. Data was collected from three large cities of Pakistan; Rawalpindi, Lahore, and Karachi. As

being the home town of the researcher, the major part of the data (N=101) was collected from Rawalpindi.

Sample

Purposive sampling technique was used. 203 primary school children and their parents were chosen for the research. The children were recruited from Federal Government Schools of three cities of Pakistan, including Rawalpindi (N = 101), Lahore (N = 49), and Karachi (N = 53). The reason of choosing Federal Govt. Schools for the research was that they offer similar curriculum and their basic teaching strategies are the same all over Pakistan. Children's age ranged from 8-11 years (4^{th}-6^{th} Grade). Care was taken to choose the sample from intact families (i.e., with no case of divorce or separation) with the number of children ranging from 2-7. In addition to that, only those families were selected who had an ability to read and comprehend both Urdu and English language with minimum education up to 12^{th} grade. There were 91 Boys and 112 Girls in the sample. The parents' age ranged from 22-60 years and education ranged from 12^{th} grade to 16^{th} or equivalent. The average age of the children was 10.22 years (SD = 0.83). The average age of the mothers on the time of testing was 37.09 years (SD = 5.31) and they had completed an average of 13.71 years of education (SD = 1.30). The average age of fathers on the time of testing was 42.63 years (SD = 4.77), and they had completed an average of 13.32 years of education (SD = 1.45). The class teachers of the children who know them from the last one year were also contacted. The sample was taken from different socioeconomic classes (SES). The average income of the families was between 8000 - 15,000 thousand per month. The demographic information of the sample was

collected through demographic sheet (for detail see page 60) that was also used to develop socioeconomic index of the families.

Measures

Same measures were used in the main study, the details of which have been given on page 53. A **Demographic sheet** was added in the main study to get detailed information to form socioeconomic status index.

- Demographic Sheet

Procedure

Data collection was started from Rawalpindi city. The authorities that run all the Federal Government (F.G.) Schools were contacted to get permission (see Annex K). After having their permission, three individual F.G. schools were approached. A meeting with the school principles was arranged in each school and the research purpose was explained to them. Parents of 8 to 11 year old children (from 4th -6th Grades) were approached indirectly through their children. A consent form along with a questionnaire aimed at collecting basic information according to the sampling criteria was attached with the letter (see Annex E). Parents were requested to fill that form if they agreed to take part in the research study along with their children. 101 out of 300 parents (33.6%) contacted in Rawalpindi agreed to participate and met the study criteria; the corresponding number for Lahore and Karachi were 49 out of 200 (24.5%) and 53 out of 180 (29.4%) respectively. Parents who agreed to participate and met the criteria were contacted individually by telephone to confirm their participation.

As a first step the Raven's Standard Progressive Matrices (SPM) was administered in groups of 10-20 children in their school setting. After being seated in

a separate room the instructions were delivered. Children were told to take as much time as they needed to complete the test. On average the children took one hour to complete it. After the completion of the test the children were given small gifts, and were thanked for their participation. The same procedure was repeated with all the children in each school.

The academic record of the two consecutive examinations of children was also collected from the school examination center. The class teachers of the children who knew them for the last one year were also contacted and included in the research. They were given instructions and were provided with Teacher Rating Scale. They were requested to provide accurate ratings of the children's behavior as they have observed over the year.

The mothers of the children were contacted at their homes. They were briefed about the rationale of the study. They were first given the demographic sheet to provide detailed information. Further, they were given instructions to fill the CHAOS Scale-Urdu version and Parent Rating Scale. After the completion of all the scales they were interviewed by the researcher. The interviews of those who allowed to tape record it, were recorded on the tape recorder. The responses of the rest were recorded on the interview forms. The whole procedure took approximately one and a half hour with each mother. The fathers who were available willing were also contacted. They were given CHAOS Scale-Urdu version and were requested to fill it.

After getting the desired data from Rawalpindi, the researcher traveled to Lahore and Karachi respectively. The same procedure was repeated in both of these cities. From Lahore the sample of 49 children and their families, and from Karachi 52 children and their families, was taken according to the sampling criteria.

RESULTS

Chapter III

RESULTS

The present study was conducted to study the relationship between home chaos and children's cognitive ability and their socioemotional adjustment. The total sample consisted of 203 school children with the age range of 8-11 years (4^{th} & 6^{th} Grade) and their mothers. 68 fathers who could be approached at the time of study were also included (see page 52 for detail). Among 203 families 151 were nuclear and 52 were living with their extended families. The data was collected from three cities Rawalpindi, Lahore and Karachi. The means and standard deviations of children's and their parents' age and parents' educations are given in tables 17 and 18. One-way and two way ANOVA along with *t*-statistics, and regression analysis were used to test the hypotheses.

Table 17

Mean, Standard Deviation, and Standard Error of Age (in years) of Mothers, Fathers, and Children (N = 203)

Age	*Min.*	*Max.*	*M*	*SD*	*SE*
Mothers	26	53	37.09	5.31	0.37
Fathers	30	57	42.63	4.77	0.33
Children	8	11	10.22	0.83	0.06

Table 18

Mean, Standard Deviation and Standard Error of Education Level (no. of years) of Mother and Fathers (N = 203)

Education Level	*Min.*	*Max.*	*M*	*SD*	*SE*
Mothers	12	16	13.71	1.30	0.09
Fathers	12	16	13.22	1.45	0.10

At the first step reliability analysis of all the measures was done. Alpha coefficient and item total correlations were calculated for CHAOS Scale-Urdu Version and were found out to be satisfactory ($\alpha = .77$). The alpha reliability of the CHAOS scale given to fathers ($N = 66$) was .69. The reliability analysis of combined scale of 66 couples was also done and was found to be .70. Reliability analysis for Teachers Rating Scale (TRS) and Parents Rating Scale (PRS) of BASC-2 was also done and was found to be satisfactory for both TRS ($\alpha = .77$) and PRS ($\alpha = 0.85$) and their subscales ranging from .56 to .78 for PRS subscales and from .58 to .86 for TRS subscales. For Ravens Standard Progressive Matrices (SPM) test-retest reliability and Split- half reliability were calculated. Test-retest reliability was calculated with 12 months interval. From the total sample of 203 children 53 (boys = 21, Girls = 32) were contacted again in their school in Rawalpindi for retesting. Same procedure was applied as in the pilot study. Both test-retest ($r = .77$, $p<.01$) and split half reliability (Spearman-Brown Coefficient = .79) were found to be satisfactory (for tables see annexure J).

Descriptive data of all the measures is given in table 19.As preliminary analysis correlations were calculated between CHAOS score and children's score on

BASC-2 scales and SPM to test the hypotheses of relationship between home chaos and children's cognitive ability and socioemotional adjustment (see table 20).

Table 19

Mean, Standard Deviation, and Standard Error of Home Chaos and Children's Scores on All the Measures (N = 203)

Measures	*M*	*SD*	*SE*
CHAOS Scale	3.97	3.04	0.21
Cognitive ability Score(SPM)	26.77	11.44	0.80
Externalizing problem(PRS)	21.25	12.69	0.89
Internalizing problems(PRS)	24.86	11.17	0.78
Behavioral symptoms index (PRS)	35.70	18.03	1.27
Adaptive Skills (PRS)	91.69	13.82	0.97
Externalizing problem(TRS)	18.42	12.83	0.97
Internalizing problems(TRS)	14.56	8.60	0.60
Behavioral symptoms index (TRS)	39.85	18.75	1.32
Adaptive Skills (TRS)	65.01	18.34	1.29
School Problems(TRS)	14.53	8.27	0.58

Table 20

Correlations between Home Chaos and Children's Behavioral Problems and Adaptive Skills (N = 203)

	Home Chaos
Cognitive ability Score(SPM)	-.04
Externalizing problem(PRS)	.54*
Internalizing problems(PRS)	.52*
Behavioral symptoms index (PRS)	.59*
Adaptive Skills (PRS)	-.39*
Externalizing problem(TRS)	.30*
Internalizing problems(TRS)	.36*
Behavioral symptoms index (TRS)	.30*
Adaptive Skills (TRS)	-.23*
School Problems(TRS)	.25*

*$p<.01$

Results support the hypothesis of expected relationship between home chaos and children's socioemotional adjustment. It shows significant positive correlations between home chaos and children's behavioral problems, and a negative correlation between home chaos and adaptive skills both in home and school settings. However the correlation between home chaos and children's cognitive ability is insignificant though indicates a negative relationship.

Correlation between Parent and Teacher Ratings of children's behavioral problems was also calculated (see table 21).

Table 21

Correlations between Parent and Teacher Ratings of Children's Behavioral Problems (N = 203)

Subscales	*r*
Externalizing problem	.31**
Internalizing problems	.31**
Behavioral symptoms index	.35**
Adaptive Skills	.42**

***p<.01*

Results indicate significant positive correlations between parent and teacher ratings of children's behavioral problems on subscales of BASC-2 Scales (see table 21). It supports the presence of behavioral problems among children in both home and school settings.

One way ANOVA was applied to find out the differences between mothers having different educational level and their reported home chaos (see table 22). On the basis of the education of the sample three groups were formed: i) intermediate (12 years), ii) graduation (14 years), and iii) masters and equivalent (16 years). Results indicate non significant mean differences between three groups of education on home chaos. It shows that mother's education does not have a significant impact on household management.

Table 22

Means, Standard Deviations and F value of 3 Groups of Education of Mothers on CHAOS Scale-Urdu Version (N = 203)

	Education						
	12 years (*n* =59)		14 years (*n* =114)		16 years (*n* =30)		
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*
Home chaos	4.44	2.97	3.76	3.16	3.83	2.67	1.00

df= (2,200) p=n.s

To study the differences between family systems regarding home chaos t-test analysis was done (see table 23). Results indicate that extended families experience greater home chaos (M = 5.17, SE = .45) as compared to nuclear families (M = 3.56, SE = .23).

Table 23

t-test Analysis of Nuclear and Extended Families on their Scores on CHAOS Scale-Urdu Version (N=203)

	Family system				
	Nuclear (*n*=151)		Extended (*n*=52)		
	M	*SD*	*M*	*SD*	*t*
Home chaos	3.56	2.87	5.17	3.23	3.39*

*$p < .01$

To study the effect of home chaos on children's academic achievement t-test analysis was done. Percentages of two consecutive examinations were taken as

academic achievement of children. Two groups were formed. Children having academic percentage of 70% and above were grouped as high achievers and children having percentages 40% and below were grouped as low achievers (see table 24). Results by supporting the hypothesis indicate that children from families experiencing high home chaos show low academic achievement ($M = 4.90$, $SE = .53$) as compared to children from families having low home chaos ($M = 2.52$, $SE = .35$).

Table 24

t-test Analysis of High Academic Achievers and Low Academic Achievers on Home Chaos (N=84)

	Academic achievement				
	High achievers (70% and above) ($n = 44$)		Low achievers (40% and below) ($n = 40$)		
	M	*SD*	*M*	*SD*	*t*
Home chaos	2.52	2.31	4.90	3.34	3.82*

*$p < .001$

Hierarchical Multiple Regression Predicting Children's Cognitive Ability and Socioemotional Adjustment

In order to test whether home chaos was predictive of children's cognitive ability, behavioral problems and adaptive skills hierarchical multiple regression analysis was carried out including city(dummy coded), socioeconomic index, gender of children, home chaos and interaction term chaos×gender in the prediction of children's score of cognitive ability, behavioral problems, and adaptive skills. For both PRS and TRS the composite scores for behavioral problems (externalizing and internalizing problems, behavioral symptoms index) were computed by adding the scores of their subscales. Similarly for adaptive composite score the scores of its subscales were added. School problems composite score was calculated by adding the scores of its two subscales. The result does not support the hypothesis of chaos as being predictive of children's cognitive ability. However results support the hypothesis that home chaos is a significant predictor of children's socioemotional adjustment.

For running hierarchical multiple regression forced entry method was used. Each hierarchical multiple regression consisted of four steps. First city (dummy coded) and socioeconomic index were entered, in second step gender of the child, and in third step home chaos scores were entered. Home chaos scores were entered last to find out its unique contribution as a predictive of children's cognitive ability, behavioral problems and adaptive skills over and above place of living, socioeconomic status and gender. In fourth step the interaction term chaos×gender scores was entered. Hierarchical multiple regression analysis was conducted separately for children's score on cognitive ability and externalizing problems, internalizing problems, adaptive skills, and school problems on both Parent Rating

Scale (PRS) and Teacher Rating Scale (TRS). The same entry procedure of predictors was applied through out the analysis. The assumptions of independent error in regression (Durbin-Watson = 1.64) and no multicollinearity (VIF values are less than 10) were met for each regression analysis.

Table 25

Model Summary of Hierarchical Multiple Regression Predicting Children's Cognitive Ability (N = 203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.348	.121	.108	1.08	.121	.000
2[b]	.365	.133	.115	10.76	.012	.101
3[c]	.369	.136	.114	10.76	.003	.401
4[d]	.370	.137	.110	10.78	.001	.722

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

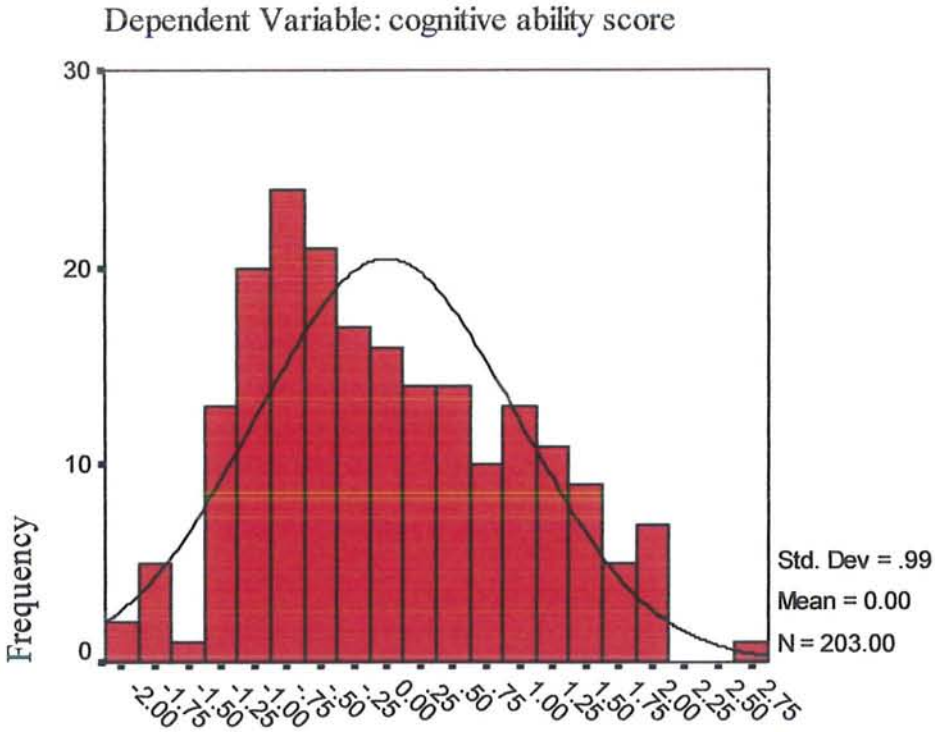
Table 26

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Cognitive Ability (N = 203)

	B	*SEB*	β	ΔR^2
Step 1				
Constant	28.72	2.27		.121***
Lahore	-7.99	1.94	-.30***	
Karachi	-6.35	1.98	-.24**	
Socioeconomic Status	.04	.04	.070	
Step 2				
Constant	29.84	2.36		.012
Lahore	-7.78	1.94	-.29***	
Karachi	-5.87	-1.99	-.23**	
Socioeconomic Status	.03	.37	.06	
Gender	-2.55	1.55	-.11	
Step3				
Constant	30.64	2.55		.003
Lahore	-7.86	1.94	-.29***	
Karachi	-5.96	1.99	-.23**	
Socioeconomic Status	.03	.04	.06	
Gender	-2.37	1.56	-.10	
CHAOS	-.21	.25	-.06	
Step4				
Constant	30.95	2.69		.001
Lahore	-7.88	1.95	-.28***	
Karachi	-5.98	2.00	.23**	
Socioeconomic Status	.033	.37	.06	
Gender	-3.09	2.57	.14	
CHAOS	-2.96	.35	.08	
Chaos×gender	.180	.50	.05	

***p<.01, ***p<.001*

To investigate whether home chaos was predictive of cognitive ability of children hierarchical multiple regression was carried out. The analysis generated four models (see tables 25 & 26). The results indicate model one (city and socioeconomic status as predictors) as significant in predicting cognitive ability in children however the preceding three models are not significant. In step three where chaos was added to find out its unique variance the Beta value remained insignificant [t (197) = -.84, p>.05]. It indicates home chaos as not providing significant contribution in predicting children's cognitive ability. Similarly the interaction term is also non-significant.



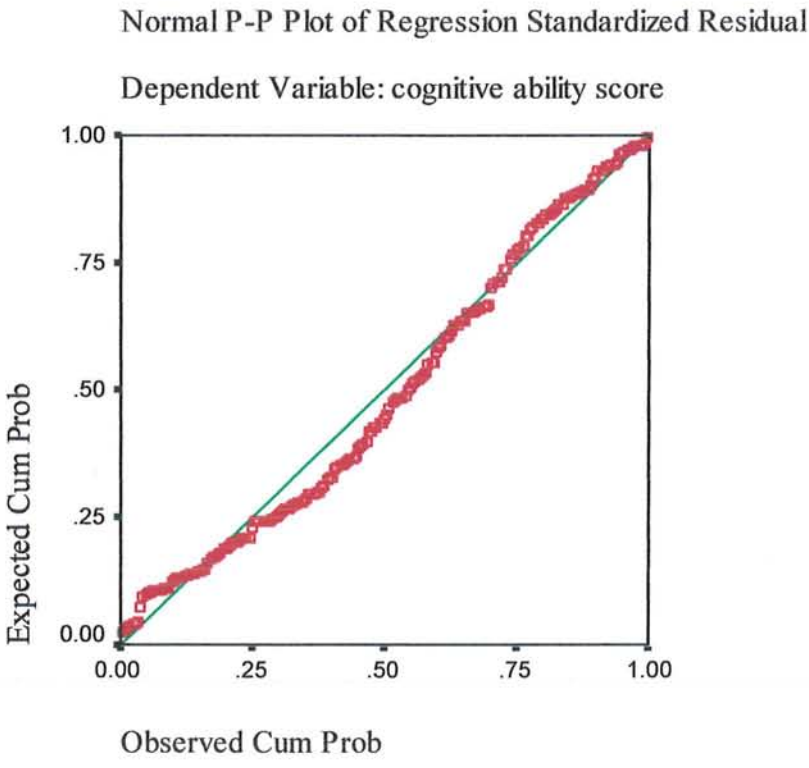


Figure 1: Histogram and normal probability plot showing distribution of data (scores on cognitive ability test) and residuals respectively.

Table 27

Model Summary of Hierarchical Multiple Regression Predicting Children's Externalizing Problems on PRS (N = 203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.195	.038	.024	12.54	.038	.052
2[b]	.355	.126	.109	11.98	.088	.000
3[c]	.615	.378	.362	10.13	.252	.000
4[d]	.620	.385	.366	10.10	.007	.138

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 28

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Externalizing Problems on PRS (N = 203)

	B	*SEB*	β	ΔR^2
Step 1				
Constant	21.89	2.64		.038
Lahore	-5.71	2.25	-.19**	
Karachi	-1.09	2.29	-.34	
Socioeconomic Status	.022	.04	.04	
Step 2				
Constant	18.48	2.63		.088***
Lahore	-6.36	2.16	-.22**	
Karachi	-2.57	2.22	-.08	
Socioeconomic Status	.033	.041	.06	
Gender	7.71	1.72	.30***	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	10.49	2.39		.252***
Lahore	-5.50	1.83	-.19**	
Karachi	-1.39	1.88	-.05	
Socioeconomic Status	.03	.04	.05	
Gender	5.96	1.47	.23***	
CHAOS	2.12	.24	.51***	
Step4				
Constant	11.70	2.52		.007
Lahore	-5.58	1.82	-.19**	
Karachi	-1.39	1.88	-.05	
Socioeconomic Status	.030	.035	.05	
Gender	3.11	2.41	.12	
CHAOS	1.79	.32	.43***	
Chaos×gender	.71	.47	.17	

***p<.01, ***p<.001*

To investigate whether home chaos was predictive of externalizing problems of children (reported by parents) hierarchical multiple regression was carried out. The results in tables 27 & 28 indicate home chaos [t (197) = 5.95, p<.001] and gender [t (197) = 3.17, p<.01] as significant predictors of children's externalizing problems as reported by parents. 37.8% variance in externalizing problems can be explained by home chaos. The significant R square change in model three (ΔR^2 = .252, p<.001) indicates home chaos as significantly contributing in the model over and above city, SES, and gender. The positive Beta value of gender indicates that boys were high on externalizing problems as compared to girls. The interaction term is not significant.

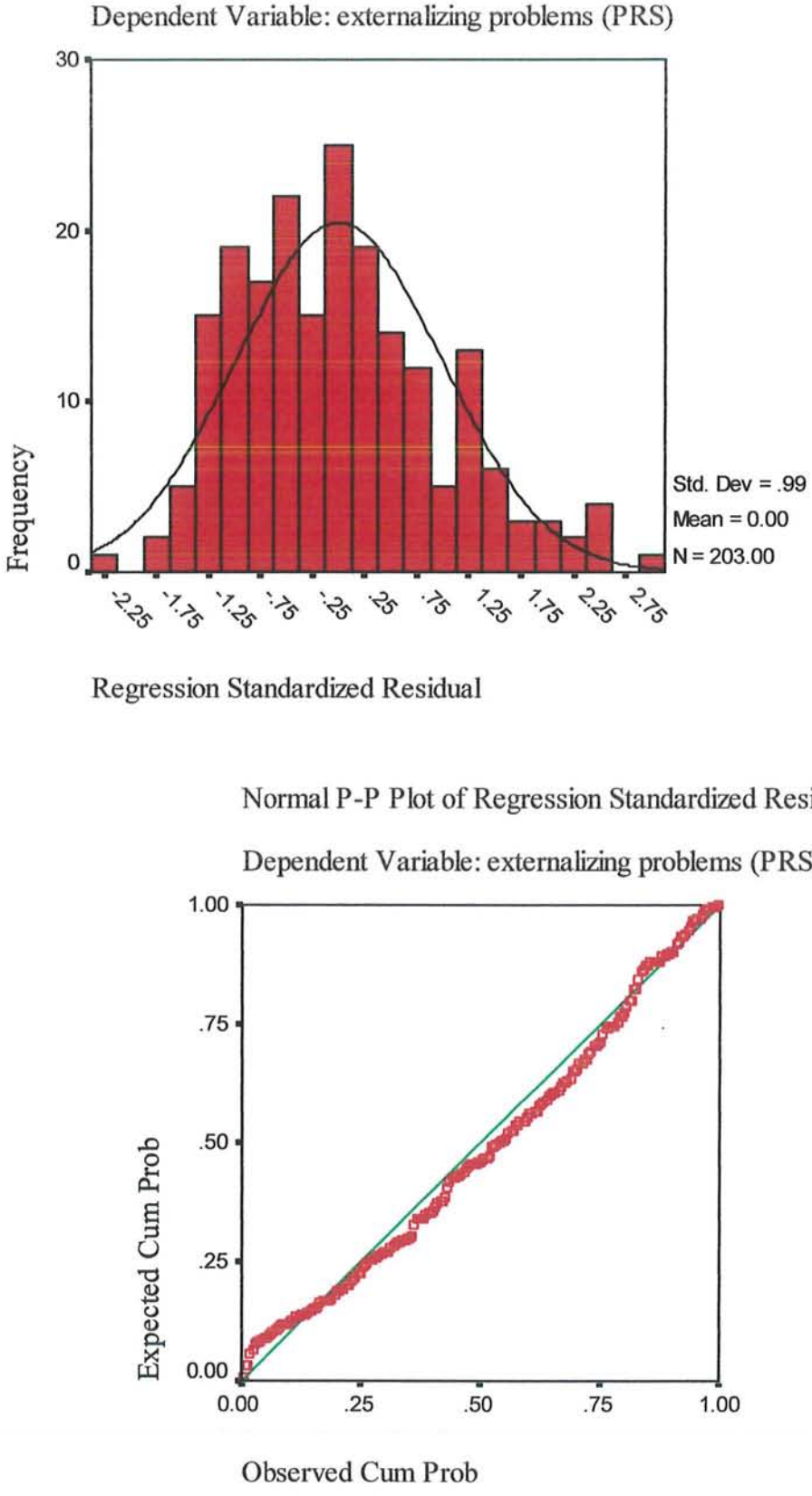


Figure 2: Histogram and normal probability plot showing distribution of data (scores on externalizing problems-PRS) and residuals respectively.

Table 29

Model Summary of Hierarchical Multiple Regression Predicting Children's Internalizing Problems on PRS (N = 203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.161	.026	.011	11.11	.026	.155
2[b]	.180	.033	.013	11.10	.007	.247
3[c]	.559	.313	.295	9.38	.280	.000
4[d]	.560	.313	.292	9.39	.001	.655

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 30

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Internalizing Problems on PRS (N = 203)

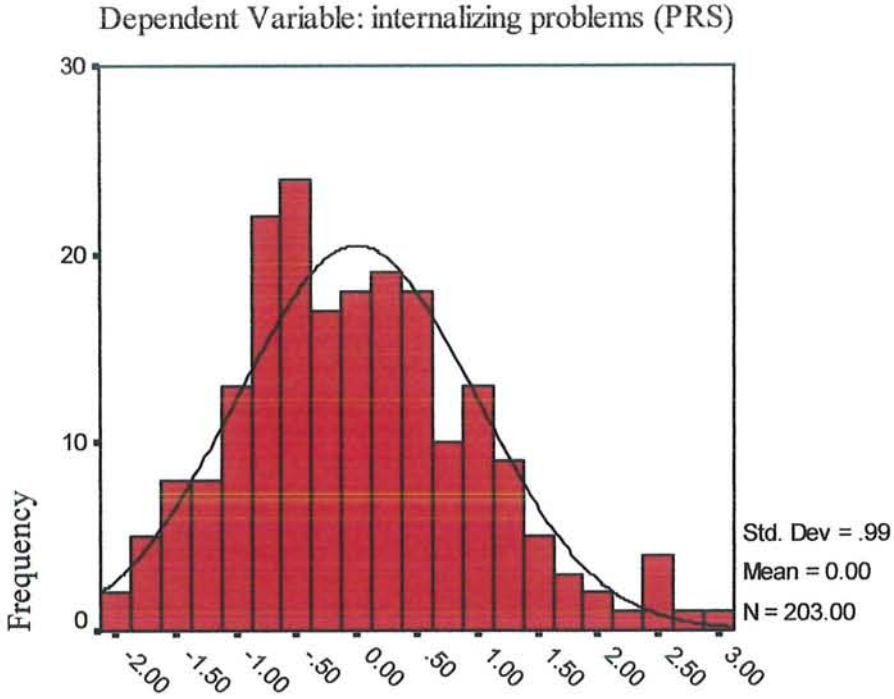
	B	*SEB*	β	ΔR^2
Step 1				
Constant	25.57	2.34		.026
Lahore	-3.63	1.99	-.14	
Karachi	-2.68	2.04	-.11	
Socioeconomic Status	.02	.04	.04	
Step 2				
Constant	26.38	2.44		.007
Lahore	-3.48	1.99	-.13	
Karachi	-2.33	2.07	-.09	
Socioeconomic Status	.02	.04	.03	
Gender	-1.85	1.59	-.08	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	18.97	2.22		.280***
Lahore	-2.68	1.69	-.10	
Karachi	-1.24	1.74	-.05	
Socioeconomic Status	.013	.03	.03	
Gender	-3.48	1.36	-.16*	
CHAOS	1.97	.22	.54***	
Step4				
Constant	19.30	2.35		.001
Lahore	-2.69	1.69	-.10	
Karachi	-1.24	1.75	-.05	
Socioeconomic Status	.013	.03	.03	
Gender	-4.28	2.24	-.19	
CHAOS	1.88	.30	.51***	
Chaos×gender	.19	.44	.05	

*$p<.05$, ***$p<.001$*

To investigate whether home chaos was predictive of internalizing problems of children (reported by parents) hierarchical multiple regression was done. The results are mentioned in tables 29 & 30. The significant *R* square change in model three (ΔR^2 = .280, $p<.001$) indicates home chaos [t (197) = 8.96, $p<.001$] as significantly predicting internalizing problems (explaining 31.3% variance) of children as reported by parents. The *R* square change of model two and four is not significant however gender is also predictive [t (197) = 2.56 $p<.05$] of internalizing problems in children in model three. The negative sign with gender indicates that girls were perceived as high on internalizing problems as compared to boys.



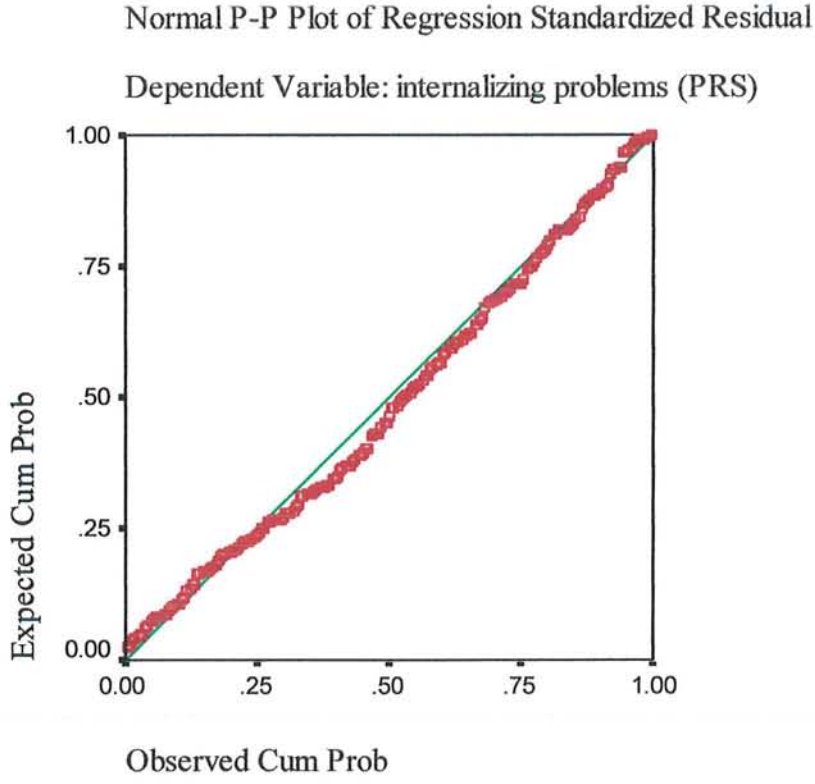


Figure 3: Histogram and normal probability plot showing distribution of data (scores on internalizing problems-PRS) and residuals respectively.

Table 31

Model Summary of Hierarchical Multiple Regression Predicting Children's Behavioral Symptoms Index on PRS (N = 203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.203	.041	.027	18.50	.041	.038
2[b]	.317	.100	.082	17.96	.059	.000
3[c]	.643	.413	.399	14.54	.313	.000
4[d]	.649	.421	.403	14.48	.007	.122

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 32

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Behavioral Symptoms Index on PRS (N = 203)

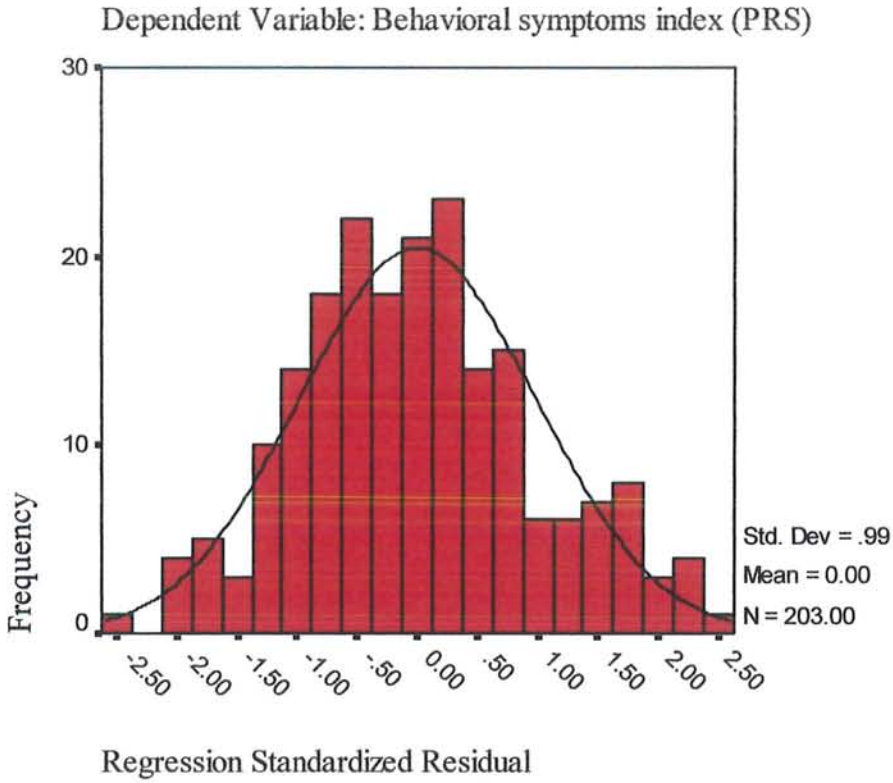
	B	*SEB*	β	ΔR^2
Step 1				
Constant	41.75	3.89		.038*
Lahore	-9.02	3.32	-.21**	
Karachi	-.79	3.39	-.02	
Socioeconomic Status	.01	.06	.01	
Step 2				
Constant	37.63	3.95		.059***
Lahore	-9.81	3.23	-.22**	
Karachi	-2.56	3.22	-.06	
Socioeconomic Status	.02	.06	.03	
Gender	9.32	2.58	.25***	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	24.47	3.44		.313***
Lahore	-8.39	2.62	-.19**	
Karachi	-.63	2.70	-.02	
Socioeconomic Status	.02	.05	.02	
Gender	6.44	2.11	.17**	
CHAOS	2.49	.34	.57***	
Step4				
Constant	26.27	3.62		.007
Lahore	-8.51	2.61	-.19**	
Karachi	-.62	2.69	-.01	
Socioeconomic Status	.02	.05	.02	
Gender	2.19	3.45	.06	
CHOAS	3.00	.46	.49***	
Chaos×gender	1.05	.68	.17	

**p<.05, **p<.01, ***p<.001*

To find out whether home chaos was predictive of behavioral symptoms index of children as rated by their parents on PRS hierarchical multiple regression was done. The results are given in tables 31 & 32. Results indicate significant *R* square change in first three steps of regression. The significant *R* square change in model two indicates gender [t (197) = 3.05, p<.01] as a significant predictor of behavioral problems among children. Moreover in model three the significant *R* square change indicate home chaos as significant predictor (explaining 41.3% variance) of behavioral symptoms index of children as reported by their parents [t (197) =10.25, p<.001]. However *R* square change at step four is not significant showing no interaction affects of chaos and gender on behavioral symptoms index of children.



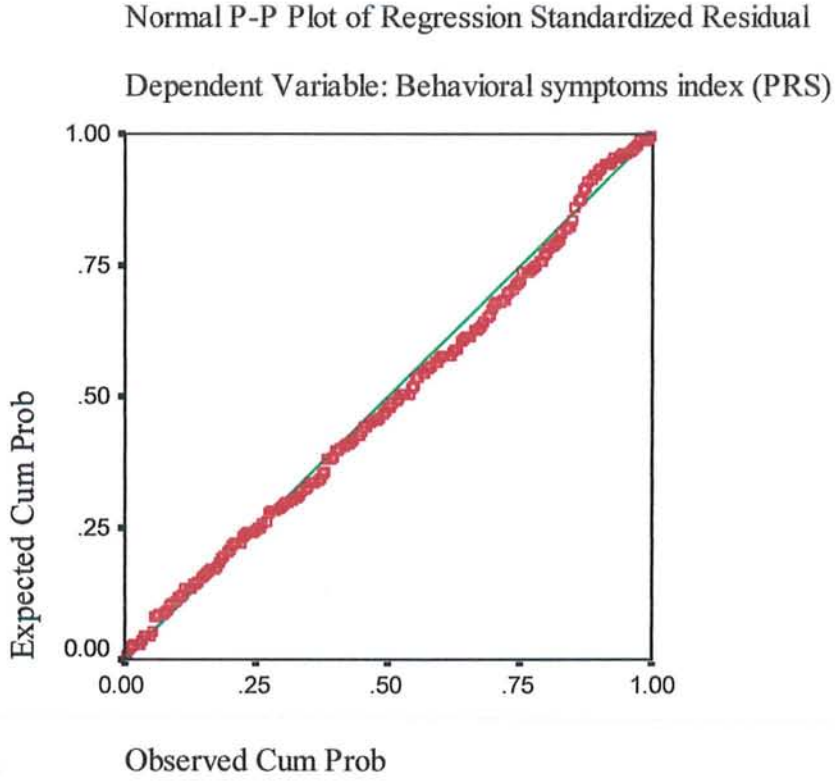


Figure 4: Histogram and normal probability plot showing distribution of data (scores on behavioral symptoms index-PRS) and residuals respectively.

Table 33

Model Summary of Hierarchical Multiple Regression Predicting Children's Adaptive Skills on PRS (N = 203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.325	.105	.092	13.17	.105	.000
2[b]	.416	.173	.157	12.69	.068	.000
3[c]	.563	.317	.299	11.56	.144	.000
4[d]	.563	.317	.296	11.59	.000	.948

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 34

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Adaptive Skills on PRS (N = 203)

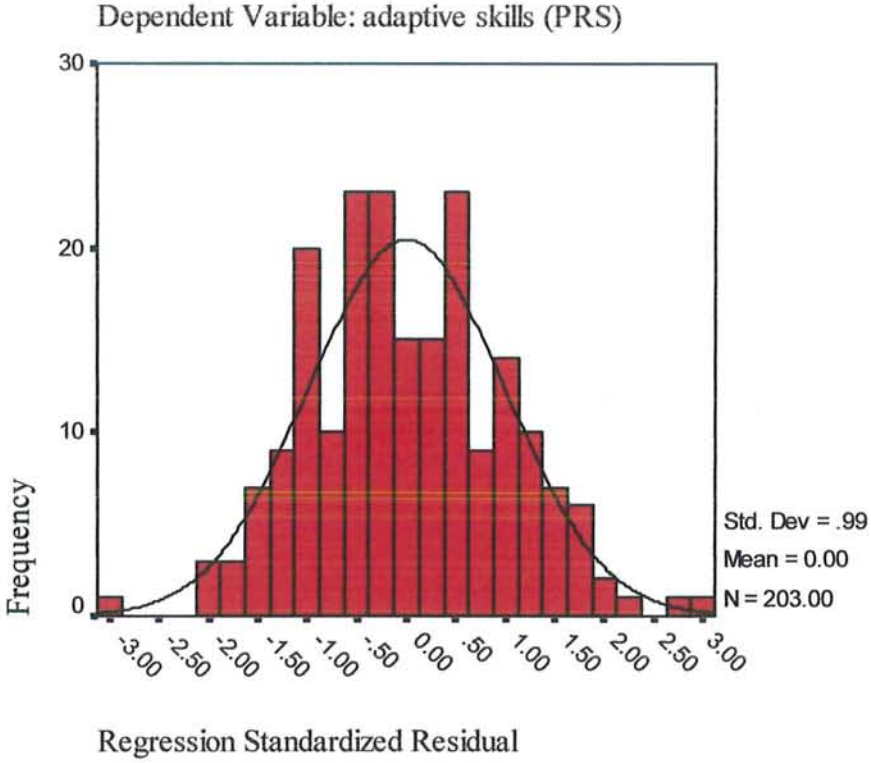
	B	*SEB*	β	ΔR^2
Step 1				
Constant	89.03	2.77		.105***
Lahore	.68	2.37	.02	
Karachi	-7.46	2.41	-.24**	
Socioeconomic Status	.09	.05	.15*	
Step 2				
Constant	92.45	2.79		.068***
Lahore	1.30	2.29	.04	
Karachi	-6.07	2.35	-.19*	
Socioeconomic Status	.08	.04	.14	
Gender	-7.36	1.83	-.27***	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	99.03	2.74		.144***
Lahore	.59	2.09	.02	
Karachi	-7.03	2.15	-.22**	
Socioeconomic Status	.09	.04	.14*	
Gender	-5.92	1.68	-.21**	
CHAOS	-1.74	.27	-.38***	
Step4				
Constant	99.04	2.89		.000
Lahore	.59	2.09	.02	
Karachi	-7.03	2.15	-.22**	
Socioeconomic Status	.09	.04	.14*	
Gender	-5.96	2.76	-.22*	
CHAOS	-1.75	.37	-.38***	
Chaos×gender	.01	.54	.002	

**p<.05, **p<.01, ***p<.001*

To investigate whether home chaos was predictive of adaptive skills of children as rated by their parents on PRS hierarchical multiple regression was done. The results are given in tables 33 & 34. Results indicate significant *R* square change in first three models. Home chaos is highly significant predictor [t (197) = -6.43, p<.001]. The negative sign of Beta value indicates negative relationship between home chaos and children's adaptive skills. Results also indicate gender [t (197) =-3.53, p<.01] a significant predictive of parent's perceived adaptive skills of children. Boys were perceived as having less adaptive skills as compared to girls by their parents. However the interaction term chaos×gender is not significant.



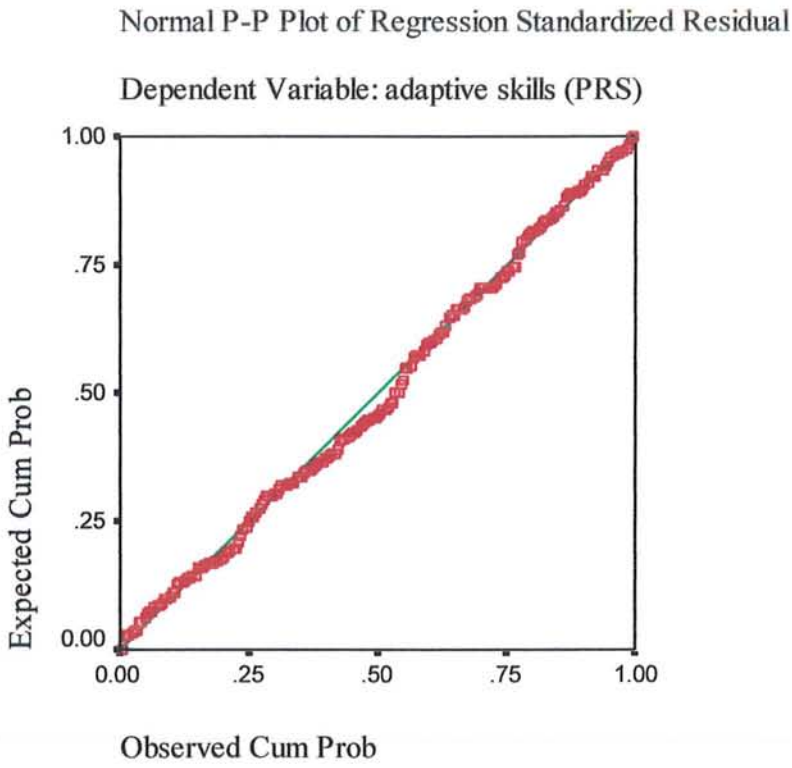


Figure 5: Histogram and normal probability plot showing distribution of data (scores on adaptive skills-PRS) and residuals.

Table 35

Model Summary of Hierarchical Multiple Regression Predicting Children's Externalizing Problems on TRS (N=203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.238	.057	.043	12.55	.057	.009
2[b]	.350	.122	.105	12.14	.066	.000
3[c]	.441	.194	.174	11.66	.072	.000
4[d]	.441	.194	.170	11.69	.000	.862

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, choas×gender

Table 36

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Externalizing Problems on TRS (N=203)

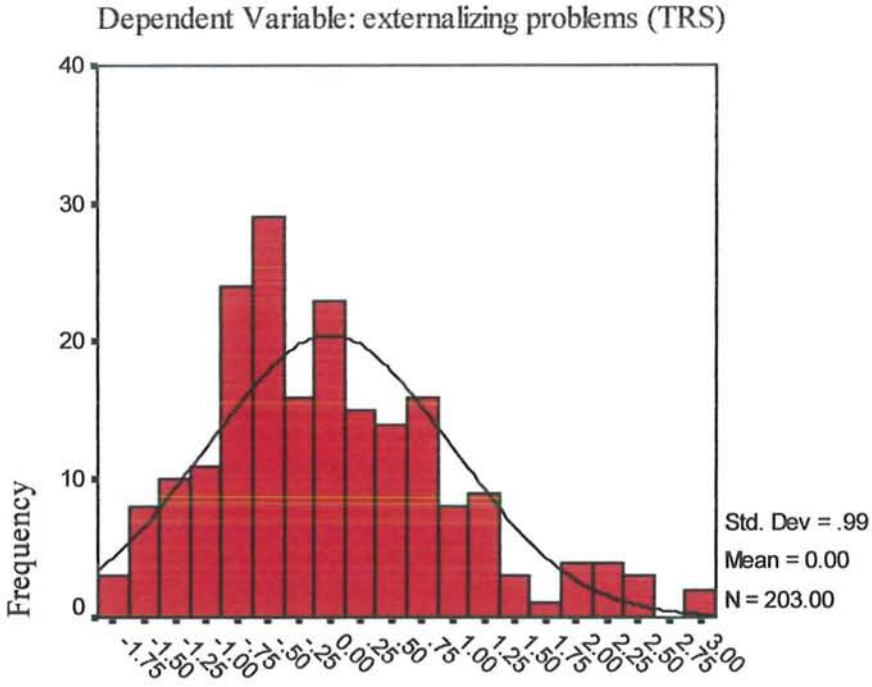
	B	*SEB*	β	ΔR^2
Step 1				
Constant	12.85	2.64		.057**
Lahore	-2.53	2.26	-.09	
Karachi	3.19	2.30	.11	
Socioeconomic Status	.12	.04	.20**	
Step 2				
Constant	9.88	2.67		.066***
Lahore	-3.10	2.19	-.10	
Karachi	1.91	2.25	.07	
Socioeconomic Status	.13	.04	.22**	
Gender	6.72	1.75	.26***	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	5.57	2.76		.072***
Lahore	-2.64	2.10	-.09	
Karachi	2.54	2.17	.09	
Socioeconomic Status	.12	.04	.22**	
Gender	5.77	1.69	.22**	
CHAOS	1.14	.27	.27***	
Step4				
Constant	5.73	2.92		.000
Lahore	-2.65	2.11	-.09	
Karachi	2.54	2.17	.08	
Socioeconomic Status	.12	.04	.22**	
Gender	5.39	2.78	.21	
CHAOS	1.10	.37	.26**	
Chaos×gender	.09	.55	.02	

***p<.01, ***p<.001*

To investigate whether home chaos was predictive of externalizing problems in children in school setting as reported by their teachers on TRS hierarchical multiple regression was done. The results are given in tables 35 & 36. The results indicate significant *R* square change in first three models showing the significant contribution of gender [t (197) = 3.41, p<.01] and home chaos [t (197) = 4.19, p<.001] in explaining externalizing problems in children in school setting as perceived by their teachers. Home chaos explains 19.4% variance of externalizing problems among children. However the interaction term chaos×gender in fourth step is non-significant.



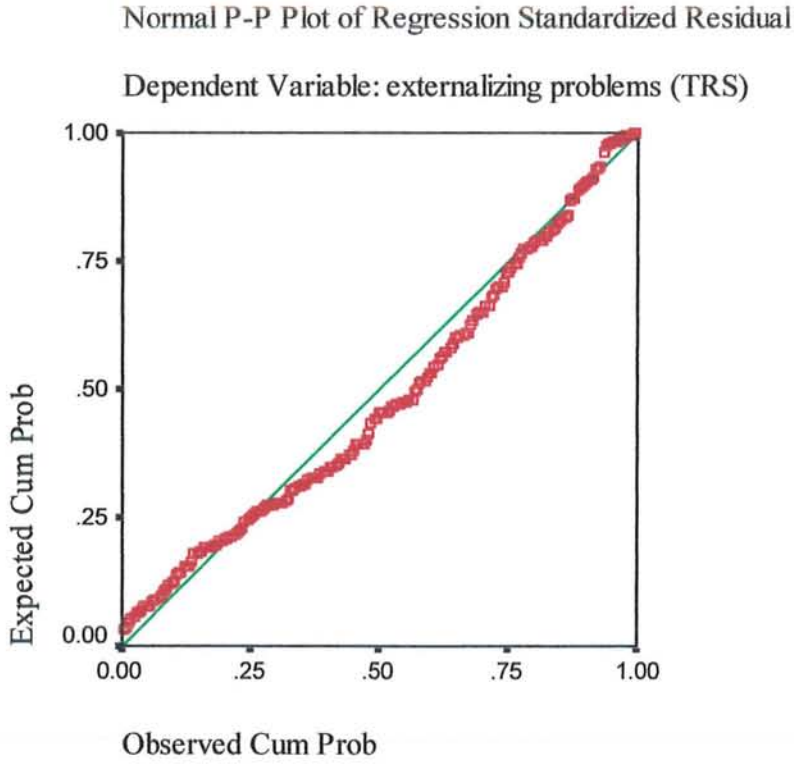


Figure 6: Histogram and normal probability plot indicating distribution of data (scores on externalizing problems-TRS) and residuals

Table 37

Model Summary of Hierarchical Multiple Regression Predicting Children's Internalizing Problems on TRS (N=203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.222	.049	.035	8.45	.049	.018
2[b]	.226	.051	.032	8.46	.002	.543
3[c]	.420	.176	.155	7.90	.125	.000
4[d]	.426	.181	.156	7.89	.005	.259

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 38

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Internalizing Problems on TRS (N=203)

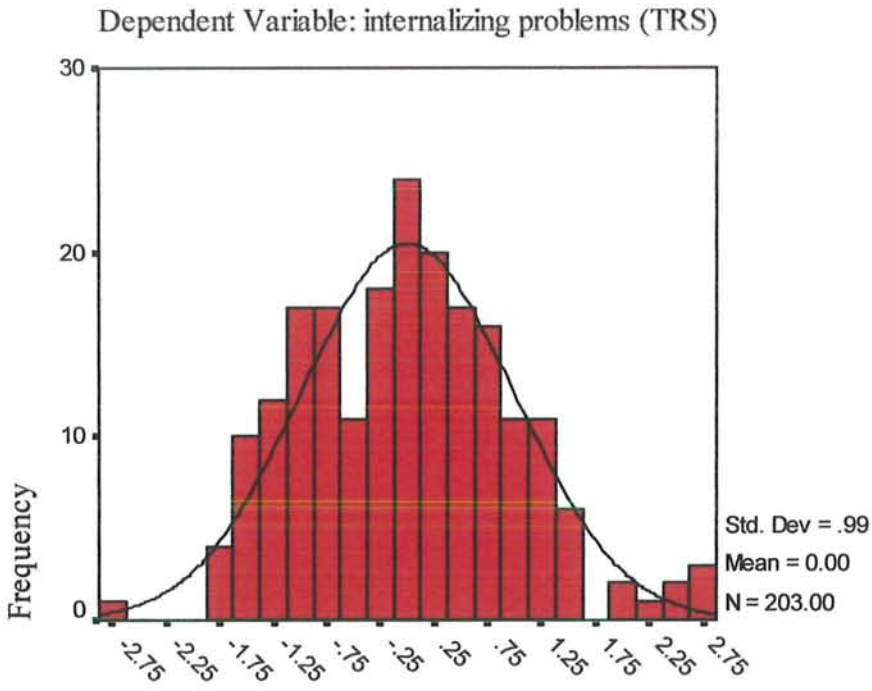
	B	*SEB*	β	ΔR^2
Step 1				
Constant	13.43	1.78		.049*
Lahore	-3.25	1.52	-.16*	
Karachi	1.76	1.55	.09	
Socioeconomic Status	.03	.03	.08	
Step 2				
Constant	13.10	1.86		.002
Lahore	-3.31	1.52	-.17*	
Karachi	1.62	1.59	.08	
Socioeconomic Status	.03	.03	.09	
Gender	.74	1.22	.04	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	9.29	1.87		.125***
Lahore	-2.89	1.43	-.15*	
Karachi	2.18	1.47	.11	
Socioeconomic Status	.03	.03	.08	
Gender	-.09	1.15	-.006	
CHAOS	1.01	.19	.36***	
Step4				
Constant	10.00	1.97		.005
Lahore	-2.95	1.43	-.15*	
Karachi	2.18	1.47	.11	
Socioeconomic Status	.013	.03	.08	
Gender	-1.78	1.88	-.10	
CHAOS	.82	.25	.29**	
Chaos×gender	.42	.37	.15	

**p<.05, **p<.01, ***p<.001*

To investigate home chaos as predictive of internalizing problems in children in school setting as reported by their teachers on TRS hierarchical multiple regression was done. The results are presented in tables 37 & 38. The significant *R* square change (ΔR^2 = .125, p<.001) in step three indicates home chaos as a predictive of internalizing problems in children in school as reported by teachers [t (197) = 5.47, p<.001]. Non-significant *R* square change in step four indicates no interaction affects of chaos and gender on internalizing problems as reported by teachers.



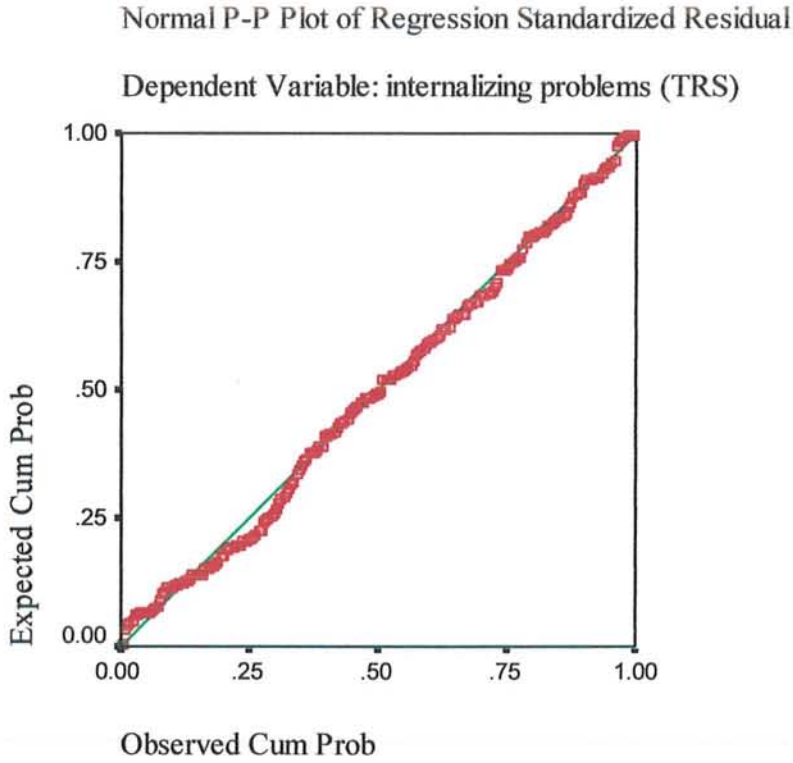


Figure 7: Histogram and normal probability plot showing distribution of data (scores on internalizing problems-TRS) and residuals.

Table 39

Model Summary of Hierarchical Multiple Regression Predicting Children's Behavioral Symptoms Index on TRS (N=203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.225	.051	.036	17.69	.051	.016
2[b]	.350	.122	.105	17.06	.072	.000
3[c]	.438	.192	.171	16.41	.069	.000
4[d]	.445	.198	.174	16.39	.006	.215

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 40

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Behavioral Symptoms Index on TRS (N=203)

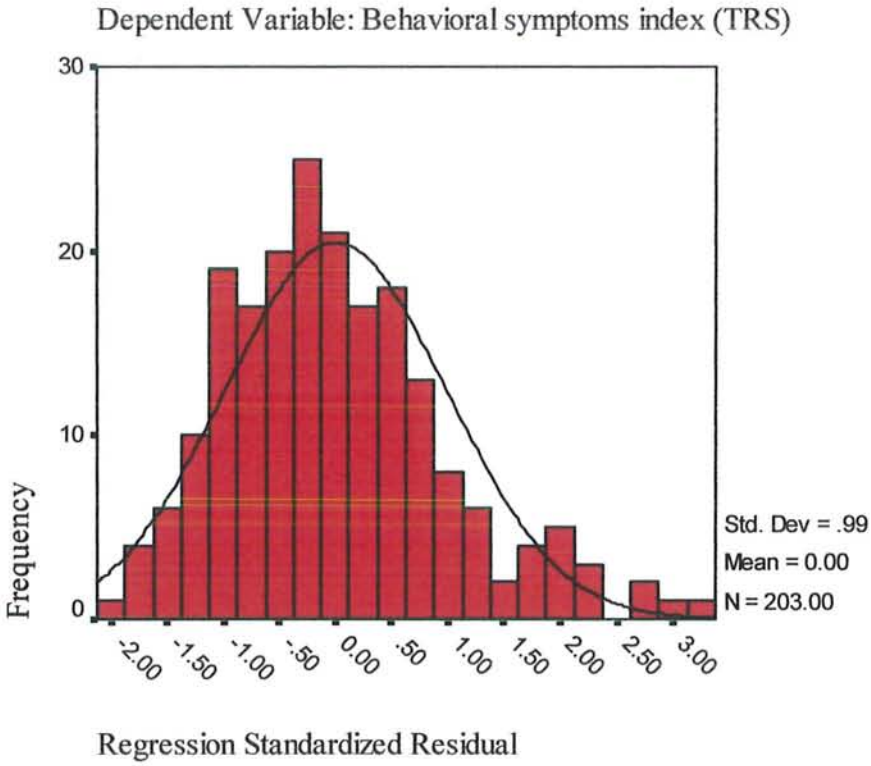
	B	SEB	β	ΔR^2
Step 1				
Constant	32.28	3.72		.051*
Lahore	-6.69	3.18	-.16*	
Karachi	3.00	3.24	.07	
Socioeconomic Status	.09	.06	.12	
Step 2				
Constant	27.92	3.75		.072***
Lahore	-7.52	3.07	-.18*	
Karachi	1.13	3.16	.03	
Socioeconomic Status	.11	.06	.13	
Gender	9.87	2.45	.27***	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	21.96	3.89		.069***
Lahore	-6.88	2.96	-.16*	
Karachi	2.00	3.05	.05	
Socioeconomic Status	.10	.06	.13	
Gender	8.56	2.38	.27***	
CHAOS	1.58	.38	.27***	
Step4				
Constant	23.59	4.09		.006
Lahore	-6.99	2.96	-.17*	
Karachi	2.01	3.04	.05	
Socioeconomic Status	.10	.06	.13	
Gender	4.71	3.90	.13	
CHAOS	1.14	.52	.19*	
Chaos×gender	.95	.77	.16	

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

To find out home chaos as a predictive of behavioral symptoms in children in school as reported by their teachers on TRS hierarchical multiple regression was done. The results are presented in tables 39 & 40. The results indicate significant *R* square change (ΔR^2 = .069, p<.001) in second and third model showing both home chaos [t (197) = 4.11, p<.001] and gender [t (197) = 3.59, p<.001] as predictive of behavioral symptoms of children on TRS. However interaction term chaos×gender is non-significant.



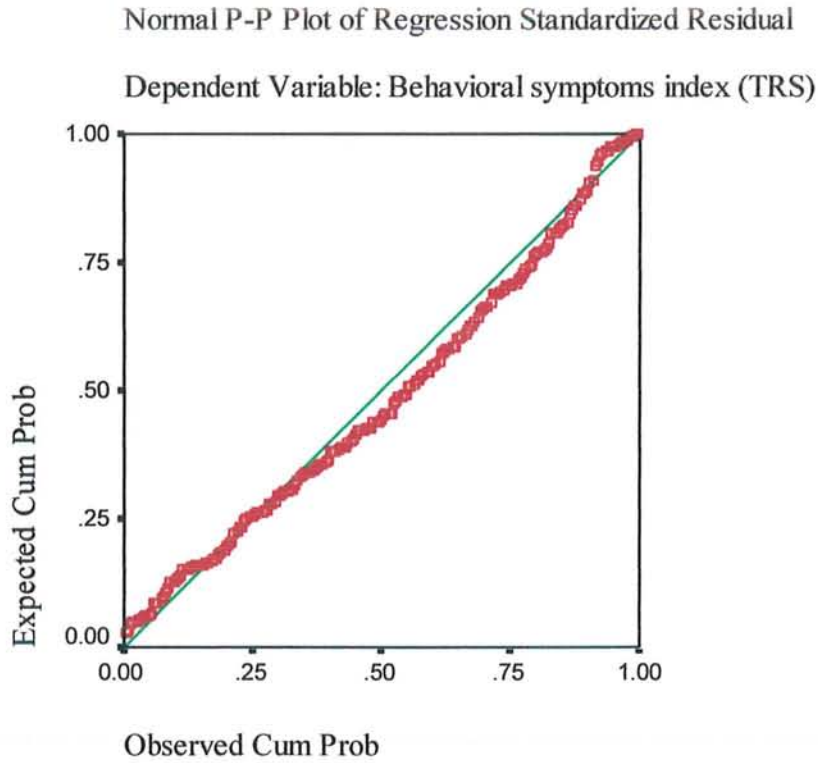


Figure 8: Histogram and normal probability plot indicating distribution of data (scores on behavioral symptoms index-TRS) and residuals.

Table 41

Model Summary of Hierarchical Multiple Regression Predicting Children's Adaptive Skills on TRS (N=203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.151	.023	.008	18.27	.023	.205
2[b]	.261	.068	.049	17.88	.046	.002
3[c]	.363	.132	.110	17.31	.064	.000
4[d]	.368	.135	.109	17.32	.003	.384

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 42

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's Adaptive Skills on TRS (N = 203)

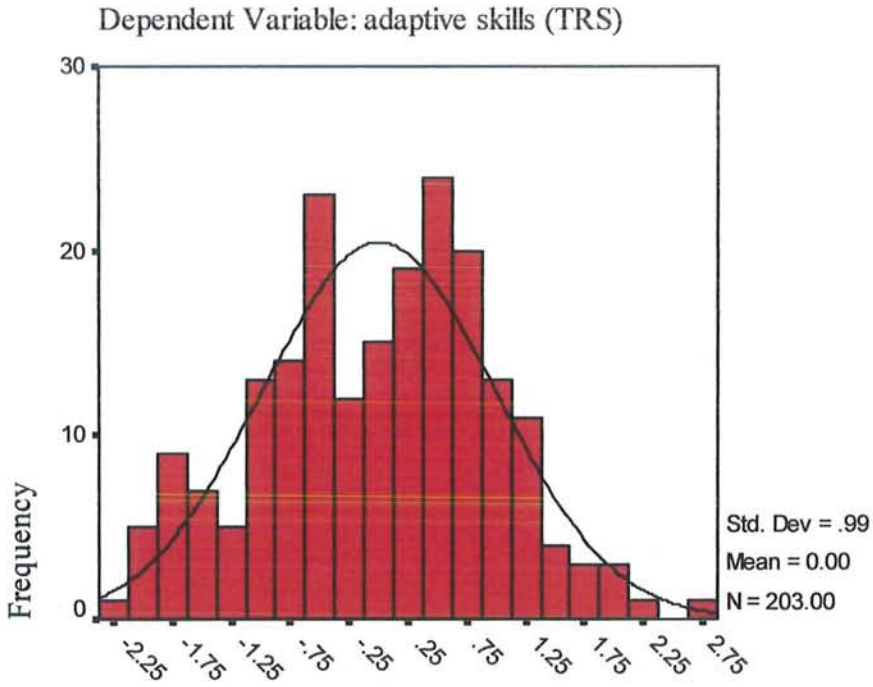
	B	*SEB*	β	ΔR^2
Step 1				
Constant	59.83	3.84		.023
Lahore	1.72	3.28	.04	
Karachi	-1.19	3.35	-.03	
Socioeconomic Status	.11	.06	.14	
Step 2				
Constant	63.37	3.93		.046**
Lahore	2.39	3.22	.06	
Karachi	.33	3.31	.01	
Socioeconomic Status	.09	.06	.12	
Gender	-8.00	2.57	-.22**	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	69.17	4.09		.064***
Lahore	1.77	3.12	.04	
Karachi	-.52	3.22	-.01	
Socioeconomic Status	.10	.06	.13	
Gender	-6.37	2.51	-.18**	
CHAOS	-1.54	.41	-.26***	
Step4				
Constant	67.96	4.33		.003
Lahore	1.85	3.12	.04	
Karachi	-.53	3.22	-.01	
Socioeconomic Status	.10	.06	.13	
Gender	-3.88	4.12	-.11	
CHAOS	-1.21	.55	-.20*	
Chaos×gender	-.71	.81	-.12	

*$p<.05$, **$p<.01$, ***$p<.001$

To investigate whether home chaos was predictive of adaptive skills in children in school as reported by their teachers on TRS hierarchical multiple regression was done. The results are contained in tables 41 & 42. The significant *R* square change in both model two ($\Delta R^2 = .046$, $p<.01$) and three ($\Delta R^2 = .016$, $p <.001$) indicates both gender and chaos as predictive of adaptive skills in children as perceived by teachers. Home chaos is significantly predicting adaptive skills [t (197) = -3.79, $p <.001$] and result indicate negative relationship between home chaos and adaptive skills among children as perceived by teachers. The negative Beta value in model two [t (197) = -2.68, $p <.01$] shows that boys were perceived as having less adaptive skills as compare to girls by their teachers. Model four is not significant.



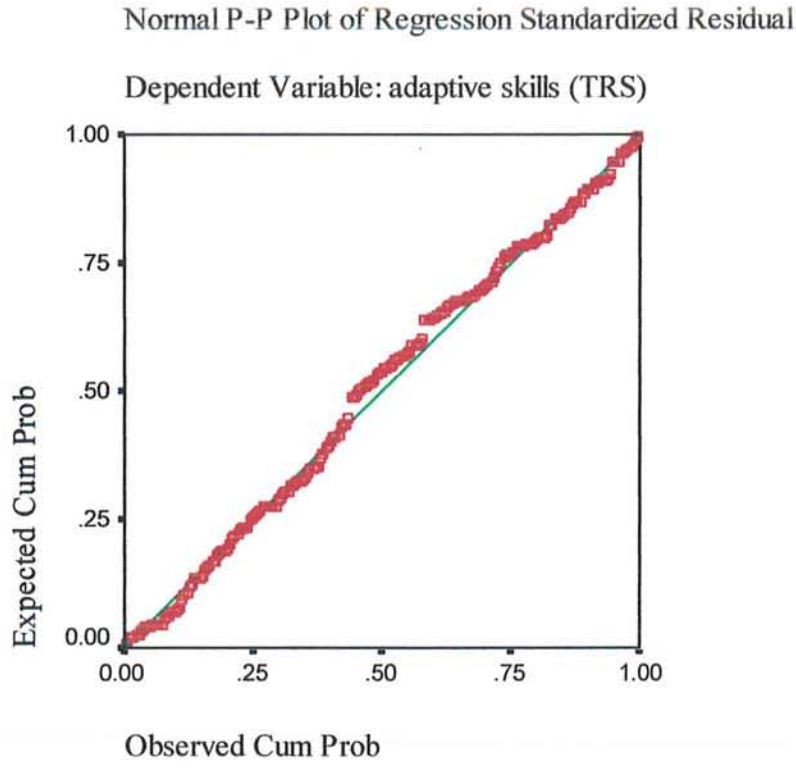


Figure 9: Histogram and normal probability plot showing distribution of data (scores on adaptive skills-TRS) and residuals.

Table 43

Model Summary of Hierarchical Multiple Regression Predicting Children's School Problems on TRS (N=203)

Model	R	R^2	Adjusted R^2	Std.Error of Estimate	ΔR^2	Sig.F change
1[a]	.082	.007	-.008	8.31	.007	.720
2[b]	.212	.045	.026	8.17	.038	.005
3[c]	.316	.100	.077	7.95	.055	.001
4[d]	.318	.101	.074	7.96	.001	.572

a. SES, Lahore-Karachi.
b. SES, Lahore-Karachi, gender
c. SES, Lahore-Karachi, gender, home chaos
d. SES, Lahore-Karachi, gender, home chaos, chaos×gender

Table 44

b-values, Standard Errors of b-values and Beta values for Each Model of Hierarchical Multiple Regression Predicting Children's School Problems on TRS (N=203)

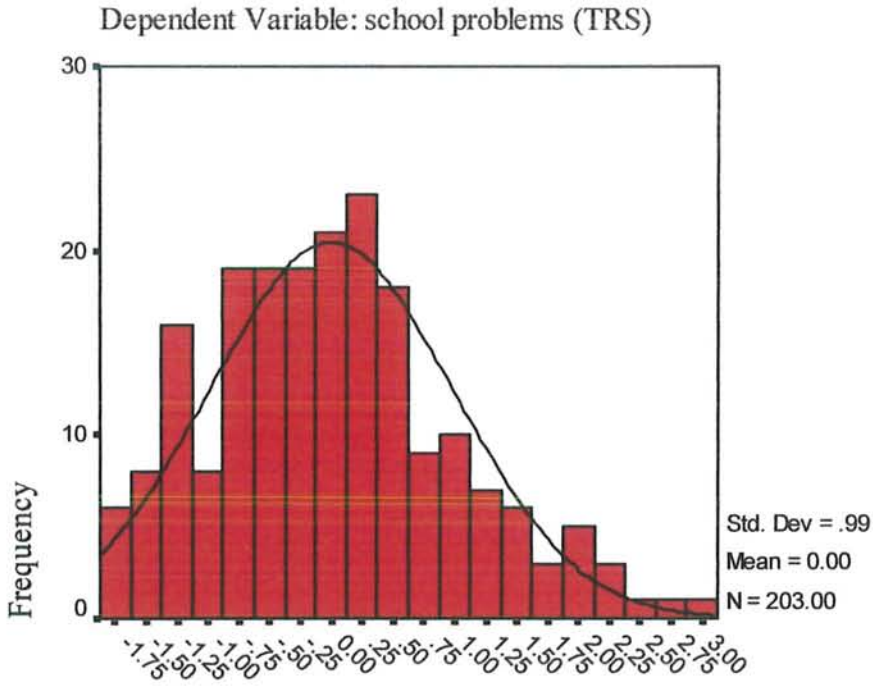
	B	*SEB*	β	ΔR^2
Step 1				
Constant	15.03	1.75		.007
Lahore	-.01	1.49	-.001	
Karachi	1.03	1.52	.06	
Socioeconomic Status	-.07	.03	-.05	
Step 2				
Constant	13.57	1.79		.038**
Lahore	-.29	1.47	-.02	
Karachi	.40	1.51	.02	
Socioeconomic Status	-.01	.03	-.03	
Gender	3.31	1.17	.19**	

Continued...

	B	*SEB*	β	ΔR^2
Step3				
Constant	11.14	1.88		.055**
Lahore	-.03	1.13	-.002	
Karachi	.76	1.48	.04	
Socioeconomic Status	-.01	.03	-.04	
Gender	2.77	1.15	.17*	
CHAOS	.65	.19	.24**	
Step4				
Constant	11.50	1.99		.001
Lahore	-.05	1.44	-.003	
Karachi	.76	1.48	.04	
Socioeconomic Status	-.01	.03	-.04	
Gender	1.92	1.89	.12	
CHAOS	.55	.25	.20*	
Chaos×gender	.21	.37	.08	

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

To investigate whether home chaos was predictive of school problems in children as reported by their teachers on TRS hierarchical multiple regression was done. The results are contained in tables 43 & 44. Results indicate home chaos as explaining 10% of the variance in school problems of children. Significant *R* square change in model two ($(\Delta R^2 = .038, p<.01)$ and model three ($\Delta R^2 = .055, p<.01$) show gender [$t\ (197) = 2.40, p < .05$] and home chaos [$t\ (197) = 3.46, p < .01$] respectively as significantly predicting school problems in children perceived by teachers. Non-significant *R* square change in model four indicates no interaction affects of chaos and gender.



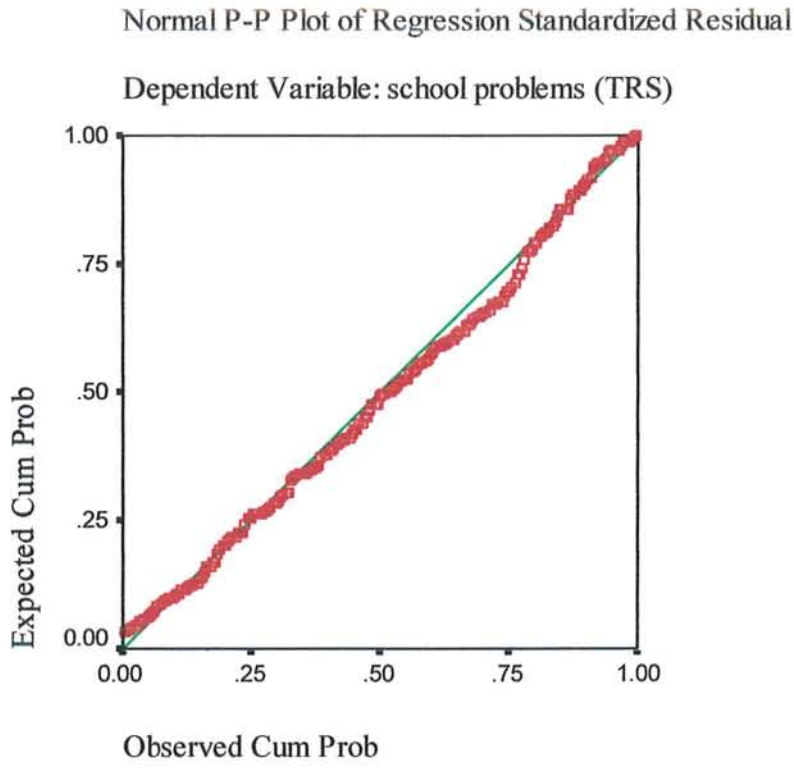


Figure 10: Histogram and normal probability plot showing distribution of data (scores on school problems (TRS) and residuals.

The results of hierarchical multiple regression indicate home chaos and gender as significant predictors of children's behavioral problems and adaptive skills on both PRS and TRS over and above socioeconomic status and place of living (city). Furthermore both parents and teachers perceived boys as high on externalizing problems and behavioral symptoms index (BSI) and low on adaptive skills and internalizing problems as compared to girls. Results do not indicate socioeconomic status as significant predictor for children's socioemotional adjustment except adaptive skills (as reported by parents) and externalizing problems in school setting (as perceived by teachers). In addition results do not indicate interaction affects of chaos and gender on behavioral problems and adaptive skills of children. These finding show that gender does not moderate the affects of chaos on behavioral problems and adaptive skills of children as reported by parents and teachers.

To investigate gender differences on cognitive ability, behavioral problems and adaptive skills two way analysis of variance (ANOVA) was carried out. Sample was divided into 'low chaos' and 'high chaos' groups using a median split ($Mdn = 4$). ANOVA was run separately for PRS scales and TRS scales. The results overall support the hypothesis that home chaos affects boys more as compared to girls. The results are contained in tables 45-64.

Table 45

Mean and Standard Deviations of Cognitive Ability Score of Boys and Girls from High and Low Chaotic Families (N = 203)

		Cognitive ability		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	25.85	11.17	41
	Male	24.52	9.63	42
	Total	25.18	10.38	83
Low chaos	Female	29.94	12.62	71
	Male	24.88	10.56	49
	Total	27.87	12.03	120
Total	Female	28.45	12.22	112
	Male	24.71	10.09	91
	Total	26.77	11.44	203

Table 46

F values of Children's Cognitive Ability Score on PRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	1136.938	3	378.979	2.983	.032
Intercept	133830.405	1	133830.405	1.53.381	.000
CHAOS	238.799	1	238.799	1.880	.172
Gender	994.704	1	994.704	3.894	.050
Chaos×Gender	168.814	1	168.814	1.329	.250
Error	25282.638	199	127.048		
Total	171933.000	203			
Corrected Model	26419.576	202			

The results indicate a non-significant main effect of home chaos [F (1,199) = 1.88, p = .172] and non-significant interaction effect between home chaos and gender of the child [F (1,199) = 1.33, p = .25]. Result indicates significant main effect of

gender [F (1,199) = 3.89, p = .050] on cognitive ability of children (see tables 45 & 46).

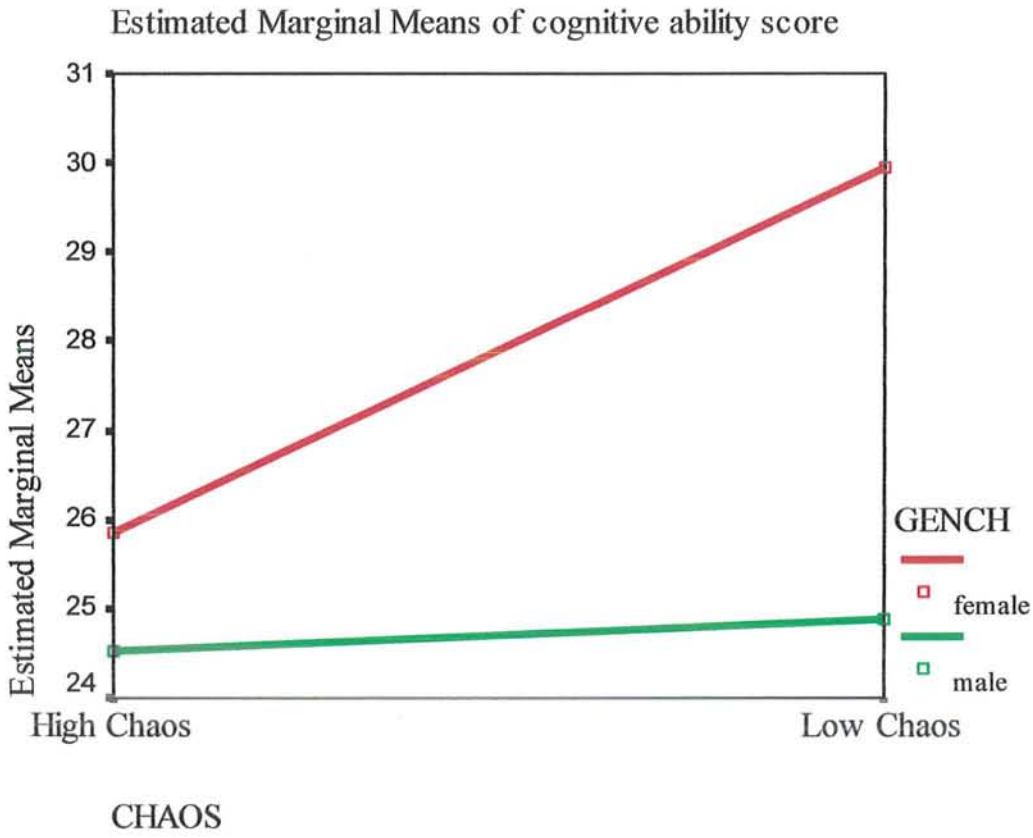


Figure 11: Cognitive ability of male and female children from high and low chaotic families showing significant main effect of gender and non-significant main effect of home chaos and non-significant interaction effect of home chaos and gender.

Table 47

Means and Standard Deviations of Children's Score of Externalizing Problems on PRS from Low Chaotic and High Chaotic Families (N = 203)

		Externalizing problems		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	23.93	11.46	41
	Male	31.86	13.01	42
	Total	27.94	12.83	83
Low chaos	Female	14.73	9.96	71
	Male	19.35	10.37	49
	Total	16.62	10.34	120
Total	Female	18.10	11.39	112
	Male	25.12	13.18	91
	Total	21.25	12.69	203

Table 48

F values of Children's Score of Externalizing Problems on PRS from Low Chaotic and High Chaotic Families (N = 203)

	SS	*df*	*MS*	*F*	*p*
Corrected model	8212.744	3	2737.581	22.422	.000
Intercept	97656.011	1	97656.011	799.835	.000
CHAOS	5696.910	1	5696.910	46.660	000
Gender	1903.118	1	1903.118	15.587	.000
Chaos×Gender	132.956	1	132.956	1.089	.298
Error	24296.941	199	122.095		
Total	124145.000	203			
Corrected Model	32509.685	202			

The results indicate significant main effects of home chaos [F (1,199) = 46.60, p <.001] and gender [F (1, 99) = 15.587, p<.001] on externalizing problems of children as reported by parents. It indicates that boys are affected more by home

chaos ($M = 25.12$, $SD = 13.18$) as compared to girls ($M = 18.10$, $SD = 11.39$). There is non-significant interaction effect of chaos and gender [$F = (1,199) = 1.098$, $p = .298$, see tables 47 & 48].

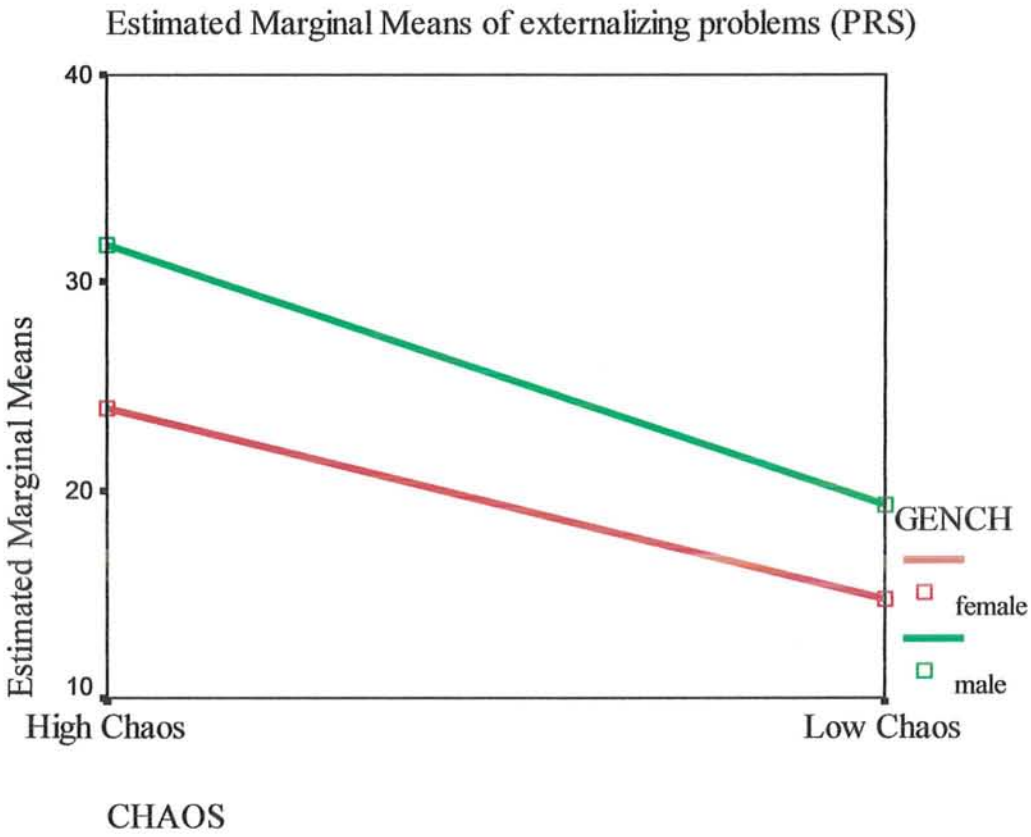


Figure 12: Children's externalizing problems (PRS) from high and low chaotic families indicating significant main effect of both home chaos and gender and non-significant interaction effect of home chaos and gender.

Table 49

Means and Standard Deviations of Children's Score of Internalizing Problems on PRS from Low Chaotic and High Chaotic Families (N = 203)

		Internalizing problems		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	33.34	9.96	41
	Male	29.10	12.24	42
	Total	31.19	11.40	83
Low chaos	Female	21.62	8.84	71
	Male	18.82	8.17	49
	Total	20.48	8.65	120
Total	Female	25.91	10.83	112
	Male	23.56	11.50	91
	Total	24.86	11.17	203

Table 50

F values of Children's Score of Internalizing Problems on PRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	6237.939	3	2079.313	21.825	.000
Intercept	127977.868	1	127977.868	1343.304	.000
CHAOS	5853.363	1	5853.363	61.439	000
Gender	600.987	1	600.987	6.308	.013
Chaos×Gender	25.175	1	25.175	.264	.608
Error	18958.918	199	95.271		
Total	150626.000	203			
Corrected Model	25196.857	202			

The results indicate significant main effects of home chaos [F (1,199) = 61.439, p <.001] and gender [F (1, 99) = 6.308, p <.05] on internalizing problems of children as reported by parents. It indicates that girls exhibit more internalizing

problems in chaotic conditions (M = 25.91, SD = 10.83) as compared to boys (M = 23.56, SD = 11.50). There is non-significant interaction effect of chaos and gender [F = (1,199) = .264, p = .608, see tables 49 & 50].

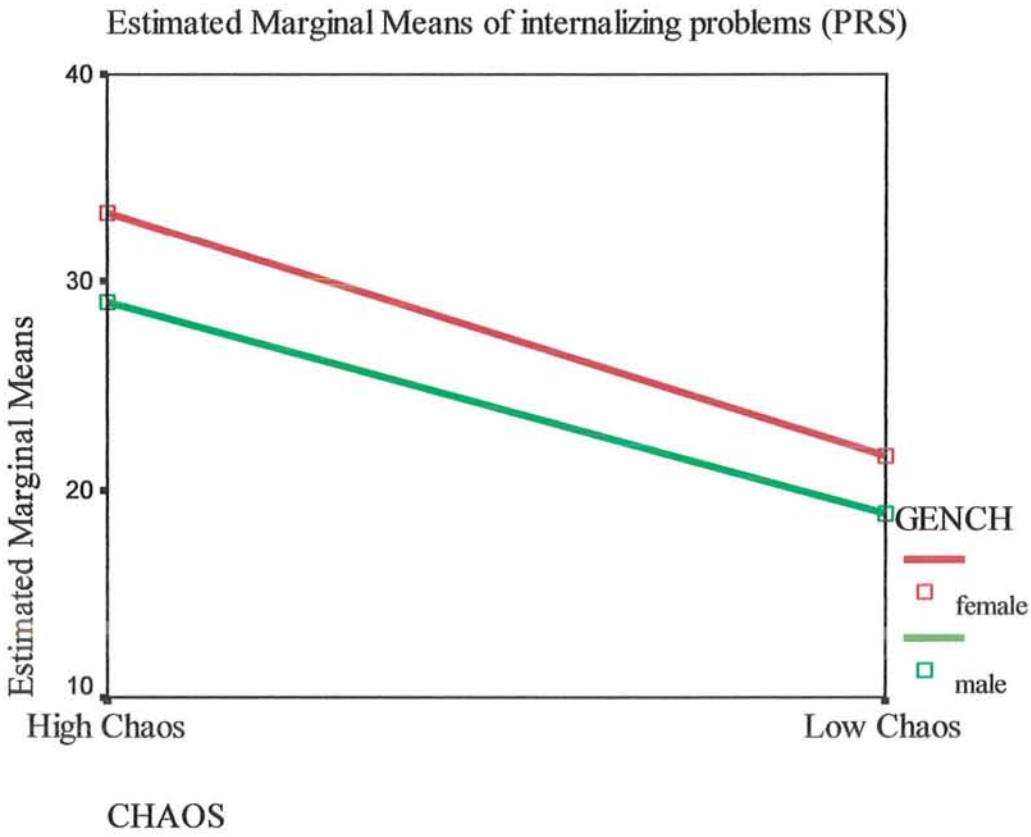


Figure 13: Children's internalizing problems (PRS) from high and low chaotic families showing significant main effects of both home chaos and gender and non-significant interaction effects of home chaos and gender.

Table 51

Means and Standard Deviations of Children's Score of Behavioral Symptoms Index on PRS from Low Chaotic and High Chaotic Families (N=203)

		Behavioral symptoms index		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	46.49	15.45	41
	Male	54.64	20.42	42
	Total	50.61	18.48	83
Low chaos	Female	29.92	14.29	71
	Male	36.00	15.37	49
	Total	32.40	14.98	120
Total	Female	35.98	16.70	112
	Male	44.60	20.08	91
	Total	39.85	18.75	203

Table 52

F values of Children's Score of Behavioral Symptoms Index on PRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	18730.886	3	6243.629	23.679	.000
Intercept	337448.243	1	337448.243	1284.635	.000
CHAOS	14996.633	1	14996.633	57.091	000
Gender	2452.039	1	2452.039	9.335	.003
Chaos×Gender	51.845	1	51.845	.197	.637
Error	52273.380	199	262.680		
Total	393329.00	203			
Corrected Model	71004.266	202			

The results indicate significant main effects of home chaos [F (1,199) = 57.091, p<.001] and gender [F (1, 99) = 9.335, p<.01] on behavioral symptoms of

children as reported by parents. The significant main effect of gender indicates boys as more affected in chaotic conditions (M = 44.60, SD = 20.08) as compared to girls (M = 35.98, SD = 16.70). There is non-significant interaction effect of chaos and gender [F = (1,199) = .197, p = .637], see tables 51 & 52.

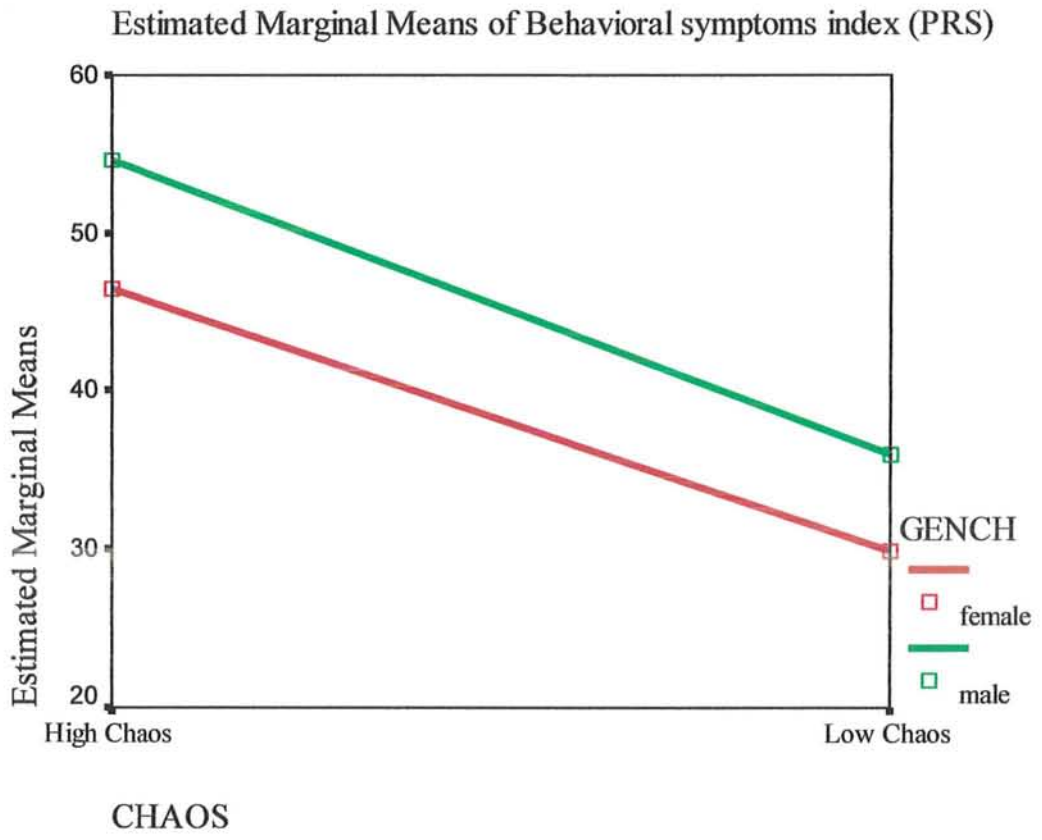


Figure 14: Children's score on behavioral symptoms index (PRS) from high and low chaotic families indicating significant main effects of home chaos and gender on behavioral symptoms and non-significant interaction effects of home chaos and gender.

Table 53

Means and Standard Deviations of Children's Score of Adaptive Skills on PRS from Low Chaotic and High Chaotic Families (N = 203)

		Adaptive skills		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	90.02	11.51	41
	Male	82.90	15.67	42
	Total	86.42	14.15	83
Low chaos	Female	98.79	11.39	71
	Male	90.35	12.14	49
	Total	95.34	12.38	120
Total	Female	95.58	12.15	112
	Male	86.91	14.30	91
	Total	91.69	13.82	203

Table 54

F values of Children's Score of Adaptive Skills PRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	7021.536	3	2340.512	14.769	.000
Intercept	1585283.243	1	1585283.243	10003.681	.000
CHAOS	3176.243	1	3176.243	20.043	000
Gender	2928.416	1	2928.416	18.48	.000
Chaos×Gender	21.140	1	21.140	.133	.715
Error	31535.528	199	158.470		
Total	1745360.000	203			
Corrected Model	38557.064	202			

The results indicate significant main effects of home chaos [F (1,199) = 20.043, p <.001] and gender [F (1, 99) = 18.48, p <.001] on adaptive skills of children

as reported by parents. The significant main effect of gender indicates boys as more effected in chaotic conditions and were perceived by parents as having less adaptive skills ($M = 86.91$, $SD = 14.30$) as compared to girls ($M = 95.58$, $SD = 12.15$).There is non-significant interaction effect of chaos and gender [$F = (1,199) = .133$, $p = .715$], see tables 53 & 54.

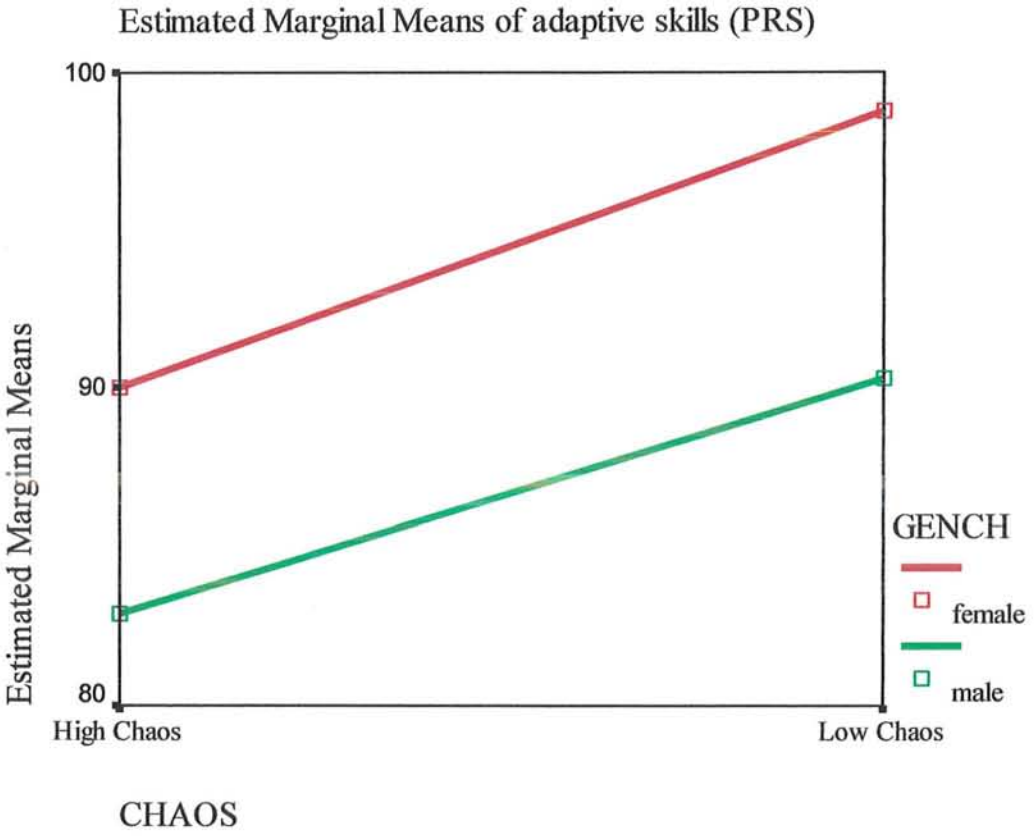


Figure 15: Children's adaptive score (PRS) from high and low chaotic families indicating significant main effects of home chaos and gender and non-significant interaction effect of home chaos and gender.

To study gender differences among children as perceived by their teachers on TRS two-way ANOVA was applied. The analysis was done separately for externalizing and internalizing problems, behavioral symptoms index, adaptive skills, and school problems.

Table 55

Means and Standard Deviations of Children's Score of Externalizing Problems on TRS from Low Chaotic and High Chaotic Families (N = 203)

		Externalizing problems		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	19.05	11.94	41
	Male	26.43	14.01	42
	Total	22.78	13.47	83
Low chaos	Female	13.66	10.12	71
	Male	17.94	12.91	49
	Total	15.41	11.49	120
Total	Female	15.63	11.08	112
	Male	21.86	14.01	91
	Total	18.42	12.83	203

Table 56

F values of Children's Score of Externalizing Problems on TRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	4328.675	3	1442.892	9.930	.000
Intercept	71844.942	1	71844.942	494.456	.000
CHAOS	2328.631	1	2328.631	16.026	000
Gender	1643.151	1	1643.151	11.309	.001
Chaos×Gender	116.438	1	116.438	.801	.372
Error	28914.829	199	145.301		
Total	102148.000	203			
Corrected Model	33243.567	202			

The results indicate significant main effects of home chaos [F (1,199) = 16.026, p <.001] and gender [F (1, 99) = 11.309, p <.01] on externalizing problems of

children as perceived by their teachers. The significant main effect of gender indicates boys as more affected by chaos and were perceived high on externalizing problems ($M = 21.86$, $SD = 14.01$) as compared to girls ($M = 15.63$, $SD = 11.08$). There is non-significant interaction effect of chaos and gender [$F = (1,199) = .801$, $p = .372$], see tables 55 & 56.

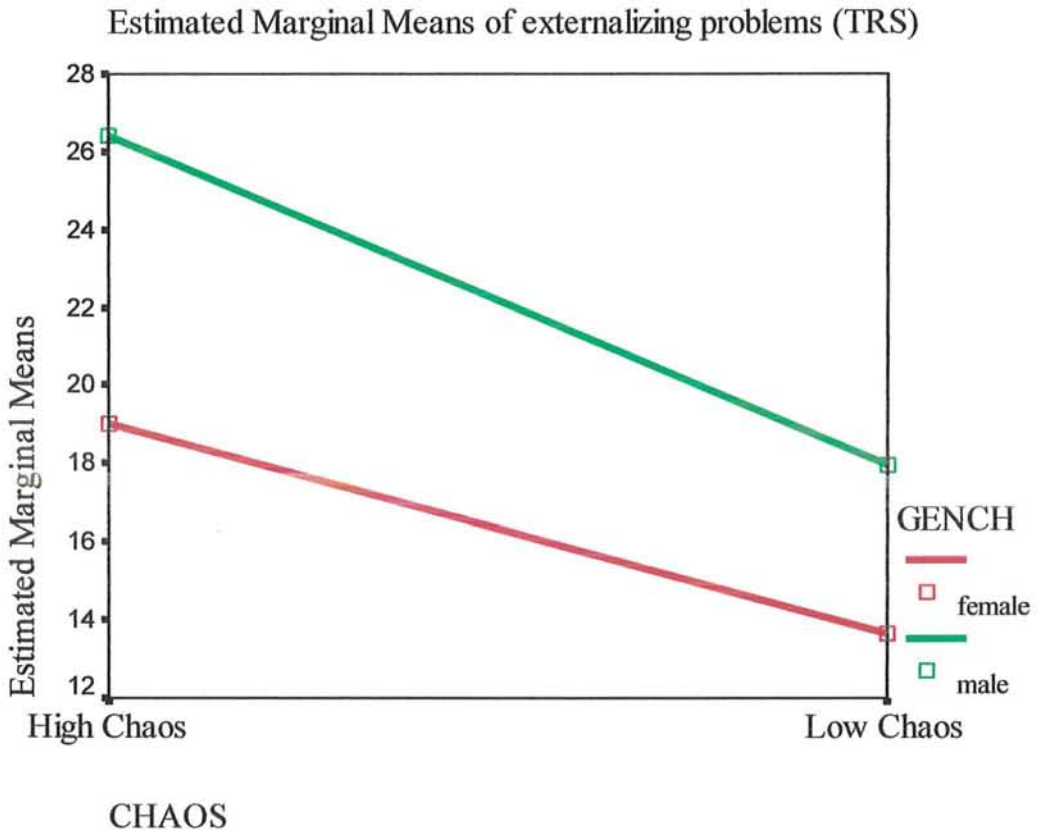


Figure 16: Children's score on externalizing problems (TRS) from high and low chaotic families showing significant main effects of home chaos and gender and non-significant interaction effect of home chaos and gender.

Table 57

Means and Standard Deviations of Children's Score of Internalizing Problems on TRS from Low Chaotic and High Chaotic Families (N = 203)

		Internalizing problems		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	17.20	8.91	41
	Male	18.10	9.55	42
	Total	17.65	9.19	83
Low chaos	Female	12.52	7.52	71
	Male	12.27	7.51	49
	Total	12.42	7.48	120
Total	Female	14.23	8.33	112
	Male	14.96	8.95	91
	Total	14.56	8.60	203

Table 58

F values of Children's Score of Internalizing Problems on TRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	1362.771	3	454.257	6.659	.000
Intercept	43646.325	1	43646.325	639.809	.000
CHAOS	1334.251	1	1334.251	19.559	000
Gender	5.020	1	5.020	.074	.786
Chaos×Gender	16.159	1	16.159	.237	.672
Error	13575.327	199	68.218		
Total	57953.000	203			
Corrected Model	14938.099	202			

The results indicate significant main effects of home chaos [F (1,199) = 19.559, p<.001] on internalizing problems of children as perceived by their teachers. There is non-significant main effect of both gender [F (1, 99) =.074, p=.786] and

interaction effect of chaos and gender [F = (1,199) = .237, p = .627], see tables 57 & 58.

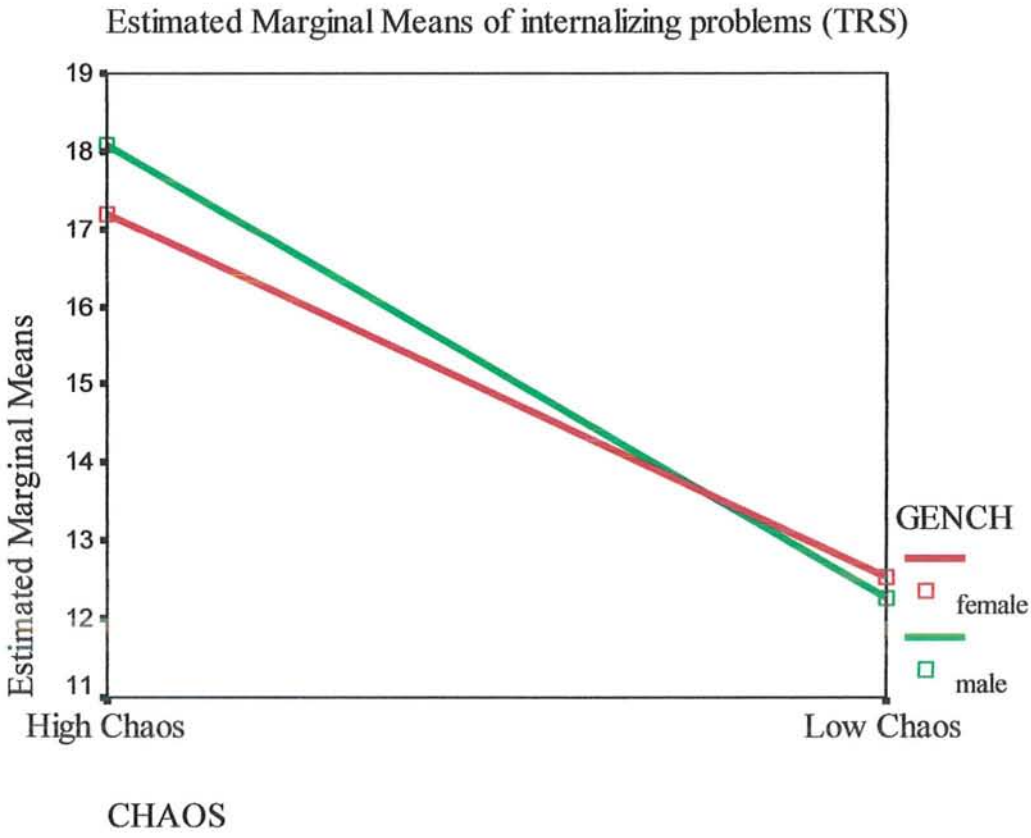


Figure 17: Children's score on internalizing problems (TRS) from high and low chaotic families showing significant main effect of home chaos and non-significant main effect of gender and interaction effect of home chaos and gender.

Table 59

Means and Standard Deviations of Children's Score of Behavioral Symptoms Index on TRS from Low Chaotic and High Chaotic Families (N=203)

		Behavioral symptoms index		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	34.76	14.86	41
	Male	48.55	18.66	42
	Total	41.73	18.16	83
Low chaos	Female	29.69	16.07	71
	Male	34.20	17.56	49
	Total	31.53	16.77	120
Total	Female	31.54	15.76	112
	Male	40.82	19.36	91
	Total	35.70	18.03	203

Table 60

F values of Children's Score of Behavioral Symptoms Index on TRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	9643.158	3	3214.386	11.425	.000
Intercept	262021.943	1	262021.943	931.295	.000
CHAOS	4555.719	1	4555.719	16.192	000
Gender	4052.244	1	4052.244	14.403	.000
Chaos×Gender	1040.887	1	1040.887	3.700	.056
Error	55989.108	199	281.352		
Total	324418.000	203			
Corrected Model	65632.266	202			

The results indicate significant main effects of home chaos [F (1,199) = 16.192, p <.001] and gender [F (1, 99) = 14.403, p <.001] on behavioral symptoms

index of children as perceived by their teachers. The significant main effect of gender indicates boys as more affected by chaos and were perceived high on behavioral symptoms (M = 40.82, SD = 19.36) as compared to girls (M = 31.54, SD = 15.76). There is non-significant interaction effect of chaos and gender [F = (1,199) = 3.700, p = .056], see tables 59 & 60.

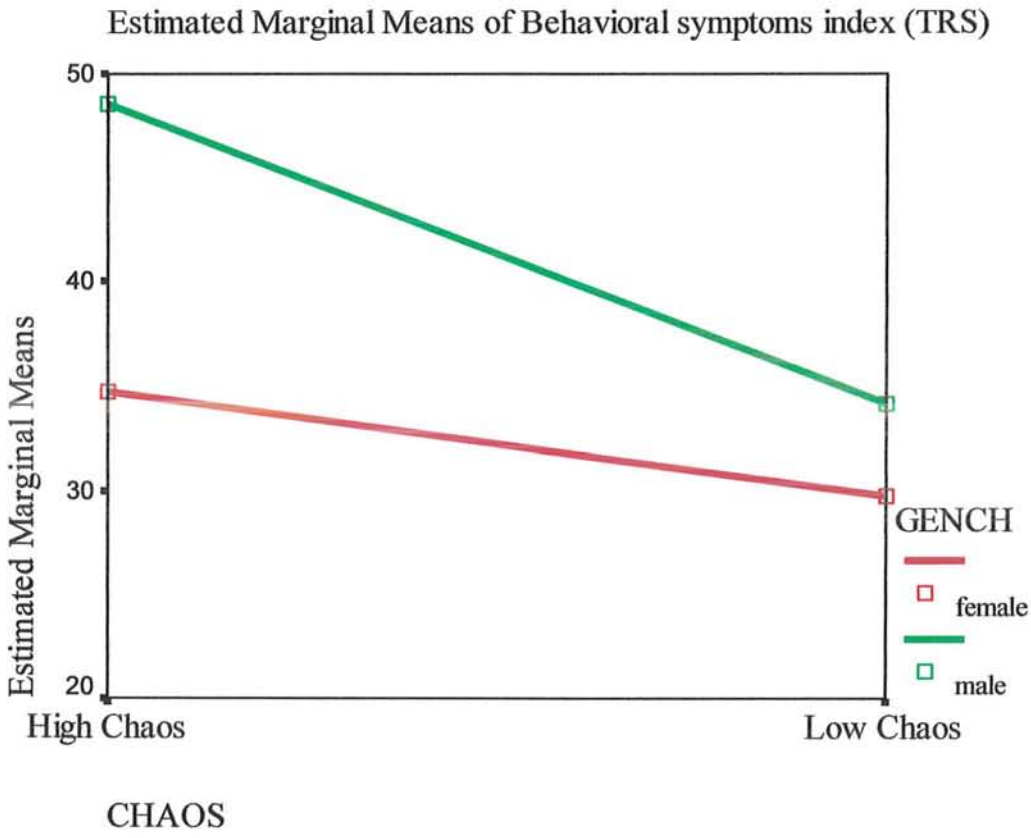


Figure 18: Children's score on behavioral symptoms index (TRS) from high and low chaotic families showing significant main effects of home chaos and gender and non-significant interaction effect of home chaos and gender.

Table 61

Means and Standard Deviations of Children's Score of Adaptive Skills on TRS from Low Chaotic and High Chaotic Families (N = 203)

		Adaptive skills		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	64.37	17.87	41
	Male	54.43	14.99	42
	Total	59.34	17.12	83
Low chaos	Female	71.37	16.67	71
	Male	65.41	19.86	49
	Total	68.93	18.20	120
Total	Female	68.80	17.38	112
	Male	60.34	18.52	91
	Total	65.01	18.34	203

Table 62

F values of Children's Score of Adaptive Skills on TRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	7595.867	3	2531.956	8.346	.000
Intercept	789859.456	1	789859.456	2603.467	.000
CHAOS	3909.403	1	3909.403	12.886	000
Gender	3055.431	1	3055.431	10..71	.002
Chaos×Gender	191.486	1	191.486	.631	.428
Error	60374.114	199	303.388		
Total	925905.000	203			
Corrected Model	67969.980	202			

The results indicate significant main effects of home chaos [F (1,199) = 12.886, p <.001] and gender [F (1, 99) = 10.071, p <.001] on adaptive skills of

children as perceived by their teachers. The significant main effect of gender indicates boys as more affected by chaos and were perceived low on adaptive skills (M = 60.34, SD =18.52) as compared to girls (M = 68.80, SD = 17.38).There is non-significant interaction effect of chaos and gender [F = (1,199) = .631, p = .428], see tables 61 & 62.

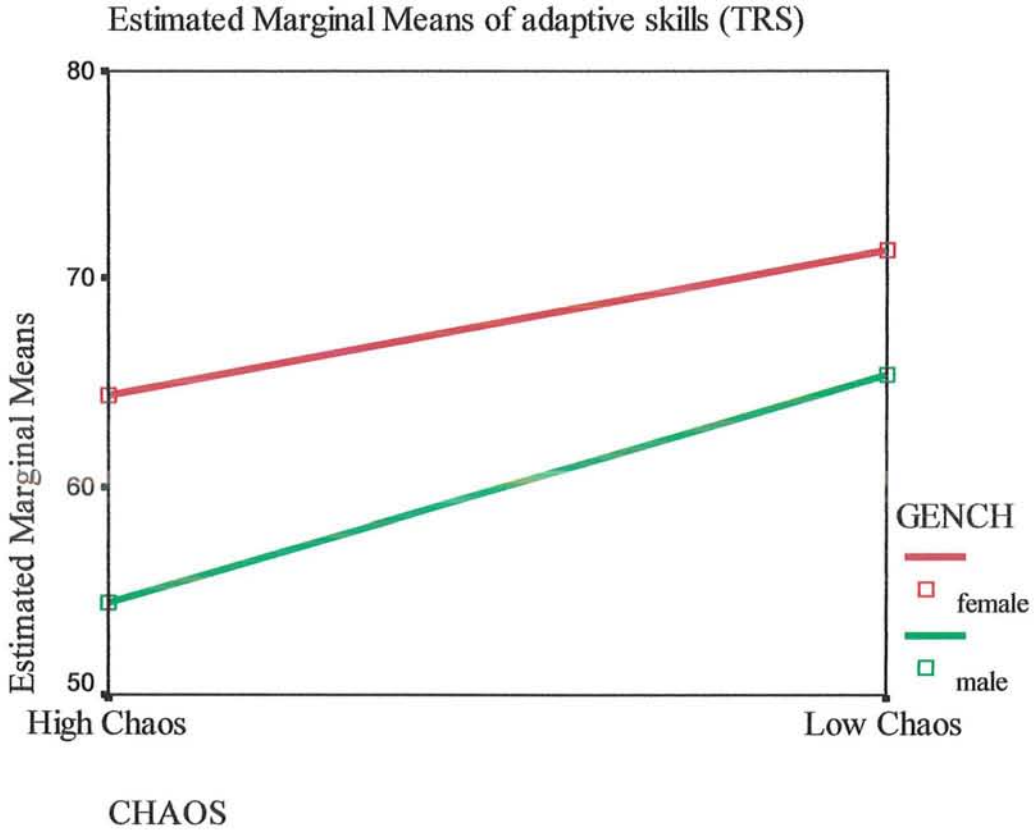


Figure 19: Children's score on adaptive skills (TRS) from high and low chaotic families indicating significant main effects of home chaos and gender and non-significant interaction effect of home chaos and gender.

Table 63

Means and Standard Deviations of Children's Score of School Problems on TRS from Low Chaotic and High Chaotic Families (N = 203)

		School problems		
Home chaos	Gender	*M*	*SD*	*N*
High chaos	Female	14.63	7.00	41
	Male	19.14	9.50	42
	Total	16.92	8.61	83
Low chaos	Female	12.04	7.03	71
	Male	14.08	8.38	49
	Total	12.88	7.64	120
Total	Female	12.99	7.10	112
	Male	16.42	9.22	91
	Total	14.53	8.27	203

Table 64

F values of Children's Score of School Problems on TRS from Low Chaotic and High Chaotic Families (N = 203)

Source	*SS*	*df*	*MS*	*F*	*p*
Corrected model	1343.399	3	447.800	7.139	.000
Intercept	43391.109	1		691.716	.000
CHAOS	708.290	1		11.291	001
Gender	518.518	1		8.266	.004
Chaos×Gender	73.738	1		1.175	.280
Error	12483.202	199	62.730		
Total	56667.000	203			
Corrected Model	13826.601	202			

The results indicate significant main effects of home chaos [F (1,199) = 11.291, p <.01] and gender [F (1, 99) = 8.226, p <.01] on school problems of children

as perceived by their teachers. The significant main effect of gender indicates boys as having more school problems (M = 16.42, SD = 19.22) as compared to girls (M = 12.99, SD = 7.10) as perceived by their teachers. There is non-significant interaction effect of chaos and gender F = (1,199) = 1.175, p = .280], see tables 63 & 64.

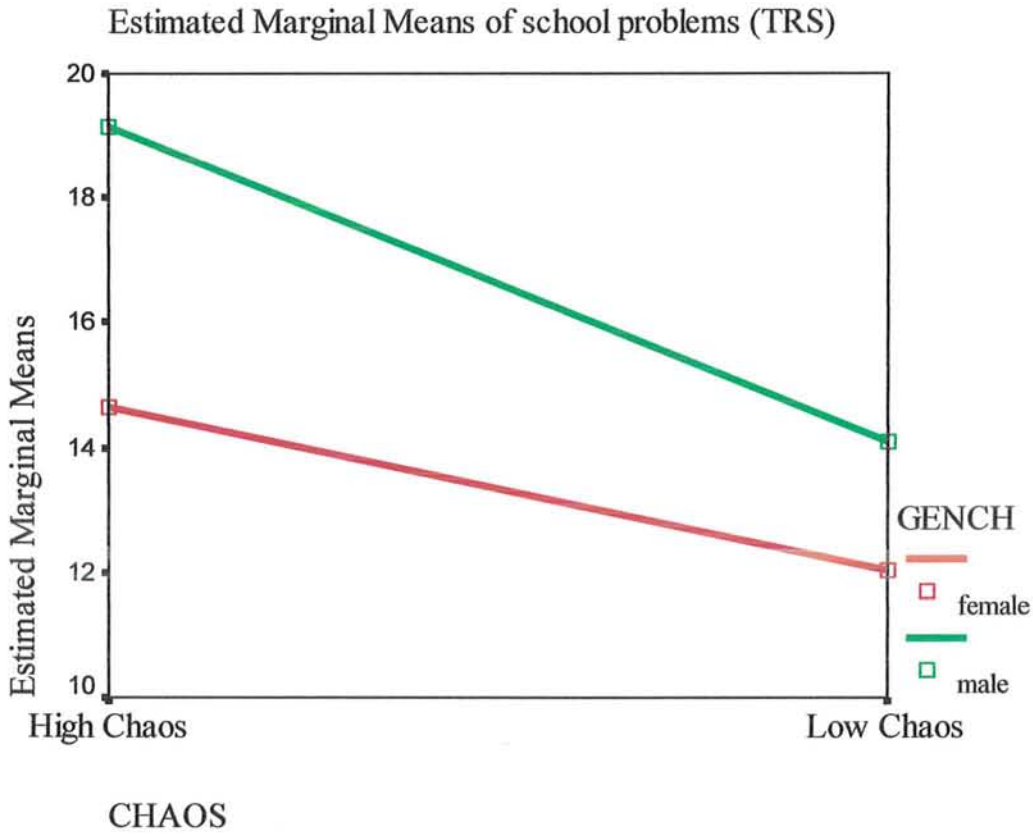


Figure 20: Children's score on school problems (TRS) from high and low chaotic families showing significant main effects of home chaos and gender and non-significant interaction effect of home chaos and gender.

The results of two-way ANOVA indicate that home chaos has more effects on boys as compared to girls. They have been perceived both by their parents (from high chaotic families) and teachers as high on externalizing problems, behavioral symptoms, and low on adaptive skills. However girls are being perceived as having more internalizing problems in high chaotic conditions as compared to boys in home

settings. Furthermore boys have shown to have more school problems as compared to girls. Results of the hierarchical multiple regression analyses (PRS) indicated significant prediction of parental report of child internalizing problems (R^2 = .31, F = 14.91, p<.000), externalizing problems (R^2 = .38, F = 20.44, p<.000), behavioral symptoms index (R^2 = .42, F = 23.71, p< .000) and adaptive skills (R^2 = .31, F =15.14, p<.000). In addition parents from Rawalpindi rated their children as higher on externalizing [t = 2.74, p< .01] and internalizing problems (t = 2.17, p< .05) compared to children from Lahore. Children from Rawalpindi (t = 4.31, p< .001) and Lahore (t = 2.99, p< .05) were rated higher on adaptive skills compared to children from Karachi. No other city comparisons were significant. Results of the hierarchical multiple regression analyses (TRS) also indicated significant prediction of teacher report of child internalizing symptoms (R^2 = .18, F = 7.23, p<.000) , externalizing symptoms (R^2 = .19, F = 7.87, p<.000), behavioral symptoms index (R^2 = .19, F = 8.07, p< .000), child adaptive skills (R^2 = .13, F =5.10, p<.000), and school problems (R^2 = .10, F = 3.67, p<.002). Compared to children from Lahore children from Karachi were rated as higher on externalizing problems compared to children from Lahore (t = 1.98, p = .05), and children from Rawalpindi (t = 2.69, p< .05) and Karachi (t = 2.85, p< .01) were rated higher on internalizing problems . No other city comparisons were significant. . All significant relations were in the hypothesized direction, with higher levels of home chaos predicting higher levels of child internalizing and externalizing problems, behavioral symptoms, school problems and lower levels of child adaptive skills. Chaos x gender interactions were non-significant in both PRS and TRS regressions showing males as higher on externalizing problems and lower on internalizing problems and adaptive skills as compared to females and were consistent with previous research.

Interview Analysis

In order to get some in-depth information regarding home environment, interviews were conducted with the mothers. A semi-structured interview schedule was used (see Annex C) which was based on five categories i.e., *communication pattern* of the family, *routines and regularities* regarding meal timings, study timings of the children and recreational activities of the family, *situational traffic pattern*, *disorganization in home*, and *relaxation time available to the mother*. Content analysis of the interview responses was done using similar procedure as used in the pilot study (see page 77 for detail). The sample was divided into two groups, high chaotic ($N = 83$) and low chaotic ($N = 120$) families by median split ($Mdn = 4$). Those interviews in which mothers reported problems on each question of the different categories (regarded as *problem categories*) were separated. The frequency and percentages of families on different problem categories were computed for both high and low chaotic groups. Results indicate high percentage of families in chaotic group reporting *problem categories* as compared to families in low chaotic (see table 65).

Mothers from chaotic families also reported multiple problems including their inability to gather at meals timings, lack of routines, absence of mutual cooperation, and noisy environments. Most mothers reported lack of interest and less contribution on part of their partners in terms of parenting and house hold responsibilities. Many mothers perceived their husbands as aggressive and dominant. Mutual understanding among couples was also low in chaotic families as compared to the low chaotic families. The interview results of each category will be discussed in the following sections.

Table 65

Frequency and Percentages of High and Low Chaotic Families on Each Category of Interview Schedule (N = 203)

Categories	High Chaotic families ($n = 83$)		Low Chaotic families ($n = 120$)	
	f	%	*f*	%
Communication pattern	52	62.65	16	13.33
Routines/Regularities	40	48.19	22	18.33
Situational traffic pattern	28	33.73	24	20.00
Disorganization	53	63.86	26	21.67
Relaxation time available to mother	52	62.65	32	26.67

1. Communication Patterns

62.65% families from high chaotic group and 13.33% families from low chaotic group reported problems on each question of this category. Mothers form chaotic families reported frequent disagreements with their husbands on not paying attention and giving proper time to their children, financial matters, and various personal issues. They also reported their inability to talk peacefully due to the noise and interruptions children made during their conversation. Some excerpts of interviews are given below as examples;

1- جب ہمارے درمیان اختلاف ہوتا ہے، تو وہ بہت سخت بات کرتے ہیں- اکثر میں ہی خاموش ہو جاتی ہوں، کیوں کہ میں اندر سے ڈرتی ہوں کہ کہیں وہ ناراض نہ ہو جائیں- میں اُن سے بچوں کی پڑھائی پر توجہ دینے کے لئے کہتی ہوں، تو وہ غُصّے میں آجاتے ہیں اور کہتے ہیں، جو اِن کے مقدر میں ہوگا، بن جائیں گے، میں سارا دن کھپائی کرتا ہوں، اب واپس آکر بھی اُن کے پیچھے رہوں-

'He speaks harshly when we disagree, and often its me who stop arguing because I feel concerned that he might get upset. If I ask him to pay attention to children's activities and studies, he becomes angry and says, 'they'll get what's their destiny. I work hard throughout the day, I don't want to indulge in these things after coming home'.

2- یہ غُصّے کے بہت تیز ہیں، بچوں کے معاملے میں پریشان رہتے ہیں، اور مُجھے اُن کا خیال کرنے کے لئے کہتے ہیں۔ جب غُصّے میں آجائیں، تو آپے سے باہر ہو جاتے ہیں، اکثر یہی کیفیت رہتی ہے۔

'He (husband) is very short tempered, though he does feels concerned about our children and always tells me to watch them and take care of them...when he looses temper, he starts shouting and gets out of control, this happens most of the times.'

3- ہم میاں بیوی کبھی ساتھ نہیں بیٹھتے۔ یہ بچوں کو گالیاں دیتے ہیں، اور جب وہ اسکول کا کام نہ کریں، تو بیلٹ سے مارتے ہیں۔

'Me and my husbands hardly sit together. He abuses children, and if they don't do their homework he physically abuses them'.

4- بچے باپ سے خوف زدہ رہتے ہیں، اور ابو کے ساتھ کبھی کھانا نہیں کھاتے۔ بچے چاہتے ہیں کہ ابو گھر سے باہر رہیں اور رات کو آئیں۔ وہ کبھی گھر کے کام کاج میں ہاتھ نہیں بٹاتے۔

'My kids are afraid of their father, never have dinner with him. They like when he stays out and come home late at night. He never helps me with the chores in the house'.

On the other hand mothers from low-chaotic families reported mutual understanding, more support from their husband, and the ability to resolve family issues.

Mother 1:

1 - ہمارے درمیان اختلاف نہیں ہوتا-اُن کی غلطی ہو، تو وہ مان لیتے ہیں، اپنی غلطی میں مان لیتی ہوں، اور ہم مل کر مسئلے کا حل تلاش کرتے ہیں-
میرے میاں، بچوں کے معاملے میں خیال رکھتے ہیں،اور ہم چاہتے ہیں کہ ہمارے بچے پڑھیں اور صاف ستھرے رہیں-

'We hardly disagree, if he makes a mistake, he admits it later on, I admit mine, we try to mutually resolve the issue'. My husband is very caring about our children and we want them to have a good education and stay clean and tidy.

2 - میرے میاں بہت کم غُصّے میں آتے ہیں اور چیختے چلاتے نہیں-بچوں کے معاملات میں میری بہت مدد کرتے ہیں-

'My husband hardly gets angry, he never shouts, he helps me in taking care of the children'.

2. *Routines/Regularities*

On the second category 48.19% families from high chaotic group and 18.33% families from low chaotic group reported problems in their daily routines and regularities. Mothers from chaotic families experience various problems such as high level of noise, irregular routines and resulting academic irregularities of their children. For example;

1 - بچے بہت زیادہ شور مچاتے ہیں-زیادہ تر آپس میں لڑتے ہیں-اسکول سے واپسی پر ٹی وی لگا لیتے ہیں اور اُس کے بعد کھیلتے ہیں-پڑھائی کا کوئی وقت مقرر نہیں ہے، جب تک میں چیخوں نہیں، پڑھنے نہیں بیٹھتے-ڈنڈا ہے، تو ٹھیک ہیں-

'Children make too much noise and fight with each other most of the time. After coming back from school they watch television and play games most of the time. There is no fixed time of studying. They don't study on their own until I shout and tell them to work. They only behave when I get angry.

2 - میں اور میرے میاں ایک دوسرے کو برداشت نہیں کرتے- بچے شور مچاتے ہیں اور اپنی مرضی سے ہوم ورک کرتے ہیں، اُن کا کوئی وقت نہیں ہے-

'Me and my husband don't get along very well. Children are very noisy, they do their school work when they feel like it. There are no regular timings for that'.

3 - بچے چیزیں استعمال کر کے اپنی جگہ پہ نہیں رکھتے اور مجھے تلاش کرنی پڑتی ہیں- بچوں کی مداخلت سے میں اور میرے میاں آپس میں بات نہیں کر پاتے- بچے اپنی پڑھائی میں دلچسپی نہیں لیتے اور جب تک میں زبردستی نہ کروں، پڑھنے نہیں بیٹھتے-

Children never put things back where they belong to, I have to look for things. Me and my husband cannot share and talk in peace because of frequent interruption. Children don't take interest in their studies and don't start their school work till I force them to do so.

Mothers from low-chaotic families on the other hand, did follow regular routine and help their children to do so too.

1- میں نے اپنے بچوں کی تربیت مناسب طریقے سے کی ہے- یہ اسکول سے واپسی پر آ کر آرام کرتے ہیں اور پھر شام کو 5 بجے اٹھتے ہیں، چائے پیتے ہیں اور پھر اسکول کا کام کرنا شروع کر دیتے ہیں- میں روزانہ ان کی اسکول ڈائری چیک کرتی ہوں- یہ ایک سے ڈیڑھ گھنٹے کے لئے ٹی وی دیکھتے ہیں اور پھر رات کو 10 بجے تک سو جاتے ہیں-

I have trained my children very well. They come back from school and relax till 5 in the evening, they then have their tea/snack, and start their school work. I check their school diaries regularly. They are allowed to watch television for 1-1/2 hour and go to bed by 10.00 pm.

2- مجھے اپنے بچوں پر اعتماد ہے- وہ کبھی جھوٹ نہیں بولتے اور اپنا کام خود کرتے ہیں- وہ عموماً رات کو ساڑھے نو بجے تک سو جاتے ہیں- ہم انہیں پڑھائی کے دوران ٹی وی دیکھنے کی اجازت نہیں دیتے- میں اپنے پڑوسیوں اور رشتے داروں کو بچوں کے امتحانات کے بارے میں بتا دیتی ہوں اور اُن کو منع کرتی ہوں کہ اس دوران وہ ملنے نہ آئیں-

I trust my children. They don't lie and do their school work on their own. They usually go to bed around 9: 30 pm. We don't allow them to watch television while studying. I tell my neighbors and relatives about my children's exams schedule and tell them I'll appreciate a visit after my children's exams are finished.

3. *Situational traffic pattern*

Mother from chaotic families (63.86%) report high situational traffic patterns which reduce their ability to manage their routines as compared to the families from low chaotic group (21.67%). They stated that their relatives often visit them, and these visits become more frequent during summer and winter holidays which upset their budgets and their children become out of control. Moreover mothers who live with their in laws also reported various problems including privacy and crowding. Some mothers reported that one room is shared by 3-7 individuals in the house. Further they face high situational traffic patterns, some of them labeled their homes as a Zoo. Some of the excerpts of the interviews are given below;

1- ہمارے ہاں بہت زیادہ مہمان آتے ہیں۔ محلے سے بھی اور رشتہ دار بھی چھٹیاں گزارنے آتے ہیں۔ اس سے نہ صرف ہمارے اخراجات پہ اثر پڑتا ہے بلکہ بچوں کی روٹین خراب ہو جاتی ہے۔ مہمان اکثر امتحانوں کے زمانے میں آتے ہیں جس سے میں اکثر پریشان ہو جاتی ہوں۔

Lots of visitors come unannounced. Neighbors and some close relatives also come to visit during holidays. It not only disturbs our budget but also effects children's daily routine. They often come during exams and I get very worried.

2- ہماری فیملی بڑی ہے۔ لوگوں کا مسلسل آنا جانا مجھے آرام نہیں کرنے دیتا۔ بس اسی طرح گزارہ کر رہے ہیں۔

We are a large family. I hardly find time to relax because of the frequent visits (of other family members). That's the way we are spending our lives.

4. Disorganization

Most mothers from chaotic families reported a lack of routine and organization in their houses. Their children don't have regular timings for studies, watching television, and for going to bed at night. This chaos gets worse during children's holidays. Mothers reported that during holidays their children sleep very late at night, get up very late in the day, and hardly share chores around the house. This ultimately leaves less time for mothers to relax. Some examples are given below;

1- ہماری چھٹیوں میں کوئی روٹین نہیں ہوتی۔
اگر مجھے آرام کے لئے وقت بھی ملے، تو عموماً کسی مسئلے پر سوچتے ہوئے گزار دیتی ہوں۔

There is hardly any routine in children's holidays. What ever time I have to relax, I often spend it in thinking about some thing that I'll have to deal with.

4- بچوں کی چھٹیاں ہیں، اس لئے کوئی روٹین نہیں ہے۔ کبھی میں صبح جلدی اٹھتی ہوں اور کبھی نہیں جب میں دیکھتی ہوں کہ دوسرے سو رہے ہیں، تو میں پھر سو جاتی ہوں۔ اسکول کے زمانے میں بچوں کی پڑھائی کے اوقات دیکھنا آسان ہوتا ہے لیکن چھٹیوں میں تو کہہ کہہ کے میرا دماغ خراب ہو جاتا ہے۔ رات کو سونے کا کوئی خاص وقت نہیں ہے۔ اسکول کے زمانے میں مجھے اکثر صبح ناشتہ بنانے اور ساتھ ساتھ بچوں کو سنبھالنے میں مشکل ہوتی ہے۔

Its children's holiday period. I sometimes get up early in the morning, but other times, I go back to sleep when I see others still sleeping. In school days it is easy to mange study timings of children but in holidays it's totally out of control, I feel frustrated and have to say it again and again. They don't have any regular timing to go to bed at night. In school days too, I often find it very difficult to manage making breakfast and handling children at the same time.

5. Relaxation time available to mother

62.65% mothers from high chaotic group reported lack of peace and mutual cooperation amongst the family members in their homes. They also stated that most of the burden of the household is on them and they feel extremely pressured to finish things on time. As a consequence, they are unable to relax properly, and reported to feel low quite often. Utilizing ineffective discipline strategies make the matter worse for them;

2- مجھے اپنے لئے بہت کم وقت ملتا ہے۔ اب آپ دیکھیں کہ میں صبح سے سوچ رہی ہوں کہ نہالوں، لیکن ابھی تک مجھے وقت نہیں ملا۔ میں سکون سے سوچ بھی نہیں پاتی، بعض دفعہ میں بچوں سے کہتی ہوں کہ میں زندگی سے پریشان ہو گئی ہوں اور میں جا رہی ہوں۔ دل چاہتا ہے کہ گھر چھوڑ کر بھاگ جاؤں۔

I hardly get any time for myself. Now look at me, I am planning to take a shower since this morning and didn't have any time to do it yet. I can't even think in peace....some times I tell my children that I am fed up of this life and I want to run away from this.

3- میں بہت زیادہ سوچتی ہوں- یہی میرا مسئلہ ہے- مجھے اپنے کام روک کے آرام کرنا پڑتا ہے-

I think too much....and this is my main problem, I have to interrupt whatever I am doing to get some rest.

In contrast mothers from low-chaotic families reported a better regulated home environment and their daily routine included a relaxation time with or without the other family members. Most of these mothers stated that they trained their children to wake up early, get ready, have breakfast, and leave for school on time. During holidays also they maintained some routines except for a relaxation in study schedule so that they can have some fun time. Due to an organized system at home, these mothers reported to get enough time to relax and entertain.

مجھے اپنے گھر میں آرام کرنے کے ساتھ ساتھ اپنے دوستوں کے گھر جانے کا بھی کافی وقت مل جاتا ہے۔ وہ بھی ہمارے گھر آتے ہیں۔ بچوں کو معلوم ہے کے کب اُنہیں اپنے کمرے میں بیٹھ کر پڑھنا ہے اور اپنا ہوم ورک کرنا ہے۔ چنانچہ وہ اپنا کام خود کرتے ہیں اور ہر وقت میری نگرانی کی ضرورت نہیں ہوتی۔ میں صرف اُنکا کام چیک کرتی ہوں اور اُنکی غلطیوں کے بارے میں بتاتی ہوں۔

I find enough time to relax and visit my friends or entertain them in my own home quite often. Kids know their time to sit in their room and do their home-

work or some reading, so they do it on their own now and don't need my supervision. I only check on them off and on and give them feedback on how they are doing.

On the whole the analysis of the interviews with the mothers revealed many differences between chaotic and non-chaotic families. They expressed differences on overall implementation of regular routines in the house, fathers' interest and role in the household activities, effective discipline strategies, mothers' level of stress etc. Moreover family system (i.e., nuclear vs. extended families living together) and situational traffic patterns have also been emerged as important contributing factors towards home chaos. It was also observed that parents usually don't perceive these factors important in child development. They did wonder about their children's problematic behavior but couldn't understand where it was coming from. It was also noticed that most of the parents don't visit their children's schools to meet with their teachers. Fathers' lack of interest in children's behavior in general along with their academic activities was also reported by most of the mothers in our sample. These factors might be regarded as having cumulative effects on home environment. The overall results of the present research are discussed in detail in the next chapter.

DISCUSSION

Chapter IV

DISCUSSION

A healthy child development is dependent on both heredity and environment. Evidence has suggested that environment can have both positive and negative impact in the actualization of genetic potential. Bronfenbrenner has proposed the concept of 'proximal processes' which refer to the process by which genetic potential gets effective actualization. By strengthening these proximal processes the actualizing potential of genetic material can be increased (Bronfenbrenner & Ceci, 1994).

It has been established that proximal processes such as parent-child interactions do not take place in vacuum and are rather imbedded in a complex environment (Bronfenbrenner, 1979, 1986). Within this multidimensional environment two main aspects, the social microsystem (the family) and the physical microenvironment of the children were the center of attention in the present study (for details see chapter I). One of the most important aspects of the physical microenvironment is environmental chaos. Over the last decade research has found evidence of significant impact of environmental chaos on child development and adjustment (Coldwell, Pike, & Dunn, 2006; Dumas et al., 2005). Chaos has also been seen as a mediator of the relations between poverty and socioemotional adjustment of adolescents (Evans et al., 2005). Research on western and non-western societies such as Egypt (Wachs et al., 1993), India (Evans, Palsane, Lepore, & Martin, 1989), and Hong Kong (Mitchell, 1971) etc. have supported the links between chaos, developmental outcomes and various aspects of parenting. However this area has not been explored scientifically in Pakistan. There is some research evidence on social

microenvironment (Pervez, & Anila, 1994) and on impact of noise on children's academic performance (Quaid, Khan, Anwar, & Mateen, 2001). But the importance of chaos within the household and its impact on child development has never been explored properly. The present research was conducted to search for the links between environmental chaos and child development in Pakistani culture which is collectivistic in nature. However due to the unavailability of any indigenous empirical data regarding the links, an intensive and careful literature review was done before designing the study. Urdu version of the CHAOS scale (Matheny, Wachs, Ludwig, & Phillips, 1995; Shamama-tus-Sabah & Gilani, 2008) was used which is a valid and reliable instrument to measure home chaos. The main objective was to explore the relationship between home chaos and children's cognitive ability and socio-emotional adjustment and also to investigate home chaos as predictive of children's cognitive ability and adjustment. Along with parents, teachers were also included in the research to have their perspective of children's behavior. It was hypothesized that elevated levels of home chaos will be associated with elevated behavioral, adaptive and school problems, lower cognitive ability and less academic achievement among children. It was also intended to explore relationship of home chaos with mother's education and type of family (nuclear or living with the extended family), and to observe gender differences among children from chaotic families. The overall results have supported the expected relationship between home chaos and children's socio-emotional adjustment. However the present research has suggested no significant relationship between home chaos and cognitive ability of children.

The first phase of the study consisted of two steps. The first step was translation of the CHAOS scale (Matheny et al., 1995) and to establish psychometric properties of the translated Urdu version of the scale. The results of both the first

phase and the main study suggested that CHAOS Scale-Urdu version is a reliable, internally consistent and economical measure of home chaos. Parent rating scale and teachers rating scale of Behavioral Assessment System for Children-BASC-2 (Reynolds & Kamphaus, 2004) were also found to be reliable with educated mothers and teachers respectively. Results also showed Ravens Standard Progressive Matrices (Ravens, Court, & Ravens, 1978) as a culture fair test by reliably measuring children's cognitive ability in Pakistani culture. In continuation of the first phase of the study *t*-test was applied to find out the similarity of perception among couples of the final phase. Only 68 fathers were available therefore this analysis was run with 68 couples. In line with the results of the first phase no significant mean differences emerged. It suggests that couples similarly perceive their environment as chaotic or non-chaotic.

To observe the relationship between home chaos, mother's education and family system, one way ANOVA and *t*-test were applied respectively. Home chaos was found to be significantly related to family system but not with mother's education. Available research indicates maternal education as a buffering agent in overcrowded homes. Research shows that educated Egyptian mothers living in overcrowded homes use authoritative style which was related to high cognitive competence of their children (Shapiro, 1974; Von de Lippe, 1999). However in the present study the results showed no significant differences between three groups with different educational backgrounds of mothers (12 years, 14 years, and 16 years) on their scores on CHAOS Scale-Urdu version. In Pakistan the educated women have more opportunities to pursue a career/profession. They work outside their home to support their families and their busy schedule leaves little room to mange their homes efficiently. At the same time dearth of supportive facilities (e.g. day care centers,

adequate transportation to work place and so on) can make the matter worse. Less educated women generally have low income jobs and very few job opportunities. The results of the present research indicate though that formal education is not an important factor in home chaos in Pakistani culture. This might be due to its societal values which expect girls to be prepared to manage the household from a very early age. More emphasis is placed on learning to manage the home and perform the household related tasks instead of formal education. This could be the reason behind the result that did not highlight the significance of formal education in terms of home chaos.

In Pakistani culture although there is a growing trend towards having nuclear families due to multiple factors like income level, job requirements, personal preferences etc extended family system (i.e., parents and children living together, daughters till they get married and sons even after they get married) is still popular and is considered to be the sign of connected and cohesive families. In some cases families prefer extended system for financial reasons as they cannot afford to run independent houses, but generally, it is a preferred family system. Present findings showed a significant difference in levels of home chaos between extended and nuclear families, extended families being more chaotic, noisy and disorganized. As evident from the interview responses (see interview analysis) mothers from extended families reported more noise levels, high traffic patterns, lack of routine, lack of privacy, and exhibited lessiz-faire parenting style. This suggests that even though multiple caregivers are available to children, these families experience chaos and parenting difficulties. Having single kitchen for multiple users, frequent visits from relatives, large number of individuals (11-18 per home), resulting noise, and lack of collective effort to maintain routines may be regarded as possible reasons of home chaos in such

families. Information gathered through demographic sheet revealed that in some of the families where 2-4 families live together under one roof, one family occupies only one room. This results in 5 to 7 individuals per room (depending upon the number of children). In previous researches, crowding is considered another important dimension of environmental chaos and has been found to affect parent-child transactions by deteriorating social support relations and producing psychological distress among caregivers (Evans et al., 1998). Along with the results on CHAOS scale, the interview analysis also showed that extended families experience lack of sufficient place for children to study, for mothers to take rest, and restricted privacy of the couples. The impact of crowding could be another factor behind home chaos in these families.

Available research shows significant negative relationship between home chaos and cognitive development (Petrill, Pike, Price, & Plomin, 2004; Gottfried & Gottfried, 1984). The findings of the present research however do not support this. The non-significant negative relationship between cognitive ability of children and home chaos (r =-.049, β= -.06) might be attributed to the early schooling system and cultural values of Pakistan. In Pakistan children generally start going to schools at the age of 3. This could be a source of greater opportunity to get engaged in multiple activities from an early age, away from crowded homes. Earlier findings suggested that early exposure, stimulation, and active participation lead to the better cognitive development among children (Andrade et al., 2006; Shaffer, 2004). According to Shaffer (2004) cultural differences of what, when, and how the instructions are given to the children accounts a great deal of cognitive development. The non significant relationship might be due to these children's early experiences of exposure and cognitive stimulation in their social environment.

Results have also revealed gender difference showing girls as high on cognitive ability as compared to boys. In Pakistani society children specifically girls at an early age are encouraged and reinforced to take part in various household activities. Girls usually start helping their mother from a very early age. In many families little girls also take care of their younger siblings while their mothers are busy in performing other household chores. Boys are also expected to help around the house but not as much as the girls. This experience could have an impact on the development and sustenance of their cognitive abilities. Results indicate that although chaos has no main effect on cognitive ability of the present sample, it may have some relationship with the gender of the child.

It was hypothesized that home chaos will be associated with low academic achievement and more school problems. Present findings support the hypothesis and revealed home chaos as a significant predictor of children's school problems and indicated negative impact of home chaos on children's academic achievement (see table 33 & 53). Research has suggested that exposure to home chaos can endanger children's academic performance through multiple pathways. Environmental chaos has been considered as deleterious for children's academic success (Quid et al., 2001). According to Harold, Aitken, & Shelton (2007) inter-parental conflict and high levels of hostility in household also affect children's attributional processes and their long term academic success. In the present research children from high chaotic families showed lower academic scores and exhibited more school problems including learning and attention problems as compared to the children from low chaotic families. The possible explanation of this relationship might be attributed to reduced ability of children to focus and learn in chaotic environment, lack of routine and regularities, increased chaos during holidays, and interparental conflicts. These factors

could have a negative impact on their interest, attention and focusing ability. A significant positive relationship has been observed between parent's support (provision of breakfast and school supplies, parents' presence at home when children leave for school) and academic achievement of Nigerian pupils aged 8-11 years (Bolarin, 1992). The present findings and interview analysis revealed that chaotic families often fail to provide these provisions and experience higher levels of inter-parental conflicts. Mothers from chaotic families reported more aggression expressed by their spouses, frequent disagreement with them, and expressed higher level of stress. These factors could adversely affect the quality of parenting and may indirectly lead to children's deteriorating academic performance. Parents are expected to provide healthy and stable environment for their children, failure to do so may lead to multiple behavioral problems among children in various social situations.

Keeping in view the relationship of home chaos with cognitive ability and academic achievement the results present a different picture. It is observed that chaos adversely affect academic achievement of children but not their cognitive ability. These results might be attributed to the educational and examination system of Pakistani schools where children are required rote memorization of the text. Home chaos being the major factor in limiting the attentional focusing and learning, may lead to lower academic performance among children.

Middle childhood is a period when children develop emotional competence and emotion management skills (Shaffer, 2004). Children differ in their emotional competence due to multiple factors such as parenting environment (Wachs, 1992; Wohlwill & Heft, 1977), biological influences, interpersonal influences and ecological influences such as over crowding, financial problems, and ill health which in turn may lead to less responsive parenting (Shaffer, 2004). The results of the

present study have supported the significant impact of ecological factors such as environmental chaos on children's adjustment. The hypothesis about significant positive relationship between home chaos and externalizing and internalizing problems, behavioral symptoms and significant negative relationship with adaptive skills was supported. Both parents rating scales and teachers rating scales have indicated home chaos as an important aspect of physical microenvironment that can lead to adverse developmental outcomes. Regression analysis showed that most of these correlations could not be accounted for their socioeconomic status, gender of the children, and city of residence. Significant variance among these correlations indicated home chaos as a significant predictor of children's externalizing, internalizing, and adaptive problems. Children from chaotic families were perceived as high on both externalizing problems (hyperactivity, aggression and conduct problems) and internalizing problems (depression, anxiety, and somatization) by their parents and teachers. The results are inline with previous evidence which have also shown positive relationship of chaos and children's behavioral problems (Andrade et al., 2006; Dumas et al., 2005). Environmental chaos can influence child development due to its influence on caregivers' behavior (Wachs, 1989, 1993) and by affecting the social support relations between parents and elementary school children (Evans et al, 1998). It may also interfere with proximal processes (Bronfenbrenner & Evans, 2000) and produce psychological distress among adults by lowering their social support relations (Lepore, Evans, & Schneider, 1991) and causing social withdrawal as coping strategy (Evans, Rhee, Forbes, Allen, & Lepore, 2000). In the present research, various factors were reported by mothers from chaotic families in their interview, such as poor parent-child transactions, ineffective and harsh discipline strategies, and lack of temporal and physical structure resulting from elevated levels of home chaos.

The interview analysis showed that mothers' inability to get time for themselves to relax and perform some other personal activities may lead to higher level of stress which could be a major contributing factor in poor parent-child relationship. Empirical support for the negative impact of maternal stress on childrearing practices and parenting has been found in the literature. Greater maternal emotional stress was found to be directly influencing parenting that in turn has an impact on social initiating among children. It also suggested that even milder level of stress can affect parenting that may lead to less developed social skills among children (Assel, Landry, Swank, Steelman, Miller-Loncar, & Smith, 2002). Interviews analysis of the mothers from chaotic families suggested that they perceived their families as more disorganized and noisy. They stated that they get less time to pay proper attention to their children and most of the time they are multitasking without much thinking. High situational traffic patterns not only disrupt their routines but also cause financial problems and make house management even more difficult. Most of them perceived their spouses as aggressive and least interested in household problems and children's activities. Evidence suggests that poor fathering can also be a major contributing factor in children's behavioral problem (Atzaba-Poria, Pike, & Dealter-Deckard, 2004; Formoso, Gonzales, Barrera, & Dumka, 2007).

These factors might be considered as having cumulative effects in producing home chaos ultimately limiting children's abilities to manage their emotions which can be expressed in other contexts such as school. Emotional competence plays a very important role in forming relationships. It has been noted that children who develop constructive way of emotional management show more success in their peer relations (Calkins, Gill, Johnson, & Smith, 1999). The significant positive relationship between home chaos and children's behavioral problems perceived by their teachers supports

this assumption that home chaos may lead to externalizing problems by inhibiting children's social competence which ultimately affects various aspects of their social life.

It was hypothesized that children from high chaotic families will exhibit less adaptive skills as compared to low chaotic families. This hypothesis was supported as CHAOS score showed statistically significant increase in the proportion of the variance associated with children's adaptive skills as perceived by their parents and teachers. Children from high chaotic families were rated as having less social skills, poor study skills, and poor adaptability at home and school settings. It suggests that such children may get fewer opportunities to practice social skills and learn ineffective management skills through modeling. It has been noted in previous research that environmental chaos may lead children to develop strategies that help them filter out unwanted stimulation which might result in filtering out valuable information too (Evan, Kliewer, & Martin, 1991). Chaos has also been shown to reduce children's ability to understand and respond to social cues (Dumas et al., 2005). Children's low adaptive skills in school setting support this view. It may be assumed that children not only develop these strategies to cope with chaos but also continue to use them in other contexts. As revealed from interview analysis mothers from chaotic families reported that as a family they hardly spend time together or have meals together. Such families may miss out opportunities to share and connect and develop a routine to be together at least once a day

Socioeconomic status (SES) has been considered an important aspect in family functioning. Previous researches have shown chaos as having adverse impact on children's developmental outcomes in lower socioeconomic classes (Evans et al., 2005). According to Evans and English (2002), families belonging to the lower

socioeconomic class face multiple physical and psychosocial risks such as noise, crowding, substandard housing, family turmoil, community violence etc., compared to the middle-income families. The exposure to these cumulative stressors may lead to socio-emotional dysfunction among children. The present study has indicated home chaos as significant predictive of children's socio-emotional adjustment in six out of eight regressions over and above socioeconomic status of the families. It supports earlier findings suggesting chaos as a unique construct and not a substitute for adverse social and psychological circumstances (Dumas et al., 2005). In the present research socioeconomic status was found to have a significant positive relationship only with adaptive skills in home setting (PRS) and with externalizing problems among children in school setting (TRS). This suggests that financial position can be an important aspect in learning social, adaptive, and leadership skills. Less exposure to technology, overcrowded homes, substandard living, and multiple risks reduce parents' ability to practice and teach healthy adaptive skills to their children. These results support the earlier findings showing poverty as deleterious for both parents' emotional life and children's socio-emotional functioning (Garner, Jones, & Miner, 1994; Garner & Spears, 2000). There was also a positive correlation between socioeconomic status and externalizing problems among children in school settings. It showed that children from upper middle class families exhibited externalizing problems more as compared to their lower class counterparts. It seems that better financial position can be a way to provide various facilities in life but it cannot be a substitute for parental attention, discipline, and time management skills.

To test the hypothesis of gender differences in socio-emotional adjustment of children form high and low chaotic families, two-way analysis of variance (ANOVA) was applied. The results showed that home chaos has a negative effect on boys more

than it has on girls. These findings are inline with previous evidence (Evans, Lepore, Shejwal, & Palsane, 1998) that stated that parents from chaotic families perceived boys as high on externalizing problems, behavioral symptoms and low on adaptive skills as compared to the girls. Teachers in the present research had also reported more aggression, hyperactivity, higher behavioral symptoms and other school related problems, and low adaptive skills among the boys compared to the girls from high chaotic families. Moreover, boys form high chaotic families were also low on academic achievement as compared to the girls. It seems that home chaos adversely affects boys more than the girls. Exception is the internalizing problems where girls have been rated high by their parents and no significant gender differences were reported by teachers between children of high and low chaotic families. Cultural and societal values generally discourage both verbal and physical aggression in girls. This could lead to the internalizing symptoms such as depression, anxiety, and multiple somatic complaints. Girls in the present sample are perceived as high on internalizing problems by their parents.

Overall the findings point towards home chaos as a significant predictor of children's behavioral, adjustment, adaptive, and school related problems in both home and school settings. However it doesn't suggest any relationship with the cognitive ability of these children.

Implications of the Study

The present research has suggested that home chaos has a significant aspect of children physical microenvironment that can influence their performance in various

important areas of their lives. The study has paved ways to an area of research previously neglected in Pakistan.

Pakistan is highly populated country where increasing urbanization is leading to crowding and economic constraints. Changes at a societal and family level need to be addressed as these can have an impact on children's psychological and cognitive development. Microsystem is extremely important in understanding child development and has been the focus in the present research. The results suggest home chaos as significantly predictive of children's adjustment problems in both home and school settings and may have diverse implications. There is a need to increase awareness among parents about the importance of routines and regularities in home, and about interrelationship between different ecological systems like home and school. The qualitative analysis of the study has highlighted the complex nature of bidirectional influences among home chaos, parenting, maternal stress and children's developmental outcome. This framework can be further explored to use family and school based preventive interventions.

The study also gives some insight about the cultural moderators of home chaos. Wachs and Corapci (2003) have suggested a hypothetical linkage pattern between chaos and children's adverse developmental outcomes. They have explained several culturally sensitive moderators of chaos such as presence of multiple caregivers, parents' belief system and living structure of the families. On the contrary the present research has not supported the moderating effect of multiple caregivers in Pakistan. Extended family system might be considered as one opportunity for having multiple caregivers. But unfortunately the presence of multiple caregivers despite compensating for mothers' reduced involvement has been instrumental in increasing the chaos level at home. Similarly mothers' education level has not been found as an

important buffering agent against chaos. Keeping the sample size in perspective (N = 203), it can be said that these finding are pointing towards the presence of a linkage pattern between home chaos, parenting, child development and related concerns in Pakistani culture. A detailed investigation with a larger sample is needed to have an in depth and focused view of this issue in future.

The present study has also helped to explore 'quality of fathering' as an important aspect in home management. The crucial role of fathers in providing healthy and stable home environment to children is important specially in cultures where hierarchy in terms of gender is prevalent and considered a norm. Gender discrimination can be addressed seriously at a broader level. A balance in power and privileges between both the genders is required to effectively use the authority to maintain a system around the house. Lack of interest on fathers' part can put a lot of pressure on mothers who have to perform various tasks while having less authority and control in making decisions.

Overall, the research has addressed a wide range of adverse outcomes of environmental chaos which may affect family life regardless of their socioeconomic status.

Limitations of the Study

Within the Pakistani cultural context, the present research can be a valuable addition in the existing body of knowledge by opening new area of research which can lead to greater awareness necessary for families, school administration and researchers in general. However it is important to address some of the limitations in the present study that could lead future researchers to fill the gaps.

- In the present research CHAOS Scale was used along with detailed interviews to get in depth information about home environment of the sample. However, observation techniques could also be used to further support the results by verifying the information reported by mothers. Lack of time and resources, and training in observational techniques limited the researcher's ability to use this strategy in the present study.
- Inter rater reliability for teachers rating scale could not be calculated due to the unavailability of sufficient number of teachers who were willing to participate in the research. It limited the researcher to get enough data to be sufficient for inter rater reliability.
- The use of the English version of BASC-2 (permission of translation was not given by the organization) limited the variability of the sample as only educated mothers (who could read and understand English language) were included in the sample.

Recommendations and Suggestions

The present research has indicated home chaos as one of many aspects of child's immediate environment which can have negative impact on development. However there are other variable which might have direct or indirect links with home chaos. Moreover cultural variation may also act to moderate the effects of home chaos on child development. To address these aspects it is suggested to conduct further studies to explore various family structures, specific parenting styles, parental beliefs about child development, their level of awareness, and the possible links between adult's heath status and home chaos in Pakistani society. To widen this framework

there is also a need to explore the relationship between home chaos and children's behavioral problems among less educated families. There is also a need to study specific coping strategies parents use to deal with home chaos and its resulting problems. This will help to increase the generalisability of the current findings across different settings and cultural variation within Pakistani culture.

This study highlights the importance of environmental chaos and its link with child development in multiple contexts in Pakistani culture. The important implication of the present study could be in primary as well as secondary prevention. Parents have to be educated about the crucial role they can play by having predictable environment with routines regularities and practicing effective and healthy parenting strategies. It is also suggested to develop link programs between parents and school management to increase the awareness of both the parties about the interrelationship of various systems and contexts of child's environment. It will also facilitate the families and school management to find out mutual solutions of children's behavioral problems.

The results of the present study support the linkage pattern between environmental chaos and children's adverse outcomes proposed by Wachs and Corapci (2003). However keeping in view the results and interview analysis which revealed general lack of awareness and lack of quality fathering, a proposed link and a guideline to reduce environmental chaos at a micro level is recommended (see figure 21), keeping in view the population rate, economical problems, unemployment, crowded residential areas, crowded classrooms, noisy surroundings of schools, and imbalance between income and needs of the families.

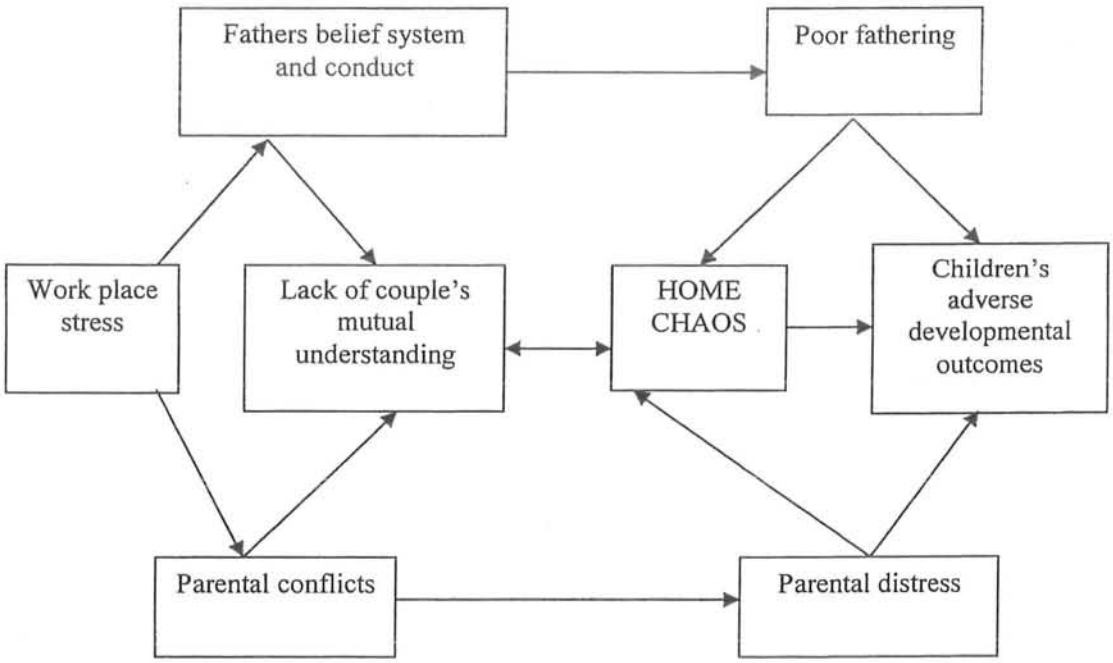


Figure 21. Hypothetical patterns to demonstrate possible links between various factors which may lead to home chaos in Pakistani culture

Awareness of an equilibrium between cognitive learning and psychologically healthy growth of the children is required both by parents at home and by teachers at school. Children can be trained to follow the norms and laws of the society in a manner that can be instrumental in the development of healthier and productive generations. Electronic and print media can be used to create awareness among parents about the importance of quality of parenting specifically fathering, for understanding and timely responding to children's needs to ensure that their children are not only getting good grades but are also learning laws of good behavior.

The inclusion of public awareness programs in Government policies about the adverse effects of environmental chaos and importance of communication between parents and school administration is highly needed. Moreover through properly planned counseling facilities for parents and teachers, they can be guided to

understand the significance of microenvironment and to use techniques to reduce chaos and promote regularities and structure in their environment.

The present research has highlighted the fact that psychologically healthy child development not only needs the process of formal education, it also needs a warm, predictable, and structured microenvironment around the house which can also fosters maintenance of circumstances conducive to effective child-parent transaction.

Conclusion

To conclude, the findings of the present research support the links between home chaos and children's socioemotional adjustment, school problems, and their poor academic achievement. The relationship between home chaos and cognitive ability has not been supported. This research was an attempt to fill the gap that has been created by not giving a considerable importance to the physical context of children at micro level in Pakistan. It provides support for Bronfenbrenner's Bioecological Model that in contrary to Behavioral Genetics Model gives importance to both heredity and environment and emphasizes the importance of proximal processes (the reciprocal interactions between developing children and persons, objects and environment around them) in shaping children's personality. Home chaos being one aspect of physical microenvironment can negatively affect these interactions by lowering their duration, intensity, frequency etc. The findings of the present research indicate that home chaos has the ability to disrupt children's development not only by affecting them directly (i.e. by affecting their focusing ability and lowering their academic performance) but affecting them indirectly as well through interfering with mothers' ability to manage their homes and affecting their

quality of parenting. Due to the chaotic environment mothers get less time for relaxation and/or monitoring their children properly, and can be stressed out. The results highlight the importance of family living characterized by structure, organization, predictability, routines, and regularities and explain the negative impact of environmental chaos on children's emotional adjustment, learning social skills, adaptability to various situations and academic achievement irrespective of the social class of the families.

The results also show that extended family system could be one of major contributing factors in elevating home chaos which is contrary to the existing belief that it could provide an opportunity for multiple caregivers which is important for healthy child rearing. The detailed interviews conducted with mothers also revealed that there are other factors which can contribute towards the development of home chaos. Amongst them 'low quality fathering' and 'high situational traffic 'were considered to be the prominent ones.

In the present research teachers' rating of children's behavior were also included which provided the opportunity to understand children's adjustment problems in school setting. The results showed that children from chaotic families not only exhibited elevated levels of externalizing and internalizing problems within home environment but continued to do so in school settings. It supported Bronfenbrenner's assertion that the interrelationship of various contexts within children's ecological environment has significant impact on their psychological health and performance on various tasks. In addition boys from chaotic families were perceived high on behavioral and adaptive problems by their parents and teachers and showed lower academic performance compared to the girls from chaotic families.

This was in line with some of the previous researches (Evans, Lepore, Shejwal, & Palsane, 1998) which concluded that home chaos affects boys more compared to girls.

As it has been discussed earlier the present findings don't support the links between home chaos and mother's education and children's cognitive ability. The results are contrary to the findings of some of the earlier studies done in western cultures. It calls for a need to explore it further to understand the complex linkage pattern between home chaos and children's adverse developmental outcomes and to search for various culture specific moderators.

The findings of the present research have wide implications for policy makers, educationists, parents, school authorities, and family counselors. The originality of the research lies in the differences we have found out in the results (home chaos is not associated with cognitive ability and maternal education, and extended family system seems to elevate home chaos). These differences point towards the various cultural moderators and mediators working between chaos and children's outcomes. It provides insight into the role that physical environment can play in a child's development. The current findings suggest that unpredictability, disorganization, crowding, noise, and lack of structure in the immediate context of children can act as risk factors not only for children's socioemotional adjustment and their academic success but their abilities to adjust in various social settings. The results lead to the requirements of developing counseling programs targeted on appropriate parenting skills along with a strong emphasis on educating them about the physical microenvironment and its significance in children's psychological health and academic achievements. Future research is needed to further explore the gene-environment interplay (G×E) and to observe the phenomena of home chaos with a lot more depth and breadth.

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APPENDIXES

ANNEXURE A

CHAOS

HNVO1	There is very little commotion in your home.	1 True	2 False	_____
HNVO2	Your family can usually find things when they need them.	1 True	2 False	_____
HNVO3	Your family almost always seems to be rushed.	1 True	2 False	_____
HNVO4	Your family is usually able to stay on top of things.	1 True	2 False	_____
HNVO5	No matter how hard they try, your family always seems to be running late.	1 True	2 False	_____
HNVO6	It's a real zoo in your home.	1 True	2 False	_____
HNVO7	At home family members can talk to each other without being interrupted.	1 True	2 False	_____
HNVO8	There is often a fuss going on at your home.	1 True	2 False	_____
HNVO9	No matter what your family plans, it usually doesn't seem to work out.	1 True	2 False	_____
HNV10	You can't hear yourself think in your home.	1 True	2 False	_____
HNV11	You often get drawn into other people's arguments at home.	1 True	2 False	_____
HNV12	Your home is a good place to relax.	1 True	2 False	_____
HNV13	The telephone takes up a lot of your family's time at home.	1 True	2 False	_____
HNV14	The atmosphere in your home is calm.	1 True	2 False	_____
HNV15	First thing in the day, your family has a regular routine at home.	1 True	2 False	_____

مندرجہ ذیل میں چند بیانات دیئے گئے ہیں۔ ہر بیان کو غور سے پڑھیں اور درست پر نشان لگائیں۔

عُمر: _____ جنس: _____ پیشہ: _____ تعلیم: _____

نمبر شمار	بیانات	جی ہاں	جی نہیں
1-	ہمارے گھر میں شور شرابا/ ہنگامہ بہت کم ہوتا ہے۔		
2-	ہمیں اپنے گھر میں ضرورت پڑنے پر چیزیں بآسانی مل جاتی ہیں۔		
3-	ہم تقریباً ہمیشہ جلدی میں رہتے ہیں۔		
4-	عموماً گھر کے معاملات ہمارے قابو میں رہتے ہیں۔		
5-	ہم خواہ کتنی ہی کوشش کیوں نہ کریں، ہمیں ہمیشہ دیر ہو جاتی ہے۔		
6-	ہمارا گھر درحقیقت ایک چڑیا گھر ہے۔		
7-	ہم گھر میں بغیر کسی مداخلت کے ایک دوسرے سے باتیں کر سکتے ہیں۔		
8-	ہمارے گھر میں اکثر افراتفری مچی رہتی ہے۔		
9-	ہم خواہ کوئی بھی منصوبہ بنائیں، عموماً وہ پایۂ تکمیل تک نہیں پہنچ پاتا۔		
10-	گھر کے ہنگامے کی وجہ سے آپ کو اپنی سوچ کی آواز بھی سنائی نہیں دیتی۔		
11-	میں اکثر گھر میں دوسروں میں ہونے والی بحث میں الجھ پڑتا/ پڑتی ہوں۔		
12-	میرا گھر آرام کرنے کے لئے اچھی جگہ ہے۔		
13-	گھر میں ہمارا کافی وقت ٹیلیفون پر گفتگو کرنے میں صرف ہوتا ہے۔		
14-	ہمارے گھر کا ماحول پُرسکون ہے۔		
15-	ہمارے گھر میں ہر صبح کا آغاز ایک باقاعدہ طے شدہ طریقے/ روٹین سے ہوتا ہے۔		

ANNEXURE B

Focus Group Schedule

1. Suppose there is a disturbance, loud noises, too many visitors and no particular routine in the house, what word will you use for this situation?
2. How will you define dissatisfaction and hustle bustle/clumsiness?
3. What do you think are the factors behind hustle bustle/clumsiness?
4. Is it important to have regularities around the house? (probe) If yes, why? If not, how?
5. In your opinion, what are the reasons for a lack of discipline or routine in the house?
6. (Probe further) Do you think visitors could disturb the household routine? How?
7. Are loud noises associated with guests visiting?
8. Who do you think is responsible for irregularities around the house?
9. In your opinion how much the relationship between husband and wife has to do with household irregularities or indiscipline? (Probe further) How does it effects the routine around the house?
10. Do you think that lack of rest/relaxation can effect the household regularities or discipline?
11. Do you think household disorganization can effect the normal growth and development of children? (Probe) How do you think that happens?
12. Do you think the household indiscipline, chaos, or lack of peace, can be controlled? (Probe further) if yes, how? If not, why?
13. What is your opinion about fathers' role in maintaining the household organization, and discipline?

Focus Group Schedule

1- فرض کیجئے اگر گھر میں ہنگامہ ہو، شور شرابا ہو، لوگوں کی آمد درفت زیادہ ہو اور کوئی باقاعدہ معمول نہ ہو، تو آپ کے خیال میں اس کیفیت کو کیا نام دیا جائے گا؟

2- آپ غیر تسلّی بخش صورتِ حال اور بدانتظامی کو کیسے بیان کریں گے؟

3- آپ کے خیال میں گھریلو بدانتظامی کی کیا وجوہات ہیں؟

4- کیا گھر میں انتظام اور ترتیب کا ہونا ضروری ہے؟ (مزید وضاحت طلب کریں)، اگر ہاں، کیوں؟ اگر نہیں، کیسے؟

5- آپ کے خیال میں گھر میں تنظیم اور ترتیب کی کمی کی کیا وجوہات ہیں؟

6- (وضاحت طلب کریں) کیا آپ کے خیال میں صرف مہمانوں کی زیادہ آمد و رفت سے گھریلو انتظام پر اثر پڑتا ہے؟ کیسے؟

7- کیا آپ کے خیال میں مہمانوں کی آمد و رفت شور شرابے کا باعث بنتی ہے؟

8- آپ کے خیال میں گھر میں ہونے والی بدانتظامی کا ذمہ دار کون ہے؟

9- آپ کے خیال میں میاں بیوی کے آپس کے تعلقات کا گھریلو بدانتظامی سے کیا تعلق ہے؟ (مزید وضاحت طلب کریں)- یہ کس طرح گھر کے معمول پر اثر انداز ہوتے ہیں؟

10- کیا آپ کے خیال میں آرام اور سکون کی کمی، گھریلو معمولات اور تنظیم کو متاثر کرتی ہے؟

11- کیا آپ سمجھتے ہیں کہ گھریلو بدانتظامی سے بچوں کی تربیت اور نشو و نما پر اثر پڑتا ہے؟ (مزید وضاحت طلب کریں)، آپ کے خیال میں یہ کس طرح ہوتا ہے؟

12- آپ کے خیال میں گھریلو بدانتظامی اور شور شرابے / بے سکونی کو کس طرح ختم کیا جا سکتا ہے؟ (مزید وضاحت طلب کریں)، اگر ہاں، کیسے؟ اگر نہیں، کیوں؟

13- آپ کے خیال میں گھریلو انتظام اور تنظیم کو قائم رکھنے میں والد کا کردار کتنا اہم ہے؟

ANNEXURE C

Interview Schedule

Communication Patterns

1. Do you all sit together?
   - How many times a day? ----------
   - For how long? ----------

2. Do you disagree with your spouse? ----------
   - On what matters? ----------
   - How you both react? ----------

3. Can you talk with out interruptions? ----------
4. Usually who is the louder person in your home? ----------
5. How is your children's behavior at home? Quite/noisy? ----------
6. Other notes----------

Routines and Regularities

1. What is your daily routine? ----------
2. Do you meet at meal times? ----------
   - If not, what are the reasons? ----------
3. Study habits of children ----------
4. Are there home work timing of children? ----------
   - I not, how they do their school work? ----------
5. Do you check their bags and home work diaries? ----------
   - If not, why? ----------
6. Are there sleep timings for children? ----------
   - If not why? ----------
   - What are sleep timings of adults? ----------
7. Are their T.V timings for children? ----------
   - If not, why? ----------
8. Do children help you in household? ----------
9. Other notes----------

Home Traffic Pattern

1. What is your evening schedule? ----------
2. Usually how frequently people visit you? ----------
3. Do you both/family go out to visit people/ how frequently ----------
4. Do children's friends come to meet them/how frequently ----------
5. What is your routine on weekends? ----------
6. Other notes----------

Disorganization

1. Is there any routine in your home? ----------
2. Do children put things in place ----------
   - If not, why ----------
3. Is it easy to find things? ----------
4. Do children get late from school? ----------
   - If yes, what are the reasons? ----------
5. Who is late most of the time in your home? ----------
6. What happens in the mornings? ----------
7. What happens during meal timings? ----------
8. What happens at work timings? ----------
9. What happens when you gat late? ----------
10. Other notes----------

Relaxation Time

1. Do you find time for your self? ----------
2. How you utilize that time? ----------
3. Can you think peacefully about something important? ----------
   - If not, than at what time you feel your home peaceful? ----------
4. Can you relax in your home? ----------
   - If not, why? ----------
5. Other notes----------

انٹرویو کا سوالنامہ

طرزِ گفتگو:

1- کیا آپ دونوں/سب اکٹھے بیٹھتے ہیں؟

- دن میں کتنی مرتبہ _____
- کتنی دیر کے لئے _____

2- کیا آپ کا اپنے شوہر/بیوی سے اختلاف ہوتا ہے؟

- اگر ایسا ہے، تو کن معاملات میں؟ _____
- اور پھر دونوں کا ردِعمل کیا ہوتا ہے؟ _____

3- کیا آپ بغیر مداخلت کے گفتگو کر سکتے ہیں؟ _____

4- آپ کے گھر میں سب سے اونچی آواز کس کی ہے؟ _____

5- آپ کے بچے کا طرزِ عمل کیسا ہے؟ کیا وہ خاموش رہتے ہیں یا شور مچانے والے ہیں؟ _____

6- مزید معلومات: _____

معمولات:

1- آپ کا روزمرہ کا معمول کیا ہے؟

2- کیا آپ سب کھانے کے اوقات میں اکٹھے ہوتے ہیں؟

- اگر ایسا نہیں ہے، تو وجوہات کیا ہیں؟ _____

3- بچوں کے پڑھنے کے معمولات کیا ہیں؟ _____

4- کیا بچوں کے ہوم ورک کے اوقات مقرر ہیں؟ _____

- اگر نہیں، تو وہ اپنا ہوم ورک کس طرح کرتے ہیں؟ _____

5- کیا آپ اُن کے بستے اور اسکول کی ڈائری کھول کر دیکھتی ہیں؟ _____

- اگر نہیں، تو کیا وجہ ہے؟ _____

6- بچوں کے سونے کے اوقات کیا ہیں؟ اگر نہیں تو کیوں؟ _____

- اور بڑوں کے سونے کے اوقات کیا ہیں؟ _____

7- کیا آپ بچوں کے ٹی وی دیکھنے کے اوقات مقرر ہیں؟ _____

- اگر نہیں تو کیوں؟ _____

8- کیا بچے گھر کے کام کاج میں آپ کی مدد کرواتے ہیں؟ _____

9- مزید معلومات: _____

میل ملاقات اور مہمانوں کی آمد و رفت:

1- آپ سب کی شام کی مصروفیات کیا ہوتی ہیں؟

2- آپ کے یہاں مہمانوں کی آمد و رفت کا کیا معمول ہے؟

3- کیا آپ سب یا دونوں بھی ملنے کے لئے جاتے ہیں؟ _____ عموماً کتنی بار؟ _____

4- کیا بچوں کے دوست ان سے ملنے آتے ہیں؟ _____ کتنی بار؟ _____

5- ہفتہ وار چھٹیوں میں آپ سب یا دونوں کا معمول کیا ہوتا ہے؟ _____

6- مزید معلومات: _____

بدانتظامی:

1- کیا گھر میں ایک ترتیب اور طریقے پر کام ہوتا ہے؟ _____

2- کیا بچے چیزیں استعمال کر کے اپنی جگہوں پر رکھتے ہیں؟ _____

- اگر نہیں، تو وہ کیا کرتے ہیں؟ _____

3- جب آپ کو چیزوں کی ضرورت ہو، تو کیا وہ با آسانی آپ کو مل جاتی ہیں؟ _____

4- کیا بچوں کو اسکول سے دیر ہو جاتی ہے؟ _____

- اگر ہو جاتی ہے، تو اس کی کیا وجوہات ہیں؟ _____

5- گھر میں زیادہ دیر کون کرتا ہے؟ _____

6- صبح کے اوقات میں آپ کے گھر کا ماحول کیسا ہوتا ہے؟ _____

7- کھانوں کے اوقات میں آپ کے گھر کا ماحول کیسا ہوتا ہے؟ _____

8- کام پر جانے کے اوقات میں آپ کے گھر کا ماحول کیسا ہوتا ہے؟ _____

9- جب آپ کو دیر ہو رہی ہو، تو پھر کیا ہوتا ہے؟ _____

10- مزید معلومات: _____

آرام کا وقت:

1- کیا آپ کو اپنے لئے وقت ملتا ہے؟ _____

2- آپ اس وقت کو کیسے استعمال کرتی ہیں؟ _____

3- کیا آپ گھر میں کسی اہم مسئلے کے متعلق سکون سے سوچ پاتی ہیں؟ _____

- اگر نہیں تو پھر کس وقت آپ کو محسوس ہوتا ہے کہ اب سکون ہے۔ _____

4- کیا آپ اپنے گھر میں آرام کر پاتی ہیں؟ _____

- اگر نہیں، تو کیوں؟ _____

5- مزید معلومات: _____

ANNEXURE D

DEMOGRHAPHICS

Q1- Occupation of the head of the Family.

1. Shopkeeper
2. Business/Trade
3. Govt.Servant BPS 17 or Below 17
4. Private Sector Job
5. Labor
6. Grower
7. Professional
8. Unemployed
9. Armed Forces BPS 17 or Below 17
10. Retired
11. Any Other----------
12. ----------

Q2- Occupation of the Wife.

13. Shopkeeper
14. Business/Trade
15. Govt.Servant BPS 17 or Below 17
16. Private Sector Job
17. Labor
18. Grower
19. Professional
20. Unemployed
21. Armed Forces BPS 17 or Below 17
22. Retired
23. House wife
24. Any Other----------
25. ----------

Q3-Education of the Head of the Family

No. of Years----------

1. Illiterate
2. Primary
3. Middle
4. Matric
5. F.A/ FSc
6. B.A
7. M.A/M.Sc
8. Professional
9. Any Other----------

Q4-. Education of the Wife.

No. of Years----------

10. Illiterate
11. Primary
12. Middle
13. Matric
14. F.A/ FSc
15. B.A
16. M.A/M.Sc
17. Professional
18. Any Other----------

Q5- Total income

1. less than 3,000
2. 3,000-10,000
3. 10,000-15,000
4. 15,000-25,000
5. 25,000-35,000
6. 35,000-45,000
7. 45,000 and above

Q6- Husband's Income

1. less than 3,000
2. 3,000-10,000
3. 10,000-15,000
4. 15,000-25,000
5. 25,000-35,000
6. 35,000-45,000
7. 45,000 and above

Q7-Wife;s Income

1. less than 3,000
2. 3,000-10,000
3. 10,000-15,000
4. 15,000-25,000
5. 25,000-35,000
6. 35,000-45,000
7. 45,000 and above

Q7-Family Type

1. Nuclear
2. Joint
3. Any other----------

Q8-Family Size----------

Q9-No.of Children----------

Q10- No. Of Bedrooms in the home----------

No. of people per Room----------

Q11-House Information

1. Owned
2. Rented

Q12-No. of earning persons in the family----------

Q13-Measurement of life style

1. Radio
2. tape recorder
3. T.V color
4. T.V black and white
5. VCR/VCP
6. DISH/LEAD/Cable
7. Computer
8. Motorcycle----------no----------
9. Cycle----------no----------
10. Car----------no----------
11. Other ----------no----------
12. Tractor----------
13. Air cooler
14. Air conditioner
15. Refrigerator
16. Microwave oven
17. Washing machine
18. Telephone
19. Mobile

Q14- Area of living----------

Q15- Description

1. Widow
2. Divorced
3. Any other----------

ANNEXURE E

Dear Parents

As A PhD student at National Institute of Psychology, Quaid-e-Azam University, Islamabad, I am carrying out research work on the relationship of home environment and children's life style. This being closely related with you I need your cooperation and help.

If you agree to kindly cooperate I shall have to meet you personally and give you more details about my research. This research is basically aimed to find out the importance of home environment in child development I am sure that realizing the need and significance of such research you would spare some of your precious time for me.

Thanks

If you agree to participate in this research I assure you that:

1. All information about you will be kept confidential.
2. All information will be used only for research work.
3. In this process more information related with the research will be provided to you later.

On agreeing upon the preceding paragraphs please fill up the form below and the attached one with the required information:

I father/mother_____of the child_____ allow my child to participate in this research work and shall also cooperate myself.

Father's signature: ----------

Mother's signature: ----------

Date: ----------

Home address: ----------

Tel.No (Res): ----------

Cell No: ----------

Write answers to all the questions, please.

Father's education: ----------

Father's age: ----------

Mother's education: ----------

Mother's age: ----------

Father is employed	Yes/No
Mother is employed	Yes/No
Father doing business	Yes/No
Mother doing business	Yes/No
Father can read Urdu	Yes/No
Father can understand Urdu	Yes/No
Mother can read Urdu	Yes/No
Mother can understand Urdu	Yes/No
Father can read English	Yes/No
Father can understand English	Yes/No
Mother can read English	Yes/No
Mother can understand English	Yes/No

Total number of persons in your home: ----------

Total number of your children: ----------

Are children living with both the parents (father & mother): ----------

If not, kindly tick mark the right answer below:

1. Due to death of one.
2. Due to separation.
3. Due to divorce.

محترم والدین

میں قومی ادارۂ نفسیات، قائدِ اعظم یونیورسٹی، اسلام آباد میں Ph.D. کی طالبہ ہوں- اپنے تحقیقی کام کے لئے میں نے جس موضوع کا انتخا
ہے، وہ ہے " **گھریلو ماحول اور بچوں کا طرزِ زندگی**"- اس سلسلے میں مجھے آپ کے تعاون کی ضرورت ہے-

اگر آپ میری اس ریسرچ میں میرے ساتھ تعاون کرنے کو تیار ہوں، تو میں آپ سے ملاقات کر کے اپنے کام کی مزید تفصیل آپ کو بتا
گی- میں آپ سے یہ کہنا چاہتی ہوں کہ اس ریسرچ سے والدین کو یہ اندازہ ہوگا کہ بچوں کی صحیح نشو ونما کے لئے گھر کے ماحول کی کیا اہمیت ہے اور اسے
بہتر بنانے کے لئے کیا کیا جاسکتا ہے- امید ہے کہ آپ اس موضوع کی اہمیت کو سمجھتے ہوئے اپنے قیمتی وقت میں سے کچھ وقت مجھے عنایت کریں گے-

شر

اگر آپ اس تحقیقی کام میں شرکت کرنے کے لئے راضی ہیں تو اطمینان رکھیئے-

1- آپ سے متعلق تمام معلومات پوشیدہ رکھی جائیں گی-
2- تمام مواد صرف تحقیقی کام کے لئے استعمال ہوگا-
3- مزید معلومات آپ کو بعد میں مہیا کی جائیں گی-

اگر آپ اس تحقیقی کام میں شرکت کے لئے راضی ہیں، تو براہ مہربانی مندرجہ ذیل فارم پُر کیجئے اور آگے لگے فارم پر معلومات فراہم کیجئے-

بچے (نام) _____ کا میں والد/والدہ _____ بچے کو اس تحقیقی کام میں شرکت کی اجا
دیتا/دیتی ہوں اور خود بھی اس میں تعاون کرنے کے لئے تیار ہوں-

دستخط والد : _____

دستخط والدہ : _____

تاریخ : _____

گھر کا پتہ : _____

گھر کا فون نمبر : _____ موبائل نمبر: _____

براہِ مہربانی جہاں تک ممکن ہو سکے، تمام سوالات کے جوابات دیجئے۔

والد کی تعلیم : _____

والد کی عمر : _____

والدہ کی تعلیم : _____

والدہ کی عمر : _____

والدہ نوکری کرتی ہیں۔	ہاں	نہیں	والد نوکری کرتے ہیں۔	ہاں	نہیں
والدہ کاروبار کرتی ہیں۔	ہاں	نہیں	والد کاروبار کرتے ہیں۔	ہاں	نہیں
والدہ اردو سمجھ لیتی ہیں۔	ہاں	نہیں	والد اردو سمجھ لیتے ہیں۔	ہاں	نہیں
والدہ اردو پڑھ لیتی ہیں۔	ہاں	نہیں	والد اردو پڑھ لیتے ہیں۔	ہاں	نہیں
والدہ انگریزی سمجھ لیتی ہیں۔	ہاں	نہیں	والد انگریزی سمجھ لیتے ہیں۔	ہاں	نہیں
والدہ انگریزی پڑھ لیتی ہیں۔	ہاں	نہیں	والد انگریزی پڑھ لیتے ہیں۔	ہاں	نہیں

آپ کے گھر کے کل افراد کی تعداد : _____

آپ کے بچوں کی تعداد : _____

کیا بچے کے والد اور والدہ ساتھ رہتے ہیں؟ : _____

اگر نہیں تو براہِ مہربانی مناسب جواب پر نشان لگائیں۔

1- انتقال ہو گیا ہے۔

2- علیحدگی ہو گئی ہے۔

3- طلاق ہو گئی ہے۔

ANNEXURE F

C-2

Children, Second Edition

ctions:

ges that follow are phrases that describe how children may act. Please phrase, and mark the response that describes how this child has behaved n the last several months).

rcle **N** if the behavior **never** occurs.

rcle **S** if the behavior **sometimes** occurs.

rcle **O** if the behavior **often** occurs.

rcle **A** if the behavior **almost always** occurs.

rk every item. If you don't know or are unsure of your response to an your best estimate. A "Never" response does not mean that the child gages in a behavior, only that you have not observed the child to behave

Mark Your Responses

p pencil or ballpoint pen; do not use a felt-tip pen or marker. Press firmly, tain to **circle** completely the letter you choose, like this:

N (S) O A

to change a response, mark an X through it, and circle your new choice,

N (X) (O) A

rting, be sure to complete the information in the box on the right-hand ge 3.

ANNEXURE G

ANNEXURE H

YAHOO! MAIL Classic

Re: research on chaos Thursday, July 12, 2007 8:11 AM

From: "Ted Wachs" <wachs@psych.purdue.edu>
To: "shamama syeda" <barhvi@yahoo.com>

July 12, 2007.

To whom it may concern;

I was a co-developer of the CHAOS scale. This e-mail letter is to confirm that Shamama Syeda has my permission to translate the CHAOS scale into Urdu and use the scale for research purposes. If there are any questions about this permission please contact me at the address below. Sincerely, T.D. Wachs.

Theodore D. Wachs
Professor of Psychological Sciences
Purdue University, West Lafayette, Indiana. USA. 47906.
wachs@psych.purdue.edu

ANNEXURE I

T-scores range of Adaptive and Clinical Scale of BASC-2

Adaptive Scales	Clinical Scales	T-Scores Range
Very high	Clinically significant	70 and above
High	At-risk	60-69
Average	Average	41-59
At-risk	Low	31-40
Clinically significant	Very low	30 and above

Minimum and Maximum Scores of PRS and TRS Scales.

	Externalizing Problems		Internalizing Problems		Adaptive Skills		School Problems	Behavioral Symptoms Index	
	PRS	TRS	PRS	TRS	PRS	TRS	TRS	PRS	TRS
	Min/ Max	Min/ Max	Min/ Max	Min/ Max	Min/ Max	Min/ Max	Min/ Max	Min/ Max	Min/ Max
Hyperactivity	0/30	0/33						0/30	0/33
Aggression	0/33	0/30						0/33	0/30
Conduct Problems	0/27	0/27							
Anxiety			0/42	0/21					
Depression			0/42	0/33				0/42	0/33
Somatization			0/36	0/27					
Atypicality								0/39	0/21
Withdrawal								0/36	0/24
Attention Problems							0/21	0/18	0/21
Learning Problems							0/24		
Adaptability					0/24	0/24			
Social skills					0/24	0/24			
Leadership					0/24	0/18			
Activities of Daily Living					0/24				
Study Skills						0/21			
Functional Communication					0/36	0/30			
Total score	90	90	120	81	132	117	45	198	162

ANNEXURE J

Alpha Coefficient of CHAOS Scale-Urdu Version Mothers, Fathers, and Combined Scale of 68 Couples

	N	Number of items	Alpha Coefficient
CHAOS Scale (Urdu) (Mothers)	203	15	.77
CHAOS Scale (Urdu) (Fathers)	66	15	.69
CHAOS Scale (Urdu) (Mothers and Fathers)	132	15	.70

Item-Total Correlations of CHAOS Scale-Urdu Version (N = 203)

Items	*r* (CHAOS Score-Mothers)
1	.59**
2	.59**
3	.48**
4	.47**
5	.51**
6	.55**
7	.54**
8	.62**
9	.33**
10	.59**
11	.56**
12	.36**
13	.20**
14	.46**
15	.443**

**$p < .01$

Alpha Coefficient of Parent Rating Scale and its Subscales (N = 203)

Sub Scales PRS	No. of Items	Alpha Coefficient
Hyperactivity	10	.75
Aggression	11	.78
Conduct problems	9	.74
Anxiety	14	.76
Depression	14	.67
Somatization	12	.74
Atypicality	13	.76
Withdrawal	12	.72
Attention Problems	6	.74
Adaptability	8	.55
Social Skills	8	.73
Leadership	8	.56
Activities of Daily Living	8	.54
Functional Communication	12	.79
Total	160	.77

Alpha Coefficient of Teacher Rating Scale and its Subscales (N = 203)

Sub Scales TRS	No. of Items	Alpha Coefficient
Hyperactivity	11	.74
Aggression	10	.85
Conduct Problems	9	.81
Anxiety	7	.70
Depression	11	.68
Somatization	9	.72
Atypicality	10	.81
Withdrawal	8	.82
Attention Problems	7	.80
Learning Problems	8	.74
Adaptability	8	.70
Social Skills	8	.78
Leadership	6	.58
Study Skills	7	.86
Functional Communication	10	.69
Total	139	.85

Test-Retest Reliability of Ravens Standard Progressive Matrices (N = 53)

SPM	Age of children		Score		Retest Reliability
	M	*SD*	*M*	*SD*	
SPM	10.36	0.74	30.98	9.89	.77*
SPM Retest	11.36	0.74	37.08	9.38	

**P<.01*

Split Half Reliability of Ravens Standard Progressive Matrices-SPM (N = 203)

SPM	Number of Items	Spearman-Brown Coefficient
SPM	60	.79

ANNEXURE K

Dr. Muhammad Ajmal
National Institute of Psychology
CENTRE OF EXCELLENCE, QUAID-I-AZAM UNIVERSITY
P.O. BOX 1511, ISLAMABAD, PAKISTAN

Dated:21.03.2006

TO WHOM IT MAY CONCERN

It is certified that Syeda Shamama tus Sabah, is M.Phil research student at the National Institute of Psychology, Centre of Excellence, Quaid-i-Azam University, Islamabad. She is currently working on the 'Effects of Family Environment on Children Life Style' under my supervision.

She needs to collect data from Teachers/students of your Institution in this regard. I assure you that the information collected from the Teachers/students of your Institution will be treated for research purposes only and will be held strictly confidential.

I hope you will allow her to collect data for her research work. Your cooperation is highly appreciated.

With warm wishes.

Sincerely yours

(Dr. Nighat Gillani)
Associate Professor
Supervisor

please entertain

Principals

DirFCET
Brig
Director
FGEI (C/G) Dte
Sir Syed Road Rwp
(MUHAMMAD ARIF)

FG Sir Syed School Boys —— + Girls ——

Location: Quaid-i-Azam University, (New Campus), Shahdra Road, (Off Main Murree Road), Islamabad, (Pakistan)
Telephones: 2230703, 2231685, 2230894; Fax: 2230704; Email: nip@nip.edu.pk; Web Site: http://www.nip.edu.pk

بسم الله الرحمن الرحيم

Dr. Muhammad Ajmal

National Institute of Psychology

CENTRE OF EXCELLENCE, QUAID-I-AZAM UNIVERSITY
P.O. BOX 1511, ISLAMABAD, PAKISTAN

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With warm wishes.

Sincerely yours

(Dr. Nighat Gillani)
Associate Professor
Supervisor

All Heads FGEI (C/G) LRC
Please extend maximum
cooperation for research work.
as per FGDE orders.

Lt Col
GSO-I
FGEI (C/G) Regional Office
Lahore Cantt.

Location: Quaid-i-Azam University, (New Campus), Shahdra Road, (Off Main Murree Road), Islamabad, (Pakistan)
Telephones: 2230703, 2231685, 2230894; Fax: 2230704; Email: nip@nip.edu.pk; Web Site: http://www.nip.edu.pk

Dr. Muhammad Ajmal

National Institute of Psychology

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With warm wishes.

Sincerely yours

(Dr. Nighat Gillani)
Associate Professor
Supervisor

Please entertain

GSO-I Karachi

Location: Quaid-i-Azam University, (New Campus), Shahdra Road, (Off Main Murree Road), Islamabad, (Pakistan)
Telephones: 2230703, 2231685, 2230894; Fax: 2230704; Email: nip@nip.edu.pk; Web Site: http://www.nip.edu.pk