Household Chaos and its Association with Maternal Education, Family System, and Children's Academic Achievement in Pakistani Culture

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The present study examined the relationship between home chaos, maternal education, family system, and children's academic achievement. The study was based on purposive sample of 203 children and their mothers. Primary school children (Boys = 91, Girls = 112) with an age range of 8-11 years were recruited from Federal Government schools of Rawalpindi (*n* = 101), Karachi (*n* = 53), and Lahore (*n* = 49). Confusion, Hubbub, and Order Scale (Matheny, Wachs, Ludwig, & Phillips, 1995) was used to measure home chaos. Maternal education ranged from Intermediate to Masters and equivalent. Nuclear and extended family systems were studied. Children's academic achievement was measured by taking the average of their last consecutive examinations. Results indicated nonsignificant association between home chaos and maternal education. Results also revealed that extended families experience higher home chaos as compared to nuclear families.

Keywords: Home chaos, children's academic achievement, maternal education, family system

Middle childhood is a period when considerable growth takes place in children's physical, cognitive, and emotional capacities. The context of the relationships that they form within and outside of their

families is embedded in experiences at multiple levels ranging from their immediate family to the society and culture at large. The individuality of each person and the physical environment that forms the background of the relationship also play a significant role in this regard (Hindi, 1992).

Home environments that support emotional security, social integration, and crucial social experiences necessary for growth are considered healthy. Families that provide such stimulating environment and opportunities are considered healthy families, where 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 (Mental Health Council, 1996; Repetti, Taylor, & Seeman, 2002). Along with various social and economical factors, healthy family functioning, and good parenting require structured and predictable environment. Zamberlan and Biasoli have identified low interactions between adults and children, poor social attachment, control through restriction and punishment, and low levels of family organization as risk factors and potentially harmful environmental factors in child development (as cited in Andrade et al., 2005). The families that fail to provide stable and good parenting environment and have frequent conflicts and disorganization around the house are called risky or chaotic families.

Guided by the Bronfenbrener's bioecological model (Bronfenbrenner & Cecil, 1994), were interested in studying the physical aspects of microsystem context of children. Home chaos is one important aspect of physical microenvironment. It refers to contexts such as the home, day care center, or school. These contexts 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 (Wachs & Corapci, 2003, p. 3). 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). Ample evidence is available that links home chaos with children's adverse developmental outcomes (Dumas et al., 2005; Evans, Gonnella, Marcynszn, Gentile, & Salpekar, 2005; Evans, Hygge, & Bullinger, 1995). Researches within this field have supported a significant association between home chaos and family income and parental education (Dumas, LaFreniere, & Serketich, 1995), parenting styles (Coldwell, Pike, & Dunn, 2006), socioeconomic conditions of the families (Evans et al., 2005), adults emotional well-being

(Cheung, Leung, Chan, & Ma, 1998; Evans, Palsane, Lepore, & Martin, 1989), behavioral problems and poor academic achievement, and low IQ among children (Deater-Deckard, Mullineaux, Beckman, Petrill, Schatschneider, & Thompson, 2009; Dumas et al., 1995; Evans, Lepore, Shejwal, & Palsane, 1998; Supplee, Unikel, & Shaw, 2007). Home chaos also predicts children's helpless/hopeless responses to academic challenge mediated by sleep problems (Brown & Low, 2008).

Researches have also identified maternal education (Von der Lippe, 1999; Wachs & Corapci, 2003) and extended family system (Munroe & Munroe, 1971) as unique moderators of home chaos that operate only in some cultures. It has been indicated that the relationship of authoritative style of child rearing and teaching style with cognitive competence was higher for educated Egyptian mothers living in over crowded homes than their lower educated counterparts (Von der Lippe, 1999). Household chaos has also been shown to be significantly related to less educated parents who had low IQ levels, provided less literacy environment, were high on negativity and low on warmth (Deater-Deckard et al., 2009). Moreover Johnson, Martin, Brooks-Gunn, and Petrill (2008) showed home chaos to be positively related to children's expressive vocabulary, reading mastery, and phonological awareness especially whose mothers were above average readers. Research indicates that in some non western cultures, extended family system can moderate the effects of home chaos on children's developmental outcomes. Involvement of older siblings in care-giving activities has been shown to compensate the unavailability of mother in extended families. But this does not appear to extend beyond infancy. Results from non westerns countries are consistent with the developed western countries in terms of indicating a relationship between harsher discipline and low monitoring with pre-school and school-age children (Wachs & Corapci, 2003). However very little empirical information is available from Pakistan and other Asian cultures regarding effects of home chaos on child development and culturally driven moderators. The available evidence is related to the social microenvironment (Pervez & Anila, 1994), impact of noise on children's academic performance (Quaid, Khan, Anwar, & Mateen, 2001), and the link between maternal education and home chaos (Shamama-tus-Sabah & Gilani, 2008). The present research the links maternal education, family system, and children's academic achievement with home chaos. The following hypotheses were formulated:

1. Home chaos will be associated with low maternal education.

2. Extended family system will be associated with elevated levels of home chaos.

3. Children from chaotic families will exhibit low academic achievement.

Method

Sample

Purposive sample of 203 school children with their mothers was taken from three cities of Pakistan: Rawalpindi ($n = 101$), Lahore ($n = 49$), and Karachi ($n = 53$). The primary school children had an age range of 8-11 years (4th- 6th grade) and were recruited from Federal Government Schools. The average age of the children was 10.22 years ($SD = .83$). The average age of the mothers at 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 mean income of the families ranged from 8, 000 - 15, 000 Rs. per month. Care was taken to choose the sample from intact families (i.e. no case of divorce or separation), and with the number of children ranging from 2-7. The sample was taken from different socioeconomic classes.

Instrument

Confusion, Hubbub, and Order Scale   Home chaos was measured through Confusion, Hubbub, and Order Scale (CHAOS; Matheny et al., 1995) with a *true false* format. The reported alpha coefficient of the CHAOS items of the original scale is .79 and 12 months test retest stability correlation is .74.

The scale consists of 15 items. To guard against *response set,* half of the items were written in reverse direction. A single score is derived from the questionnaire by simple sum of responses. Higher score on the scale indicates more chaotic and disorganized home environment. In the present study the Urdu version of the scale was used (for translation procedure and reliability of the translated version see Shamama-tus-Sabah & Gilani, 2008).

Demographic Sheet   To develop socioeconomic index of the families included in the sample, a demographic sheet was constructed. It included information about parent's occupation, education, their

separate income, total income (including any source of income 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 each room, information about house such as rented or owned, number of individual earning for the family, and number of basic household appliances available. Index was calculated by putting the subjective weights to each category and then the series was normalized by 100 index. The index ranged from 1-100, where 1 represents *the poorest* and 100 represents *the richest*.

Procedure

Permission from school authorities was sought and letters acquiring acceptance were sent to parents of target group. After getting consent from the parents 101 children and their mothers were selected according to the sampling criteria. Participation was confirmed individually through telephones.

The academic record of the children was collected from the school examination branch. Average of the childs performance in the last two examination was regarded as academic achievement. The mothers were contacted at their homes. They were briefed about the aim of the study. They were given the demographic sheet to provide the required information. They were then given the Urdu version of CHAOS and were requested to fill the scale. After completing data collection in Rawalpindi the same procedure was carried out in other two cities Lahore and Karachi.

Results

The alpha reliability of the Urdu version of CHAOS was calculated and found to be satisfactory ($\alpha = .77$). One-way ANOVA was used to find out the differences among different educational levels of mothers and their respective home chaos levels. *t* test was run to examine the differences in home chaos between nuclear and extended families and hierarchal multiple regression was used to test whether home chaos predicts children's academic performance after controlling for socioeconomic status and maternal education. Descriptive analysis revealed the range of scores on CHAOS-Urdu from 0-12 ($M = 3.97$, $SD = 3.04$); 1 (less than 3,000 rupees/month) to 7 (45,000 and above/month) for monthly income of the families; 12th grade to 16th grade for mother's education ($M = 13.71$, $SD = 1.30$); and 23% marks to 97% marks for academic achievement of children.

Table 1

Means, Standard Deviations, and F value of Maternal Education and Home Chaos (N = 203)

	Maternal 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.*

One-way ANOVA was applied to find out the relationship between home chaos and mothers educational level (see Table1). 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). There were nonsignificant differences between three groups of education on home chaos levels. It shows that mother's education might not have a significant impact on household management.

Table 2

t test Analysis of Family System and Levels of Home Chaos (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	3.395*

*p< .01.

Results indicate that extended families experience greater home chaos (*M* = 5.17) as compared to nuclear families (*M* = 3.56). To test whether home chaos predicts children's academic achievement, Hierarchical Multiple regression with forced-entry method was used. Each Hierarchical Multiple regression consisted of three steps. First socioeconomic index was entered, in second step mother's education, and in third step home chaos scores were entered. Home chaos scores were entered last to find out its unique contribution as a predictor of

children's academic achievement over and above socioeconomic status and maternal education (see Tables 3 & 4).

Table 3

Model Summary of Hierarchical Multiple Regression Predicting Children's Academic Achievement (N = 203)

Model	R	R^2	Adjusted R^2	Std. Error of Estimate	ΔR^2	Sig. F change
1[a]	.291	.085	.080	16.18	.085	.000
2[b]	.303	.092	.082	16.16	.007	.221
3[c]	.397	.157	.145	15.60	.066	.000

a. Socio economic index (SES index)
b. SES, mother's education
c. SES, mother's education, home chaos

Table 4

Hierarchical Multiple Regression Predicting Children's Academic Achievement (N = 203)

	B	SEB	β	ΔR^2
Step 1				.09***
Constant	45.16	2.59		
Socio economic Status	.22	.51	.29***	
Step 2				.01
Constant	30.68	12.08		
Socio economic Status	.21	.05	.27***	
Mother's education	1.09	.89	.08	
Step3				.07***
Constant	40.06	11.91		
Socio economic Status	.22	.05	.29***	
Mother's education	.80	.87	.06	
Home Chaos	-1.43	.36	-.26***	

***$p < .001$.

Results indicate home chaos as a significant predictor of children's academic achievement after controlling for socioeconomic status and mother's education. The results in Tables 3 and 4 indicate home chaos [$t(199) = 3.94$, $p<.001$] and gender [$t(199) = 4.29$, $p<.001$] as significant predictors of children's academic achievement. The significant R square change in model three ($\Delta R^2 = .07$, $p<.001$) indicates home chaos as significantly contributing in the model over and above SES and mother's education. The negative β value of chaos

score indicates the significant negative relationship between home chaos and academic achievement of children. In model two β value remained nonsignificant [t (199) = .92, p>.05]. This indicates mother's education as not providing significant contribution in predicting children's academic achievement.

Discussion

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) Home chaos is one important aspect of this multi-dimensional environment. Over the last decade research has found evidence of impact of environmental chaos on child development and adjustment (Coldwell et al., 2006; Dumas et al., 2005). Chaos has also been seen as a mediator of the relations between poverty and socio- emotional adjustment of adolescents (Evans et al., 2005). Research in other societies such as Egypt (Wachs et al., 1993), India (Evans et al., 1989), and Hong Kong (Mitchell, 1971) etc. have supported the links between chaos, developmental outcomes, and various aspects of parenting. In addition available research has indicated that in some cultures mother's education and extended family system can act to moderate the effects of home chaos (Munroe & Munroe, 1971; Shapiro, 1974; Valsiner, 1987). However, this area has not been explored scientifically in Pakistan. Therefore it was intended to observe the links between home chaos, maternal education, family system, and children's academic achievement.

The results of the present study showed nonsignificant differences between three groups with different educational backgrounds of mothers and levels of home chaos and therefore do not support the hypothesis. In Pakistan educated women have more opportunities to pursue a career. They work outside their home to support their families and their busy schedule leaves little room to mange their homes efficiently. Dearth of supportive facilities (e.g., day care centers, adequate transportation to work place, and so on) can make the matters worse. Less educated women generally have low-level income jobs and very few opportunities. The results of the present research indicate that formal education might not be a good moderator for home chaos in Pakistani culture. 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 household related tasks instead of formal education. The

limited educational range of mothers in the present sample must be kept in view. The inclusion of broader categories i.e. primary, middle, and secondary education is suggested for future research.

In Pakistani culture there is a growing trend towards having nuclear families. This could be due to multiple factors like income, job requirements, personal preferences, etc. The 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. Present findings showed a significant difference in levels of home chaos between extended and nuclear families. This can be an indication that extended family system, in spite of providing an opportunity for multiple caregivers, may lead to crowding and increased noise, and ultimately elevated levels of home chaos.

It was hypothesized that home chaos will be associated with low academic achievement in children. Findings support the hypothesis and revealed home chaos as a significant predictor of children's academic achievement over and above socioeconomic status and mother's education. The results are inline with previous findings (Evan et al., 1998; Quaid et al., 2001). The explanation of this relationship might be attributed to reduced ability of children to focus and learn in a chaotic environment characterized by lack of routine and regularities, high noise levels, and unstructured environment. These factors could have a negative impact on their interest, attention, and focusing abilities.

Conclusion, Limitation, and Suggestions

Overall the study yielded a significant negative relationship between home chaos and children's academic achievement and supports the previous findings (Deater-Deckard et al., 2009; Evans et al., 1998). It was also revealed that extended families experience high levels of chaos as compared to nuclear families. However chaos was not found to be significantly related to mother's educational level. 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 (Munroe & Munroe, 1971). Unfortunately the presence of multiple caregivers can be vital in increasing the chaos level at home despite reducing mother's involvement (Wachs & Corapci, 2003). Research findings point towards the presence of a different linkage pattern between home

chaos, maternal education level, family structure, 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.

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