Research Paper

Environmental Correlates of Adolescent Anxiety

Psychology

Jeny. Rapheal	Research Scholar, (Psychology) Bharathiar University, Coimbatore
Varghese Paul K	HOD, Dept of Psychology, Prajyothi Nikethan College, Kerala

ABSTRACT
This study investigates into environmental factors contributing to the anxiety level of normal adolescent population of India. Sample consisted of 174 school going adolescents with mean age 15.89 selected from different educational institutions of Thrissur district in Kerala state. Home Environment inventory by Karuna Shankar Mishra, and IPAT anxiety scale by Samuel E King were used to collect necessary data. Statistical analysis using SPSS version 20 revealed significant correlation between most environmental variables and anxiety level of adolescents. T-test results indicated higher anxiety level (37.33) for students belonging to aided schools. Also anxiety level of students residing in rural area (37.70) was higher than their counterparts in urban area. A detailed ANOVA exhibited significant difference in the anxiety level of students belonging to low, average and high levels of home environment variables. Entire study explores the necessity of addressing environmental factors in the prevention and treatment of adolescent anxiety.

History of etiology of anxiety began from the theoretical expoundations of psycho-dynamic, humanistic and existential schools of psychology which eventually integrated empirically established results from classical, instrumental and cognitive-social branches of psychology into it. Later, explosion of innovations in biological sciences, particularly in brain sciences like neuroscience and neuro-biology provided a more concrete background from which anxiety disorders can be viewed and interpreted. For instance, neuro-cognitive model of anxiety proposes a common amygdale-prefrontal circuitry that underlies dysfunctional biases in emotional processing (Bishop, 2007). At the same time, scientific research outcomes, substantiating the environmental and social influences on biological variables, like neuro-endocrine responding of organisms, helped to sustain the validity of interpretations of environmental and social psychologists on phenotypic risk factors of anxiety. Recent data from 8232 respondents across six European countries reveals an association between adverse parenting (e.g. overprotection) and higher risk of anxiety disorder (Heider et al., 2008), while the experience of one or more unexpected, negative, life events increases the risk of generalized anxiety (Blazer et al., 1987). Interestingly, there is evidence that preexisting biological vulnerability factors (e.g. reduced hippocampal volume) can modulate the impact of environmental stress and the likelihood of an anxiety disorder (e.g. PTSD; Gilbertson et al., 2002; Bremner et al., 2003) as cited in *Research in anxiety disorders: From the bench to the bedside* (Garner et al.,2009).

Modern studies pinpoint on the concept of "sense of control" while tracing the pathway of environmental influence on the development of anxiety. Control is broadly defined as the ability to personally influence events and outcomes in one's environment, principally those related to positive or negative reinforcement. Barlow (2000) who defines anxiety as a coherent cognitive-affective structure operating within our defensive motivational system says, at the heart of this structure is a sense of uncontrollability focused on future threats, danger, or other potentially negative events. Bruce F Chorpita (1998) in the study titled *The development of anxiety: The role of control in the early environment* notices that there exists a diversity of literature supporting the notion that an immediate sense of diminished control is commonly associated with the immediate expression of anxiety (Barlow, 1988, 1991; Beck & Emery, 1985; Lazarus, 1966, 1968; Lazarus, Averill, & Opton, 1970; Mandler, 1972; Sanderson, Rapee, & Barlow, 1989). At the same time, early experience with uncontrollable events in one's environment is the source from which this sense of diminished control germinates (Schneewind, 1995) which may be thought of as a primary pathway to development of anxiety .Maier and Seligman(1976) observe that uncontrollable events in the environment act by unleashing some sort of motivational, cognitive and emotional imbalance. Interpretation for this, given by Chorpita (1998) is more precise and noteworthy. According to Chorpita,

early experience with lack of control contributes to something of a psychological template, which at some point becomes relatively fixed and diathetic. Stated another way, this psychological dimension of a sense of control is possibly a mediator between stressful experience and anxiety, and over time this sense becomes a somewhat stable moderator of the expression of anxiety. That is, the environment may help to foster a cognitive template, with early uncontrollable experience contributing to the formation of a cognitive vulnerability. This is the paradigm behind the environmental factors (psychological) acting as generators of anxiety.

Attempts to describe anxiety in terms of attachment styles have amassed much empirical evidences. Interpersonal mechanisms by which anxiety is regulated through attachment relationships has received significant theoretical consideration (Bowlby, 1973; Stayton & Ainsworth, 1973). Bowlby (1980), the proponent of attachment theory says that all forms of anxiety with the exception of specific animal phobias are accounted by anxiety regarding attachment figures. Meanwhile, attachment theory itself is primarily based on the presupposition of a biologically based system that promotes proximity with potential caregivers (Bowlby, 1969, 1973, 1980). Similar developmental approaches to anxiety emphasizes early experience with primary care givers and significant others. Such experiences impact the sense of self and the way in which the child confronts various developmental challenges in later life too (Kegan, 1982; Mahoney, 1991). Family environments that are most likely to generate anxiety in children involve parental control through over protection or rejection. Fear of separation or abandonment induced by such negative emotional climate often gives rise to a coping strategy centered on chronic vigilance, which may continue throughout childhood and adulthood and lead to the development of anxiety disorders (Bowlby, 1973; Cassidy & Berlin, 1994; Weinfield, Sroufe, Egeland, & Carlson, 1999)

Coming to adolescence, anxiety is something most adolescents wear on their sleeves in their endless attempts to cope with biological and social demands while navigating through a state of rapid developmental transition. Anxiety is one of the most common psychological disorders in school-aged children and adolescents worldwide (Costello, Mustillo, Erkanli, Keeler & Angold, 2003). In this 21st century, the tone and texture of the immediate environment of an adolescent is imbued with pathological elements capable of incurring a special psychological and physical state akin to anxiety. Evidences are there that, a particular set of family characteristics is associated with the development of anxiety and its disorders (e.g., Turner, Beidel, & Costello, 1987). Prominent among the explications related to the relation between behaviors of care takes and development of anxiety is that of Parker (1983). In his studies he meticulously explores the predictive power of parental approach in develop-

ing anxiety prone children. For normal adolescents, sources of anxiety often include, identity, sexuality, social acceptance etc. The symptoms more commonly reported by normal adolescents included fear of heights, speaking, blushing, excessive worry about past behavior, and self consciousness (Bell-Dolan et al,1990). Substantial research literature, mostly from developed countries,(Boys A, Farrell M, Taylor C, Marsden J, Goodman R, Brugha T, Bebbington P, Jenkins R, Meltzer H.2003, Patel V, Flisher A, Hetrick S, McGorry P(2007), Beam MR, Gil-Rivas V, Greenberger E, Chen C (2002) suggests a complex socio-ecological framework of risk factors operating in multiple contexts that are central to the lives of adolescents, namely, home, school, peer group and neighbourhood. A few studies from low and middle income countries have identified family structure and relationships,social class (Chandra R, Srinivasan S, Chandrasekaran R, Mahadevan S 1993, Rahim SI, Cederblad M 1989)urbanization and school failure as some factors associated with mental disorders in adolescents. On analyzing more concrete and objective environmental variables, socioeconomic status has been found to be both related and unrelated to anxiety. Broadly, social disadvantage is associated with increased stress (Goodman et al., 2005). Mixed and culturally biased results were obtained in the case of variables like type of school, gender, number of siblings, size of family, ordinal position and educational status of parents. On the contrary, more consistent results were evident in the studies that focus on the role of subjective psychological environment.

The intervention and prevention of adolescent anxiety is not often given serious concern since anxiety among a large number of children and adolescents goes undiagnosed owing to the internalized nature of its symptoms (Tomb& Hunter, 2004). But, anxious adolescents create heavy burden on society because as they suffer with their own personal struggles, they engage in increased problem behaviors, have poor self-concepts and show low school achievements, such as absenteeism, avoidance and difficulty in concentrating (Byrne, 2000; Dia & Bradshaw, 2008). If left untreated or ignored, anxiety disorders can lead to further mental health problems, poor social and developmental outcomes later in life (Saavedra, Silverman, Morgan-Lopez, & Kurtines, 2010). Moreover, adolescence is a critical period during human development in which life goals, values and establishment of direction and purpose in life are created (Berman, Weems & Stickle, 2006). Also, increasing evidences for the co-morbidity of anxiety and depression can exasperate the situation all the more. All these things reiterate the importance of analyzing environmental factors in diagnosis and treatment of anxiety. Being a socio-psychological malady, an environmental perspective towards adolescent anxiety, in addition to supplementing manifold interventional strategies, will definitely guard against its onset in adolescent period, by sensitizing parents and other caretakers. Though studies on anxiety based on the attachment theory and parenting style are galore, there are very few investigations that focused on the home environment of adolescents in the Indian context.

Present study probing into environmental factors contributing to adolescent anxiety aims to explore the psychological ambience of their immediate environments-- mainly home and school. How certain characteristics of home environment mediate the anxiety level of normal adolescents was our concern. Hypotheses were centered around the linear relationship between environmental variables and overt and covert anxieties of the selected sample. We were interested in the difference between the groups belonging to low, average and high levels

of various home environment variables in their anxiety levels. We hope this kind of approach will necessarily contribute to researches in the area of parenting style—the cardinal medium through which dynamics of a family system thrives. Moreover, counseling and therapeutic strategies will be benefitted from the results of such a study as adolescent counseling and psychotherapy will always remain incomplete if it fails to account for the psychological forces operating in the environment of which he/she is a part.

Method
Sample of the study consisted of 174 students from one government (N=38), two private (N=54) and two aided(N=82) schools of Thrissur district in Kerala state selected by convenient sampling. There were 91 males and 83 females. The mean age of participants was 15.89. Home environment scale by Karuna Shankar Mishra and IPAT anxiety scale by Samuel E Krug were administered to the students after getting informed consent from their parents and school authorities. Necessary demographic details were also collected by distributing a self prepared demographic profile for adolescents. Data analysis was carried out with the help of SPSS version 20. Here, home environment was the independent variable and anxiety served as the dependent variable. Pearson's correlation coefficient was estimated to understand the nature and significance of relationship between the variables. To get a clear picture of difference between students belonging to low, average, and high groups of Home Environment variables, in their, Anxiety a detailed ANOVA was performed.

Measures
Home Environment of the participants was assessed using Home Environment Inventory (HEI) Prepared by Karuna Shankar Mishra. It consists of 10 subscales namely, A-Control, B-Protectiveness, C- Punishment, D-Conformity, E-Social Isolation, F-Reward, G-Deprivation of privileges, H-Nurturance, I-Rejection and J-Permissiveness. It is a 5 point Lickert scale and each subscale contains 10 questions. Home Environment Inventory (HEI) claims high content as well as criterion related validity. Established reliability coefficients of dimensions are A-.879, B-.748, C-.947, D-.866, E-.870, F-875, G-.855, H-.901, I-.841, J-.726 respectively.

IPAT anxiety scale by Samuel E King was used to assess the anxiety level of participants. It consists of 40 items of which, first 20 items measure overt anxiety and next 20 measure covert anxiety. The scale which is often administered in clinical practice has test re-test reliability score .80 and its split half reliability is .78 . It claims remarkable cultural and content validity.

Results
Mean anxiety of the participants was 36.6 which is average. Anxiety level of female students was 36.2 and that of males 36.88.(Table:1). All home environment variables except control, protectiveness and permissiveness exhibited significant correlation ranging from (r=.14) to(r=.32) with the anxiety level of participants(Table:2). At the same time objective demographic variables didn't show any significant relation with anxiety except that the relation between age and anxiety was highly significant (Table:3). Significant differences in the means of anxiety levels of adolescents belonging to low, average and high levels of various home environment variables proved to be significant in ANOVA (Table:4). T-test revealed more anxiety level(37.7) for students residing in rural area. Similarly, aided (37.33) school students exhibited more anxiety than their counterparts in private (34.87) schools. And both results were significant with

P<.05. (Table:5)

Table:1 Descriptive Statistics For Entire Sample													
	A	B	C	D	E	F	G	H	I	J	ANX	Covert	Overt
Mean	20.6	26.8	25.0	29.5	9.6	30.3	7.5	23.7	10.4	21.3	36.6	18.2	18.3
SD	5.9	6.6	6.1	6.1	5.9	6.8	5.5	6.4	6.2	5.5	8.1	4.3	4.9

A-control, B-protectiveness, C-punishment, D-conformity, E-isolation, F-reward, G-deprivation of privileges, H-nurturance, I-rejection, J-permissiveness, ANX-anxiety

Table: 2 Correlation between subjective variables of Home Environment and dependent variables

	A	B	C	D	E	F	G	H	I	J
ANX	.004	.03	.17**	.18**	.28****	-.18**	.30****	-.14*	.32****	.01
Covert	-.02	-.05	.10	.20**	.25***	-.18**	.25***	-.19**	.24***	-.07
Overt	-.00	.09	.18**	.12*	.23***	-.14*	.26***	.06	.31****	.01

*p<.05, **p<.01, ***p<.001, ****p<.0000

Table:3 Correlation for objective variables of Home Environment with anxiety

	Age	Age of Father	Age of Mother	Family Size	Ordinal position	No of Brothers	No of Sisters
ANX	.17**	-.03	-.11	-.03	-.01	-.03	.08
Covert	-.00	-.05	-.01	-.09	-.01	-.06	.10
Overt	.30****	-.03	-.11	-.01	-.05	-.00	.03

**p<.01, ****p<.0000

Table:4 T-test for difference between means

Variable	Mean	SD	Df	t-value
Male	36.29	7.35	172	0.4792
Female	36.88	8.97		
Rural	37.70	8.23	172	2.1963*
Urban	34.97	7.80		
Aided	37.33	7.57	172	1.8583*
Private	34.87	9.15		

*P<.05

Table:5 ANOVA Summary

Home Environment (HE) variables	Levels of (HE) variables	Dependent variables	Mean	SD	Df (f1, f2)	F
CONTROL	Low	ANX	35.7	8.24	2,171	.35
	Average		37.0	8.19		
	High		36.3	8.09		
PROTECTIVENESSS	Low	ANX	36.7	8.32	2,171	.017
	Average		36.7	7.85		
	High		36.5	8.41		
PUNISHMENT	Low	ANX	35.1	9.39	2,171	.902
	Average		36.3	7.41		
	High		37.4	8.28		
CONFORMITY	Low	ANX	34	9.36	2,171	3.519*
	Average		36.6	7.90		
	High		38.3	7.14		
SOC. ISOLATION	Low	ANX	34	7.69	2,171	6.882**
	Average		37.6	7.85		
	High		41.3	8.88		
REWARD	Low	ANX	37.4	10.57	2,171	3.740*
	Average		38.0	6.97		
	High		34.6	8.47		
Dep.Of PREVILEGE	Low	ANX	34.2	8.55	2.171	7.946***
	Average		37.6	7.50		
	High		42.8	5.36		
NURTURANCE	Low	ANX	39.8	9.52	2,171	2.433
	Average		36.5	7.23		
	High		35.5	8.66		
REJECTION	Low	ANX	32.3	9.68	2,171	7.990***
	Average		36.5	7.64		
	High		39.6	6.79		
PROTECTIVENESS	Low	ANX	35.8	7.41	2,171	.1901
	Average		36.3	7.43		
	High		36.9	8.89		

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

Discussion

A negative family climate is a threat to the emotional well-being of adolescent population. On analyzing the results, one can see that a punitive atmosphere can increase the anxiety level of adolescents. The positive correlation between "punishment" and anxiety (r=.17, p<.01), punishment and overt anxiety (r=.18, P<.01) (Table:2) supports the previous research findings regarding the negative impact of punishment can have on the psychological state of individuals. At the same time the significant negative correlation between "reward" and anxiety (r= -.18, P<.01), reward and covert anxiety (r= -.18, P<.01), reward and overt anxiety (r= -.14, P< .05) emphasizes the therapeutic importance of a rewarding atmosphere in healing anxiety and seems to be ratifying the claims of positive psychology that positive reinforcement will increase the positive affect and positive outlook towards the life. Also significant difference in the means of anxiety of students belonging to low, average and high levels of "reward" was very much obvious in ANOVA. These results are compatible with punishment-conflict model of anxiety proposed by Estes and Skinner (1941).According to this model, a punished behavior is suppressed by inhibiting motivation to respond to the positive reinforcement. The presentation of aversive stimulus which is often unpredictable and uncontrollable often involves some aspects of uncertainty, which may lead to anxiety

In the same manner conforming to the norms and customs of family curtails one's freedom and sense of control over oneself which may lead to anxiety. The significant positive correlation between conformity and anxiety (r=.18, P<.01) conformity and covert (r= .20, P<.01) and overt (r=.12, P<.05) anxieties confirms this. Same is the case with the other negative characteristics of family environment. "Social isolation" revealed high significant correlation with anxiety (r=.28, P<.000) and covert (r=.25, P<.001) and overt (r= .23, P<.001) anxieties. Deprivation of privileges exhibited significant relation with anxiety (r=.30, P<.000) and covert (r=.25,P<.001) and overt (r=.26, P<.001) as well. Finally 'rejection' too showed extremely significant correlation with anxiety (r=.32, P<.000) and covert (r=.24, P<.001) and overt (r=.31,P<.000) anxieties. Meanwhile, the positive quality of home environment called 'nurture', just like 'reward' exhibited a negative significant correlation with anxiety measures. Correlation of "nurture" with anxiety was (r=.-14,P<.05),and with covert anxiety was (r= -.19, P<.01) .ANOVA results enhanced these observed facts by revealing significant differences in the means of anxieties of students belonging to low, average and high levels of seemingly negative home environment variables, like conformity , F(2,171)=3.519, P<.05),social isolation, F(2,171)=6.88, P=.001), deprivation of privileges, F(2,171)=7.946, P<.001) and rejection, F(2,171)=7.990, P<.001) respectively. All these seems to be very much compatible with previous research findings that parenting traits such as overcontrol, lack of warmth or rejection, and overprotection are known to be associated with the etiology of anxiety disorder (Stark et al 1990; Rapee 1997; Caster et al 1999; Hudson and Rapee 2000; Hidalgo et al 2001; Ollendick and Hirshfeld-Becker 2002; Neal and Edelmann 2003; Hollenstein et al 2004; Chavira and Stein 2005). Also behavioral inhibition which is the salient feature of anxiety, can be elicited by specific stimulants and situations in the environment at various ages of development (Kagan 1989; Rubin et al 1997) In the case of the variable "control", it is observed that it hasn't showed any serious impact on the anxiety level of adolescents despite the evidences in the past literature that parental psychological control is very much related to psychological outcomes of adolescents (Gray & Steinberg, 1999; Steinberg, 2001, Ballash et al 2006) But ,in Kerala families which has not fully emancipated from traditional patriarchal structure, perhaps 'control' is providing most adolescents with a predictable structure of behaving so that the 'controlling atmosphere' might not be interfering with their emotional life. Perhaps a large sample may provide a more clear picture of facts.

One thing that is to be noticed is , with age, anxiety level of adolescents may increase. The significant correlation between anxiety and age (r=.17,P<.01) and the extremely significant correlation between overt anxiety and age (r=.30, P<.000) reveals this. But the present sample consisted of students within 15-17 age range only. Hence it is not sure that observed effect of age on adolescent anxiety is reliable and can be accepted for generalization.(Table:3).

The lack of any relation between birth order and anxiety seems to be contradicting the Alderian views on birth order and individual difference in psychological vulnerability. Also, the other objective home environment variables like family size, number of siblings, age of mother etc didn't show any significant relation with anxiety levels (Table:3). Similarly,There are many evidences for adolescent girls scoring high in their anxiety tests (Campbell& Rapee, 1994; Costello, Egger, & Angold, 2005; Poulton, Milne, Craske, & Menzies, 2001; Weiss& Last, 2001). The present study however contradicts these findings(Table:4).

Type of school in which adolescent studies, can have an impact on their anxiety. Here we notice that aided school students have higher level of anxiety than private school students (t=1.8583, P<.05)(Table:4). Which means differences in schooling matters in the emotional well-being of adolescents. So far, a detailed study hasn't took place in Indian context regarding the relationship between school atmosphere and psychopathology. The present result indicates the necessity for intensifying the research ventures in this line. Similarly urban adolescents suffer less from anxiety compared to rural students (t=2.196, P<.05)(Table:4) indicating the fact that seemingly indirect environmental factors too can have a role in the anxiety level of adolescents.

Thus it is much clear that environment is an important factor in the diagnosis and treatment of anxiety. A detailed study aimed at distinguishing elements of objective as well as psychological environment of adolescents will prove highly effective in the preventive and curative measures of adolescent anxiety. Anxiety is the one of the most prevalent and enduring of all psychological disorders plaguing adolescent population of modern era. For this, whatever be the intervention strategies caretakers are adopting, ranging from pharmacological remedies to various forms of counseling and psychotherapy, they must address the elements of culture & environment to which adolescent belongs. And the psychological environment of home which is saturated with parenting style, should undergo meticulous exploration. Steinberg(2001) one of the renowned researchers on parent-adolescent relationship staunchly advocates "systematic large-scale, multifaceted, and ongoing public health campaign to educate parents and other caretakers about adolescence". Findings from the studies like this too, we hope, will contribute to parent/teacher awareness programmes intented for promoting adolescent well-being in Indian context.

Limitations of Study

The major draw back of this study is, it couldn't take into account the socio-economic status of the families of adolescents despite the fact that there does exist strong evidences in previous western as well as eastern studies related to the impact of financial status on the anxiety level (Alex Cohen et al, 2008). Also, the educational status of parents is not considered as an independent variable which might have a pertinent role in the parenting style adopted by respective parents and affect the anxiety level of adolescents.

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