

Understanding fear in school children

Musleh Uddin Kalar ^{1*}, Syed M. Mustahsan ², Maroof Ali ², Kiran Fatima ², Khalil Farooque ², Marzia Batool ², Syed M. Haider ², Fatima Feroz ²

¹ Senior Registrar MBBS, MPH, (USA). Department of Community Health Sciences, Karachi Medical & Dental College, Pakistan

² Research Associate MBBS, Dept. of Community Health Sciences, SMC, Dow University of Health Sciences, Pakistan

* **Corresponding Author:** Musleh Uddin Kalar; MBBS, MPH, (USA)
Senior Registrar, Department of Community Health Sciences
Karachi Medical & Dental College, Pakistan
E-mail: kalar747@gmail.com | Phone: 9221 03312587070 | Fax: 009221 36675655

Abstract

Introduction: Fear is an intense aversion to or apprehension of a person, place, activity, event, or object that causes emotional distress and often avoidance behavior. Recent studies implicate the prefrontal cortex in fear expression as well, by way of its connection to the basal and then to central nucleus of amygdala.

Objective: The objective of this study was to determine the frequency of fear in school children.

Methods: This was a comparative cross sectional study which was conducted in a private school. School children of 7-12 years of age were selected and the sampling technique was non-probability convenient sampling. Fear Survey Schedule For Children – Revised (FSSC-R) questionnaire was administered to indicate the level of fear. Multiple response analysis was conducted to present overall frequency of fear. Logistic regression was conducted to assess the predictors for the dependent variable of fear. Independent sample *t*- test was performed to assess the normal distribution of fear.

Results: Most of the students feared from failing in their test (62.3%) proceeded by fear from electricity (59.3%) and fear from wild animals (57.6%). Mean fear scores for females (9.40 ± 22.7) were higher than that of males fear scores (6.14 ± 22.7). Independent sample *t*-test showed significant effect of gender, $t(179) = -8.0$, $p < 0.0001$, with females having higher scores than males. Logistic regression showed the odds of sensitivity of fear were 5.64 times higher for females than they were for males. For males, the odds were 1.06, and for females the odds were 5.98.

Study Limitation: Data was only collected from medium class students of 9 years of age.

Conclusion: Fears are a normal part of development, fears of children are realistic and most of them imaginary.

Key words: Fear-provoking cognitions, gender differences, Fear Survey Schedule – Revised (FSSC-R), school children, optimistic statements

Introduction

Fear is an intense aversion to or apprehension of a person, place, activity, event, or object that causes emotional distress and often avoidance behavior.¹ Research in medical science revealed that amygdala of the brain is primarily responsible for the conditioning of fear through sensory system of the body and the central nucleus of amygdala controls defensive behavior (freezing), autonomic and endocrine responses. Recent studies implicate the prefrontal cortex in fear expression as well, by way of its connection to the basal and then to central nucleus of amygdala.² It is especially important to identify the possible fears of school children when caring. School children have hospital related fears because of their developmental stage. They are not able to separate reality from the imaginary and their ability to express and cope with their fears is limited.³ Dental fears have multifactorial origins which are broadly divided into personal characteristics, environmental factors, or situational factors. Most of the existing literature on factors affecting dental fear and behavior focuses on school children as they most often present with behavior problems. However, school-aged child through adolescence can also present with behavior problems where communication cannot be established by the clinician. Though personality characteristics are said to influence dental fear and behavior the most, they are also strongly affected by social and family environments.⁴ A frequently used self-report instrument to assess for specific phobia in youths is the Fear Survey Schedule for Children-Revised (FSSC-R). The FSSC-R consists of 80 items assessing a broad range of fears out of which five common fear factors emerge: fear of danger and death, failure and criticism, the unknown, small animals and medical fears. The FSSC-R has to date been extensively tested for reliability and validity and there are extensive normative data available, also the instrument seems to have good discriminant properties to differentiate children with different types of specific phobias.⁵ It is formulated to specify certain fear sensitivities in children and adolescents, as a tool to pick out fearful children for prevention and treatment investigation and analysis and as a pre and post therapy studies measure with children and adolescents.⁶ Factor analytic studies have revealed that the FSSC-R contains five factors; fear of trauma and disasters (eg, bomb blast, fire injury etc), fear of animals (like snake), fear of loneliness and strangers (eg, alone in crowd), fear of criticism (eg, dress different from others) and fear of hospital and its instruments (eg, injections, nurses). It categorizes the fear in children on a 3 point scale (none, some and a lot). The initial studies have reported that young children are more fearful than older children and adolescence. Previous researches has shown that children are more fearful of trauma and disasters which causes physical injury like being hit by a car, bomb blasts, terrorists. Another study has reported that the five target fears (“Not being able to breathe,” “Being hit by a car or truck”, “Falling from high places”, “Bombing attacks or being invaded”, and “Fire or getting burned”) were listed in the top ten of the most common fears for the children.⁷ This research is conducted to analyze the rate of fear factor in children of our society and to explore the most common stimuli and the

most frequent factor which causes fear in our children. The objective of this study was to determine the frequency of fear in school children.

Materials and Methods

Study design and study cases

A comparative cross sectional study was conducted in a private school of Karachi, Pakistan from January 2013 till March 2013. The participants were school children of 7-12 years of age and were selected on the basis of non probability convenient sampling.

Sample Size

The sample size calculation was done using the W.H.O. software for “Sample Size Calculation” edited by L. Lemeshow and S. K. Lwanga, where $\alpha = 5\%$, $1 - \beta = 90$, $P_o = 0.50$, $P_a = 0.40$, n (sample size) = 211. The researcher recruited 248 subjects to avoid the chances of type 2 error.

Inclusion/Exclusion Criteria

Children included in the study had vaccination status according to the Expanded Program of Immunization of Pakistan and had no history of chronic illnesses. Children having repeated hospitalization were excluded.

Administration

Fear Survey Schedule For Children – Revised (FSSC-R) questionnaire was administered and school children are asked to indicate their level of fear to various stimuli and situations on a 3-point scale: ‘none’, ‘some’, ‘a lot’. This took place in the children’s classrooms with the teacher and a research assistant present to provide assistance, if necessary, and to ensure independent responding.

Confidentiality

The data were collected on the questionnaire without the names of the participants so that anonymity could be maintained.

Fear Survey Schedule For Children – Revised (FSSC-R) Construct and Aims

The FSSC-R is intended to measure the construct of fear in children and adolescents. It is designed (1) as an ipsative instrument to identify specific fear sensitivities in individual children and adolescents, (2) as a normative instrument for selecting fearful children and adolescents for

prevention and treatment trials and (3) as a pre-treatment and post-treatment measure in therapy outcome studies with youths. It has been used in specific feared situations or objects that lead to avoidance behaviors in youths with specific phobias and social phobias.⁸

Test Construction and Description

The FSSC-R is a widely used self-report measure of children and adolescents' fears. The instrument, a revision of Scherer and Nakamura's original Fear Survey Schedule for Children, contains 80 items that are each rated on a three-point scale (*none, some, a lot*).⁹ A total fearfulness score can be obtained, as can five subscale scores based on a factor analysis of the items. In addition, the number of intense fears can be indicated (i.e., the number of fears endorsed 'a lot'), as can the most prevalent fears for a given child/adolescent or group of children and adolescents (i.e., boys, preadolescents, school phobic youngsters, etc.).¹⁰

Factor Structure

The FSSC-R possesses a relatively robust factor structure that has been replicated across sex, age and nationality.¹¹ Principal component analysis with varimax rotation was used to determine the original factor structure, and confirmatory factor analysis procedures have been used to validate the structure in subsequent studies. The five factors are entitled as ('Making mistakes' and 'Being teased'), The Unknown (e.g. 'Dark places' and 'Ghosts or spooky things'), Minor Injury and Small Animals (e.g. 'Snakes' and 'Getting a cut or injury'), Danger and Death (e.g. 'Being hit by a car or truck' and 'Not being able to breathe') and Medical Fears (e.g. 'Having to go to the hospital' and 'Getting a shot from the nurse or doctor'). The factor structure has been related meaningfully to different types of clinical phobia, including animal phobias, natural environment/situational phobias, social phobias and injection/illness phobias.^{12,13}

Reliability

The reliability of the FSSC-R total fearfulness score and the factor subscale scores has been examined in three principal ways: internal consistency coefficients, test-retest reliabilities and stability of scores over time. Cronbach's alpha coefficients for the total fearfulness score have consistently been reported to be above 0.90. Test-retest reliability for overall fearfulness has been estimated to be 0.82. Factor subscale test-retest reliabilities have ranged from 0.70 to 0.87 over three months.^{14,15}

Validity

The validity of the FSSC-R has been demonstrated in a number of ways. In the initial studies, girls were found to report higher levels of fearfulness than boys and younger children were shown to report higher levels of fearfulness than older children. These findings are consistent

with the literature on sex-related fears in adults and developmental features of fear and related constructs in children.¹⁵ Finally, the FSSC-R has been used to establish treatment efficacy in major outcome studies with fearful and anxious children and adolescents.^{16,17}

Application

Norms for children and adolescents between 7 and 16 years of age from the United States and Australia are available. Other studies have reported means and standard deviations for samples from other countries (e.g. England, Netherlands, France, Germany, and Sweden). FSSC-R total and subscale scores have been shown to decrease with age and across longer time intervals, caution is required in interpreting changes due to prevention and treatment trials.¹⁸

Data Management and Statistical Analysis

The data was entered on Statistical Package for Social Sciences (SPSS) version 20 (SPSS, Inc., Chicago, IL, USA) and analyzed. A descriptive analysis was performed; continuous variable of age and fear scores were presented as continuous variables. Categorical variable of gender and FSSC-R variables were presented as proportions (%). Multiple Response Analysis was conducted to present overall frequency of fear. (Table 1) Binary logistic regression analysis was conducted to assess the predictors for the dependent variable of fear, with a threshold for the selection of $p < 0.05$. Independent variables were gender and age. Independent sample t -test was performed to assess the normal distribution of dependent variable of fear. Assumptions were made that two groups (males and females) have approximately equal variance on the dependent variable of fear by conducting Levene's test and the two groups are independent of one another.

Study Limitations

Although we have progressed through an advance prospective methodology but there are some limitation of our study. Due to small sample size, we were unable to infer data from a large population and majority of our data was from medium class students and were unable to judge the psychological behavior of children as children may have some social desirability or some type of negative information in their minds which can effects their fear beliefs but our study showed that the mean age of fear was 9 years because this is an important developmental period for simple phobias.

Ethical Considerations

The study protocol was approved by ethical review committee. Written informed consent was taken from the participants before their enrolment in this study. The participants' involvement in this study was voluntary and no financial incentives were provided to any study participant.

Results

Multiple Response Analysis

The mean age of school children was 9 years \pm 1.81. Males were 67.2% and females were 32.8%. Multiple Response Frequencies procedure was used to display overall frequency of school children who favored the dichotomous variable of “a lot for fear.” (Table 1, 2)

Independent sample t- test

Fear scores of males and females were compared. Descriptive statistics for the two groups showed that the mean fear scores for females (9.40 \pm 22.7) were higher than that of males fear scores (6.14 \pm 22.7). Levene’s Test for Equality of Variances showed the two groups had approximately equal variance on the dependent variable of fear. The significance level is 0.06 indicating that the variances are approximately equal. There was a significant effect of gender, $t(179) = -8.0, p < 0.0001$, with females having higher scores than males. (Table 3)

Binary logistic regression analysis

This model was used to predict the odds that a subject of a given gender will have fear sensitivity. The odds prediction equation is if the subject is a male (gender = 1), then the $ODDS = e^{-1.671+1.731(1)} = e^{0.06} = 1.06$. That is, a male is only 1.06 times as likely to develop sensitivity of fear. If the subject is a female (gender = 2) then the $ODDS = e^{-1.67+1.73(2)} = e^{1.79} = 5.98$. That is, a female is 5.98 times as likely to have sensitivity of fear. Odds were converted to probabilities. For males $Y = ODDS/1+ODDS = 1.06/1+1.06 = 0.51$. That is our model predicts that 51% of males have sensitivity of fear. For female $Y = ODDS/1+ODDS = 5.98/1+5.98 = 0.85$. That is, our model predicts that 85% of female have sensitivity of fear. The variables in the equation output also gives us the Exp(B) or the odds ratio predicted by the model. This odds ratio can be computed by raising the base of the natural log to the b^{th} power, where b is the slope from our logistic regression equation. For our model $e^{1.731} = 5.64$. That tells us that the model predicts that the odds of sensitivity of fear were 5.64 times higher for females than they were for males. For males, the odds were 1.06, and for females the odds were 5.98. The odds ratio was $5.64/1.06 = 5.64$. The Model summary shows the addition of gender and age as covariates in the analysis of logistic regression. The R^2 statistics was 0.11 indicating an 11% correlation of age and gender with fear in children (Table 3).

Discussion

The FSSC-R was filled by 67.2% males and 32.8% females, total of 248 subjects. Out of these, 51% of males and 85% of females were sensitive to fear which indicates that females have 5.64

times higher rate of fear than males. Our results showed that majority of the children were feared from failing in a test (62.3%) followed by fear from getting a shock from electricity (59.3%), bear or wolves (57.6%), falling from high places (56.8%), getting poor grades (56.4%) and getting hit by a car or truck (56.4%). According to a survey conducted in Nepal, 2006 showed a significant difference of fear factors between boys and girls as girls having high rate of fear than boys ($t=1.94, p=0.05$)¹ which is similar to the results obtained in our study with a significant effect of gender. ($t=-8.0, p=0.0001$)^{19,20}

Consistent with previous research, girls clearly displayed higher fear levels than boys. It is still unclear what the origins of this marked gender difference in fearfulness are. The most plausible explanations in the literature relate to biological (genetics and hormones) or socialization factors (i.e., greater permission for girls to exhibit and report fears than boys).²¹⁻²³ Individual difference variables did not substantially mediate the effects of negative and positive information. Yet, it should be noted that general fearfulness, anxiety sensitivity, and to a lesser extent trait anxiety and behavioral inhibition, were already linked to fear of the beast, dogs, and other predators. At the very least, this finding suggests that there is a group of anxiety-prone children who tend to make inflated fear evaluations and become easily scared of a wide range of potentially threatening stimuli.²⁴

Future work should also examine whether the transmission of positive information can be exploited therapeutically. Particularly in combination with exposure exercises, careful provision of positive information could be a valuable clinical tool in correcting fear-provoking cognitions and decreasing children's level of fear overall. The present data as well as those obtained by Field et al indicate that verbal information affects children's fear evaluations. The results suggest that adults can increase children's fears by expressing negative ideas about certain stimuli and situations as well as reduce or diminish fears in children through optimistic statements.^{25,26}

Conclusion

Fears are a normal part of development but it can be a mind-killer, sapping all energy and will-power to take control of a situation and overcome it. Fears of children are realistic and most of them imaginary. Children fears are learned. They are taught by their parents, teachers and learned through experience. The responses of fear of school-age children include a wider range of intrusive images and thoughts. School age play a big part in categorizing their perception of reality. This may result in avoiding enjoyable conditions in their lives. The consequences of fear include impaired mental and physical health, disturbed normal sleep patterns, lack of self-confidence and all these interfere with less attention and concentration to studies because they remain on alert for things happening around them. Fear can be released by counseling and carrying out a continuous dialogue using children's own language as sharing fears take away a lot of scariness.

Considering the obtained results, the following significant points are of keen importance:

- 1) In comparison to boys, girls showed higher fear level concerning whole study.

- 2) The most prevalent fears in school children are failing in a test, getting shock from electric city, fear of beasts, falling from a high place, earth quack and fire burn.

Information of fear either positive or negative, greatly influence behavior of school children.

Recommendations

The ideal situation for a child is developed by their parents and teachers. Children should be encouraged to develop their confidence against the fearful conditions. A scientific literature should be developed to psychologically prepare the children and to implement the knowledge that can able our children to cope up the fearful conditions.

Conflict of Interest: The authors declare that they have no competing interests.

References

1. United Health Care. (2013). In Hallucinations Complications, *Fear*. Retrieved from https://member.uhcmedicareolutions.com/healthlinepage/channel/hallucinations_complications#top.
 2. Pare HC, Pare D. Plastic Synaptic Networks of the Amagdala for the Acquisition, Expression, and Extinction of Conditioned Fear. *Physiol Rev*. 2010;90(2):419-63.
 3. Salmela, Marja. (2010). *Hospital-related fears and coping strategies in 4-6-year-old children*. Doctoral dissertation, University of Helsinki, Faculty of Medicine, Institute of Clinical Medicine, Clinic for Children and Adolescents, Child Psychiatry. Retrieved from [<https://helda.helsinki.fi/bitstream/handle/10138/22646/hospital.pdf?sequence=1>]
 4. Suprabha B S, Rao A, Choudhary S, Shenoy R. Child dental fear and behavior: The role of environmental factors in a hospital cohort. *J Indian Soc Pedod Prev Dent*. 2011;29:95-101
 5. Lena R. *Fears, anxieties and cognitive-behavioral treatment of specific phobias in youth*. Stockholm: Department of Psychology, Stockholm; 2009.
 6. Ollendick TH. Fear Survey Schedule For Children-Revised. 2008; <http://onlinelibrary.wiley.com/doi/10.1002/9780470713334.app3/pdf>, 2013.
 7. P. Muris a, H. Merckelbach a, T.H. Ollendick b, N.J. King, C. Meesters, Van Kessel C. What is the Revised Fear Survey Schedule for Children measuring? *Behav Res Ther*. 2002;40(11):1317-26.
-

8. Barrett, P. M., Dadds, M. R., & Rapee, R. M. Family treatment of childhood anxiety: A controlled trial. *J Consult Clin Psychol.* 1996;64(2):333-42.
 9. Herbert, M. (2008) *Clinical Child and Adolescent Psychology: From Theory to Practice.* J. W. Sons.
 10. Ollendick TH. Cognitive behavioral treatment of panic disorder with agoraphobia in adolescents: A multiple baseline design analysis. *Behavior Therapy.* 1995;26(3):517-31.
 11. Thomas H. Ollendick Neville J King WY. *International Handbook of Phobia and Anxiety Disorders in Children and Adolescents.* New York: Plenum press 1994.
 12. Weems CF SW, Saavedra LM, Pina AA, Lumpkin PW. The Discrimination of children's phobias using the Revised Fear Survey Schedule for Children. *J Child Psychol Psychiatry.* 1999;40(6):941-52.
 13. G King, N. J and Ollendick, T. H. Reliability of the Fear Survey Schedule for Children – Revised. *Behav Res Ther.* 1983;21(6):685-692.
 14. Friedman, A. G., Campbell, T., and Okifuji, A. Specific fears as predictors of generalized anxiety in children. *J Psychopathol Behav Assess.* 1991;13:45-52.
 15. Kendall, P. C. Treating anxiety disorders in children: results of a controlled trial. *J Consult Clin Psychol.* 1994;62(1):100-110.
 16. Ollendick TH, Jones RT. Risk factors for psychological adjustment following residential fire: the role of avoidant coping. *J Trauma Dissociation.* 2005;6(2):85-99.
 17. Barrett PMD, Mark R.; Rapee, Ronald M. Family treatment of childhood anxiety: A controlled trial. *J Consult Clin Psychol.* 1996;64(2):333-42.
 18. Kendall PC HJ, Gosch E, Flannery-Schroeder E, Sugveg C. Cognitive-behavioral therapy for anxiety disordered youth: a randomized clinical trial evaluating child and family modalities. *J Consult Clin Psychol.* 2008;76(2):282-97.
 19. Campbell Marilyn A. and Rapee, Ronald M. Current issues in the assessment of anxiety in children and adolescents: A developmental perspective. *Behav Change.* 1996;13(3):185-93.
 20. Field, Andy P, Argyris, Nicolas G and Knowles, Karina A (2001) Who's afraid of the big bad wolf: a prospective paradigm to test Rachman's indirect pathways in children. *Behav Res Ther.* 2001;39(11):1259-76.
 21. Mahat G, Scoloveno MA. Nepalese school-age children's self-reported fears and coping strategies related to medical experiences. *J Cult Divers.* 2006;13(1):34-40.
 22. Bernstein GA, Borchardt CM, Perwien AR. Anxiety disorders in children and adolescents: a review of the past 10 years. *J Am Acad Child Adolesc Psychiatry.* 1996;35(9):1110-1119.
 23. Craske, M. G. Fear and anxiety in children and adolescents. *Bull Menninger Clin.* 1997;61(Suppl. A), A4–A36.
-

24. Merckelbach, H. and Muris, P. (2001) Specific Phobias, in Anxiety Disorders: An Introduction to Clinical Management and Research (eds E. J.L. Griez, C. Faravelli, D. Nutt and J. Zohar), John Wiley & Sons, Ltd, Chichester, UK. doi: 10.1002/0470846437.ch6
25. Lonigan, C. J., & Phillips, B. M. (2001). Temperamental basis of anxiety disorders in children. In M. W. Vasey, & M. R. Dadds (Eds.). The developmental psychopathology of anxiety (pp. 60–91). New York: Oxford University Press.
26. Field, A. P., Argyrus, N. G., & Knowles, K. A. Who's afraid of the big bad wolf: A prospective paradigm to test Rachman's indirect pathways in children. *Behav Res Ther.* 2001;39(11):1259-76.

Table 1: Descriptive Statistics

| Demographic profile and frequency of fear in school children | |
|---|--------------------|
| Characteristics | Mean \pm SD or % |
| Age (years) | 9 \pm 1.81 |
| Gender | Males (67.2%) |

Table 2: Multiple Response Frequencies

| Fear Variables | Responses | | Percent of cases |
|----------------------------------|-----------|---------|------------------|
| | N | Percent | |
| Bear or Wolves | 136 | 2.3% | 57.6% |
| Strange or Mean looking dogs | 109 | 1.9% | 46.2% |
| Being sent to the principal | 123 | 2.1% | 52.1% |
| Getting a report card | 97 | 1.7% | 41.1% |
| Failing a test | 147 | 2.5% | 62.3% |
| Getting poor grades | 133 | 2.3% | 56.4% |
| Getting punished by father | 116 | 2% | 49.2% |
| Getting hit by a car or truck | 133 | 2.3% | 56.4% |
| Fire getting burned | 125 | 2.1% | 53% |
| Getting a shock from electricity | 140 | 2.4% | 59.3% |
| Falling from high places | 134 | 2.3% | 56.8% |
| Burglar breaking into house | 100 | 1.7% | 42.4% |
| Death or dead people | 105 | 1.8% | 44.5% |
| Ghost or Spooky things | 100 | 1.7% | 42.4% |
| Earthquakes | 128 | 2.2% | 54.2% |
| Getting lost at a strange place | 120 | 2% | 50.8% |
| Not being able to breathe | 119 | 2% | 50.4% |

Table 3: *t*-test & Logistic Regression

| Independent Sample <i>t</i> test: Gender compared with Fear Scores Group Statistics | | | | | |
|--|---|---------------------------|--------------------------------------|---------------------|----------|
| Characteristics | | Fear Scores Mean \pm SD | | | |
| Gender | | | | | |
| Male | | 61.46 \pm 22.7 | | | |
| Female | | 94.04 \pm 27.63 | | | |
| Equal variances assumed | Levene's Test for equality of variances | | <i>t</i> -test for equality of Means | | |
| | F | <i>P</i> | T | df | <i>p</i> |
| Fear | 4.28 | 0.60 | -8.07 | 179 | 0.0001 |
| Probability of obesity - Binary Logistic Regression Analysis | | | | | |
| Characteristics | Odds Ratio | 95% CI | | <i>p</i> -value | |
| Females (ref = male) | 5.64 | 2.36, 13.47 | | 0.0001 | |
| Age | 0.97 | 0.92,1.03 | | 0.44 | |
| Model summary | | | | | |
| Step | -2 Log likelihood | Cox & Snell R Square | | Nagelkerke R Square | |
| 1 | 221.338 | 0.110 | | 0.149 | |