The Effect of Self-Esteem, Self-Efficacy and Family Social Support on Test Anxiety in Elementary Students: A Path Model

Ali Asghar Bayani[1,*]

[1]Department of Psychology and Education, Azadshahr Branch, Islamic Azad University, Azadshahr, IR Iran

[*]*Corresponding author*: Ali Asghar Bayani, Department of Psychology and Education, Azadshahr Branch, Islamic Azad University, Azadshahr, IR Iran, E-mail: aliasghar.bayani@gmail.com

Abstract

Background: Test anxiety is one of the most important variables which affect the mental health of students in primary schools. Therefore, it is crucial to identify the factors that influence test anxiety.

Objectives: The current study aimed to investigate the mediation effect of self-esteem on the relationship between self- efficacy social support and test anxiety.

Patients and Methods: Participants were 374 elementary students (179 boys; 195 girls) who completed the Rosenberg self-esteem scale, the perceived social support from family, the self-efficacy questionnaire and the test anxiety inventory. The relationships between the variables were examined via path analysis. Data analysis was conducted using descriptive and inferential statistics by statistical package for social sciences (SPSS) and analysis of moment structures (AMOS) software.

Results: Findings showed that self-efficacy was negatively related with test anxiety (-0.23, $P < 0.01$), a significant negative association existed between self-esteem and test anxiety (-0.37, $P < 0.01$) and there was a negative association between social support and test anxiety (-0.18, $P < 0.05$). The mediation effect of self-esteem on the relationship between self-efficacy, social support and test anxiety were supported in a path model.

Conclusions: These findings support the negative correlation of self-efficacy, social support, and self-esteem with test anxiety. The obtained model is appropriate to explain the test anxiety of elementary students.

Keywords: Self-Esteem, Self- Efficacy, Family Social Support, Test Anxiety

1. Background

Test anxiety is a crucial educational problem affecting many students in schools worldwide (1). It is a multidimensional concept comprising cognitive, physiological-affective and behavioral components (2), defined as a set of phenomenological, physiological and behavioral responses that accompany concern about possible negative consequences or failure on the examination or similar evaluative situations (3). Test anxiety was conceptualized by Zeidner (4) as four components: 1) Tension: emotional feelings that someone experiences before or during a test, 2) Fear: thoughts relative to exam performance, 3) Test-irrelevant thinking: thoughts which divert the learner's attention away from the exam, 4) Physical symptoms: psychological feedbacks before or during the exam.

Various models consisting of the drive, interference, cognitive-attention, dual-deficit, self-regulation, self-worth and transactional theory are presented to explain the concept of test anxiety (4). A large number of students usually experience test anxiety to the extent that it affects their academic and future life. A meta-analysis of test anxiety data demonstrated that test anxiety was a widespread phenomenon (5). According to numerous studies, the prevalence of test anxiety is reported about 10% to 41% in elementary and secondary school students (6, 7). Given the high prevalence of test anxiety among students and the severity of associated impairments, it is very important to understand the processes by which these difficulties emerge.

Most of educational institutions regularly use academic achievement tests to make decisions about their students (8). Many children, adolescents and young people feel anxious when they face different tests because of the fact that their grades directly depend on how well they answer the questions. Therefore, it can be understood that almost all students experience test anxiety at least once in their academic life (9). As a result, many researchers concentrated on the effects of test anxiety on academic achievements for long years (10). Literature includes researches who studied a set of variables with respect to test anxiety.

Self-efficacy is an important construct in the Bandura social cognitive theory [11]. It refers to beliefs in one's capabilities to organize and execute the courses of action required producing given attainments [12]. Moreover, self-efficacy is established as a strong predicator of behavior by many researchers [13]. Self-efficacy plays a crucial role in learning and academic achievement [14]. It can be related to academic problems such as poor grades and inefficient study habits [15]. High self-efficacy leads to improving in doing tasks; while low self-efficacy makes students leave or avoid doing their tasks [16]. Many studies have related self-efficacy to various educational and psychological factors such as anxiety, stress and academic achievement [17-19].

Self-esteem is a vital factor in human behavior which is the focus of academic and popular circles [20]. It is defined as an evaluation of oneself [21]. Many different studies reported that self-esteem can be affected by some factors such as family, culture and social support [22]. Many studies argued the relationship between self-esteem and some other variables such as depression, anxiety and locus of control [23-25].

Social support is a construct applied widely in various studies since it was suggested as a scientific concept by Caplan in 1974 [26]. According to Dumont and Provost social support refers to a multidimensional concept that includes the support actually received (informative, emotional and instrumental) and the source of the support (friends, family, strangers and animals) [27]. Social support has a considerable effect on psychological well-being and physical health [28].

The relationship between test anxiety and psychological factors such as self-esteem, family and self-efficacy are widely studied in student samples [29-31]. Despite the fact that previous researches demonstrated the association between the social support and self-efficacy with test anxiety, less attention is paid to the mechanisms or processes constructing it. Therefore, this question arises that which mediating variables can be considered as the relationship between social support and Self-efficacy with test anxiety?

2. Objectives

According to the results in the literature, and the evidence supporting the mediating role of self-esteem, the current study developed a hypothetical model depicted in Figure 1. However, the current study had two particular aims: first, to examine the relationship between self-efficacy, social support, self-esteem and test anxiety among elementary students; second, to explore the mediating role of self-esteem in the relationship between self-efficacy and social support and test anxiety.
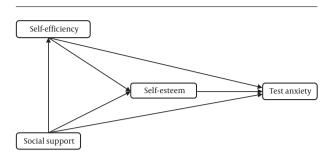

Figure 1. Hypothesis Model for the Effects of Self-Efficacy, Social Support and Self-Esteem on Test Anxiety

3. Patients and Methods

3.1. Participants

Participants were 374 students (179 boys; 195 girls) in the academic year 2013 - 2014, selected by cluster random sampling model from elementary schools of Gorgan city in Golestan province, Iran. The sample size was estimated by the Krejcie and Morgan table. Selection was based on the following criteria: being an elementary student in Gorgan at the time of the study and while completing the questionnaire, not suffering from any psychological disorders. The distribution of the respondents was as follows: 49.7% were fifth-graders and 50.3% were sixth-graders. Participation in this study was voluntary.

3.2. Measures

The study employed the following instruments:

The Rosenberg self-esteem scale: it is a self-report tool to assess individual self-esteem. Its reliability and validity were assessed in previous researches among different cultures and languages [32]. This scale included ten items (rated on a Likert scale from strongly agree to strongly disagree), among them five items were scored reversely. Higher scores show a high level of self-esteem. Evidence for the validity and the reliability of Persian versions of the Rosenberg self-esteem scale is reported for the Iranian subjects [33]. Cronbach's alpha coefficient of this scale was 0.82 in the present study.

The perceived social support from family (PSS-FA): the PSS-FA was used to measure student's perceived social support. The PSS-FA consists of 20 items, representing perceived social support from family members [34]. This scale has a 3-point Likert-type scale which are "yes", "no", and "don't know". Evidence for the validity and the reliability of Persian versions of PSS-FA is reported for Iranian subjects [35]. Cronbach's alpha coefficient for PSS-FA was 0.86 in the present study.

The self-efficacy questionnaire for children: it is a 21-item self-report scale developed to assess three components of self-efficacy: (a) social, (b) academic and (c) emotional. Participants express their perceived ability on a 5-point scale not at all (1) to very well (5) on each item. Evidence for the validity and the reliability of Persian versions of SEQC is reported for Iranian subjects (36). Cronbach's alpha coefficient for this scale was 0.80 in the present study.

The test anxiety inventory: this is a 20-item multiple-choice self-report inventory that assesses individual characteristics in test anxiety as a situation-specific personality trait. The researchers asked the participants to report their experiences of anxiety before, during and after the test. Each item is rated on a 4-point scale ranging from 1 (almost never) to 4 (almost always). Evidence for the validity and the reliability of the Persian versions of test anxiety inventory reported for Iranian subjects (37). Cronbach's alpha coefficient for this scale was 0.76 in the present study.

Data analysis was conducted by SPSS ver. 21 and AMOS ver. 19; $P < 0.05$ was considered as statistically significant. At first, normality of the data was tested. Secondly, the linearity of relationships between variables was calculated. Finally, path analysis was conducted using goodness-of-fit index (GFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA).

4. Results

Means and standard deviations, correlations and Cronbach's alphas coefficient of the study scales are listed in Table 1. Before path analysis test of the model, the correlation between variables was calculated. Alphas coefficient for self-efficacy, social support, self-esteem and test anxiety were 0.80, 0.86, 0.82 and 0.86, respectively. The findings illustrated statistically significant associations between all the variables in the model. Consequently, self-esteem is positively and significantly related with social support ($r^2 = .09$, $P < 0.01$) and self-efficacy ($r^2 = 0.18$, $P < 0.01$). In addition, negative and significant relationships were obtained between self-esteem and test anxiety ($r^2 = 0.14$, $P < 0.01$), social support and test anxiety ($r^2 = 0.03$, $P < 0.05$), and self-efficacy and test anxiety ($r^2 = 0.17$, $P < 0.01$). The significant relationships between variables and the high levels of internal consistency coefficients were accepted as signifiers of sufficiency for path analysis and thus path analysis was carried out.

Path analysis: based on the model mentioned in the introduction, the path analysis technique was applied. In this model, test anxiety was treated as an exogenous variable while self-esteem, social support and self-efficiency were all treated as endogenous. The estimation of the model was evaluated by a maximum likelihood method.

The results indicated that model was not good fit to the data (see Table 2). Therefore, the direct path from self-efficacy and social support to test anxiety was removed. A new path analysis for the modified model was then tested.

According to the results (see Figure 2), self-efficiency had a significant direct effect on self-esteem ($\beta = 0.38$, $P < 0.01$). Self-esteem had a significant direct effect on test anxiety ($\beta = -0.37$, $P < 0.01$). Social support and self-efficiency had an indirect effect on test anxiety via self-esteem. Self-esteem had a significant direct effect on test anxiety. Social support and self-efficiency had an indirect effect on test anxiety via self-esteem.
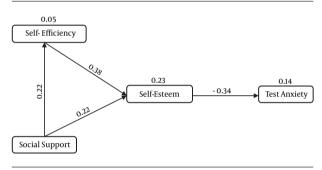

Figure 2. Path model for mediation effect of self-esteem on the relationship between self-efficacy, social support and test anxiety

In relationship of the indirect effects, the "social support → self-esteem → test anxiety" and "self-efficiency → self-esteem → test anxiety" pathway appeared significant ($P < 0.01$). The model explained 16% of the total variance of test anxiety among students.

5. Discussion

Test anxiety is recognized by many students as an important problem they need help to deal with (1). It is one of the major factors influencing elementary student academic performance. Examining the psychological and environmental factors promotes better explanation of the nature of test anxiety.

The current investigation mainly aimed to explore the mediating role of self- esteem in relation with self-efficacy and social support and test anxiety. Similar findings of Wachelka, and Katz (29); Yildirim (30) and Nie et al. (31), are in line with the results of the current study, which showed significant relationships between test anxiety, self-esteem, self-efficacy and social support. Findings regarding self-efficacy and test anxiety parallel to the ones by Finney and Schraw (17); Tahmassian and Jalali Moghadam (19) and Prati et al. (18) who also found a significant relationship between self-efficacy and test anxiety. The association between social support and test anxiety was in line

Table 1. Correlation Matrix Among Variables for Total Subjects (n = 374)

	α	Mean $\pm$ SD	1	2	3	4
Test anxiety	0.86	7.82 $\pm$ 5.15	1			
Self-esteem	0.82	4.51 $\pm$ 3.71	-0.371[a]	1		
Self-efficiency	0.80	59 $\pm$ 6.75	-0.230[a]	0.429[a]	1	
Social support	0.86	24.97 $\pm$ 4.25	-0.184[b]	0.301[a]	0.222[b]	1

[a]Correlation is significant at the 0.01 level (2-tailed).
[b]Correlation is significant at the 0.05 level (2-tailed).

Table 2. Model of Fit Indexes of the Modified Model

	CMIN	DF	P	GFI	AGFI	NFI	TLI	CFI	RMESA
Initial model	5.134	1	0.023	976.	0.760	0.893	0.410	0.902	0.201
Modified model	1.26	2	0.531	0.994	0.969	0.974	1.05	1	0.000

Abbreviations: GFIc, goodness-of-fit index; CFIg, comparative fit index.

with those of the previous studies that found higher social support related to lower test anxiety (30).

The most important findings of this research concentrated on the moderating roles of self-esteem on the relationship between social support, self-efficiency and test anxiety. The results showed that self-esteem medicated the effects of both self-efficacy and social support on test anxiety. Self-efficacy and social support contributed indirectly via the self-esteem to explain the variations in test anxiety. These findings are consistent with those of earlier studies reporting a relationship between self-esteem, self-efficacy, social support and test anxiety (17, 29-31). Some researchers believe that self-esteem can rarely have a direct causal factor on the phenomena (38).

As expected, correlational results showed a significant relationship between self-esteem and social support. This result was consistent with those of the previous studies that reported the relationships between self-esteem and social support (39).

In summary, the present study investigated the important role of self-esteem as a mediator among self-efficacy, social support and test anxiety. It was shown that self-esteem seems to be a predicting factor in test anxiety.

A few limitations of these studies are important to note. First, the sample was selected from only one city. This sample may not be representative of all cities in Iran. Second, the study was cross-sectional in nature, and therefore the causing factor cannot be determined. The third limitation was that the data in this research was collected only through self-report measures.

Acknowledgments

References

1. Salend SJ. Addressing test anxiety. *Teach Cxcept Children.* 2011;**44**(2):58.
2. Putwain DW, Woods KA, Symes W. Personal and situational predictors of test anxiety of students in post-compulsory education. *Br J Educ Psychol.* 2010;**80**(Pt 1):137–60. doi: 10.1348/000709909X466082. [PubMed: 19646333].
3. Sapp M. Psychodynamic, affective, and behavioral theories to psychotherapy. Charles C Thomas Publisher; 2010.
4. Zeidner M. Test anxiety: The state of the art. Springer Science & Business Media; 1998.
5. Sridevi KV. A study of relationship among general anxiety, test anxiety and academic achievement of higher secondary students. *J Educ Pract.* 2013;**4**(1):122–30.
6. Huberty TJ. Test and performance anxiety. *Principal leadersh.* 2009;**10**(1):12–6.
7. Sena JD, Lowe PA, Lee SW. Significant predictors of test anxiety among students with and without learning disabilities. *J Learn Disabil.* 2007;**40**(4):360–76. [PubMed: 17713134].
8. Papantoniou G, Moraitou D, Filippidou D. Psychometric properties of the Greek version of the Test Anxiety Inventory. *Psychology.* 2011;**02**(03):241–7. doi: 10.4236/psych.2011.23038.
9. Rothman DK. New approach to test anxiety. *J College Student Psychother.* 2004;**18**(4):45–60.
10. Sub A, Prabha C. Academic performance in relation to perfectionism, test procrastination and test anxiety of high school children. *Psychol Stud.* 2003.
11. Bandura A. Self-efficacy mechanism in human agency. *Am Psychol.* 1982;**37**(2):122.
12. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev.* 1977;**84**(2):191–215. [PubMed: 847061].
13. Maddux JE, Norton LW, Stoltenberg CD. Self-efficacy expectancy, outcome expectancy, and outcome value: relative effects on behavioral intentions. *J Pers Soc Psychol.* 1986;**51**(4):783.
14. Lent RW, Brown SD, Larkin KC. Self-efficacy in the prediction of academic performance and perceived career options. *J Counsel Psychol.* 1986;**33**(3):265.

15. Pajares F, Schunk DH. Self and self-belief in psychology and education: A historical perspective. New York: cademic Press; 2002.

16. Vieno A, Santinello M, Pastore M, Perkins DD. Social support, sense of community in school, and self-efficacy as resources during early adolescence: an integrative model. *Am J Community Psychol.* 2007;**39**(1-2):177–90. doi: 10.1007/s10464-007-9095-2. [PubMed: 17437191].

17. Finney SJ, Schraw G. Self-efficacy beliefs in college statistics courses. *Contemp Educ Psychol.* 2003;**28**(2):161–86. doi: 10.1016/s0361-476x(02)00015-2.

18. Prati G, Pietrantoni L, Cicognani E. Self-efficacy moderates the relationship between stress appraisal and quality of life among rescue workers. *Anxiety Stress Coping.* 2010;**23**(4):463–70. doi: 10.1080/10615800903431699. [PubMed: 19937503].

19. Tahmassian K, Jalali Moghadam N. Relationship between self-efficacy and symptoms of anxiety, depression, worry and social avoidance in a normal sample of students. *Iran J Psychiatry Behav Sci.* 2011;**5**(2):91–8. [PubMed: 24644452].

20. Wong CH, Mruk DD, Lee WM, Cheng CY. Targeted and reversible disruption of the blood-testis barrier by an FSH mutant-occludin peptide conjugate. *FASEB J.* 2007;**21**(2):438–48. doi: 10.1096/fj.05-4144com. [PubMed: 17167075].

21. Zeigler-Hill V, Jordan CH. Two faces of self-esteem: implicit and explicit forms of self-esteem. Handbook of implicit social cognition: Measurement, theory, and applications. ; 2010.

22. Schmitz MF. Influence of Social and Family Contexts on Self-Esteem of Latino Youth. *Hispanic J Behav Sci.* 2006;**28**(4):516–30. doi: 10.1177/0739986306293999.

23. Orth U, Robins RW, Roberts BW. Low self-esteem prospectively predicts depression in adolescence and young adulthood. *J Pers Soc Psychol.* 2008;**95**(3):695–708. doi: 10.1037/0022-3514.95.3.695. [PubMed: 18729703].

24. Sowislo JF, Orth U. Does low self-esteem predict depression and anxiety? A meta-analysis of longitudinal studies. *Psychol Bull.* 2013;**139**(1):213–40. doi: 10.1037/a0028931. [PubMed: 22730921].

25. Martin G, Richardson AS, Bergen HA, Roeger L, Allison S. Perceived academic performance, self-esteem and locus of control as indicators of need for assessment of adolescent suicide risk: implications for teachers. *J Adolesc.* 2005;**28**(1):75–87. doi: 10.1016/j.adolescence.2004.04.005. [PubMed: 15683636].

26. Caplan G. Support systems and community mental health: Lectures on concept development. Behavioral Publications; 1974.

27. Dumont M, Provost MA. Resilience in adolescents: Protective role of social support, coping strategies, self-esteem, and social activities on experience of stress and depression. *J Youth Adolescence.* 1999;**28**(3):343–63.

28. Uchino BN. Social support and physical health: Understanding the health consequences of relationships. Yale University Press; 2004.

29. Wachelka D, Katz RC. Reducing test anxiety and improving academic self-esteem in high school and college students with learning disabilities. *J Behav Ther Exp Psychiatr.* 1999;**30**(3):191–8.

30. Yildirim I. Depression, Test Anxiety and Social Support among Turkish Students Preparing for the University Entrance Examination. *Eurasian J Educ Res.* 2007(29).

31. Nie Y, Lau S, Liau AK. Role of academic self-efficacy in moderating the relation between task importance and test anxiety. *Learn Individ Differ.* 2011;**21**(6):736–41.

32. Wongpakaran T, Wongpakaran N. A comparison of reliability and construct validity between the original and revised versions of the Rosenberg Self-Esteem Scale. *Psychiatry Investig.* 2012;**9**(1):54–8. doi: 10.4306/pi.2012.9.1.54. [PubMed: 22396685].

33. Mohammadi N. The preliminary study of validity and reliability of Rosenberg Self-Esteem scale. *J Iran Psychol.* 2005;**1**:313–20.

34. Procidano ME, Heller K. Measures of perceived social support from friends and from family: Three validation studies. *Am J Commun Psychol.* 1983;**11**(1):1–24.

35. Tol A, Majlessi F, Rahimi A, Shojaeizadeh D, Mohebbi B. Determinate relation between perceived social support and relevant factors with hba1c in type 1 diabetic patients. *Hospital.* 2012;**10**(4):53–60.

36. Tahmassian K, Anari A. The Relation between domains of self-efficacy and Depression in adolescence. *Q J Appl Psychol.* 2009;**3**(1):84–94.

37. Moaddeli Z, Ghazanfari Hesamabadi M. A survey on the students' exam anxiety in the Fatemeh (PBUH) College of Nursing and Midwifery, Spring 2004. *Strid Dev Med Educ.* 2005;**1**(2):65–72.

38. Blackhart GC, Nelson BC, Knowles ML, Baumeister RF. Rejection elicits emotional reactions but neither causes immediate distress nor lowers self-esteem: a meta-analytic review of 192 studies on social exclusion. *Pers Soc Psychol Rev.* 2009;**13**(4):269–309. doi: 10.1177/1088868309346065. [PubMed: 19770347].

39. Civitci N, Civitci A. Self-esteem as mediator and moderator of the relationship between loneliness and life satisfaction in adolescents. *Pers Individ Differ.* 2009;**47**(8):954–8.