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The Role Of Self-Efficacy And Perceived Social Support As Predictors Of Test Anxiety Among Female Undergraduate Students In Chennai

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Abstract

Test anxiety is a common form of anxiety that is faced by students of all stages. Though low level of test anxiety is considered as an important achievement emotion [61], experiencing high levels of test anxiety can result in emotional and physical distress which affects the concentration, cognitive ability, self-esteem, self-efficacy, attention, memory power of the student, and cause physiological manifestations such as higher galvanic skin response, heart rate, dizziness, nausea, and panicking [8]. It is also highly prevalent, affecting 40-60% of the students negatively [50]. Hence it is vital to identify students with high test anxiety and provide them with appropriate intervention to help them perform at their maximum potential. The objective of this study is to analyze the relationships and the effectiveness of two important factors, self-efficacy, and perceived social support (support from friends, family, and significant others), in mitigating the ill-effects of test anxiety. Perceived Social support is defined as the information from the environment that leads an individual to perceive and believe he or she is loved and cared for, esteemed, and is a member of a network of mutual obligation [16]. Self-efficacy refers to an individual's belief in his or her own capacity to execute behaviors necessary to produce specific performance attainments [5]. The tools used for the study were the Multidimensional Scale of Perceived Social Support- MSPSS [82], General Self-efficacy Scale- GSE [83], and the Westside Test Anxiety Scale- WTAS [85]. The data was collected through purposive and snow-ball sampling techniques from a sample of about 221 female undergraduate students with age ranging between 17 and 23 years in Chennai, via online and in-person modes. Standard linear regression, Multiple regression, and Pearson's product moment correlation were used to analyze the data. The results revealed that- there exists a significant relationship between Self-efficacy and Test anxiety ($r(211) = -.349$, $p < 0.01$)), there is a significant relationship between Perceived social support and Test anxiety ($r(211) = -.210$, $p < 0.01$)), there exists a significant relationship between Perceived social support from both family and friends and Test anxiety ($r(211) = -.251$, $p < 0.01$; $r(211) = -.149$, $p < 0.05$)) but not between significant other and Test anxiety ($r(211) = -.115$, $p > 0.01$)), both Self-efficacy and Perceived social support significantly predict Test anxiety ($R^2 = .122$, $t(211) = -5.384$, $p < 0.01$; $R^2 = .044$, $t(211) = -3.110$, $p < 0.01$)), and that Perceived social support from Family independently predicts Test anxiety significantly ($t(211) = -3.199$, $p = .002$ ($p < 0.01$)). The implication of this study is that the results can be used to develop educational, psychological, and psychosocial intervention programs for college students who are affected by high levels of test anxiety.

Key words: Test anxiety, Self-efficacy, Perceived social support, Undergraduate female students

I. INTRODUCTION

Test anxiety is a common form of anxiety that is faced by students of all stages, right from kindergarten to college. Some research indicate that few students benefit from the rush of adrenaline that is felt as a result of the nervousness experienced during the test-taking environment. Test anxiety is one of the most important achievement emotions which is conceptualized as a situation-specific form of trait anxiety that predisposes a person to perceive evaluation of performance as threatening, and thus respond to such situations with heightened anxiety [61]. Many researchers propose test anxiety to be a multidimensional construct which consists of a cognitive (e.g. worrying about performance and its consequence), bodily-affective (e.g. increased heartbeat associated with arousal), and behavioral manifestations (e.g. task-irrelevant behavior such as avoidance) [73]. Subsequent models of test anxiety have included additional components namely test-irrelevant thoughts, distraction, confidence, and cognitive obstruction [25].

Test anxiety should be considered as an important construct, but it has received less attention in academic literature. One reason why it should be considered as important is because of its high prevalence. It is estimated that 40% to 60% of the students are negatively affected by test anxiety [50]. Another reason is that test anxiety has a lot of disruptive consequences on the student's level of preparation, performance, overall subjective well-being, and personal welfare. It could also serve as a precursor of more serious forms of anxiety such as clinical mood and anxiety disorders. The vital need for considering test anxiety as a serious problem among students can be understood better when one considers the effects of this phenomenon on the students. Experiencing high levels of test anxiety can result in emotional and physical distress which affects the concentration, cognitive ability, self-esteem, attention, and memory power of the student [8]. The individuals with test anxiety report that they have recurring thoughts in which they compare self-performance with peer group, develop worries related to concerns regarding consequences of failure, loss of self-esteem and self-worth, low levels of self-efficacy, indulging in underestimating one's own ability as well as excessive worry over evaluations [13]. Apart from these psychological and cognitive effects, physiological manifestations such as higher galvanic skin response, heart rate, dizziness, nausea, and panicking are observed. These symptoms lead to arousal that is subjectively interpreted by the student in an erroneous way [28]. All these together affect the performance and overall well-being of the students.

There are several models that theoretically predict the causative factors of Test anxiety. One of the first models that can be traced back to in the literature is the 'Cognitive-attentional model.' This model was given by Sarason (1978, 1980) and Wine (1971, 1980). According to this theory, cognitive and attentional variables impair performance and thus foster test anxiety. The first group of factors include cognitive variables such as negative evaluations and self-perceived inadequacies. The second group include aspects of emotionality which are physiological reactions of distress and tension in response to the environment. Both the variables lead the students to divide their attention between task-relevant and task-irrelevant behaviors. Students with high test anxiety allocate majority of their attention towards task-irrelevant tasks and cognitions which lead to reduced performance [74]. Another model that conjectures with the cognitive-attentional model is the 'Learning deficit model.' This model proposes that deficient test-taking skills and inadequate study habits are the main reasons for reduced performance as opposed to test anxiety [75]. Subsequently, it was found through extensive studies that students with high test anxiety were less likely to have effective study habits and related skills when compared to those with low test anxiety [76]. Thus, it was concluded that both the models were partly true, and that poor study and test-taking skills led to high levels of test anxiety, which in turn led to low performance [63]. But this 'deficit model' did not explain the scenario in which students with adequate study skills still suffer from debilitating test anxiety. This finding led to the formation of the 'Dual deficit model' which emphasizes the role of both cognitive interferences and study skills deficits [42]. This model later came to be known as the 'Information-processing model' which attributes poor performance of high-test anxious students to issues in encoding, organizing, and retrieving relevant information in a test-taking situation [77]. Another model that explains this phenomenon is the 'Social learning model' which is based on the traditional social learning theories. This theory emphasizes the concepts of locus of control, self-esteem, self-efficacy, expectancy outcomes, and reinforcements [34]. More recently, Lowe and colleagues (2008) presented a new conceptualization of test anxiety which explains it as an interplay between psychological, social, and biological factors. The theory proposes that intra-individual variables such as intelligence, self-efficacy, trait anxiety, study skills and habits, as well as inter-individual variables such as cognitions which are specifically related to social humiliation. In addition to the previous theories, this theory emphasizes on the importance of

social factors, especially the effect of social evaluation [39]. These models aid in developing a holistic understanding of the construct of test anxiety and its causative factors.

Self-efficacy refers to perceived capabilities for performing actions or learning at designated levels [5]. In other words, self-efficacy is concerned with individual's belief in their ability to exercise control over challenging demands and their own functioning. Major work in the area concerning self-efficacy was done by Bandura, who proposed the 'Social cognitive theory' based on the earlier social learning theories in 1986, through his book, 'Foundations of thought and action'. In his book, Bandura describes self-efficacy as an optimistic self-belief that facilitates goal-setting, effort investment, persistence in the face of obstacles, resilience, and recovery from set-backs. He hence calls it an 'operative construct' that directly has an effect on subsequent behavior and appraisal of past [5]. Bandura further describes the operative nature of the construct by explaining that, self-efficacy affects the amount of effort individuals expend in order to change a particular behavior to obtain a goal, the amount of control they perceive over the situation, and the extent to which they persist to attain that goal despite of barriers [51]. It should be noted that self-efficacy is not the same as unrealistic self-confidence or optimism. The three qualities that distinguish the construct of self-efficacy are, the implication of internal attribution, the prospective nature which refers to future behavior, and the operative nature of the construct which shows how cognitions are proximal to critical behavior [68].

One of the main theories that explain self-efficacy is the 'Socio-cognitive theory' given by Bandura in 1986. The theory proposes that human functioning results from a dynamic interplay of personal, behavioral, and environmental influences. It is a form of reciprocal determinism in which Personal factors such as cognition, affect, and biology, Behaviors of the individual, and Environmental influences such as interactions create a triadic reciprocity. The theory pre-supposes that human beings possess certain capabilities such as symbolization, planning alternative strategies, vicarious learning, self-regulation, and self-reflection. Among these self-reflection is considered as the most distinctive ability that distinguishes mankind. This ability to indulge in self-regulation allows people to make sense of their experiences, explore their cognition (meta-cognition), engage in self-evaluation, and alter thought process and behavior accordingly. This quality allows individuals to reflect on their experiences, acquire information from similar others, interpret this information and thus form a self-efficacy judgement [57]. In this context, observing a similar individual succeed can raise their self-efficacy and motivate them to attempt the task, as they now believe that they too have the required potential to finish the task. Hence, in accordance to this theory, self-efficacy of a student can be increased by correcting their faulty beliefs and cognitions (personal factors), providing training to increase their academic skills and self-regulation (behaviors), and altering their environment to be more conducive and supportive (environmental factors) [5][6]. Another theory that explains the construct is the 'Self-efficacy theory' which states that self-efficacy can influence one's behavior selection, the degree and duration of efforts in the face of trials, thinking pattern, and emotional response pattern. Thus, self-efficacy can shape one's appraisal, coping strategies, and psychological symptoms in the face of stressful and challenging demands [5]. Bandura also describes several other factors that could give rise to self-efficacy. Some of the mentioned sources are, when one accomplishes a goal and attributes the success internally while perceiving it as repeatable, when a similar role model who is perceived to have similar ability successfully masters a difficult situation, when one is verbally persuaded and reassured by others, and when one does not experience apprehensive emotional arousal in a threatening environment. Among these four sources, personal mastery and reassurance are considered to be the strongest predictors of one's self-efficacy. Apart from the mentioned theories, several authors who studied the construct have given other sources which influence the level of self-efficacy. In the context of the sample under study, one of the major sources of self-efficacy among students is their home and family. Authors have proposed that parents who provide a warm, responsive, encouraging, and supportive home environment contribute to mastery experiences which are a powerful source of self-efficacy. Family members also act as important models who teach ways to cope with difficulties and persist in the face of trials [58]. The peer group of the students also have an important effect on their self-efficacy. A student with an efficacious peer group have higher chances of constructive vicarious learning through modeling. The opportunities to interact and observe from academically oriented individuals who are perceived similar to themselves has proven to promote motivational socialization, which in turn positively influences their own self-efficacy judgements [48]. Some research has also shown that beliefs of competence such as self-efficacy tends to decline as students advance through the educational system due to factors such as increased competition, norm-referenced grading, lesser individual attention, ability groupings, and more stress from the environment [78].

An optimal level of self-efficacy is vital as it is found to have a profound effect on several important aspects of individual's life. Firstly, in the context of academia, a high level of self-efficacy is required for students to be able to indulge in efficient organization of learning activity, to be motivated enough to pursue their academic goals more persistently, and to initiate constructive help-seeking behavior. Overall, students with higher self-efficacy are more capable to cope with academic problems, and thus perform superiorly [11]. Self-efficacy beliefs also indirectly affect goal-setting of individuals. It influences the challenges that they decide to undertake and how high they set their goals. An optimistic level of self-efficacy also influences how people respond to discrepancies between one's personal goals and their performance. Self-efficacious individuals set their goals higher and exert more effort to resolve an identified discrepancy [32]. Self-efficacy is found to promote effective use of cognitive resources, which contributes in the formation of beneficial resolutions to maintain novel behavior and to counteract temptations to relapse into undesirable behavior [40]. Self-efficacy is also related to various mental and physical performances. Self-efficacy interventions have been effective in numerous contexts such as organizational performance (career exploration and decision making), educational performance (attention and persistence), goal attainment in sports and so on [37]. Finally, Self-efficacy has been shown to have a significant influence on an individual's motivation, interest, participation, achievement, self-regulation, health, and overall well-being [79]. The widespread impact and influence of this construct makes it a vital aspect that is worth being studied.

Social support is a multi-faceted concept that has always been difficult to conceptualize, define, and measure. Though this construct has been extensively studied through the years, the researchers and theoreticians have been unable to reach an agreement regarding its operational definition and theories. As a result, the concept remains unclear, and anything that involves social interaction has been considered as social support [30][31]. Despite the disagreement, one definition that defines the construct holistically was given by House (1981), in which he says that, 'Social support is a long-term or temporary interpersonal transaction involving one or more of the following, (1) emotional concern (liking, empathy, love), (2) instrumental aid (goods and services), (3) information (about the environment), (4) appraisal (information relevant to self-evaluation)' [80]. Thus, social support systems can provide individuals with emotional comfort, guidance to cope with problems, aid in personal development, and protect them from harmful effects of stress [22]. One of the main approaches that explains the formation of perception of social support is the 'cognitive approach.' According to this cognitive-behavioral approach, perceived social support is regarded as a spontaneous and transient self-statement which is a result of direct assessment of the social support received. In this approach, perception of social support is seen as a self-schema regarding the support received, and this schema is called as support-schema. Like other self-schemas (such as self-esteem and self-efficacy), people simultaneously carry both positive and negative support-schemas based on experiences and observation. Thus, a support schema depends on one's learning history, that is, a particular schema that has been formed can be elicited and strengthened by life events that correspond to the schema, be it a positive or a negative schema. An accumulation of such schemas that are developed over time can influence one's self-schemas as well [42].

Many theories that explain the function of social support have emerged in the literature. One theory that is most often used to explain the effect of social support is the 'Buffer theory' given by Cassel in 1974. The theory proposes that, under stressful conditions, a lack of social support will lead to higher risk of becoming ill. Research has consistently shown that supportive interactions with people can act as a protective factor against health consequences of stressors. Social support appears to protect individuals in crisis from a wide range of pathological states, ranging from low birth-weight to death [12]. Another theory known as the 'Main effect theory' proposes a similar argument, but states that social support is a mitigating factor for illness regardless of the level of stress experienced by the individual. That is, social support does not only protect people in the face of stressors, but also generally in life against illnesses [26]. However, research reviews sometimes reveal inconsistent findings regarding the mitigating effect of social support. This discrepancy in literature could be attributed to the diversity in definitions, complexity of the construct, cultural variations, and the effects of other important variables. Despite of this inconsistency, the buffering and mitigating effect of social support has been supported by a large number of research findings. Some of such researches report that individuals with good social support network have reduced psychological stress even in the face of negative events. This is because, perception of social support is correlated with lower levels of cortisol, reduced heart rate and lower blood pressure even during times of acute stress [15]. Social support can also provide a pain-mitigating effect. Research shows that this could be due to the decreased activity in neural regions associated with pain and increased activity in neural regions associated with safety which occurs when the individual perceives adequate social support [9]. Social support, especially support from family acts a

strong protective factor against depression and anxiety. This effect could be explained using the stress-buffering model which was mentioned previously. Perceived social support has a protective role for psychological problems by decreasing the perception of the situation as threatening by increasing the belief that the resources available are adequate [3].

Social support has been widely studied in a multi-cultural context owing to the significant differences across various cultures. Studies have shown that Asians and Asian Americans are likely to utilize social support in culturally appropriate ways that are different from the Western ways of using Social support [36]. Findings show that Asians and Asian Americans have high levels of perceived social support as they tend to view a person as fundamentally connected with others. On the other hand, Westerners have relatively low levels of perceived social support as they view a person as independent and separate from others [35]. Another distinction is that, Westerner's conceptualization of social support involves specific transactions in which one individual enlists the help of another in service of his or her problems. This independent view that is prevalent in the Western culture encourages them to express their opinions, realize their rights, and explicitly seek the help of others [41]. Contrary to this, the interconnected conceptualization held by the Asians cause them to have concerns over potential disclosure of problems with others and also cause them to restrict help-seeking behavior. This cultural difference gives raise to the concept of explicit and implicit social support. Explicit support includes advice giving, instrumental aid, or emotional comfort from the social network. This explicit support is sought more by the Westerners as it their socially sanctioned form of social support. Implicit support specifies the emotional comfort that one receives from the social network without disclosing their problems or actively seeking for help [23]. This implicit support is conceptually similar to perceived support, the construct that is being studied in this paper. Hence the Asians find solace and comfort through the awareness of existence of their social networks without expressing their problems or seeking for help. This cultural phenomenon can be explained by the Asian's emphasis on maintaining social group harmony, which makes them believe that bringing personal problems to the attention of others might risk the harmony of the group or impose inappropriate demands on the group [70]. In support of this concept, few studies have shown that received social support (explicit) had negative buffering effects on Asians, whereas perceived support (implicit) had positive buffering effects [38]. This confirms the cultural variation and signifies the importance of understanding constructs based on the cultural and traditional background.

Exams are an important part of every student's life. Exams give the students the opportunity to display their hard work, knowledge, and a wide variety of cognitive skills. Exams have now also become an indispensable challenge to students that has to be overcome in order to succeed their dreams, which could be a scholarship, job placement, university admission, or even just the approval of their family. Sadly, this practice that is supposed to challenge and motivate the students to work harder has now become a burden to a majority of them. Test anxiety is one reason why exams have such debilitating effects on the well-being of students. A study conducted among Undergraduate students found that 49.6% of the students were suffering from high exam anxiety [81]. As mentioned in the previous section, test anxiety leads to a range of negative consequences that limit the ability and success of the students, subsequently changing the course of their entire lives. Hence, it is vital to understand this construct and conduct extensive research in order to bring forth new relevant interventions to mitigate the effects of test anxiety. It is now well established that the performance and exam results are not just an expression of the student's academic ability and knowledge, but also a result of how capable they think they are (self-efficacy). This self-belief can be considerably increased by receiving support from their friends, family, and fellow peers [28]. It has also been established that the support that is received or perceived from different sources such as friends, families, peers, and significant others does not have the same positive effects on self-efficacy. This creates the need to create a clearer picture of the kind of effect that is created by each of these sources [80]. Further, the theories proposed by Lowe- the biopsychosocial model (2008), Zeidner- The integrative transactional model (1997), and others provide an impetus to further examine the effects of other variables, especially that of perceived social support and self-efficacy of students in order to come up with newer models and interventions to help students overcome this obstacle that acts as a hurdle in their career path [39][73]. Hence this study aims to determine the medicating effects of these two variables on test anxiety through a proposed model to better understand and mitigate the negative effects of test anxiety. It should also be noted that there are not many studies that examine these variables among general undergraduate students in India, which further increases the need for the current study.

II. RESEARCH METHODOLOGY

This chapter contains a detailed account on the methodology of research, the research design, method of sampling, the characteristics of sample, the description of tools, procedure, ethical considerations, and the statistical techniques used for analysis in the study.

Research design

This research is a Cross-sectional study in which a survey was circulated online (Google questionnaire) to a sample selected through mixed sampling technique. The questionnaire was designed to include questions regarding the demographic variables and three standard tools to collect relevant data. Undergraduate female students from Chennai participated in the study, and this participation was completely voluntary and anonymous. This method was adopted to collect data to understand the construct of Test anxiety, and the extent to which the predictors, Perceived social support and Self-efficacy affect the levels of test anxiety among those students.

Sample

The sample consisted of 221 undergraduate female college students from 11 different Arts & Science and engineering colleges in Chennai. The age participants of the participants ranged from17 to 23 years of age. The majority, 71.5% (158) of the sample were students of Science major, followed by 19.5% (43) of the sample from an Arts major degree, and the rest of them (minority) were from Engineering, commerce, business, and other degrees. 10 responses were removed from the sample in accordance to the exclusion criteria (5 of the responses indicated long-term mental health problems, 5 responses indicated that they were in a break year). Hence, a sample size of 211 was used for further analysis after the exclusion.

Sampling design

Mixed or combination sampling method of non-probability sampling was used in which both Purposive sampling strategy and Snow-ball sampling technique was used. An online survey was circulated to the students who were assumed to be representative of the population under study, as well as to other potential students who would meet the criteria mentioned. In-person meeting with the students who were selected through purposive sampling was arranged after obtaining permission from the authorities of the college. After the meeting, the questionnaires were circulated to the students online in the form of Google form links and the responses were collected. Apart from this, Snow-ball sampling technique was also employed and the questionnaire (Google form) was circulated online to potential students from colleges in Chennai to make the sample more representative of Undergraduate students in Chennai. The informed consent and the debriefing sheet were attached to the questionnaires, the participants were briefed about the study beforehand and they were given the liberty to contact the researcher in case of queries.

Tools used in the study

Table 1 Tools used in the study

Variables	**Authors and Year**	**Name of the tool**
Perceived Social Support	Gregory D. Zimet, Nancy W. Dahlem, Sara G. Zimet, &Gordon K. Farley. (1988)	The Multidimensional Scale of Perceived Social Support (MSPSS)
Self-efficacy	Schwarzer, R., & Jerusalem, M. (1995)	General Self-Efficacy Scale (GSE)
Test Anxiety	Richard Driscoll, Ph.D. (2004)	The Westside Test Anxiety Scale (WTAS)

Description of tools

The Multidimensional Scale of Perceived Social Support (MSPSS)- The scale is a compact instrument designed by Zimet to measure an individual's perception of social support from three different sources. The three sources defined by the author of this tool are, Family, friends, and significant other. The instrument consists of 12 questions, in which 4 questions belong to each of the three dimensions measured by the tool.

The respondents were asked to answer the questionnaire by choosing one of the options which best describes themselves on a 7-point Likert scale (1-Very strongly disagree, 2-Strongly disagree, 3-Mildly disagree, 4-Neutral, 5-Mildly agree, 6-Strongly agree, 7-Very strongly agree). The total score is calculated by adding the score (any score ranging from 1 to 7) obtained across all 12 items of the questionnaire. Since there are no established population norms for MSPSS due to the likelihood of variation among cultures, the scale response descriptors can be used as a guide to categorize the sample (criterion-referenced test). The total score obtained could range between 12 and 84. A total between 12 to 35 indicates low perceived support, a total between 36 and 60 indicates moderate perceived social support, and a score between 61 and 84 indicates high perceived social support.

Test-retest reliability was established by administering the MSPSS on a sample of 275 subjects, who were retested after 2 to 3 months. The values obtained for Significant other, Family, and Friends subscales were 0.72, 0.85, and 0.75 respectively. The value obtained for the whole scale was 0.85, which indicates a good reliability of scores over time [82]. Construct validity of the scale was established by conducting correlational studies based on the hypotheses that perceived social support would be negatively related to reported anxiety and depression symptoms. Support for this prediction was proved by correlations between the MSPSS subscales and the depression and anxiety subscales of the Hopkins Symptom Checklist (HSCL) scale. As predicted, the subscales of the MSPSS showed significant negative correlation with the constructs of Depression and Anxiety, which indicates that the MSPSS is valid [82].

General Self-efficacy Scale (GSE)- The scale is a 10-item scale that was developed by Schwarzer, R., & Jerusalem, M. (1995) to assess a general sense of perceived self-efficacy with the aim in mind to predict coping with daily hassles as well as adaptation after experiencing all kinds of stressful life events. It does not have multiple dimensions, but gives a single comprehensive score for the construct, Self-efficacy. Responses are made on a 4-point scale (Not at all true-1, Hardly true, moderately true, exactly true- 5). Sum of the responses to all 10 items will yield the final composite score with a range from 10 to 40. A higher score represents a higher Self-efficacy. No recoding is required.
In samples from 23 nations, Cronbach's alphas ranged from .76 to .90, with the majority in the high .80s. The scale is unidimensional. Criterion-related validity is documented in numerous correlation studies where positive coefficients were found with favorable emotions, dispositional optimism, and work satisfaction. Negative coefficients were found with depression, anxiety, stress, burnout, and health complaints. In studies with cardiac patients, their recovery over a half-year time-period could be predicted by pre-surgery self-efficacy [83].

The Westside Test Anxiety Scale (WTAS)- The scale is a brief, 10-item screening instrument that was designed by Driscoll (2004) to measure the construct of test anxiety among students, to identify students with anxiety impairments, who could benefit from anxiety-reduction intervention. The items of the scale aim to measure self-assessed anxiety impairments (memory loss and poor cognitive processing) and cognitions (Catastrophizing worry) which impair the performance of the students. This test does not have multiple dimensions, but gives a single comprehensive score for the construct, Test anxiety. The respondents were asked to answer the questionnaire by choosing one of the options which best describes themselves on a 5-point Likert scale (1-Not at all or never true, 2- Slightly or seldom true, 3-Moderately, or sometimes true, 4-Highly, or usually true, 5-Always, or extremely true). The total score is obtained by adding the points obtained in each item (1 to 5 points), and this total score is then divided by 10 to obtain the Test anxiety score. The test anxiety score could range from 1 to 5, low score indicating low test anxiety and a high score indicating a high level of test anxiety.

The internal consistency reliability of the scale was assessed with the data from a sample of 218 Undergraduate students. The computation of Composite reliability (CR) gave a reliability value of 0.88, which is above the acceptable benchmark value of 0.70. This shows that the WTAS has adequate internal reliability [84]. This scale also exhibits high Face validity as it includes highly relevant cognitive and impairment factors while omitting the marginally relevant over-arousal factors [85].

Statistical Analysis

The statistical analysis was carried out using IBM SPSS statistics tool (Version 29.0.0). The following statistical techniques were used to analyze the data.

- **Descriptive statistics** such as Mean and Standard deviation were used to describe the sample under study.
- **Pearson's product moment correlation** was used to find the strength of the relationship between Self-efficacy and Test Anxiety, Perceived social support and Test Anxiety, and the three dimensions of Perceived social support and Test anxiety.
- **Standard linear regression** analysis was used to find the degree of variance in Test anxiety predicted by Perceived social support and Self-efficacy among female Undergraduate students.
- **Multiple regression** analysis was used to find the degree of variance in Test anxiety predicted by Perceived social support from Significant other, Family, and Friends among female Undergraduate students

III. RESULTS AND DISCUSSION

This chapter presents the results of the analysis and discussions related to the present study. The hypotheses which have been framed are tested. Pearson Product Moment correlation coefficient, Standard linear regression, and Multiple regression analysis have been used to study the significance of the differences and effects between means and the relationships between the variables.

Section 1: *Descriptive statistics of the sample Characteristics.*

Table 2 Represents the Means and Standard deviations of the sample under study

Variables	n	Standard Deviation	Mean
Test Anxiety	211	8.719	26.374
Self-efficacy	211	4.595	29.299
Perceived Social Support	211	14.659	60.934

Table 2 displays the mean and standard deviation for 211 respondents who responded the questionnaire. The mean of the female Undergraduate students in the age group of 17-23 was found to be (M = 26.374) and (SD = 8.719) on the variable Test Anxiety. The mean of female Undergraduate students in the age group of 17-23 was found to be (M =29.299) and (SD = 4.595) on the variable Self-efficacy. The mean of the female Undergraduate students in the age group of 17-23 was found to be (M = 60.934) and (SD = 14.659) on the variable Perceived Social Support.

Section 2: *The results of the Pearson Product Moment correlation, which studies the significance of the relationship between Test anxiety, Perceived Social support, and Self-efficacy.*

Table 3 The relationship between Self-efficacy, Perceived Social Support, and Test Anxiety

Variable	n	M	SD	1	2	3
1.Test Anxiety	211	26.374	8.719	_		
2.Self-efficacy	211	29.299	4.595	-.349**	_	
3.Perceived Social Support	211	60.934	14.659	-.210**	.336**	_

**p<.01. (2-tailed)

Table 3 represents the Pearson correlation of the three correlational variables. It is observed that there is a significant negative correlation between Test Anxiety and perceived Self-efficacy. The r value was found to be r (211) = -.349, $p < 0.01$. This result indicates that, there exists a significant inverse relationship between both the variables. Thus, it could be interpreted that, as the level of Self-efficacy increases the level of Test anxiety will reduce and vice-versa.

Hence, **Hypothesis 1 stating that there will be a significant relationship between Self-efficacy and Test anxiety is accepted.**

The alternate hypothesis which states a significant relationship between both the variables is thus accepted.

It can also be observed from Table 3 that there exists a significant negative correlation between Test anxiety and Perceived social support. The r value was found to be r (211) = -.210, $p < 0.01$. This data means that there is a significant inverse relationship between both the variables. Thus, it could be interpreted that, as the level of Perceived social support increases the level of Test anxiety will reduce and vice-versa.

Hence, **Hypothesis 2 stating that there will be no significant relationship between Perceived Social Support and Test Anxiety is rejected.**

The null hypothesis is thus rejected and an alternate hypothesis which states a significant relationship between both the variables is accepted.

Section 3*: The results of Pearson Product Moment correlation between each of the three dimensions of Perceived Social Support and Self-efficacy.*

Table 4 The relationship between the three dimensions of Perceived Social Support and Test Anxiety

Variable	n	M	SD	1
1.Test Anxiety	211	26.374	8.719	_
2.Significant other	211	19.526	7.117	-.115
3.Family	211	20.806	5.699	-.251**
4.Friends	211	20.602	5.625	-.149*

**p<.01. *p<.05 (2-tailed)

Table 4 represents the Pearson correlation between the three dimensions of Perceived social support and Test Anxiety. It is observed that there exists a significant negative relationship between two of the dimensions, perceived social support from friends and from family and Test anxiety. The r value was found to be r (211) = -.251, $p < 0.01$; and r (211) = -.149, $p < 0.05$ for the Family and Friends dimensions respectively. This data proves that there is a significant inverse relationship between support perceived from two dimensions (Friends

and Family) and Test anxiety. It can also be inferred that the dimension of Family is more strongly negatively correlated ($p < .01$) to Test anxiety than the dimension of Friends ($p < .05$). Thus, it could be interpreted that as perceived social support from friends and family increases, the level of test anxiety would reduce and vice-versa.

Hence, **Hypothesis 3 stating that there will be no significant relationship between Perceived social support from Family and Test anxiety is rejected.**

The null hypothesis stating that there is no relationship is rejected as the results from the table suggest that there is a significant negative relationship. An alternative hypothesis stating a significant relationship between the variables is accepted.

Hypothesis 4 stating that there will be no significant relationship between Perceived social support from Friends and Test anxiety is rejected.

This null hypothesis is also rejected as the results from the table show that there exists a significant negative relationship between the variables. An alternative hypothesis stating a significant relationship between both the variables is accepted.

It can also be inferred from table 4 that the dimension of Significant other and Test anxiety are not significantly correlated. The r value was found to be $r (211) = -.115$, $p > 0.01$ for the dimension of Significant other. The data also shows that the dimension of Significant other is negatively but not significantly correlated with Test anxiety. Thus, it could be interpreted that, as the level of perceived social support from significant other increases, the level of test anxiety would not significantly reduce and vice-versa.

Hence, **Hypothesis 5 stating that there will be no significant relationship between Perceived social support from Significant other and Test anxiety is accepted.**

The null hypothesis stating that there will be no relationship is accepted owing to the weak and nonsignificant negative correlation between perceived social support from significant other and Test anxiety.

Section 4: *The results of Linear Regression analysis which measures the variance in Test anxiety predicted by Self-efficacy.*

Table 5 Regression analysis summary for Self-efficacy predicting Test Anxiety

Variable	B	t	95% CI		β	p
			LL	UL		
(Constant)	45.778	12.550	38.587	52.968		<.001
Self-efficacy	-.662	-5.384	-.905	-.420	-.349	<.001

Note: $R^2 = .122$; R^2 Adjusted = .118 ; CI is the confidence interval for B

Table 5 displays the Linear regression analysis results for the amount of variance in Test anxiety that is predicted by Self-efficacy in female undergraduate students in Chennai. The results show that Self-efficacy does significantly predict Test anxiety among the students.

Self-efficacy significantly predicts a significant proportion of Test anxiety, $R^2 = .122$, $t (211) = -5.384$, $p < 0.01$. It can be seen that Self-efficacy has significantly predicted Test anxiety with, $\beta = -.349$, $p < 0.01$. Thus the regression model is statistically significant.

Hence, **Hypothesis 6 stating that Self-efficacy will significantly predict Test Anxiety is accepted.**

The Alternate hypothesis which states that Self-efficacy significantly predicts Test anxiety is thus accepted.

Section 5: *The results of Linear Regression analysis which measures the variance in Test anxiety predicted by Perceived social support.*

Table 6 Regression analysis summary for Perceived Social Support predicting Test Anxiety

Variable	B	t	95% CI		β	p
			LL	UL		
(Constant)	33.998	13.488	29.029	38.967		<.001
Perceived Social Support	-.125	-3.110	-.204	-.046	-.210	.002

Note: R^2 = .044 ; R^2 Adjusted = .040 ; CI is the confidence interval for B

Table 6 displays the Linear regression analysis results for the amount of variance in Test anxiety that is predicted by Perceived social support in female undergraduate students in Chennai. The results show that Perceived social support does significantly predict Test anxiety among the students.

Perceived social support significantly predicts a significant proportion of Test anxiety, R^2 = .044, t (211) = -3.110, $p < 0.01$. It can be seen that Perceived social support has significantly predicted Test anxiety with, β = -.210, $p < 0.01$. Thus the regression model is statistically significant.

Hence, **Hypothesis 7 stating that Perceived social support will not significantly predict Test Anxiety is rejected.**

The null hypothesis is rejected as the regression model is significant, and an Alternate hypothesis stating a significant regression model is accepted.

Section 6: *The results of Multiple regression analysis which measures the variance in Test anxiety predicted by the three dimensions of Perceived social support.*

Table 7 Regression analysis summary for Dimensions of Perceived Social Support predicting Test Anxiety

Variable	B	t	95% CI		β	p
			LL	UL		
(Constant)	36.093	13.356	30.765	41.420		<.001
Significant other	.056	.529	-.151	.262	.045	.598
Family	-.366	-3.199	-.591	-.140	-.239	.002
Friends	-.155	-1.230	-.403	.093	-.100	.220

Note: R^2 = .070 ; R^2 Adjusted = .056 ; CI is the confidence interval for B

Table 7 displays the Multiple regression analysis results for the amount of variance in Test anxiety that is predicted by the dimensions of Perceived social support in female undergraduate students in Chennai. The results show that only one dimension of Perceived social support significantly predicts Test anxiety among the students.

All the dimensions of Perceived social support together predicts a significant proportion of Test anxiety, R^2 = .070, t (211) = 13.356, $p < 0.01$. While looking at the contribution of each dimension, perceived social support from Family seems to be the only factor that significantly predicts Test anxiety in the model. Support from family significantly predicts test anxiety with, β = -.239, t (211) = -3.199, p = .002 ($p < 0.01$). The other two factors, Significant other and Friends, does not significantly predict test anxiety with, β = .045, t (211) = .529, p = .598 ($p > 0.01$); and β = -.100, t (211) = -1.230, p = .220 ($p > 0.01$) respectively. Thus, the regression model is significant, but all the dimensions do no significantly contribute to the model.

Hence, **Hypothesis 8 stating that Perceived support from Significant other, Family, and Friends will not significantly predict Test Anxiety is partially rejected.**
The null hypothesis is only partially rejected as only one of the three dimensions of Perceived social support (Family) significantly predict Test anxiety, while the other two dimensions (Friends and Significant other) do not contribute significantly to the regression model.

Discussion
This study explored the relationship between Test anxiety, Self-efficacy, and Perceived social support along with its dimensions. On a general level the results indicate that there exists a significant relationship between these variables, and the variables of Self-efficacy and Perceived social support emerged as significant predictors of Test anxiety. This section aims to discuss the findings in more detail.

Table 2 displays the means and standard deviations of the data to understand the characteristics of the sample under study. The mean Test anxiety score of the sample of female Undergraduate students is found to be 26.37, which indicates that an average individual in the sample has high moderate level of test anxiety according to the norms of the Westside Test Anxiety Scale [85]. On further analysis it was found that 17.5% of the sample had high and extremely high-test anxiety scores (35-50), and 36.5% of the sample had moderately high-test anxiety scores (25-34). These findings are reflective of the high prevalence of Test anxiety among female Undergraduate students from Arts & Science and Engineering colleges in Chennai. Till now, research in the area of exam anxiety, in India, has been only focusing on school students, students with special needs, and Undergraduate students who belong to medical courses. Exam anxiety has often been overlooked in Arts & science and Engineering fields due to an assumption that these are easier courses. This finding is a wake-up call to identify the students who are unable to perform exams well because of exam anxiety and provide intervention programs to help them overcome their anxiety.

Self-efficacy refers to perceived capabilities for performing actions or learning at designated levels [5]. In other words, self-efficacy is concerned with individual's belief in their ability to exercise control over challenging demands and their own functioning. According to the 'Self-efficacy theory,' self-efficacy influences one's behavior selection, the degree and duration of efforts in the face of trials, and one's thinking and emotional response pattern. Hence, in the context of academia, self-efficacy is essential for a student to be motivated enough to pursue their academic goals more persistently despite set-backs [11]. Test anxiety is a situation specific form of train anxiety that predisposes a person to perceive evaluation of performance as threatening, and thus respond to such situations with heightened anxiety [61]. According to the 'Cognitive-attentional model', cognitive variables such as negative evaluations and self-perceived inadequacies cause an individual to develop test anxiety [56]. From Table 3, it can be noticed that Self-efficacy is significantly and negatively correlated with Test anxiety, which confirms both the theories mentioned above. The results of the study could be indicative of the fact that as negative self-evaluations decreases (self-efficacy increases) the test anxiety levels would reduce. Similarly, the results of Table 5 shows that The construct of Self-efficacy significantly predicts the variance (12.2%) in Test anxiety levels of the students. Thus Self-efficacy has emerged as a significant predictor of Test anxiety as anticipated. One way to explain this finding could be through the 'Learning deficit model' in which deficit study habits was found to be the starting point of the development of test anxiety [75]. When an individual performs poorly in an exam due to deficient preparation, their level of self-efficacy drops and they begin to believe that they will never be able to perform well, which affects their motivation to persist. These factors will subsequently lead to the development of test anxiety which will further reduce their performance, hence becoming a vicious cycle of responses. The finding of this study is also in alignment with other studies [4][27][47][66][72], which found a significant negative relationship between Self-efficacy and Test anxiety, and also revealed Self-efficacy to be a significant predictor of test anxiety.

Perceived social support can be defined as the extent to which individuals perceive that they receive support from their social support systems [82]. Thus, actual social support and perceived social support need not always be similar, as actual social support can be objectively measured while perceived social support is subjective to the perception of the individual. The 'Social learning model' states that test anxiety is also influenced by social factors such as locus of control, expectations, and reinforcements [34]. The 'Bio-psychosocial model' proposed by Lowe also emphasizes the inter-individual variables such as social evaluations and fear of humiliation [39]. Thus, a perception of positive social support would aid in the reduction of test and performance anxiety in general. The results of Table 3 show that the variables Perceived

social support and Test anxiety are significantly and negatively related, which confirms the above-mentioned theories. The results are indicative of the fact that, as an individual perceives to have more social support, the lesser will their level of test anxiety be and vice-versa. Similarly, the results from Table 6 shows that Perceived social support significantly predicts the variance (4.4%) in the levels of Test anxiety, which indicates that perceived social support could be a significant predictor of exam anxiety. This finding is in alignment with several other studies [1][19][71][64], which have studied the same relationship and found social support to be a significant predictor of test anxiety. The finding of this study contradicts with few studies such as the study done by Bukhari S. and Afzal F. in 2017 [10] and others, which indicates that social support does not significantly predict test anxiety levels. This discrepancy across studies could be due to two reasons: firstly, it could be due to the cultural differences between collectivistic and individualistic, as well as between urban and rural settings. People from Individualistic and urban settings do not value social support as much as those from collectivistic and rural settings. Both the groups also perceive and understand the function of social support differently [35]. Thus, such differences in samples could be a reason. Secondly, as discussed earlier, social support and perceived social support are two different constructs. Thus confusions regarding the construct measured or the way the participants perceived the questions in the tool could have contributed to the discrepancy.

Table 4 of this study shows a multiple correlational model between the three dimensions of Perceived social support (Significant other, Family, and Friends) and Test anxiety. The results indicate that the dimensions of Family and Friends are significantly and negatively related with test anxiety, and the dimension of Significant other is not significantly related, but still shows a mild negative relationship. This finding could be explained in the light of the cultural context in India. In India, especially in states like Tamil Nadu, individuals in their teenage and emerging adulthood, especially girls/women, are not encouraged or are prohibited from having romantic relationships [86]. The sample of this study comprised of college going students within the age group of 17 to 23, women of this age group are discouraged from dating by both their parents and the society. This reduces the likelihood of the sample having a partner, thus reducing the chances of them perceiving support from partners, which could have been the reason why there was no significant relationship between perceived social support from significant other and test anxiety. Table 7 of this study shows a multiple regression model between the three dimensions of social support and test anxiety. This model was designed to identify which of the three sources of perceived social support significantly predicts test anxiety levels. The results show that Family is the only dimension that significantly predicts the level of test anxiety. This finding could also be explained in the context of the sub-culture norm in Tamil Nadu. There are several studies that state parental pressure and high expectations from family as important causal factors for high exam anxiety among students in India [87]. Since pressure and high expectations from Family is the main contributor of test anxiety in India, especially in Tamil Nadu where ‘ranks’ are considered as a matter of family’s pride (India Today, 2020), perceiving support rather than pressure from family would considerably reduce the test anxiety experienced by the student. Though there are not many studies that have compared the different sources of perceived social support, few studies [71][46], have shown that family social support is an important protective factor against exam anxiety. It should be noted how both these studies were conducted in the Asian context where students consider their families as more important than their peers, which applies to the Tamil tradition as well. Hence, the finding of this study correlates with the above studies in stating that perceived support from family is the most important predictor of test anxiety when compared to other sources such as significant other and friends.

Conclusions

1. There is a significant relationship between Self-efficacy and Test anxiety scores in female Undergraduate students. The correlational relationship was found to be negative in nature (There exists an inverse relationship such that, when the level of self-efficacy increases, the level of Test anxiety will reduce and vice-versa).
2. There is a significant relationship between Perceived Social Support and Test anxiety scores in female Undergraduate students. The correlational relationship was found to be negative in nature (There exists an inverse relationship such that, as the level of perceived social support increases, the level of test anxiety will reduce and vice-versa).
3. There is a significant relationship between Perceived Social Support from friends and Test anxiety scores in female Undergraduate students. The correlational relationship was found to be negative in nature (There exists an inverse relationship such that, as the level of perceived social support from friends increases, the level of test anxiety will reduce and vice-versa).

4. There is a significant relationship between Perceived Social Support from family and Test anxiety scores in female Undergraduate students. The correlational relationship was found to be negative in nature (There exists an inverse relationship such that, as the level of perceived social support from family increases, the level of test anxiety will reduce and vice-versa).
5. There is no significant relationship between Perceived Social Support from significant other and Test anxiety scores in female Undergraduate students. The correlational relationship was found to be mildly negative but not significant.
6. Self-efficacy significantly predicted the level of Test anxiety among female undergraduate students. Thus, Self-efficacy could be a potent mitigating factor against Test anxiety among students.
7. Perceived social support had a significant effect on the level of Test anxiety among female undergraduate students. Thus, Perceived social support could be a potent mitigating factor against Test anxiety among students.
8. Only one dimension of Perceived social support- Family, significantly predicted test anxiety among female undergraduate students. Thus, social support from family is the most important aspect of social support that protects students from Test anxiety.

Limitations of the study

1. The sample is limited to students from few colleges in Chennai, hence the result might not be representative of the whole population under study.
2. The study was limited to a female sample due to lack of resources and time.
3. As the assessment was done using only self-report questionnaires, socially desirable responses could have been given, which might have affected the results of the study.
4. Most of the participants of the study are from Urban areas.

Suggestions for future research

1. This study could be done on a larger sample inclusive of students from Rural areas to obtain a more representative result.
2. Future studies could study the effect of gender difference by including male participants in the study.
3. Other variables that affect Test anxiety such as resilience, past failures, coping strategies, mental health, study habits, time management skills, teaching methods, and so on, could be included in the study to give a more comprehensive understanding of the construct.
4. A pre-post experimental study could be conducted before and after an intervention program (focus on improving self-efficacy and perceived social support) to test their effects in real-life settings.

Practical implications

1. This study has identified two important factors that reduce the level of Test anxiety among Undergraduate female students. This finding could be used to design an ‘Intervention program’ for students who have high levels of Exam anxiety. A screening test could be employed in colleges to identify students with high exam anxiety, and the selected students could be enrolled into the intervention program. According to the findings of this study, the intervention program should focus on increasing the self-confidence (self-efficacy) of the students and increasing their perception of social support, especially from their family.
2. This study has helped in understanding the importance of monitoring the level of Test anxiety among students in order to improve their performance.
3. The results warn the institutions and parents regarding the ill-effects indulging in acts that reduce the self-efficacy and perceived support of the students when they perform poorly. Acts such as giving too much pressure, using derogatory terms, having high expectations, comparing them to others, imposing studies with force, failing to give encouragement, conveying hopelessness, and so on might affect the self-efficacy and perceived support, which might further affect their performance. This might lead to a down-ward spiral with no positive outcomes.

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