The Relationship of Personality Traits, Self-Efficacy, Trait Anxiety and Optimism to Test Anxiety

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ABSTRACT

This study's aim was to investigate the effect of a number of variables on the level of students' test anxiety. One-hundred part-time students, male and female, from 2nd year and 4th year classes, completed self-report measures of test anxiety, self-efficacy, life orientation, personality traits and trait-state anxiety. Results revealed no significant difference in levels of test anxiety between genders and between 2nd and 4th year students. A negative significant relationship was found between test anxiety and both, self-efficacy and optimism, and a significant positive relationship was found between test anxiety and trait anxiety and neuroticism. Further results didn't support the research's premises as test anxiety levels were not found to be significantly related to conscientiousness. Lastly, a multiple regression analysis found optimism and trait anxiety to be significant predictors of test anxiety. Avenues of further research and implications for the development of interventions to help students cope with test anxiety are discussed.

INTRODUCTION

In general, students, parents, and teachers hold test scores out as being the holy grail of intellectual accomplishment. However, while tests certainly provide an objective measure of how students are performing and whether they are meeting their goals and standards, it is possible for exam candidates to know the material and not perform well in exams. Extraneous factors, such as distractions, external pressures, or students' psychological states, may in fact impede test performance. It is when the characteristics of anxiety are linked to academic or evaluation situations that we speak of test anxiety. Extensive research in this area has highlighted the complexity of the interrelated factors that can influence students' experiences of test anxiety. The present study aimed to assess a number of these relationships. Firstly, the relationship between students' test anxiety and specific personality traits, such as conscientiousness and neuroticism; secondly, it investigated gender differences and students' year of study in relation to test anxiety. Thirdly, it looked at the relationship of specific factors such as students' level of self-efficacy, optimism and trait-state anxiety in relation to test anxiety.

1.1 Test Anxiety

Tests are administered to students as early as Primary School, making young students very unhappy and anxious at a very early age due to fears of taking tests and of failing them. Hill and Sarason (1966) reported that highly test-anxious children were two years behind in basic reading and arithmetic skills compared to their less anxious peers by the end of elementary school. More recently, similar finding have been reported by Nyroos and Wiklund-Hörnqvist (2011). Their research showed a correlation between test anxiety and student's autonomic reactions of Primary Education's pupils. An elevated test anxiety was in turn also correlatated to poor performance in Swedish tests. They also found a similar correlation between written arithmetic

tests and the sub-component of anxious thoughts of test anxiety. When grade promotion depends on test scores, then student's anxiety is even greater. El-Zahhar and Hocever (1991) found evidence for particularly high level of test anxiety in Arab countries where extreme consequences to performance are attached to examinations in High Schools. Anxiety becomes maladaptive when it evokes, in susceptible individuals, self-preoccupying thoughts that interfere with attention to the environment and to the task that must be dealt with. Evidence suggests that the potential stress associated with examinations has a detrimental impact upon the performance in that examination (Akgun & Ciarrochi, 2003; Struthers, Perry, & Menec, 2000). A large body of international literature concerning the specific construct of test anxiety has provided considerable evidence of this phenomenon. Cizek and Burg (2006) found that test anxiety affects up to 40% of students. More recently Bradley, McCraty, Atkinson, Tomasino, Daugherty, and Arguelles (2010) found that 61% of students are affected by test anxiety at least some of the time, and 26% almost always.

Test anxiety has been conceptualised as the perception of assessment situations as threatening to the person's esteem and offering the possibility of derogatory judgements from others (Spielberger, 1966). A different definition has been provided by Cizek and Burg (2006) whom have defined test anxiety as "a specific reaction to exam taking that can negatively influence a person's performance in relation to their ability to prepare and to take a test" (p. 15). Hong (1998) claimed that test anxiety is "a complex multidimensional construct involving cognitive, affective, physiological, and behavioural reactions to evaluative situations" (p.51).

Different measures have been devised over the years to measure test anxiety empirically. Mandler and Sarason (1952) were the first to construct an index to measure the concept of test anxiety with the development of their Test Anxiety Questionnaire. In 1958, Sarason described

the Test Anxiety Scale (TAS), a 21-item true-false index. As a result of factor analyses and item analyses, Sarason subsequently developed the 37-item version (1980) which is now widely used. The TAS (1980) is the index that was used as a measure of test anxiety in this research. Some researchers have also defined specific dimensions of test anxiety. Sarason in 1984 highlighted the following four dimensions of test anxiety: worry, tension, test-irrelevant thinking, and bodily symptoms. Libert and Morris (1967) instead used a two-dimensional conceptualization of test anxiety, consisting of only two major elements: worry and emotionality. It is on this two-dimensional construct that Spielberg and colleagues (1980) constructed their Test Anxiety Inventory (TAI).

While a small degree of anxiety can act as a motivator, debilitating test anxiety can disrupt mental processes, especially when the task is demanding, such as in case of formal academic assessment (Daly, Chamberlain, & Spalding, 2011). Previous research has shown that highly test anxious people perform relatively poorly under an evaluative condition and that their performance is hindered by excessive self-preoccupations concerning their failure and its consequences (Sarason & Stoops, 1978; Seipp, 1991; Covington & Omelich, 1987). On the contrary when individuals are reassured that a negative evaluation of their performance will not be made, high test anxious scorers often perform as well or better than do low scorers (Sarason, 1973).

The poor performance of high-anxious individual can have different explanations. It is important to understand one's level of test anxiety because persons who are high in test anxiety tend to perceive the testing situation as personally threatening. In testing situations they can be tense, apprehensive, nervous, and emotionally aroused (Sarason, 1961). The negative self-centered worrying thoughts they experience distract their attention and interfere with their

concentration during examinations (Sarason, 1978). The worry reactions can also contribute to performance decrements. Test-anxious behaviour is typically brought on when a person believes that the demands of the testing situation will exceed or tax that person's intellectual and motivational capabilities. Wine (1971, 1982) claimed that the negative influence of test anxiety is due to the fact that test-anxious persons divide their attention between personal variables and variables connected to the tasks. In contrast, low test anxious individuals are able to focus their attention more on the task itself. Also Sarason (1978) highlighted how test anxiety directs attention from the task at hand to personal worries about perceived inefficacy, self-doubt and feelings of inadequacy, therefore distracting the focus of the person from the task itself. Paulman and Kennelly (1984) and Wittmaier (1972) relate the low performance of test-anxious students to their knowledge of not being well prepared for the test and to their poor knowledge of the school material. A different viewpoint was presented by Einat (2000), who pointed out that high test anxiety could be caused by high personal standards of individuals who expect maximum success and are afraid that they cannot meet their own very high standards. Earlier research in this area shows similar findings (Tryon, Leib, & Tryon, 1973). Ajwani (1986) and Jindal and Panda (1982) instead both reported contradictory evidence showing how high achievers tended to show less test anxiety than low achievers. Putwain (2009) proposed that the perception of examinations as threatening can be conceptualised both as fear of failure and motivation to achieve, suggesting an overlap between the test anxiety and the achievement goals constructs.

The evaluation of the context of the testing situation is also important as to whether it will evoke anxiety. The context relates to the task content, complexity, ambiguity, difficulty, novelty, interest, fairness, duration, time pressure, and whether it is evaluated as a threat, challenge or harmful. Bonaccio and Reeve (2010) have shown how students perceive test-related properties as

most anxiety-inducing. Perceived test difficulty does not seem to have a direct effect on test performance itself, but it seems to have an indirect effect mediated by worry (Hong, 1999). Research evidence also points to the importance of understanding how intrapersonal factors, such as self efficacy, optimism or pessimism, may be influencing students' experiences of performance anxiety (McQuade, 2009).

In the present research test anxiety was examined in a sample of part-time undergraduate students using the Sarason TAS (1980) self-report index. The students' level of test anxiety was then examined in relation to different variables such as specific personality traits namely conscientiousness and neuroticism, self-efficacy, state-trait anxiety and optimism. This study was also interested in analysing differences in the level of test anxiety between males and females and in relation to two groups, second year and fourth year students. All of the variables were also analysed as predictors of test anxiety to ascertain if a causal relationship of specific variables among the ones analysed could be found. Each of the variables of interest of the research will be now discussed in more details in the next sections.

1.2 Personality Traits and Test Anxiety

Research evidence highlights that there are marked individual differences in reactions to evaluational situations. Some people freeze when faced with an examination as they are preoccupied with self-doubt and the consequences of failure, whereas others are confident and approach the examination as an opportunity for receiving recognition. Extensive research has looked at the relationship between personality traits and test anxiety, as personality factors play a fundamental role in the diversity of responses to stressors associated with academic goal striving (Thompson & Gaudreau, 2008).

The term personality is used to refer to those "psychological qualities that contribute to an individual's enduring and distinctive patterns of feeling, thinking, and behaving" (Cervone & Pervin, 2008, p. 8). In addition personality theory has focused on the number of traits, or personality traits an individual can have. Personality traits have been defined as "consistent patterns in the way individuals behave, feel, and think" (Cervone & Pervin, 2008, p.238). In the term 'trait' we can distinguish two connotations: consistency and distinctiveness. Consistency aims at describing the regularity in the person's behaviour in the sense that the person seems predisposed to act in the way described by the trait term. The distinctiveness connotation instead highlights how one person's personality trait makes that person distinct compared to others.

Eysenck and Eysenck (as cited by Cervone & Pervin, 2008) identified two original orthogonal personality factors that were labelled 'Introversion-Extraversion' and 'Stability-Neuroticism'. An additional personality factor was later added labelled 'Normality-Psychoticims' (Eysenck and Eysenck, 1985, as cited by Cervone & Pervin, 2008). In more recent years several theorists such as McCrae and Costa (1990) have argued that there are five major personality factors or traits. This idea has been operationalised within what is known as the 'Big Five'. The Big Five model extends the Eysenckian approach by including the factors of 'Openness' and 'Conscientiousness'. The five factors included in the Big Five personality model are: Extraversion, Neuroticism, Openness, Conscientiousness, and Agreeableness (McCrae & Costa, as cited by Cervone & Pervin, 2008). Extraverts are characterised as being very sociable, active, assertive, carefree, and optimistic. Openness measures the curious, imaginative, and creative dimension to personality, whereas Agreeableness measures how good natured, cooperative, and helpful the individual may be. Those respondents scoring high on Neuroticism

are instead perceived to be more anxious, shy, depressed, and worriers. Conscientiousness denotes how hardworking, ambitious, and president an individual is (Cervone & Pervin, 2008).

The personality domains of neuroticism and conscientiousness seem to be most relevant to performance-related tasks, such as test taking (Piedmont, 1995). Trapmann, Hell, Hirn, and Schuler's (2007) meta-analysis investigated the impact of the Big Five personality factors on academic success at university. A total of 258 correlation coefficients from 58 studies published since 1980 were included. Results showed that while neuroticism was related to academic satisfaction, conscientiousness correlated with high academic achievements. Another study involving a large number of students was reported by Hirschberg and Itkin (1978). Their research included all graduate students who entered the Department of Psychology at the University of Illinois from 1965 through 1970. Conscientiousness emerged as an important predictor of student success throughout the course and also of their later success. Conscientiousness has also been related positively and consistently to excellent performance in a variety of academic courses at high school, undergraduate, and graduate school levels (Nguyen, Allen, & Fraccastoro (2005) as cited by Ryckman (2007). Studies of educational attainment also attest to the positive effects of conscientiousness (De Raad & Schouwenburg, 1996). Noftle and Robins (2007) recently summarized the results of 20 studies examining the association between conscientiousness and grade point average (GPA) or course grade in college students. Conscientiousness was significantly positively related to the academic outcome variable in 15 of these 20 studies with the mean effect size being .26.

In relation to test anxiety higher scores in neuroticism but lower scores in conscientiousness have been found in students experiencing high test anxiety (Schaefer, Matthess, Pfitzer, & Köhle, 2007). Also Sinha and Gupta (2006) research results revealed that

academic conscientiousness was significantly positively related with facilitating test-anxiety and negatively related with debilitating test-anxiety. McIlroy, Bunting, and Adamson (2000) found that conscientiousness, both general and academic, are related to test anxiety but not in a definitive manner as no clear and consistent pattern of the correlation was found.

Neuroticism instead seems to have a positive correlation to test anxiety (Fitch, 2005; Tu & Shi, 2008) and it has been reported to be significantly related to test anxiety (Schmidt & Riniolo, 1999). Also Chamorro-Premuzic, Ahmetoglu, and Furnham (2008) structural equation models showed how test anxiety was largely a function of neuroticism. Contradictory evidence however has been described by Kipper and Giladi (1978) as they found no statistical differences among their three experimental groups between neuroticism and high scores of test anxiety. Zeidner and Shani-Zinovich (2011) comparison of the Big-Five on a student population of gifted students found that such students scored low on neuroticism.

Even though McIlroy et al. (2000) did not find a clear and consistent pattern of the correlation between test anxiety and conscientiousness, what they have found instead was a clear pattern in the relationship between self-efficacy and test anxiety, a relationship which is also of interest in this research. Previous research also shows the relationship between self-efficacy and conscientiousness. Gist and Mitchell (1992) suggested that self-efficacy is driven in part by one's assessment of personal resources and constraints. In reflecting on their personal resources, conscientious individuals are likely to perceive that they are diligent and hardworking (McCrae & Costa, 1987) and should consider that a favourable resource. Another antecedent of self-efficacy is an individual's analysis of task requirement. Conscientious individuals are more likely to accurately assess task requirements because of their tendency to be organized and systematic (McCrae & Costa, 1987) and should have more confidence in their ability to meet

those requirements given their traditionally high performance levels (Barrick, Mounl, & Strauss 1993). More about the relationship of test anxiety and self-efficacy will be discussed in the next section.

The current study predicted that there would be a significant negative correlation between conscientiousness and the test anxiety levels of the participants. Further, the researcher predicted there would be a significant positive correlation between neuroticism and the participants' test anxiety level.

1.3 Self-Efficacy and Test Anxiety

Human functioning in general is facilitated by a personal sense of control. If people believe that they can take action to solve a problem, they become more inclined to do so and feel more committed to this decision. This 'personal sense of control' was first introduced by Bandura in 1977 and it was defined as self-efficacy (Schwarzer, Bäßler, Kwiatek, Schröder, & Zhang, 1997).

General self-efficacy is "the belief in one's competence to tackle novel tasks and to cope with adversity in a broad range of stressful or challenging encounters" (Luszczynska, Gutlerrez-Dona, & Schwarzer, 2005, p. 80). High anxiety and low self-efficacy can be either specific to a particular situation, such as academic performance, or pervade many aspects of life. Those who form perceptions of themselves as inefficacious tend to give up easily; dwell on their perceived deficiencies, thus detracting their attention from the task at hand; suffer from anxiety and stress; and attribute their successes to external factors (Bandura, 1977, 1982, 1986). In academic achievement or evaluative situations, lower levels of self-efficacy are related both to higher test anxiety (Betz & Hackett, 1983) and to greater decrements in task performance (Hembree, 1988; Hunsley, 1985; Stipek & Weisz, 1981). In relation to test performance, Zohar (1998) found that

when both self-efficacy and test anxiety were included as predictors, only the former was significant in relation to test performance achievements. He suggested a mediational model in which self-efficacy affects test anxiety, which in turn affects achievement, but noted that self-efficacy might also have a direct effect on achievement. Such a mediated path was supported in the study by Benson, Bandalos, and Hutchinson (1994), although the direct path was not. The general hypothesis of an effect of self-efficacy on performance, directly and indirectly via anxiety, however was not supported by Rouxel (1999) when individual differences in the level of knowledge were taken into account.

Many researchers have shown that higher efficacy is associated with lower anxiety levels prior to performing difficult tasks in general (Locke & Latham, 1990; Martocchio 1994; Wood & Bandura, 1989). More specifically, self-efficacy has been found to have a strong negative association with test anxiety (Bandalos, Yates, & Thorndike-Christ, 1995; Benson et al., 1994; Zohar, 1998). Also according to Onyeizugbo (2010) students with lower self-efficacy seem to report higher test anxiety scores. Furthermore Bembenutty (2009) research found self-efficacy to be the highest negative predictor of test anxiety in his research sample. Bandura and Schunk (1981) demonstrated how students who doubt their efficacy are more inclined to give up when presented with a difficult task. Hanna and Dempster (2009) reported how test anxiety influences students' perceptions of their competence, but it appears to have less effect on their actual scores. They suggested that remidial action is required to address the level of test anxiety experienced by students as it appears to result in unrealistic assessments of their ability, and how this, in turn, has detrimental effects on their self-efficacy.

Galla and Wood (2012) observed how self-efficacy appears useful in managing the negative effects of test anxiety. Their results indicated how test anxiety negatively predicted test

performance only for those students with low levels of self-efficacy whereas students reporting high level of self-efficacy did not show anxiety-related decrements on test performance. Similar findings were reported also by Bao and Dejun (2004) as their research highlighted how self-efficacy influenced test performance directly and how self-efficacy was the mediator of test anxiety, influencing in turn test performance. However contradictory evidence was reported by Mavis (2001). He found that even though students with high self-efficacy were more likely to score above the mean of a specific OSCE (Objective Structured Clinical Examination) test, compared to low self-efficacy students, no significant correlation was found between self-efficacy and test performance. Research also demonstrated that the strengthening of self-efficacy can significantly reduce test anxiety (Knigge-Illner, 2009). A program was devised by Knigge-Illner (2009) which included elements of behaviour training with video-supported role playing and simulation of (oral) tests situations, enhancement of learning and preparation strategies including time management as well as cognitive intervention strategies and relaxation training.

Several researchers have also discussed the relationship between the constructs of perceived self-efficacy, test anxiety and the general levels of trait and state anxiety of the individual. Wang and Liu (2000), for example, examined the relationship between these variables in a sample of college students. They found a negative correlation between general self-efficacy and each of trait anxiety, state anxiety and test anxiety.

Gender difference in the level of test anxiety was also of interest in this study. Arch as well as Benson and Bandalos (as cited by Benson et al., 1994) reported significantly lower levels of self-efficacy among women. Arch further noted that compared to men women tend to devalue their performance and to have comparatively more negative thoughts during exams.

This research hypothesized that there would be a significant negative correlation between the level of the participants' self-efficacy and their test anxiety levels. The researcher also included self-efficacy as one of the predictors of the multiple regression analysis to determine its influence in the variance in the test anxiety level of the sample.

1.4 State-Trait Anxiety and Test Anxiety

The concepts of state and trait anxiety were first introduced by Cattell (1966) and have been subsequently elaborated by Spielberger (1972). *Trait anxiety* (T-Anxiety) is described as an individual tendency to perceive various situations as dangerous and threatening. It refers to relatively stable individual differences in anxiety-proneness and it is conceptualized as a relatively stable personality trait. *State anxiety* (S-Anxiety), in turn, refers to a transitory situational state that may vary in intensity and fluctuate over time in reaction to circumstances that are perceived as threatening (Spielberger, 1983).

Whether test anxiety is a state or trait has been debated. Some researchers favour the view of test anxiety as a trait because T-Anxiety seems to be a better indicator of test anxiety, even when state anxiety is measured under examination stress conditions (Hedl, 1972; Trent & Maxwell, 1980). Also Strom, Hocevar, and Zimmer (1987) suggest that trait anxiety is an important determinant of test anxiety. On the contrary conflicting evidence lends support to the view of test anxiety as being a form of state anxiety under examination stress conditions (Taylor, 1977; King, Ollendick, & Gullone, 1992; Levitt, 1980; Spielberger, 1972). An implicit assumption of previous research is that a dispositional variable such as test anxiety accurately reflects a subject's actual anxiety during a particular examination. Although dispositional test anxiety scores are significantly related to state anxiety (Galassi, Frierson, & Sharer, 1981; Paulman & Kennelly, 1984) the extent of the relation can vary depending on situation contexts.

As noted by Spielberger and Vagg (1995) “test-anxious students are generally higher in T-Anxiety, tend to perceive examinations as more dangerous or threatening that individuals low in T-Anxiety, and experience more intense levels of S-Anxiety when taking test” (p. 6). According to King, Heinrich, Stephenson, and Spielberger (1976) students who are high in T-Anxiety perceive the stress associated with midterm or final examinations as more threatening than students low in T-Anxiety and, therefore, respond to the examination situations with greater elevations in S-Anxiety. Similar finding were reported by Hong (1998) as test anxiety scores were positively correlated with T-Anxiety scores in their sample of students. Onyeizugbo’s research (2010) investigated T-Anxiety as moderator of test anxiety and the collected data was analysed using regression analysis. The results indicated that T-Anxiety moderated 49% of the variability in test anxiety. A Pearson correlation, in the same study, also showed a positive correlation between S-Anxiety and T-Anxiety. Test anxiety levels were positively correlated to T-Anxiety scores also in the study by Kavakci, Güler, and Çetinkaya (2011). In the same study Kavakci et al. (2011) also observed how T-Anxiety levels were significantly higher in girls compared to boys.

Gross (1990) examined the performance of college students on class examinations in relation to scores on the State-Trait Anxiety Inventory and the Test Anxiety Scale. In three classes, differing in student composition and course content, test anxiety but not state anxiety was consistently and significantly related to student performance on examinations. The amount of worry that the participants believed they experienced during examinations was most strongly related to their examination performance. In fact, participants who reported experiencing higher level of test anxiety also did more poorly on examinations relative to those who believed they worried less. Also Holroyd, Westbrook, Wolf, and Badhorn (1978) found that high-test-anxious

participants performed more poorly and reported higher levels of anxioux arousal and worry in analogue testing situation than low-test-anxious participants. However, high-test-anxious and low-test-anxious participants showed virtually identical changes in electrodermal activity and heart rate in response to the stress of the testing situation. Only heart rate variablity, which appeared to reflect differences in the cognitive and attentional responses of the test anxiety groups successfully differentiated high- and low-test-anxious participants.

This research examined the direct relationship between test anxiety and T-Anxiety. It predicted a significant positive correlation between these two variables. The present study also examined the extent to which T-Anxiety could predict the variance in the level of test anxiety compared to the other variables of interest of the study.

1.5 Optimism and Test Anxiety

Similar to self-efficacy, optimism is theorized to influence human behaviour through its effect on goal striving and motivation. “As a disposition, it is expected that optimism has relevance across diverse situations” (Luszczynska et al., 2005, p. 82). More specifically Scheier, Carver, and Bridges (2000) have defined optimism as ‘a dispositional tendency to hold generalized positive expectancies even when people confront adversity or difficulty in their lives" (p. 3).

Examinations and tests can be considered to be adverse and difficult situations that students are confronted with, during their academic life, therefore optimism can be a characteristic affecting these challenge-threat evaluations. Scheier and Carver (1985) have outlined how optimists are expected to actively strive to attain desired outcomes, because they hold positive expectations about the future. In contrast, those with a prevalent negative disposition are expected to use behavioural and mental strategies to disengage themselves from goal-orientated actions due to their negative expectations, and their consequent belief that any

effort in a task would be pointless. Nes and Segerstrom (2006) meta-analytic review revealed that optimism is in fact positively correlated with problem-focused forms of coping and negatively correlated with emotion-focused coping. Problem-focused coping strategies, in turn, have been connected to reduced anxiety in performance related task (Cohen, Ben-Zur, & Rosenfeld 2008) whereas high level of test anxiety during examinations was related to avoidance and emotion-focused coping among college students by Blankstein, Flett, and Watson (1992). Correspondingly, pessimists' students set unrealistically low expectations prior to tasks that undergo some form of assessment. This strategy can have some advantages as it can 'cushion' the individual "against debilitating anxiety prior to stress-provoking tasks and motivate continued persistence in the face of that stress" (Cantor & Norem, 1989, p. 93). Projecting lowered expectations can serve to set performance standards that are less difficult to achieve (Showers & Ruben, 1990) and many even lower the threshold for satisfactory performance (Baumgardner & Brownlee, 1987).

Review of past literature has shown that the specific effect of optimism on test anxiety in students has attracted little interest so far. However some correlational analyses have revealed significant and negative relationships between test anxiety and optimism **(**Hasan & Kathem, 2003; Baker, 2003; McQuade 2009). Also Walsh (1968) found significant negative relationships between test anxiety and optimism. Research also shows how optimistic students report lower levels of psychological stress in general (Aspinwall & Taylor, 1992). Stewart, Betson, Lam, Marshall, Lee and Wong (1997) also reported similar findings in relation to optimistic medical students highlighting how they suffered less depression and anxiety compared to their more pessimistic peer. Further research in this area, conducted by Segerstrom, Taylor, Kemeny, and

Fahey (1998) showed how optimistic 1st-year law school students reported less mood disturbance in general compared to the less optimistic students of their sample.

In relation to academic achievements and life orientation, Toyama and Ichihara (2008) compared academic performance of defensive pessimists' students and strategic optimists. Defensive pessimists are those students that have low expectations for future outcomes, whereas strategic optimists acknowledge generally positive past experiences and expect positive outcomes in the futures. Their findings indicated that the academic performance of strategic optimists was more likely to improve if they used optimistic-thinking coping, whereas the opposite pattern was observed in defensive pessimists.

The present study hypothesized a significant negative correlation between participants' optimism and test anxiety levels. Optimism was also included as a predictor of the multiple regression analysis to determine its influence on the variance of the test anxiety level of the sample.

1.6 Gender, Year of Study and Test Anxiety

Research suggests a generally higher level of reported test anxiety among females compared to males (Cassidy & Johnson, 2002; Manley & Rosemier, 1972; Tryon et al., 1973; Lowe & Reynolds, 2005; Best & Stanford, 1983; Sowa & LaFleur, 1986; Putwain, 2007). Furthermore Hembree (1988) meta-analyzed the findings of 154 studies of test anxiety and gender, and found strong evidence that females experience higher levels of anxiety than males (mean effect size = .29). According to Hembree (1988) this gender difference begins early in elementary school, peaks in grades 5-10, and decreases in high school and college. Similar finding were reported by Lowe and Lee (2008) in their sample of 696 elementary and secondary school students. Girls in

their sample scored statistically significantly higher than boys on the debilitating test anxiety factors.

An intuitively explanation for gender differences in test anxiety has found some researchers in agreement that males are less likely to admit that they are anxious whereas females admit to anxiety because anxiety is perceived as a feminine trait (Deaux, 1977; Maccoby & Jackling, 1974; Sarason, Davidson, Lighthall, & Ruebush, 1960). Lewis and College (1987) provided an alternative explanation for this difference, claiming that in testing situations males are more likely to perceive the situation as a personal challenge and exhibit the facilitating responses of low-anxiety individuals, such as increased arousal, vigilance, and enthusiasm. Females, by contrast, tend to perceive the test situation as a threat and evidence behaviours characteristic of highly anxious individuals such as fear, worry, anger, and lowering of self-esteem. Evidence of neither a main nor a moderator effect of gender on test anxiety was found by Fritts and Marszalek (2010). Contradictory results of gender differences in test anxiety have also been also reported by Lin and McKeachie (1971) as they found no gender difference in the mean of test anxiety scores in three of their four samples tested. Also Onyeizugbo (2010) reported that gender was not a significant predictor of test anxiety.

Interestingly, Wang and Liao (2012) looked at the different components of test anxiety and found that females experience more emotional anxiety than males but found no statistically difference in cognitive anxiety. Similar findings have also been reported by Willimas (1996) as he found that whereas females experienced higher worry than emotionality, males reported little difference between these two anxiety components. Also Hodapp (1991) found that with respect to the four dimensions of test anxiety, female students showed higher scores of worry and emotionality in particular. Hodapp (1991) however did not found a significant gender difference

for the interference component of test anxiety. Contrary results in relation to the different components of test anxiety and gender differences have been reported by Carter, Williams, and Silverman (2008). Their study in fact demonstrated that African American boys had higher mean scores than African American girls on both Cognitive and Emotional factors of test anxiety.

Zoller and Ben-Chaim (1990) investigation of examination type, test anxiety, trait anxiety and academic achievement in relation to gender difference showed no significant gender difference on the level of trait anxiety of their sample. However their longitudinal study reported a significant dropped of male's anxiety, compared to females, after the freshman year. They also found no significant gender difference in test anxiety levels between males and females. Putwain (2008) research showed how a higher reported test anxiety score was associated with a lower performance in GCSE examination scores, and how this relationship was moderated by socio-economic background, but not gender. Chapell, Blanding, Silverstein, Takahashi, Newman, Gubi, and McCann (2005) reported low-test-anxious female graduate students had significantly higher GPAs than high-test-anxious female graduate students, but there were not significant GPA differences between low- and high-anxious male graduate students. Female undergraduates had significantly higher test anxiety and higher GPA than male undergraduates, and female graduate students had significantly higher test anxiety and higher GPAs than male graduate students.

Given this consistent difference, this study also investigated sex differences related to test anxiety. In line with previous research in the area this study predicted that female students would report a higher test anxiety than male students.

This study was also designed to determine if there was a relationship between undergraduate class levels and self-reported test anxiety levels. Aysan, Thompson, and Hamarat

(2001) explored whether younger students (juniors in high school, preparing for midterm exams) differed from older students (high school seniors who were preparing to take university entrance exams) on test anxiety. Prior to the exams, juniors displayed higher test anxiety than seniors. After the exam periods, improvements were seen for both groups, but scores of younger students remained significantly higher than scores of seniors on test anxiety. Also Schwarzer (1981) observed different level of test anxiety negatively correlated to different student's grade levels. In 5th grade students showed the highest test anxiety level, while those in 8th grade showed the lowest test anxiety level.

Manley and Rosemier (1972) examined the development patterns of anxiety, trait and test anxiety, beyond the elementary school years in a sample of 1,959 7th to 12th graders students. Results of the research suggest a distinct patterns of anxiety. In fact females exhibited higher anxiety of both types than did males, and later grades showed less test anxiety than did earlier grades. Males showed steady decline in test anxiety over the grades while females, although similarly declining, were not as consistent. Also senior high school boys displayed less anxiety of both types than did junior high boys.

This research explored the difference in the level of test anxiety of the participants in relation to their year of study. It predicted to find a significant difference on the level of test anxiety of 2nd year students compared to 4th year students.

1.7 Research Hypotheses:

1. There will be a significant difference in self-reported test anxiety levels between males and females.
2. There will be a significant difference in self-reported test anxiety levels between 2nd year students and 4th year students

3. There will be a significant negative relationship between conscientiousness and self-reported levels of test anxiety.
4. There will be a significant positive relationship between neuroticism and self-reported levels of test anxiety.
5. There will be a significant negative relationship between self-efficacy and self-reported levels of test anxiety.
6. There will be a significant negative relationship between optimism and self-reported levels of test anxiety.
7. There will be a significant positive relationship between self-reported levels of test anxiety and trait anxiety.
8. Gender, degree year, optimism, conscientiousness, neuroticism, self-efficacy and trait anxiety will significantly predict the variance in test anxiety levels.

METHOD

2.1 Participants

The study population consisted of 100 students (60 females, 40 males). Participants were recruited by convenience sampling from second-year and fourth-year classes of the part-time Psychology Degree course of Dublin Business School. Of the 100 questionnaires, 63 were completed by 2nd year students (24 males, 39 females) and 37 by 4th year students (21 females, 16 males). Participation in the research was voluntary with no incentive or credits given to the students.

2.2 Design

This investigation was quantitative in nature. It utilized a correlational and cross-sectional survey design. A specification of the independent (IV) and dependent variables (DV) and of the predictor (PV) and of the criterion (CV) variables of each hypothesis can be found below:

Hypothesis 1 - **IV**: gender; **DV**: test anxiety

Hypothesis 2 - **IV**: year of study; **DV**: test anxiety

Hypothesis 3 - **PV**: conscientiousness; **CV**: test anxiety

Hypothesis 4 - **PV**: neuroticism; **CV**: test anxiety

Hypothesis 5 - **PV**: self-efficacy; **CV**: test anxiety

Hypothesis 6 - **PV**: optimism; **CV**: test anxiety

Hypothesis 7 - **PV**: trait anxiety; **CV**: test anxiety

Hypothesis 8 - **PV**: gender, year of study, optimism, conscientiousness, neuroticism, self-efficacy and trait anxiety; **CV**: test anxiety

2.3 Materials

A survey was created by combining 5 standard questionnaires: The Big Five Inventory (BFI), John, Donahue, & Kentle (1991); the Test Anxiety Scale (TAS), Sarason (1980); the General Self-Efficacy Scale (GSE), Schwarzer & Jerusalem (1995); the Life Orientation Test (LOT), Scheier & Carver (1985); the State-Trait Anxiety Inventory (STAI), Spielberger (1983). Two demographic questions were also included on the first page of the survey to record the gender and year of study of the participants. Of the BFI only the items related to Conscientiousness and Neuroticism were administered to the participants as these were the only two personality traits relevant to the research.

The Big Five Inventory (BFI) – John, Donahue, & Kentle, 1991:

The Big Five Inventory (BFI) is a self-report inventory designed to measure the Big Five dimensions. It consists of 44 short-phrase items rated on a 5-point scale from '*disagree strongly*' to '*agree strongly*'. The BFI items are assigned to scales measuring Extraversion (8 items), Agreeableness (9 items), Conscientiousness (9 items), Neuroticism (8 items), and Openness to experience (10 items). Subscale scores are created by reverse scoring of specified items, summing the ratings for the items on each subscale, and dividing by the total number of times to obtain a mean score. John and Srivastava (1999) reported alpha reliabilities from .75 to .80 for subscales and 3-month test-retest reliabilities from .80 to .90.

Test Anxiety Scale (TAS) - Sarason, 1980:

The Test Anxiety Scale (TAS) is a 37-item instrument designed to measure the level of test anxiety experienced by students when recalling their feelings about 'testing situations'.

Since its first issue, in 1958, the scale has undergone a number of revisions and as a result of factor analyses and item analyses, the TAS final version consists of a 37-item 'true or false'

scale. The total number of 'true' answers corresponds to the individual's test anxiety score. A score of 12 or below ranks in the 'low test anxiety' range; a score of 13 to 20 ranks in the 'medium' range. Any score above 20 signifies 'high test anxiety'. Scoring 15 or greater is an indication that the individual experiences considerable discomfort about taking tests.

Wagaman, Cormier, and Cormier (1985) have reported a test-retest reliability coefficient of the scale of .87. Also test-retest reliabilities over .80 have been obtained for intervals of several weeks.

The General Self-Efficacy Scale (GSE) – Schwarzer & Jerusalem, 1995:

The General Self-Efficacy Scale (GSE) is a 10-item scale designed to assess optimistic self-beliefs to deal effectively with a variety of stressful situations. Scoring is done by adding the responses made to the 10 items. Possible responses were 1 = *not at all true*, 2 = *hardly true*, 3 = *moderately true*, and 4 = *exactly true*, yielding a total score between 10 and 40. The score on the scale will reflect the participants belief in their self-efficacy, therefore the higher the score the greater the participants sense of self-efficacy. The scale's strengths in consistency, validity and reliability have been supported by a number of multi-cultural and international studies (Leganger, Kraft, & Roysamb, 2000; Luszczynska et al., 2005; Schwarzer & Born, 1997; Schwarzer et al., 1997). The scale typical internal consistency yields between alpha = .75 and .90 (Schwarzer et al., 1997). Also re-test reliabilities coefficients of the scale, over one and two year periods, turned out to be very satisfactory (Schwarzer et al., 1997).

The Life Orientation Test (LOT) – Scheier & Carver, 1985:

The Life Orientation Test (LOT) has been developed to assess the construct of dispositional optimism. It consists of four positively worded items (e.g. I' m always optimistic about my future), four negatively worded items (e.g. I hardly ever expect things to go my way), and four

smaller items (e.g. I enjoy my friends a lot). Each item is rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Participants respond to the LOT, while keeping in mind how each item corresponds to their life in general. High scores on the measure indicate that respondents are optimistic. Scheier and Carver (1985) reported a coefficient alpha of .76 and test-retest reliability of .79 (at 4 weeks). Previous research has also shown satisfactory internal consistency ($\alpha > .70$) for both the optimism and pessimism factors (e.g., Kubzansky et al., 2004).

The State-Trait Anxiety Inventory (STAI) – Spielberger, 1983:

The State-Trait Anxiety Inventory (STAI) is a brief self-rating scale for the assessment of state and trait anxiety, in adults. In general, the STAI measures anxiety as a feature of the general population, thus it is expected its scores to follow the normal distribution. It comprises separate self-report scales for measuring state (S-Anxiety) and trait anxiety (T-Anxiety). The S-Anxiety scale (STAI Form Y-1) consists of twenty statements that evaluate how the respondent feels "right now, at this moment". The T-Anxiety scale (STAI Form Y-2) consists of twenty statements that evaluate how the respondent feels "generally". In responding to the S-Anxiety scale, the subjects choose the number that best describes the intensity of their feelings: (1) not at all, (2) somewhat, (3) moderately, (4) very much so. In responding to the T-Anxiety scale, subjects rate the frequency of their feelings on the following four-point scale: (1) almost never, (2) sometimes, (3) often, (4) almost always. Each STAI item is given a weighted score of 1 to 4. A rating of 4 indicates the presence of high levels of anxiety for ten S-Anxiety items (#3, 4, 6, 9, 12, 13, 14, 17 and 18) and eleven T-Anxiety items (#22, 24, 25, 28, 29, 31, 32, 35, 37, 38, 40). A high rating indicates the absence of anxiety for the remaining ten S-Anxiety items and nine T-Anxiety items. The scoring weights for the anxiety-present items are the same as the chosen numbers on the test form. The scoring weights for the anxiety-absent items are reversed. Scores

for both the S-Anxiety and the T-Anxiety scales can vary from a minimum of 20 to a maximum of 80. Test-restest reliability over a 20-day period for the T-Anxiety measure is .86 for males and .76 for females, while the corresponding figures for the State measure are .54 and .27 respectively. Alpha coefficient in a college student sampe of 296 males and 481 females are as follows: S-Anxiety .91 for males and .93 for females; T-Anxiety .90 for males and .91 for females. Concurrent validity for the T-Anxiety scale against other anxiety measures ranges from .52 to .80 9 (Fountoulakis et al., 2006).

2.4 Procedure

The five measures described above were combined into one survey with the two additional demographic questions asked at the top of the 1st page of the questionnaire. Each questionnaire also contained a cover page which briefly described the research purpose as well as the participant's right to withdraw from the study at any time. Confidentiality and anonymity was also assured on the cover page of each questionnaire. At the end of each questionnaire, details of helpful organisations were provided who could assist participants in case the questionnaire raised any concerns or issues. See Appendix A for an example of the full questionnaire.

A number of lecturers of the part-time classes of the Psychology Degree course in DBS were contacted via email and were asked permission to distribute the questionnaires in their classes. On arrival in class a brief introduction of the research was provided and the researcher re-iterated what was specified on the cover sheet of the questionnaires: that participation was entirely voluntary and that confidentiality and anonymity would be maintained at all times. The researcher also requested the participants to read the heading of each table carefully as some tables might have seemed similar (e.g. 'State Anxiety table' asking how the participants felt 'right now' and the 'Trait Anxiety table' asking the participants how they felt 'in general'). The

questionnaires were then distributed to those students who agreed to participate. In each class, the questionnaires were distributed and completed by the participants while both the researcher and the lecturer were present in the room. On collection of the completed questionnaires the students were thanked for their participation. Each questionnaire was numbered in no particular order for easy referral during data entry into SPSS.

RESULTS

3.1 Descriptive Statistics

Descriptive statistics were run to find the means and standard deviations of all the variables being tested. See Table 1 below for a summary of the data.

Table 1: *Descriptive Statistics of Psychological Measures*

Variable	N	Score Range	Mean	Standard Deviation
Conscientiousness	99	1 to 5	3.75	0.72
Neuroticism	100	1 to 5	2.87	0.83
Test Anxiety	96	0 to 37	16.13	6.56
Self-Efficacy	99	10 to 40	31.94	3.94
Optimism	100	0 to 24	15.10	5.02
Trait Anxiety	96	20 to 80	39.04	10.56

Descriptive statistics were also run on the demographic variables. Table 2 shows the number of males and females and their distribution across the two different years of study (2nd and 4th year).

Table 2: *Demographic Variables Summary*

Year of study		Frequency	Percent
2nd Year	**Male**	24	38.1%
	Female	39	61.9%
	Total	63	100%
4th Year	**Male**	16	43.2%
	Female	21	56.8%
	Total	37	100%

3.2 Inferential Statistics

Before analysing the data, the researcher checked whether the data was normally distributed. Please see Appendix B showing the histograms confirming the normal distribution of the data. As the check showed normal distribution, parametric tests were used.

A check of the relationship between participants' level of state anxiety and trait anxiety was also conducted. As expected the relationship between these two variables was positive and high. The mean scores for State Anxiety was 35.55 (SD = 9.79) and for Trait Anxiety was 39.04 (SD = 10.56). A Pearson correlation found that there was a strong positive significant relationship between State Anxiety and Trait Anxiety ($r(88) = .686$, $p < .001$) – see Appendix C. In view of this strong relationship, only the Trait Anxiety levels of the participants were used in the analyses as both variables (Trait and State anxiety scores) would have yielded similar results.

Hypothesis 1: **There will be a significant difference in self-reported test anxiety levels between males and females.**

Females (mean = 16.80, SD = 6.79) were found to have higher levels of test anxiety than males (mean = 15.08; SD = 6.12). The 95% confidence limit shows that the population mean difference of the variables lies somewhere between -4.44 and 1.01. Even though the mean scores differed slightly, an independent sample t-test showed that there was no significant difference between males and females and their level of test anxiety ($t(94) = -1.25$, $p = .215$). Figure 1 shows a summary of the percentage of the females and males spread across the low, medium and high test anxiety groups.

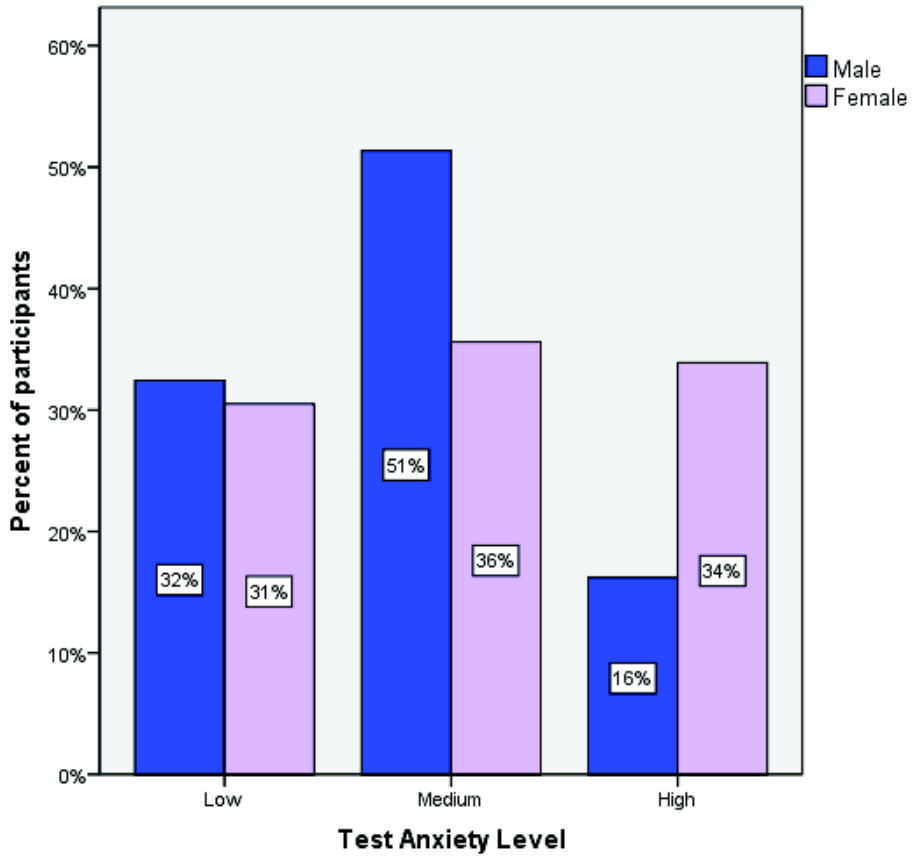

Figure 1. *Test Anxiety Level of Male and Female Participants*.

Hypothesis 2: **There will be a significant difference in self-reported test anxiety levels between 2nd year students and 4th year students**

Second year students (mean = 16.24, SD = 6.11) were found to have higher levels of test anxiety than fourth year students (mean = 15.97; SD = 7.31). The 95% confidence limit shows that the population mean difference of the variables lies somewhere between -2.61 and 3.14. Even though the mean scores differed slightly, an independent sample t-test showed that there was no significant difference between 2nd year and 4th year students and their level of test anxiety ($t(66.55) = .183$, $p = .855$). Figure 2 shows a summary of the percentage of 2nd year and 4th year students spread across the low, medium and high test anxiety groups.

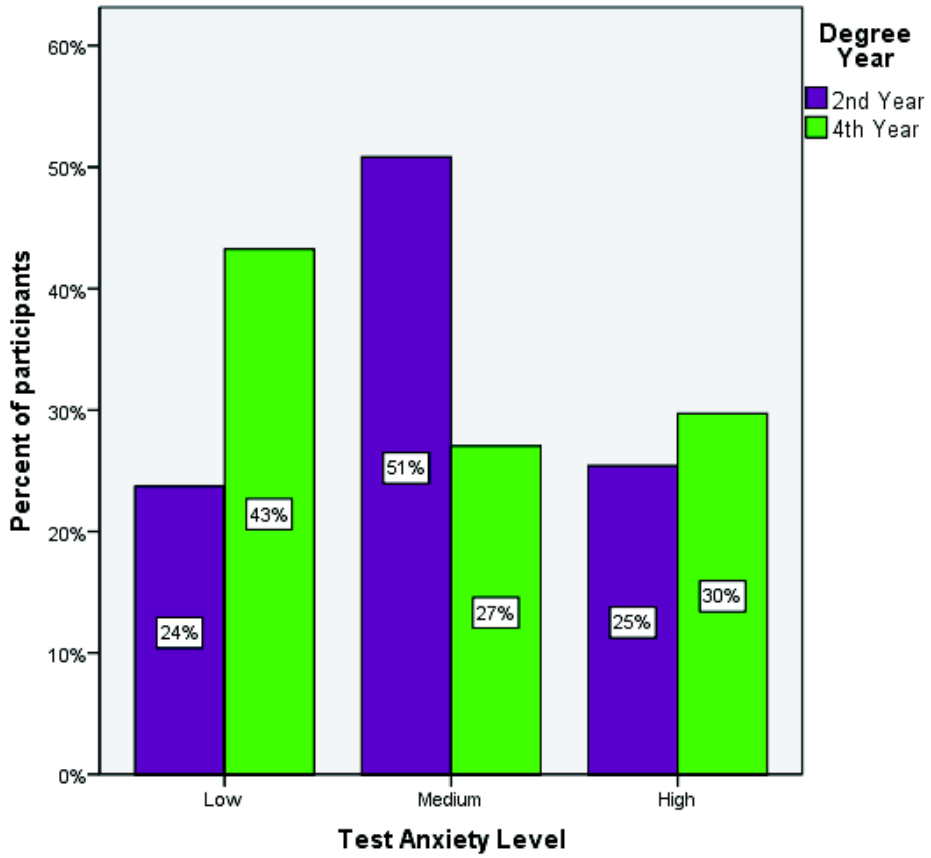

Figure 2. *Test Anxiety Level across Year of Study.*

Hypothesis 3: **There will be a significant negative relationship between conscientiousness and self-reported levels of test anxiety.**

The mean scores for Test Anxiety was 16.13 (SD = 6.56) and for Conscientiousness was 3.75 (SD = .72). A Pearson correlation coefficient found no significant correlation between Test Anxiety and Conscientiousness (r (93) = -.075, p = .467).

Hypothesis 4: **There will be a significant positive relationship between neuroticism and self-reported levels of test anxiety.**

The mean scores for Test Anxiety was 16.13 (SD = 6.56) and for Neuroticism was 2.87 (SD = .83). A Pearson correlation found that there was a moderate positive significant relationship between Test Anxiety and Neuroticism (r (94) = .324, p = .001).

Hypothesis 5: **There will be a significant negative relationship between self-efficacy and self-reported levels of test anxiety.**

The mean scores for Test Anxiety was 16.13 (SD = 6.56) and for Self-Efficacy was 31.94 (SD = 3.94). A Pearson correlation found that there was a weak negative significant relationship between Test Anxiety and Self-Efficacy ($r(93) = -.264$, $p = .010$).

Hypothesis 6: **There will be a significant negative relationship between optimism and self-reported levels of test anxiety.**

The mean scores for Test Anxiety was 16.13 (SD = 6.56) and for Optimism was 15.10 (SD = 5.02). A Pearson correlation found that there was a moderate negative significant relationship between Test Anxiety and Optimism ($r(94) = -.456$, $p < .001$).

Hypothesis 7: **There will be a significant positive relationship between self-reported levels of test anxiety and trait anxiety.**

The mean scores for Test Anxiety was 16.13 (SD = 6.56) and for Trait Anxiety was 39.04 (SD = 10.56). A Pearson correlation found that there was a moderate positive significant relationship between Test Anxiety and Trait Anxiety ($r(91) = .479$, $p < .001$).

Table 3 shows a summary of all the values of the correlations analyses.

Table 3. *Correlations Summary*

Variable	Test Anxiety	Conscientiousness	Neuroticism	Self-Efficacy	Trait Anxiety	Optimism
Test Anxiety	1					
Conscientiousness	-.075	1				
Neuroticism	.324**	-.285**	1			
Self-Efficacy	-.264**	.226*	-.410**	1		
Trait Anxiety	.479**	-.214*	.662**	-.499**	1	
Optimism	-.456**	.224*	-.462**	.311**	-.640**	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Hypothesis 8: **Gender, degree year, optimism, conscientiousness, neuroticism, self-efficacy and trait anxiety will significantly predict the variance in test anxiety levels.**

Multiple regression was used to test whether Conscientiousness, Neuroticism, Self-Efficacy, Optimism, Trait Anxiety, Gender and Year of study were predictors of Test Anxiety scores. The results of the regression indicated that seven predictors explained 23% of the variance ($R^2 = .23$, $F(7, 83) = 4.84$, $p < .001$). It was found that optimism significantly predicted test anxiety ($\beta = -2.85$, $p = .022$, 95% CI = -.683 -.054) as did Trait Anxiety ($\beta = .306$, $p = .041$, 95% CI = .008 -.379). Table 4 shows a summary of the Multiple Regression values.

Table 4. *Multiple Regression Values (Test Anxiety as dependent variable)*

Variables	*B*	*t*	*p*
Gender	.159	1.658	.101
Year of study	.070	.701	.486
Optimism	-.285	-2.330	.022*
Conscientiousness	.030	.286	.776
Neuroticism	-.024	-.183	.855
Self-Efficacy	-.028	-.255	.799
Trait Anxiety	.306	2.078	.041*

* *p* significant at .05 level.

DISCUSSION

This study proposed to identify if there was a statistically significant difference in the level of test anxiety between males and females and between second year degree students compared to fourth year students. A further aim of the study was to explore the relationship of test anxiety to specific personality traits, such as neuroticism and conscientiousness. It further examined whether a relationship existed between test anxiety and trait anxiety, self-efficacy and optimism. A multiple regression analysis was also conducted to identify if gender, year of study, optimism, conscientiousness, neuroticism, self-efficacy and trait anxiety were going to be significantly predictive of the variance in test anxiety levels.

An independent sample t-test showed that the difference in the level of test anxiety between males and females was not significant, even though the test anxiety mean scores of females were slightly higher than the mean scores of males. Also, no significant difference was found in relation to test anxiety levels of second year students compared to fourth year students, even if second year students reported a slightly higher level of test anxiety compared to fourth year students. Moreover, the correlational analyses used in the study showed no significant relationship between conscientiousness and test anxiety but a moderate positive significant relationship between neuroticism and test anxiety. Also a moderate positive correlation was found between test anxiety levels and trait anxiety. A moderate negative significant relationship was found between test anxiety levels and optimism and a weak negative significant relationship was found between test anxiety and self-efficacy. Lastly, the multiple regression analysis indicated that the seven predictors explained 23% of the variance in the level of test anxiety, with optimism and trait anxiety being significant predictors of this variance.

In light of the above results, the two hypotheses relating to gender differences and year of study differences in relation to test anxiety levels were not supported by the findings of this research. In relation to the correlational hypotheses of this research, the hypothesized relationship between conscientiousness and test anxiety was not supported by this research finding, however a relationship was found between test anxiety and each of the following: neuroticism, trait anxiety, self-efficacy and optimism. In summary, hypotheses 1, 2, 3 were rejected, whereas, hypotheses 4, 5, 6, 7 and 8 were accepted.

This research did not find a significant difference in the level of test anxiety between males and females, which contradicts the results of the majority of the research in this area (e.g. Hembree meta-analysis of 154 studies of test anxiety). The reason for the contradictory results of this research could be attributed to the relatively small sample tested (100 participants) and could also be due to the fact that the male and female groups were not equal in numbers (40 males, 60 females). However, even if the difference was not significant, females in the sample scored slightly higher than men in their level of test anxiety, which is in line with the general reporting of a higher level of test anxiety among females compared to males (Cassidy & Johnson, 2002; Manley & Rosemier, 1972; Tryon et al., 1973; Lowe & Reynolds, 2005; Best & Stanford, 1983; Sowa & LaFleur, 1986; Putwain, 2007).

Moreover, this research did not look at the specific components of test anxiety as other researchers did (Wang & Liao, 2012; Willimas, 1996). It is possible that, by looking at the specific components factors of test anxiety, even with the relatively small sample available to this research, statistically significant differences between the two groups would have been found. To enhance the understanding of the different test anxiety levels between males and females, it is suggested that future research would analyse the sub-components of test anxiety. Also, further

research could be carried out with a bigger sample group and with an even number of males and females.

In relation to the levels of test anxiety among the two different years of study (2nd year and 4th year) this research did not find a statistically significant difference which is in contradiction with the results of previous findings in the area (Aysan et al., 2001; Schwarzer, 1981; Manley & Rosemier, 1972). However, even if the difference in scores was not found to be significant, 2nd year students reported a slightly higher mean scores compared to 4th year students. This is in line with the general findings of previous research, reporting a higher level of test anxiety in early years of study compared to subsequent years.

It is important to note that the design of this study was cross-sectional rather than longitudinal. A longitudinal study would have been more appropriate in order to examine whether the level of test anxiety reduces as students progress through their degree. With a longitudinal study, it would have been possible to observe the same group of people at different points in time and this would have given a more accurate picture of the development, if any, of their test anxiety throughout the years of study. Furthermore, the research sample was taken from part-time students, therefore it varied in terms of the age and life experiences of the participants. This could have accounted for extraneous and confounding variables influencing the self-reported level of test anxiety of the participants. Further research could be done using a more homogenous sample group or by adding an additional demographic question to gather the age of the participants. The present sample was also limited to college students at a single institution; hence, caution should be exercised when generalizing findings to students at other institutions.

Regarding the relationship of an individual's personality trait and test anxiety, neuroticism seems to have a much stronger relationship to test anxiety than conscientiousness. In

line with previous studies, this research found no significant correlation between test anxiety and conscientiousness but a moderate positive significant relationship between test anxiety levels and neuroticism (Fitch, 2005; Tu & Shi, 2008). Conscientiousness in an academic setting is generally related to higher student success, excellent performance in a variety of academic courses and also high student grades (Hirschberg & Itkin, 1978; De Raad & Schouwenburg, 1996; Noftle & Robins, 2007). One could infer that a higher level of conscientiousness would predict lower levels of test anxiety, as conscientious students would be 'well prepared' before sitting an exam, thus reducing their possible test anxiety. This research however referred to test anxiety as a general construct, without looking at the specific dimensions of it as suggested by some researchers such as Sarason (1984). By looking at the different elements of test anxiety (worry, tension, test-irrelevant thoughts, and bodily symptoms) a more accurate relationship between test anxiety and conscientiousness could be found.

Another variable of interest in this research was self-efficacy. The findings of the current study were consistent with the majority of past literature that has reported a negative correlation between self-efficacy and test anxiety (Bandalos et al., 1995; Benson et al., 1994; Zohar, 1998; Knigge-Illner, 2009). Self-efficacy, as noted earlier in this research, seems to have a strong relationship also with conscientiousness. This is because as self-efficacy is partly driven by one's assessment of personal resources, the conscientious student sees their diligence and hardworking disposition as a favorable resource (McCrae & Costa, 1987; Gist and Mitchell, 1992). The direct relationship between conscientiousness and self-efficacy however was not of interest to the researcher at this point in time. It is suggested that further research would include a specific analysis of the relationship of these three variables (test anxiety, conscientiousness and self-efficacy) to gain a better understanding of their inter-relationship and effects on each other.

In line with previous research, this study found a positive significant relationship between trait anxiety and test anxiety. It has been highlighted by many researchers (Spielberger & Vagg, 1995; Onyeizugbo, 2010; Kavakci et al., 2011) that students, who experience an elevated level of test anxiety during evaluative situations, also report a general higher level of trait anxiety. Trait anxiety in fact has been described as an individual 'tendency' to perceive various situations as dangerous and threatening. One could infer that reducing an individual's tendency to 'anxiety-proneness' (trait anxiety), could also reduce their level of test anxiety. This hypothesis could be tested by further research. Interventions that attempt to reduce an individual trait anxiety could be put in place and pre and post intervention analyses should be carried out to ascertain if by reducing an individual's tendency to 'anxiety-proneness' (trait anxiety), their specific test anxiety is in turn reduced as well.

When all of the predictors of this research were taken into consideration to determine which ones were the most influential for the variance of the sample's test anxiety levels, the relationship between test anxiety and trait anxiety was confirmed once again. In fact, this study's multiple regression analysis showed that the two variables which significantly predicted the variance in the level of test anxiety were trait anxiety and optimism. Research shows how optimistic students report lower level of psychological stress in general (Aspinwall & Taylor, 1992; Stewart et al., 1997; Segerstrom et al., 1998). As highlighted by Luszczynska et al. (2005) optimism "has relevance across diverse situations" (p. 82). More specifically Scheier et al. (2000) defined it as a dispositional tendency to hold generalized positive expectations when confronted with difficult situations. This generalized expectancy of a positive outcome seems to help students reduce their level of test anxiety. The specific relationship between optimism and test anxiety was also examined in the present study, and a moderate negative significant

relationship between the two variables was found. These findings are is in line with the main research in the area (Hasan & Kathem, 2003; Baker, 2003; McQuade 2009; Walsh 1968). It is suggested that Knigge-Illner's (2009) research on the strengthening of self-efficacy could be expanded to include optimism. As Knigge-Illner (2009) devised a program for the strengthening of self-efficacy and subsequently reported a significant reduction in test anxiety, the same could be tested in relation to optimism.

It is important to note that in the present research, state anxiety was not considered as one of the main variable of interest. This is because the self-reported level of state anxiety of the participants was taken in a non-stress inducing situation (the questionnaires were in fact completed during normal class time and not before an exam). The level of the participant's state anxiety could be included in further research by looking at students' levels of test anxiety and state anxiety at different points in time during the term (pre and post exams periods).

Despite its limitations, this study also displayed some strengths. It applied a multivariable approach in the understanding of the multiplicity of factors that can influence test anxiety and analyzed a combination of psychological and demographic variables that can affect it. Furthermore, the study used a sophisticated level of analysis (multiple regression) to analyze the factors that can influence test anxiety.

In summary, research shows that many students identify test anxiety as an important problem they want help in dealing with as it plays an important role while conducting an examination and it is associated with poor performance in academic examinations. By trying to understand which are the main influential factors that can determine an elevated and maladaptive level of test anxiety, interventions can be devised for the treatment and reduction of it. Preventitive measures could include strenghtening the levels of optimism and self-efficacy in individuals. Further, by

reducing the overall level of an individual's trait anxiety, skills can be developed to enhance test performance and reduce adverse reactions to the taking of tests.

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Appendix A

N.B. For copyright reasons, it was not possible to show all the questions of the STAI questionnaire. Therefore only a sample of questions will be shown in this Appendix.

Dear Participant,

I am a final year psychology student in Dublin Business School. I would like to invite you to take part in a study on the relationship between personality traits, test anxiety and some mediating factors of test anxiety.

The questionnaire should take approximately 15 minutes to fill out. This is an anonymous survey and confidentiality is assured, hence your name is not required. Your participation is purely voluntary and you may choose to withdraw your consent at any time.

Please feel free to ask any questions during or after the survey relating to the research.

Thank you for your participation.

Kind Regards,

Sheila Cacchione

Project Supervisor: Dr. Garry Prentice [redacted])

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

Please tick : male [ ] female [ ]

Degree year: 1st yr [ ] 2nd yr [ ] 3rd yr [ ] 4th yr [ ]

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

1 Disagree Strongly	**2** Disagree a little	**3** Neither agree nor disagree	**4** Agree a little	**5** Agree strongly

I am someone who...

1. _____ Does a thorough job
2. _____ Is depressed, blue
3. _____ Can be somewhat careless
4. _____ Is relaxed, handles stress well.
5. _____ Is a reliable worker
6. _____ Can be tense
7. _____ Tends to be disorganized
8. _____ Worries a lot
9. _____ Tends to be lazy
10. _____ Is emotionally stable, not easily upset
11. _____ Perseveres until the task is finished
12. _____ Can be moody
13. _____ Does things efficiently
14. _____ Remains calm in tense situations
15. _____ Makes plans and follows through with them
16. _____ Gets nervous easily
17. _____ Is easily distracted

Read each statement and then circle the appropriate number to the right of the statement to indicate **how you feel *right* now**, that is, ***at this moment***.

		Not at all	Somewhat	Moderately so	Very much so
1	I feel calm	1	2	3	4
2	I feel secure	1	2	3	4
3	I am tense	1	2	3	4
4	I feel strained	1	2	3	4
5	I feel at ease	1	2	3	4
6		1	2	3	4
7		1	2	3	4
8		1	2	3	4
9		1	2	3	4
10		1	2	3	4
11		1	2	3	4
12		1	2	3	4
13		1	2	3	4
14		1	2	3	4
15		1	2	3	4
16		1	2	3	4
17		1	2	3	4
18		1	2	3	4
19		1	2	3	4
20		1	2	3	4

Please write a number next to each statement to indicate the **extent to which you think the statement is true.**

1	**2**	**3**	**4**
Not at all true	Hardly true	Moderately true	Exactly true

1	I can always manage to solve difficult problems if I try hard enough.	
2	If someone opposes me, I can find the means and ways to get what I want.	
3	It is easy for me to stick to my aims and accomplish my goals.	
4	I am confident that I could deal efficiently with unexpected events.	
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.	
6	I can solve most problems if I invest the necessary effort.	
7	I can remain calm when facing difficulties because I can rely on my coping abilities.	
8	When I am confronted with a problem, I can usually find several solutions.	
9	If I am in trouble, I can usually think of a solution.	
10	I can usually handle whatever comes my way.	

Read each statement and then circle the appropriate number to the right of the statement **to indicate how you *GENERALLY* feel.**

		Almost never	**Sometimes**	**Often**	**Almost always**
21	I feel pleasant	1	2	3	4
22	I feel nervous and restless	1	2	3	4
23	I feel satisfied with myself	1	2	3	4
24	I wish I could be as happy as others seem to be	1	2	3	4
25	I feel like a failure	1	2	3	4
26		1	2	3	4
27		1	2	3	4
28		1	2	3	4
29		1	2	3	4
30		1	2	3	4
31		1	2	3	4
32		1	2	3	4
33		1	2	3	4
34		1	2	3	4
35		1	2	3	4
36		1	2	3	4
37		1	2	3	4
38		1	2	3	4
39		1	2	3	4
40		1	2	3	4

	Please circle “true” or “false” for each statement below:		
1	While taking an important exam, I find myself thinking of how much brighter the other students are than I am.	TRUE	FALSE
2	If I were to take an intelligence test, I would worry a great deal before taking it.	TRUE	FALSE
3	If I knew I was going to take an intelligence test, I would feel confident and relaxed.	TRUE	FALSE
4	While taking an important exam, I perspire a great deal.	TRUE	FALSE
5	During class examinations, I find myself thinking of things unrelated to the actual course material.	TRUE	FALSE
6	I get to feeling very panicky when I have to take a surprise exam.	TRUE	FALSE
7	During a test, I find myself thinking of the consequences of failing.	TRUE	FALSE
8	After important tests, I am frequently so tense my stomach gets upset.	TRUE	FALSE
9	I freeze up on things like intelligence tests and final exams.	TRUE	FALSE
10	Getting good grades on one test doesn't seem to increase my confidence on the second.	TRUE	FALSE
11	I sometimes feel my heart beating very fast during important exams.	TRUE	FALSE
12	After taking a test, I always feel I could have done better than I actually did.	TRUE	FALSE
13	I usually get depressed after taking a test.	TRUE	FALSE
14	I have an uneasy, upset feeling before taking a final examination.	TRUE	FALSE
15	When taking a test, my emotional feelings do not interfere with my performance.	TRUE	FALSE
16	During a course examination, I frequently get so nervous that I forget facts I really know.	TRUE	FALSE
17	I seem to defeat myself while working on important tests.	TRUE	FALSE
18	The harder I work at taking a test or studying for one, the more confused I get.	TRUE	FALSE
19	As soon as an exam is over, I try to stop worrying about it, but I just can't.	TRUE	FALSE
20	During exams, I sometimes wonder if I'll ever get through school.	TRUE	FALSE
21	I would rather write a paper than take an examination for my grade in a course.	TRUE	FALSE
22	I wish examinations did not bother me so much.	TRUE	FALSE
23	I think I could do much better on tests if I could take them alone and not feel pressured by time limits.	TRUE	FALSE
24	Thinking about the grade I may get in a course interferes with my studying and performance on tests.	TRUE	FALSE
25	If examinations could be done away with, I think I would actually learn more.	TRUE	FALSE
26	On exams I take the attitude, "If I don't know it now, there's no point in worrying about it."	TRUE	FALSE
27	I really don't see why some people get so upset about tests.	TRUE	FALSE
28	Thoughts of doing poorly interfere with my performance on tests.	TRUE	FALSE
29	I don't study any harder for final exams than for the rest of my coursework.	TRUE	FALSE
30	Even when I'm well prepared for a test, I feel very anxious about it.	TRUE	FALSE
31	I don't enjoy eating before an important test.	TRUE	FALSE
32	Before an important examination, I find my hands or arms trembling.	TRUE	FALSE
33	I seldom feel the need for "cramming" before an exam.	TRUE	FALSE

34	The university should recognize that some students are more nervous than others about tests and that this affects their performance.	**TRUE**	**FALSE**
35	It seems to me that examination periods should not be made such intense situations.	**TRUE**	**FALSE**
36	I started feeling very uneasy just before getting a test paper back.	**TRUE**	**FALSE**
37	I dread courses where the instructor has the habit of giving "pop"quizzes.	**TRUE**	**FALSE**

Please write a number next to each statement indicating the **extent to which you agree or disagree with the following statements:**

I Disagree a lot	I Disagree a little	I neither agree nor disagree	I agree a little	I agree a lot
0	**1**	**2**	**3**	**4**

1	In uncertain times, I usually expect the best.	
2	It's easy for me to relax.	
3	If something can go wrong for me, it will.	
4	I'm always optimistic about my future.	
5	I enjoy my friends a lot.	
6	It's important for me to keep busy.	
7	I hardly ever expect things to go my way.	
8	I don't get upset too easily.	
9	I rarely count on good things happening to me.	
10	Overall, I expect more good things to happen to me than bad.	

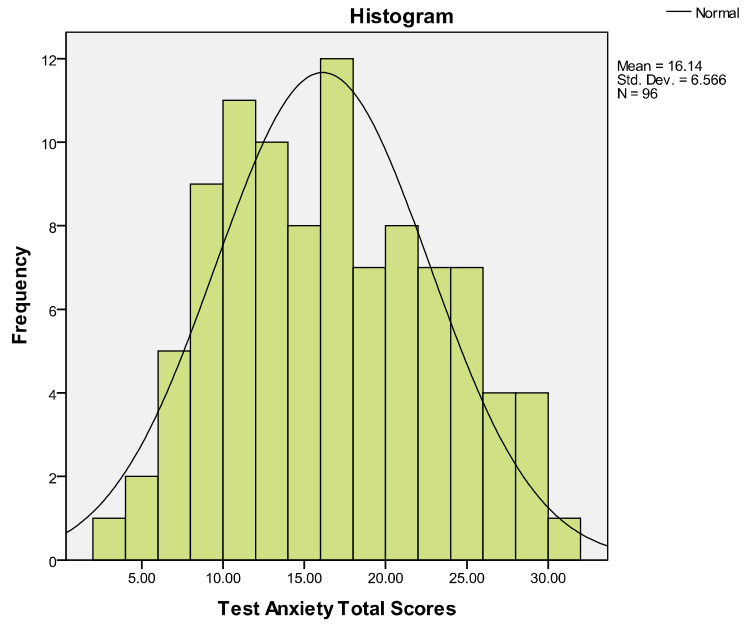
Thank you once again for your valuable co-operation!

Please be assured that symptoms of anxiety in testing situations are not abnormal or strange. As you have probably noticed, the feelings usually pass away quickly, including the irrational thoughts, when the test is over and the situation changes. Also, it is quite possible to learn to control anxiety of this kind when you know how to go about it.

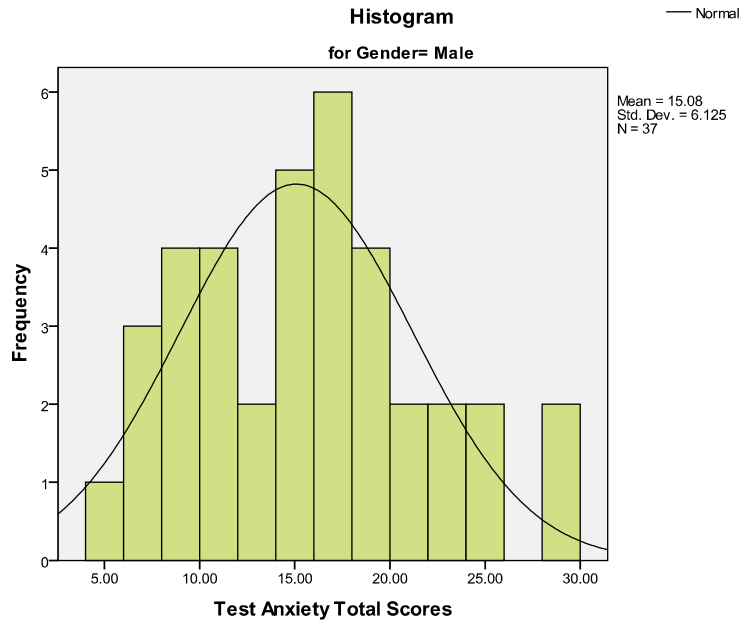
In the event of any distress you may have experienced from any of the questions asked, please be aware there are a number of help lines you can contact such as the Samaritans (1850 60 90 90) or the DBS Counselling Service.

Appendix B

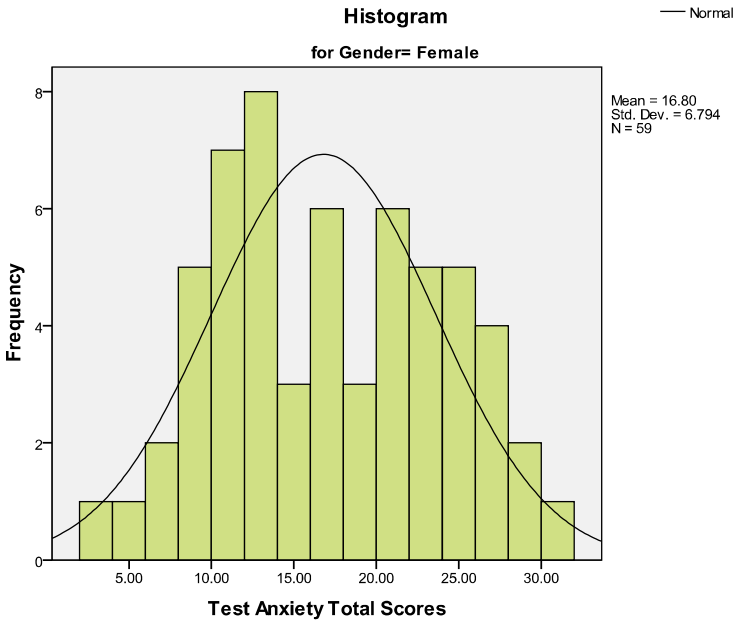
Test Anxiety – Total Scores



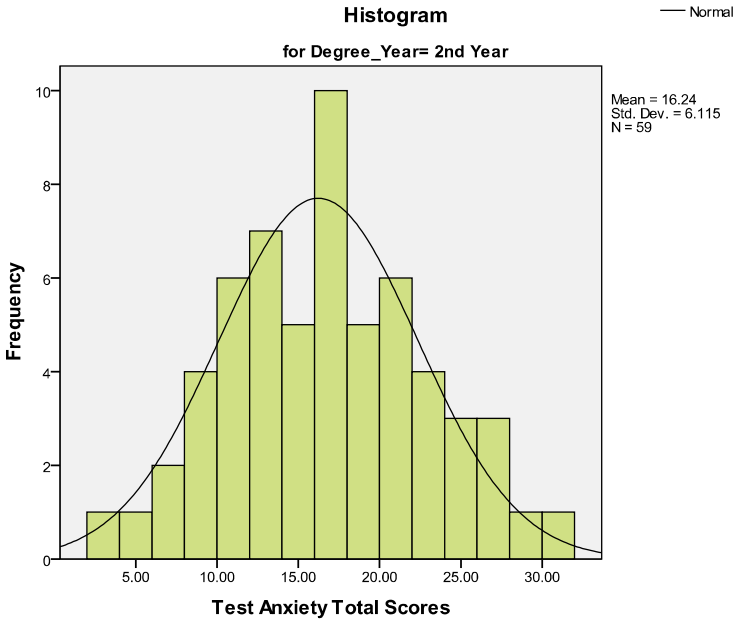
Test Anxiety – Males Scores



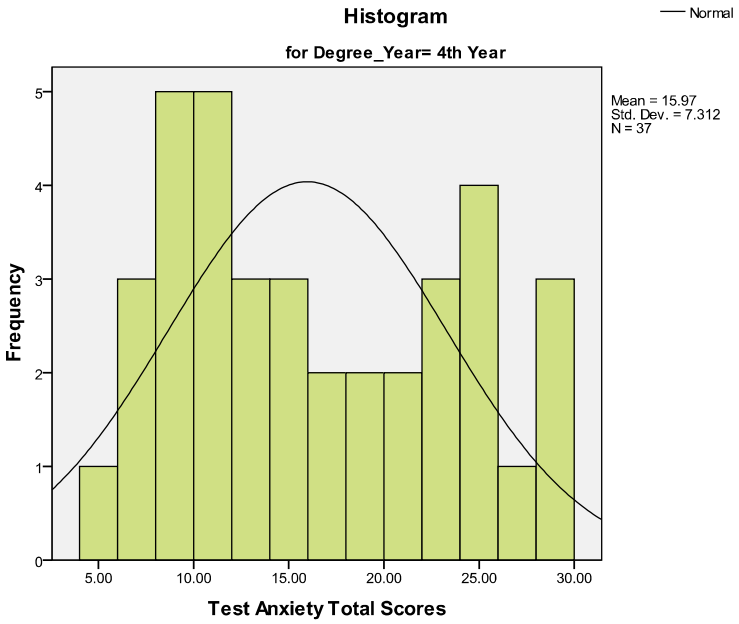
Test Anxiety – Females scores



Test Anxiety – 2nd Year



Test Anxiety – 4th Year



Appendix C

Descriptive Statistics

	Mean	Std. Deviation	N
STATE Anxiety Total	35.5532	9.79425	94
TRAIT Anxiety Total	39.0417	10.55603	96

Correlations

		STATE Anxiety Total	TRAIT Anxiety Total
STATE Anxiety Total	Pearson Correlation	1	.686**
	Sig. (2-tailed)		.000
	N	94	90
TRAIT Anxiety Total	Pearson Correlation	.686**	1
	Sig. (2-tailed)	.000	
	N	90	96

**. Correlation is significant at the 0.01 level (2-tailed).