A Model Exploring Cognitive Test Anxiety: Personality and Goal Orientation

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To Mom and Dad
Abstract
Personality traits and goal orientation have been reported to have associations with test anxiety. However, the mediation role of goal orientation between the Big Five personality traits and cognitive test anxiety (CTA) needs further exploration. Based on data from 458 university students, regression and mediation analyses were conducted to test associations between five personality factors (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism), two types of goal orientations (extrinsic and intrinsic), and CTA. Direct negative relationships were found between two personality factors (Openness and Conscientiousness) and CTA. Direct positive associations were found between Neuroticism and Extrinsic Goal Orientation (EGO) and CTA. Examination of model fit indices revealed a partially mediated model examining the relationships among personality variables, goal orientation, and cognitive test anxiety was the only model with acceptable fit indices. Overall, 18.7% of the variance in cognitive test anxiety could be attributed to personality when mediated by goal orientation. Results suggested that students who reported being more extrinsically motivated were identified with more conscientious traits had higher cognitive test anxiety levels.

Keywords: cognitive test anxiety, personality, goal orientation
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CHAPTER 1

A Model Exploring Cognitive Test Anxiety: Personality and Goal Orientation

In a study conducted 20 years ago by Seiffge-Krenke (1995), test anxiety, along with the pressure to get better marks and the anxiety of receiving poor grades, was identified as the stress factors most often cited by children and adolescents. To date, test anxiety is very common. Putwain and Daly (2014) estimated the prevalence of test anxiety among secondary school students (N=2435) at 16.4%, with the proportion significantly higher in female students than in male students. Furthermore, there is concern that prevalence rates may be increasing due to the importance placed on the function of standardized measures of performance in making critical decisions in schools (Lowe, Grumbein, & Radd, 2011). Students reported significantly higher cognitive and physiological symptoms of test anxiety in high-stakes testing compared to classroom testing (von der Embse & Hasson, 2012; Segool, Carlson, Goforh, von der Embse, & Barterian, 2013).

Previous studies have established an inverse relationship between test anxiety and performance (Cassady & Johnson, 2002; Lang & Lang, 2010, Rana & Mahmood, 2010; Schunk, Pintrich, & Meece, 2008; Zeidner & Matthews, 2005.) Test anxiety can be highly disabling (Herzer, Wendt, & Hamm, 2014) and has been described as the most disruptive variable in learning (Enright, Baldo, & Wykes, 2000). Students who report high levels of test anxiety are more likely to perform poorly on tests and achievement measures, have difficulty with school truancy, be prone to higher rates of drop out (Cortina, 2008), and experience academic failure (Ramirez & Beilock, 2011).
Test anxiety, operationally defined, is a mindset that involves negative self-perceptions and expectations which significantly influence the manner individuals interpret and respond to an evaluative situation (Spielberger, 1972). It has cognitive, affective, and behavioral features which prevent the individual from presenting his or her real performance (Zeidner, 1998). The test anxiety construct first was described by Mandler and Sarason (1952) who identified two kinds of opposite and incompatible drives invoked by testing situations, task-directed drives and learned anxiety drives. Task-relevant efforts stimulate behaviors to complete the task to reduce anxiety while self-directed, task-irrelevant responses evoke implicit attempts to leave the testing situation (Mandler & Sarason, 1952). People with low levels of anxiety attend more effectively to task-directed behaviors that then enhance achievement while those with high levels of anxiety are more likely to engage in task-irrelevant thoughts and behaviors that impair performance (Mandler & Sarason 1952; Sarason, Pierce, & Sarason, 1996; Spielberger, 2013) This early work led to the creation of the Test Anxiety Questionnaire (TAQ; Sarason & Mandler, 1952), which included only a debilitating scale and inferred the presence of one drive meant the absence of the other.

Alpert and Haber (1960) later proposed a bi-dimensional theory, relabeling the drives that lead to task-irrelevant and task-directed behaviors as debilitating and facilitating anxieties. They also authored a self-report instrument, the Anxiety Achievement Test with both facilitating (AAT+) and debilitating (AAT-) subscales. However, the development of understanding the test anxiety construct continued to grow beyond the measurement instruments available at the time. The next major advancement in the field was offered by Liebert and Morris (1967), who illustrated that responses to the TAQ illustrated two primary components or factors of test anxiety. The first component was emotionality which referred to the physical and physiological
reactions to test situations, such as excessive sweating, headaches, elevated heart rate and nervousness. Worry, identified as the second factor, is comprised of the cognitive and psychological facets of test anxiety (Liebert & Morris, 1967) which are primarily focused on the consequences of failure. Research has consistently showed that worry had a stronger negative correlation with performance outcomes than the emotionality component (Cassady & Johnson, 2002; Deffenbacher, 1978; Hembree, 1988; Liebert & Morris, 1970; Wine, 1971; Zeidner, 1990).

In the 1980's, researchers devoted greater levels of attention to interference models of test anxiety. Interference models propose that test anxiety disturbs the recall of prior learning which consequently leads to reduced performance. Tobias (1979) hypothesized there are three points when anxiety has the largest effect on students learning, preprocessing, processing, and postprocessing. He proposed that anxiety can impact learning by interfering with the level of input that a student can register and understand. Wine’s (1971, 1982) cognitive-attentional theory of test anxiety states the damaging influence of test anxiety was because of test-anxious individuals dividing their attention between personal variables and task-related variables. This divided attention leads to a reduced ability to allocate to the task at hand. In contrast, non-test-anxious individuals can then focus most of their attention on the task itself. During the processing period, the resources of working memory are exceeded, subsequently making learning ineffective (Tobias, 1979; Naveh-Benjamin, McKeachie, & Lin, 1987; Naveh-Benjamin, 1991). Cognitive Load Theory (CLT) is a viable framework for examining how this operates in the instructional context, which proposes that extraneous processing load will limit the overall processing success (Sweller, 1994). In a sample scenario following this framework, a test-anxious learner may divide attention among the task, somatic concerns (e.g., heart racing, excessive sweating), and negative self-references –limiting the overall potential to process
content effectively. The last stage where anxiety impacts instruction is called the postprocessing stage. When retrieving content that has been previously mastered, there is interference in recall during the test or performance event (Eysenck, 1992; Naveh-Benjamin, 1991; Tobias, 1979). The postprocessing form of interference is seen in students who say that they have studied diligently, but seem to be unable to recall information that they have studied when taking the test (Tobias, 1979).

An alternative cognitive deficit model of test anxiety proposed that degraded test scores obtained by students with high levels of test anxiety were attributable to inadequate study habits, or to deficient test-taking skills (Tobias, 1985). This study skills deficit orientation attempts to identify the impact of test anxiety through two pathways. First, individuals with poor study skills will often recognize that they are ill-prepared for a test and subsequently develop elevated levels of anxiety during the test session. Second, students with skill deficits for studying as well as test taking do poorly in both evaluative and nonevaluative situations simply due to inabilities to encode and organize new information (Birenbaum, 2013; Birjandi & Alemi, 2010; Sansgiry & Sail, 2006; Tobias, 1985; Paulman & Kennelly, 1984; Zeidner, 1998).

Another test anxiety model, the Transactional Process Model, was proposed by Spielberger and Vagg in 1995. The Transactional Process Model mainly identifies worry and emotionality as the two components that comprise the test anxiety experience. According to this model, test anxiety is evoked as a result of the dynamic interaction between a tendency to have high evaluative traits and exposure to a stressful evaluative situation, which results in perceived threat and subsequent high-test anxiety. The transactional process model considers both dispositional and situational factors as contributors to perceptions of threat and anxiety during test taking (Spielberger & Vagg, 1995).
The various test anxiety theories collectively provide a multidimensional view of test anxiety: each one is addressing key cognitive, affective, and behavioral components of test anxiety. At present, focusing on the cognitive facet would be more beneficial to explore because of its stronger negative relationship with performance outcomes (Cassady & Johnson, 2002; Deci & Ryan, 1990; Lang & Lang, 2010; Rana & Mahmood, 2010; Schunk, Pintrich, & Meece, 2008; Zeidner & Matthews, 2005). Additional research is needed to investigate cognitive test anxiety with respect to its dynamic relationship with possible antecedents, such as personality and motivation.

**Personality**

According to Hancock (2001), personal variables can result in test anxiety. Personality is important in the study of test anxiety because it may influence the way stressful events are perceived and appraised (Matthews, 2000). Individuals with high levels of anxiety process information in a manner that prepares them from potential failure (Eysenck, 1992). They are likely to use a great deal of their cognitive resources (Lawson, 2006) scanning the evaluative situation for possible signs of threat (Eysenck, 1992), to a point of identifying danger even when it may not exist.

In the study of personality, the Big Five factors have been described as the five dimensions of personality that are used to describe human personality (Costa & McCrae, 1992). The Big Five personalities are Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. An extensive number of studies have explored how the Big Five personality traits are related to test anxiety (Chamorro-Premuzic, Ahmetoglu, and Furnham, 2008; Das Gupta and Dutta, 2012; Kumaran & Kadhiran, 2015; Lim & Ortiz-Bance, 2013; Liu, Meng, & Xu, 2006; Piedmont 1995).
Common trait descriptors of Openness are original, imaginative, creative curious, adventurous. People who identify as being open to experience tend to accept and respect novel encounters and desire to explore and understand concepts that are unfamiliar to them. Individuals who report being open to experience would vigorously pursue challenge and have patterns of thoughts and behaviors aligned with low cognitive test anxiety levels (Chamorro-Premuzic, 2011; Howard, Medina & Howard, 1996).

According to John and Srivastava (1999), Conscientiousness depicts differences in the degrees of orderliness, perseverance, and the incentive to use goal-directed behavior. Individuals who are high in Conscientiousness are described as organized, reliable, and ambitious. Studies have shown that Conscientiousness is negatively related to test anxiety (Kumaran & Kadhiravan, 2015; Lim & Ortiz-Bance, 2013; Piedmont, 1995; Zellars, Perrewe, Hochwarter, & Anderson, 2006).

Neuroticism, on the other hand, describes individual differences in susceptibility to psychological distress and skewed understanding and reasoning which often lead to maladjustment and maladaptive behavior (Heller, Watson, & Ilies, 2004). Individuals high in Neuroticism are described as anxious, tense, emotionally unstable and reactive, and insecure. These traits of individuals with emotional instability are positively associated with test anxiety (Chamorro-Premuzic, Ahmetoglu, & Furnham, 2008; Das Gupta & Dutta, 2012; Kumaran & Kadhiravan, 2015; Liu, Meng, & Xu, 2006).

Only Conscientiousness and Neuroticism were consistently correlated with test anxiety across personality-CTA relationship studies (Chamorro-Premuzic, Ahmetoglu, and Furnham, 2008; Das Gupta and Dutta, 2012; Kumaran & Kadhiravan, 2015; Lim & Ortiz-Bance, 2013; Liu, Meng, & Xu, 2006; Piedmont, 1995). However, studies that examined the relationship of
Extraversion, Openness, and Agreeableness to test anxiety showed inconsistent correlations. The repeated illustration of Conscientiousness and Neuroticism as key factors to understanding test anxiety is similar to a broad body of research focused on perfectionism – which is a common characteristic of students with test anxiety (Matthew & Zeidner, 2005; Sarason, 1980). Perfectionists are individuals who measure self-worth with success and efficiency, exert effort to achieve unrealistic goals, set high personal standards, pay attention to small details, and invest a lot of time into their work – which are key components of Conscientiousness and Neuroticism (Burns, 1980; Sherry, Hewitt, Sherry, Flett & Graham, 2010). In addition to the classic self-oriented perfectionist viewpoint, where the learner develops unrealistically high expectations for herself, there is also a dimension of social-oriented perfectionism (Hewitt & Flett, 1991). This primarily maladaptive perfectionistic profile (Stoeber, Feast & Hayward, 2009) differs from the potentially positive outcomes of self-oriented perfectionism by having a focus on meeting externally-developed goals or standards (Zeidner & Matthews, 2005).

**Goal Orientation**

Another important factor to consider in the study of test anxiety is motivation. Depending on which psychological or psychosocial processes are tapped, motivational variables may strengthen or weaken individual behavior (Marín, Infante, & Troyano, 2001). Goal orientation, in particular, is important in the study of test anxiety because students assess the testing situation in relation to his or her goals (Schutz, Quijada, de Vries, & Lynde, 2011). Test anxiety is a reaction to actual or potential failure, triggered by the implication of perceived incompetence or threat to the self that can devalue the individual’s identity (Wentzel & Wigfield, 2009).

Contemporary achievement motivation theorists have focused on behaviors involved in the development and display of aptitude and proficiency. Individuals may aspire to show high
competence or may strive to avoid incompetence in achievement contexts (Smith, Duda, Allen, & Hall, 2002). The earliest achievement motivation conceptualizations explicitly incorporated this approach-avoidance distinction (Atkinson, 1957; McClelland, 1951). In 1951, McClelland proposed the existence of at least two kinds of achievement motivation, one of which is primarily concerned with the avoidance of failure and the other one being more oriented around attaining success. According to Atkinson’s (1964) classical achievement motivation theory, when a person’s motive to achieve success is stronger than the motive to avoid failure, it results in behaviors which approach the task at hand. However, if the motive to avoid failure is stronger than the motive to achieve success, then the result will be avoidance behavior. Students who engage in failure-avoidance will most likely display poor study skills (i.e., procrastination, underachievement, poor time management, lack of organization).

Lazarus and Folkman's (1984) cognitive-relational theory relies heavily on the concept of cognitive appraisal of the parameters of the stressors (i.e., threatening elements in any given situation) and the resources – internal and external – that are available to cope with those stressors. People assess whether a given situation or task poses a threat to them based on their appraisal of these parameters. Next, they identify the extent to which a response in the situation is likely to exacerbate or mitigate the perceived threats. Anxiety ensues in this model when they perceive their resources as inadequate to overcome the stressors, leaving escape or avoidance as viable alternatives to minimize exposure to the stress-provoking task or stimulus.

The Self-Determination Theory (SDT), was originated by Edward Deci and Richard Ryan in 1985. SDT defines intrinsic and varied extrinsic sources of motivation, and the respective roles they play in the cognitive and social development of individuals. If the individual's autonomy, competence, and relatedness are upheld and supported, high-quality
forms of motivation and voluntary involvement are promoted (Ryan & Deci, 2000). According to SDT, motivation is multidimensional in nature (Deci & Ryan, 2000) encompassing three global types of motivation: intrinsic motivation, extrinsic motivation, and amotivation (Deci & Ryan, 1985, 2000, 2008). Of the three, intrinsic and extrinsic motivation are the two most commonly explored types of motivated academic behavior (Cokley, 2003).

A number of studies have consistently demonstrated the advantages of intrinsic motivation in the context of learning. Intrinsically motivated students tend to have higher academic achievement (Areepattamannil & Freeman, 2008; Areepattamannil, Freeman, & Klinger, 2011), higher intellectual performance (Gottfried & Gottfried, 2004), higher self-esteem (Deci & Ryan, 1995), greater persistence (Vansteenkiste, Lens, & Deci, 2006), less academic anxiety (Gottfried, 1990), enhanced deep or conceptual learning (Ames and Archer, 1988; Vansteenkiste, Simons, Lens, Soenens, Matos, & Lacante, 2004), enhanced cognitive flexibility and engagement (McGraw and McCullers, 1979), and enhanced subjective/psychological well-being (Burton, Lydon, D’Alessandro, & Koetner, 2006; Sheldon, Ryan, Deci, & Kasser, 2004). Thus, intrinsic motivation is related to more positive academic and psychological outcomes (Reeve, Jang, Carrell, Jeon, & Barsh, 2004). Additionally, studies indicated that intrinsic motivation is undermined when self-perceived autonomy is negated by socially controlling events, such as evaluation (Harackiewicz, Manderlink, & Sansone, 1984). For example, being closely watched or surveilled under certain circumstances, is linked to performance evaluation and attempts to compel individuals to comply with rules or standards (Lepper & Greene, 1975).

In contrast, extrinsic motivation, refers to behaviors that are determined by means which are commonly externally regulated, such as rewards and constraints. For example, a student who performs a task to satisfy external demands (e.g., material or monetary incentives) or social
contingency is externally regulated. Extrinsic motivation may also appear controlled by internal reward or punishment contingencies, such as guilt, shame or obligation (Areepattamannil, Freeman, & Klinger, 2011). For example, an individual strives to excel academically because he or she does not want to shame his or her family. In the academic setting, students who are extrinsically motivated are more likely to have lower academic achievement (Areepattamannil, Freeman, & Klinger, 2011; Becker, McElvany, & Kortenbruck, 2010; Lepper, Corpus, & Iyengar, 2005) and engage in surface level learning (Biggs, 1991). Furthermore, extrinsically motivated students experience greater anxiety (Wolters, Yu, & Pintrich, 1996), have less positive emotions in school (Sénécal, Koestner, & Vallerland, 1995), and have a poorer ability to cope with failures (Deci and Ryan, 2000). In addition, Tallis, Eysenck, and Matthews (1991) state that worriers potentially have elevated evidence requirements - they must know the perfect answer to the problem or they do not respond at all. A study by Stoebes, Feast, and Hayward (2009) found that socially prescribed perfectionism (SPP) is a maladaptive form of perfectionism associated with higher anxiety for exams and with extrinsic motivation for studying. Masson, Hoyois, Cadot, Nahama, Petit, & Anseau (2004) related extrinsic motivation to SPP, which they defined as having expectancies imposed by others, significantly lessening the perception of being in control, that tend to lead to anxiety, feelings of failure, and helplessness (Carter, Guan, Maples, Williamson, & Miller, 2015). Alternatively, self-oriented perfectionism (SOP) involves adhering to self-imposed unrealistic standards, coupled with rigorous self-evaluation and an inability to accept flawed outcomes, in pursuit of subject mastery (Stoebes, Feast, & Hayward, 2009). Stoebes, Feast, and Hayward (2009) indicated these characteristic of SOP function similarly to extrinsic motivation. As such, there are conditions through which both intrinsic and extrinsic
motivational goal orientations have been connected to the development of test anxiety for learners with at-risk personality characteristics.

**Cognitive Test Anxiety, Personality, and Goal Orientation**

Various theoretical models of test anxiety provide important insights into how test anxiety affects performance. Additional research is needed to investigate the cognitive facet of test anxiety and its dynamic relationship with possible antecedents, such as personality and motivation. This study is focused on how two specific factors might affect cognitive test anxiety - personality and goal orientation. The studies on the nature of test anxiety show that personality is a crucial variable because it may influence the way stressful events are perceived and appraised (Matthews, Deary, & Whiteman, 2003). By examining the relationship between personality and test anxiety, it may be possible to identify the personality traits that have strong and significant correlations with test anxiety. On the other hand, motivation is an internal state that activates, directs, and sustains behavior (McInerney & McInerney, 2006). According to Schutz, Quijada, de Vries, and Lynde, (2011), students assess the testing situation in relation to his or her goals. Test-anxious students performed poorly and were less motivated when exposed to highly evaluative classrooms than their less anxious counterparts. (Hancock, 2001). These statements then raise the question of what type of goal orientation do test anxious students hold that leads to undesirable behaviors of poor performance and motivation.

These variables in this investigation were included for two main reasons. First, the evidence suggests that goal orientation and personality measures are related to levels of cognitive test anxiety. It would be useful to supplement evidence about these relations in the understanding of cognitive test anxiety. Second, of more importance, this study attempts to add to the growing literature on the possible mediating effect of goal orientation on cognitive test anxiety, which
subsequently, could suppress the detrimental effects of cognitive test anxiety on academic performance.

**Current Study**

Although many researchers have reported relationships among test anxiety, personality, and goal orientation, there is an absence of research that has examined the relationships of these domains of learner personality and motivation working in unison to impact cognitive test anxiety. The current study has three primary purposes. First, to identify the relationships among the Big Five personality measures (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism) and cognitive test anxiety. Second, explore whether achievement goal orientations predict levels of cognitive test anxiety. Third, examine a possible mediating or moderating effect of achievement goal orientation on the relationship between the Big Five personality measures and cognitive test anxiety. Implications for future research and potential intervention strategies will be proposed.

**Research Question 1**

*Do the Big Five personality measures predict students’ reported levels of cognitive test anxiety?*

To examine the consistency with prior research, a direct prediction model using the Big 5 Personality measures will be used to determine if a predictive relationship between personality and cognitive test anxiety (CTA) can be detected. The standard null hypothesis would declare that Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism do not effectively predict variations in CTA (see Figure 1 for graphic depiction). Based on the prior research, the following hypotheses will be directly tested:

a. **H1**: Openness and Conscientiousness will have a significant negative relationship with CTA.
b. H2: Neuroticism will have a significant positive relationship with CTA;

c. H3: Extraversion and Agreeableness will not be related with CTA.

Figure 1. The conceptual figure depicting the relationships among the variables examined in the current study. (Direct Model)

Research Question 2

Do learners’ achievement goal orientations predict reported levels of cognitive test anxiety?

To evaluate the consistency with prior research, a direct prediction model using achievement goal orientation measures will be used to determine if a predictive relationship between goal orientation and cognitive test anxiety (CTA) can be detected. The standard null hypothesis would declare that intrinsic goal orientation does not effectively predict variations in CTA (see Figure 2 for graphic depiction). Based on the prior research, the following hypotheses will be directly tested:

a. H4: Extrinsic goal orientation will have a significant positive relationship with cognitive test anxiety;

b. H5: Intrinsic goal orientation will have a significant negative relationship with cognitive test anxiety.
Research Question 3

Do achievement goal orientations serve as mediation variables in the relationships among personality measures and cognitive test anxiety?

To investigate the mediational role of achievement goal orientation in the personality-CTA relationship, a mediation analysis will be conducted to determine whether a partial or full mediation model best fits the data. The standard null hypothesis would declare that achievement goal orientations will not mediate the relationships among personality measures and cognitive test anxiety (see Figures 3 and 4 for graphic depiction). Based on the prior research, the following hypotheses will be directly tested:

a. H6: High extrinsic goal orientation will partially mediate the relationships among cognitive test anxiety and Openness and Conscientiousness;

b. H7: High extrinsic goal orientation will fully mediate the relationship between cognitive test anxiety and Neuroticism;
c. High intrinsic goal orientation will not mediate the personality-cognitive test anxiety relationship.

Figure 3. The conceptual figure depicting the relationships among the variables examined in the current study. (Fully Mediated Model)

Maximum evidence for mediation, also called full mediation, would occur if the inclusion of the mediation variable (extrinsic goal orientation) affects the relationship of the independent variable (Openness, Conscientiousness, Neuroticism) and dependent variable (cognitive test anxiety), such that the association becomes non-significant at the final step in the analysis.

Figure 4. The conceptual figure depicting the relationships among the variables examined in the current study. (Partially Mediated Model)

Partial mediation maintains that the mediating variable (extrinsic goal orientation) accounts for some of the relationship between the independent variable (Openness,
Conscientiousness, Neuroticism) and dependent variable (cognitive test anxiety). Partial mediation implies that there is not only a significant relationship between the mediator (extrinsic goal orientation) and the dependent variable (cognitive test anxiety). But also some direct relationship between the independent (Openness, Conscientiousness, Neuroticism) and dependent variables (cognitive test anxiety).
CHAPTER II

Research on test anxiety primarily is focused on its impact on performance measures. Previous studies have established an inverse relationship between test anxiety and performance (Cassady & Johnson, 2002; Lang & Lang, 2010, Rana & Mahmood, 2010; Schunk, Pintrich & Meece, 2008; Zeidner & Matthews, 2005.) Test anxiety can be highly disabling (Herzer, Wendt, & Hamm, 2014) and has been described as the most significant disruptive variable in learning (Enright, Baldo, & Wykes, 2000). Students who report high levels of test anxiety are more likely to perform poorly on tests and achievement measures, have difficulty with school truancy, be prone to higher rates of drop out (Cortina, 2008), and experience academic failure (Ramirez & Beilock, 2011). A study conducted in 1988 by Hembree, which was the main meta-analysis conducted on test anxiety at that time, identified that high levels of test anxiety have been negatively correlated with IQ, aptitude, certain areas of academic achievement (i.e., reading, math, natural sciences, English, foreign language, psychology, and mechanical knowledge), problem solving, memory, and grades. He also identified gender, ethnicity, birth order, student status (at risk vs. passing), and testing conditions (ego-involving high stress conditions and test perceptions) as factors impacting test anxiety affecting students in early grade levels through graduate school.

The term personality describes differences between individuals in behavior, thought and affect. Personality traits and mechanisms influences our actions, interactions, choices of social environment, feelings, how we view ourselves, what goals to pursue and our reactions to circumstances – including stress. Pursuant to the current investigation, personality can impact all aspects of a person’s identification of stress and response to those stressors. Broadly defined,
stress is an adaptive reaction of living organisms in response to perceived internal or external threats to homeostasis (Lecic-Tosevski, Vukovic, & Stepanovic, 2011). Stress develops from the interaction between an individual and his subjective and objective perception of threats in his environment. Resilience and vulnerability to stressors as well as the intensity of stress response are influenced by personality.

Personality is important in the study of test anxiety because it may influence the way stressful events are perceived and appraised (Matthews, 2000). By examining the relationship between personality and test anxiety, it may be possible to identify the personality traits that have strong and significant correlations with test anxiety under different evaluative conditions. Identifying the ways personality traits interact with situational variables will aid in the type of interventions that are best suited for each personality type.

Another important factor to consider in the study of test anxiety is motivation. Depending on which psychological or psychosocial processes are tapped, motivational variables may strengthen or weaken individual behavior (Marín, Infante, & Troyano, 2001). Goal orientation, in particular, is important in the study of test anxiety because students assess the testing situation in relation to his or her goals (Schutz, Quijada, de Vries, & Lynde, 2011).

Intrinsic motivation and extrinsic motivation are the two primary types of motivated academic behavior (Cokley, 2003). Extrinsic motivation refers to behaviors that are determined by means which are commonly externally regulated, such as rewards and constraints. For example, a student who performs a task to satisfy external demands (e.g., material or monetary incentives) or social contingency is externally regulated. Extrinsic motivation may also appear as that are controlled by internal reward or punishment contingencies, such as guilt, shame, or obligation. For example, an individual strives to excel academically because he or she does not
want to shame his or her family. Numerous studies on the effects of extrinsic motivation on learning outcomes have been documented. Students who are extrinsically motivated are more likely to have lower academic achievement (Becker, McElvany, & Kortenbruck, 2010; Lepper, Corpus, & Iyengar, 2005) and engage in surface level learning (Biggs, 1991). Furthermore, extrinsically motivated students experience greater anxiety (Wolters, Yu, & Pintrich, 1996), have less positive emotions in school (Sénécal, Koestner, & Vallerland, 1995), and have a poorer ability to cope with failures (Deci and Ryan, 2000). Thus, intrinsic motivation, is related to more positive academic and psychological outcomes than extrinsic motivation (Reeve, Jang, Carrell, Jeon, & Barsh, 2004). Additionally, studies indicated that intrinsic motivation is undermined when self-perceived autonomy is negated by socially controlling events, such as evaluation (Harackiewicz, Manderlink, & Sansone, 1984). For example, being closely watched or surveilled under certain circumstances, is linked to performance evaluation and attempts to compel individuals to comply with rules or standards (Lepper & Greene, 1975).

**Test Anxiety**

The first theory on test anxiety offered by Mandler and Sarason (1952) states that situational stimuli (such as an indication that the person is being judged or a statement of expected performance) could lead to inferior performance and task-irrelevant responses in tests or achievement contexts for anxiety-prone individuals. In contrast, Mandler and Sarason’s (1952) model also proposed that individuals without a predisposition toward anxiety faced with similar pressures would benefit from these external pressures.

Alpert & Haber (1960) expanded upon this line of thinking, drawing a distinction of the fluid relationship between facilitating and debilitating aspects of test anxiety. Similar to Mandler and Sarason (1952), they posited that it was possible anxiety not only inhibits performance but
that it may also stimulate or motivate it. Anxiety is facilitative when the learner is motivated to overcome the new task because the individual views it as a challenge rather than a threat (Scovel, 1991). However, when anxiety levels are too high, it becomes debilitating. Debilitating anxiety motivates the individual to adopt avoidance behavior, be it avoidance of learning new tasks or avoidance of the current task (Scovel, 1991). This phenomenon was classically described by the Yerkes-Dodson Law. The Yerkes-Dodson Law suggests a curvilinear association between arousal and performance. Graphically, it is represented by an inverted U-shaped curve. This representation shows that too little arousal produces minimum performance; moderate arousal enhances performance to its optimal level at the peak of the curve; but beyond that, too much arousal will again hinder performance (Deffenbacher, 1983; McNally, 2003; Yerkes & Dodson, 1908). What constitutes as little, moderate, or too much arousal varies for each individual.

**State vs. Trait**

Another extension of Mandler and Sarason’s (1952) model was attention to the distinction between the state and trait components of test anxiety (Spielberger & Vagg, 1972), which is also consistent with general anxiety diagnoses and theories of personality. State test anxiety refers to a transitory condition of anxiety experienced during a perceived stressful evaluation setting. Trait test anxiety refers to relatively stable differences in the frequency and intensity with which individuals experience state test anxiety. While test anxiety was often discussed as a “state” construct, growing attention was given to the view that only those with pervasive test anxiety symptoms (i.e., trait test anxiety) are likely to be impacted seriously by the state aspect (Schwarzer & Jerusalem, 2002). All individuals are likely to encounter state aspects of anxiety – but those with higher trait test anxiety are more likely to have the state anxiety reach
debilitative levels; whereas those with low trait test anxiety are more likely to benefit from the activation of appropriate levels of stressors.

However, the additive model of test anxiety asserts that only when the additive nature of state and trait anxiety reach the individual’s critical level does anxiety become debilitative rather than facilitative (Zohar, 1998). This means that performance significantly declines only when a specific evaluative situation activates the state test anxiety factor of an individual with trait test anxiety. Zohar (1998) listed low self-confidence for the task-at-hand, high levels of perceived threat from the exam, or the cognizance of the lack of preparedness for the exam as possible situational factors which may activate the state test anxiety factor.

**Emotionality and Worry**

While the state-trait distinction and attention to debilitative and facilitative aspects of test anxiety provide insight into the broad perspective of a student’s test anxiety experience, Liebert and Morris’ (1967) work on a two-factor view of test anxiety has been the most influential and pervasive model of test anxiety in early research. According to Liebert and Morris (1967), there were two primary types of test anxiety which they referred to as worry and emotionality. A meta-analysis by Hembree (1988) confirmed by factor analysis that worry and emotionality are likely the only two factors of test anxiety. Briefly stated, the worry component represents maladaptive thoughts, such as self-criticism or apprehension about the consequences of failure, and these cognitions have been shown to undermine performance, presumably by diverting attention from task demands and interfering with retrieval processes (Deffenbacher, 1980; Sarason, 1972; Wine 1971).

The emotionality component represents one’s perceptions and interpretations of the physiological elements (e.g., sweating, rapid heartbeat) and affective states (e.g., nervousness,
tension) of the anxiety experience. These responses have been shown to have little, if any, deleterious effect on performance (Deffenbacher, 1980; Morris, Davis, & Hutchings, 1981). In 1978, Sarason developed The Reaction to Tests measure. It was the first instrument designed to examine four (4) different cognitive and emotional components of test anxiety: tension, worry, test-irrelevant thinking, and bodily reactions.

Most research on test anxiety in the last three decades has been driven by the conceptualizations of state-trait or Liebert & Morris’ (1967) views of a multifactor model of test anxiety. However, while most researchers adhere to these predominant underlying views of test anxiety, there are wide variations in explanation for the primary causes for test anxiety in learners, as well as the means by which test anxiety impacts the learners’ experiences. The following primary orientations for test anxiety provide context for interpreting test anxiety in learners in standard academic settings.

**Learning-Testing Cycle**

The traditional orientation toward test anxiety focused on the state-dependent cues related to evaluative situations as the central issue for test anxiety, promoting explicit attention toward the testing event itself as the critical point for test anxiety. However, contemporary views of test anxiety have highlighted the importance of examining thoughts and behaviors during the three phases in the learning–testing cycle: test preparation, test performance, and test reflection (Cassady, 2004; Schwarzer & Jerusalem, 1992).

**Test Preparation Phase.** Test anxiety manifests during the test preparation stage in several ways. Everson, Smodlaka, and Tobias (1995) showed that individuals with high-test anxiety levels have deficits in encoding and storage processes, lack a deeper understanding of reading materials, have poor study skills (Culler & Holohan, 1980), and are inadequate at self-
monitoring during the test preparation phase (Covington, 1992). Poor self-regulation can lead to an overestimation or underestimation of their level of preparedness for exams which in turn can lead to either a false sense of security during the test preparation stage (Winne & Jamieson-Noel, 2002) or to adopting performance-avoidance goals (McGregor & Elliot, 2002) that often manifest as procrastination (Cassady & Johnson, 2002). In addition, Naveh-Benjamin, McKeachie, Lin, and Hollinger (1987) found that high test anxiety levels correlated with inadequate skills for developing conceptual representations of core content, interference in the working memory’s articulatory processing loop while in the test preparation phase (Ikeda, Iwanaga, & Seiwa, 1996), and a tendency of perceiving tests as threatening events (Schwarzer & Jerusalem, 1992). Interestingly, cross-cultural analyses among women in Kuwait and the U.S. revealed a significantly lower occurrence of perceived test threat (Cassady, Mohammed, & Mathieu, 2004). The authors believe that levels of perceived test threats are significantly lower in collectivist cultures and in societies where success is guaranteed to all citizens (Cassady, Mohammed, & Mathieu, 2004).

In this phase, the brunt of test anxiety’s impact is in the failure to adequately encode, organize, and store content (Mueller, 1980; Naveh-Benjamin, 1991). Consequently, a limited bank of effectively organized conceptual cues will be all that is available during the test performance phase (Bar-tal, Raviv, & Spitzer, 1999).

**Test Performance Phase.** The test performance phase refers to the time period during which the student completes the examination. Cognitive test anxiety impacts the performance phase in several ways. First, poor preparatory processes (i.e., study skills) can significantly affect performance because of the limited amount of stored conceptual cues (Covington & Omelich, 1987; Naveh- Benjamin, 1991). Second, if the problem is not due to an inadequate preparatory
process, the issue shifts to retrieval failures (Naveh-Benjamin, McKeachie, Lin, & Hollinger, 1981) because of the shallow understanding of the material (e.g., memorization). The lack of synthesis and analysis of concepts causes students to be indecisive due to the lack of confidence in knowing what they know (Bar-tal, Raviv, & Spitzer, 1999). The feeling of uncertainty is magnified when faced with multiple choice test formats because all the given choices may seem correct to an individual with high test anxiety. Additionally, skewed views of the test and anticipation of the level of difficulty of the exam often prompt self-deprecating thoughts, interference, distractibility (e.g., task-irrelevant thinking), where task-irrelevant cues become the attentional focus or task-relevant cues are rendered ineffective (Cassady, 2004; Schutz & Davis, 2000; Schwarzer & Jerusalem, 1992).

Test Reflection Phase. In the final phase, the test reflection phase, test anxiety impacts how one perceives and behaves in future test-related situations due to how one attributes success or failure. Higher levels of anxiety accompany ratings of externalized attributions for success (e.g., “I did well because the test was easy”) or lack of ability as a causative agent to failure (e.g., “I’m not smart enough.”) (Bandalos, Yates, & Thorndike, 1995). However, individuals who attribute failure to the lack of effort generally were found to have lower levels of test anxiety. According to Elliot & McGregor (1999), internalized attribution for success or failure which is centered on one’s ability will influence future efforts to avoid failure or approach success.

A cycle then develops when students with attributions that have the locus of control externalized, a feeling of learned helplessness. The student then becomes more disengaged from academic tasks, increasing the chances of failure (Schwarzer & Jerusalem, 2002). Due to the lack of a distinct transition point from the reflection phase to the next test’s preparation phase, it is important to be mindful of a student’s affect during this time frame. The longer students fixate
on negative affect produced by their attributions, the less likely they are to successfully prepare for an upcoming examination (Covington, 1985).

**Study-Skills Deficit Model**

One of the most enduring views for test anxiety has been classically referred to as a study-skills deficit model, which argues that anxious students are essentially deficient in a wide variety of study and test-taking skills. A study by Culler and Houlahan (1980) contradicted the then common stereotype of the high test anxious student who knows the subject matter but forgets (or is unable to access) the studied concepts at test time. They found that high test-anxious students who had developed and exercised better study skills did better academically than those with poor study habits. High anxious students often compensated for their poor study skills by increasing study time. Their findings suggest that at least part of the academic performance decrement may be due to less knowledge of the relevant material as a function of differential study skills. The noted skills deficits include problems with encoding, rehearsal, organization, and retrieval of information prior to and during tests.

The study skills deficit orientation attempts to identify the impact of test anxiety through two pathways. First, individuals with poor study skills will often recognize that they are ill-prepared for a test and subsequently develop elevated levels of anxiety during the test session. Second, as demonstrated by Paulman and Kennelly (1984), students with study skill and test taking skill deficits do poorly in both evaluative and non-evaluative situations simply due to abilities to encode and organize new information.
Cognitive-Attentional Model

Another recent model is the cognitive-attentional model. This model states that anxiety divides attention between task-relevant and task-irrelevant thoughts, which leads to disturbed recall of prior learning (Wine, 1971). Once the task-irrelevant thoughts interfere with the ability to focus on the test, performance on the test is lowered.

Tobias (1979) proposed a model examining the general negative effects of anxiety on learning from instruction consistent with the cognitive-attentional perspective. Similar to the perspective of the Learning-Testing cycle work summarized above, Tobias hypothesized there are three points when anxiety has the largest effect on students learning. The first point is during preprocessing, where anxiety can impact learning by interfering with the level of input that a student can register and understand. The student divides attention between the task, somatic concerns (e.g., heart racing, excessive sweating) and negative self-references. The less the student is able to process, the less can be later recalled for further processing. Cognitive Load Theory (CLT) states that if the resources of working memory are exceeded then learning will be ineffective. One of CLT’s basic principles is that working memory has a limited capacity on the amount of information it can hold and number of ways it can manipulate that information at a given time (Sweller, 1994; Van Gerven & Pascal, 2003). A second principle of CLT is that new information can only be encoded into long term memory if the working memory is actively engaged in the comprehension and processing of instructional material (Cooper, 1998; Sweller, 1994). Therefore, during difficult tasks, it is crucial that an individual is able to use his or her working memory efficiently (Van Gerven & Pascal, 2003), if not, then learning will be ineffective. Having the stimuli reheard or reviewed, such as by video or audio playback, may help negate this effect of test anxiety (Tobias, 1979). Anxiety may also impact instruction during
the processing of input stage where the level of difficulty, reliance on memory, and organization of the task will likely have the strongest effect on learning (Naveh-Benjamin, 1991; Naveh-Benjamin, McKeachie, & Lin, 1987; Tobias, 1979). The difference between high- and low-test anxious students becomes more pronounced as difficulty of content increases. Instruction which requires students to rely on short or intermediate term memory is harder for anxious students than when they need to recall long term memory information (Tobias, 1979). Achievement will improve if the amount of memory recall required is reduced and if prior instructional material is available for reference. A third way to reduce the negative effects of student anxiety relates to the organization of the task. Studies show that well-organized material helps anxious students achieve a better organization of input (Tobias, 1979).

The last stage where anxiety impacts instruction is called the postprocessing stage. When retrieving content that has been previously mastered, there is interference in recalling that material during tests (Tobias, 1979). The postprocessing form of interference is seen in students who say that they have studied diligently, but seem to be unable to recall information that they have studied when taking the test (Tobias, 1979). Although these three points have been consistent with prior studies, more research into these predictions would help clarify the interaction of anxiety due to instructional methods.

Whitaker Sena, Lowe, and Lee (2007) studied predictors of test anxiety on elementary and secondary school students with learning disabilities. Their results indicated that learning disabilities predicted higher Cognitive Obstruction/Inattention and Worry scores and lower scores on Performance Enhancement/Facilitation Anxiety scale and lie scale compared to students with high test anxiety but without a learning disability. Items on the Cognitive Obstruction/Inattention and Worry subscales describe excessive nervousness, irrational worries,
and negative thoughts associated with the test taking process. Items on the Performance Enhancement/Facilitation Anxiety scale describe slight feelings of nervousness experienced before or during the test taking process which are believed to enhance one’s performance on the test. The Lie scale is a validity index that describes ideal socially acceptable test behavior. The lower performance enhancement scores imply that they are resigned and have become accepting of their failures and incompetencies. Whitaker Sena et al.’s results are congruent with previous studies that cognitive interference was the most powerful predictor of test anxiety for students with a learning disabilities. Another study revealed that students with learning disabilities were more test anxious than students without learning disabilities (Bryan, Sonnefeld, and Grabowski, 1983).

Associations between adaptive and maladaptive perfectionism, four types of goal orientations, cognitive test anxiety, and word list performance and GPA as indicators of academic performance of 134 university students were studied by Eum and Rice (2011). Overall, they found that nearly half of the variance in cognitive test anxiety was attributable to gender, goal orientations, and perfectionism. Consistent with current literature, the authors found that cognitive test anxiety was inversely associated with both GPA and word list performance. An additional finding was that cognitive test anxiety was positively associated with dysfunctional perfectionism and avoidance goal orientations (Eum & Rice, 2011).

Transactional Process Model

The Transactional Process Model mainly identifies worry and emotionality as the two components that comprise the test anxiety experience. According to this model, test anxiety is evoked as a result of the dynamic interaction between a tendency to have high evaluative traits and exposure to a stressful evaluative situation, which results in perceived threat and resultant
high test anxiety. The transactional process model proposes that both disposition and situation factors contribute to perceptions of threat and resultant anxiety during test taking (Spielberger & Vagg, 1995). In other words, the extent to which an assessment is perceived as threatening depends on the interaction between the features of the assessment contexts (e.g., test value, test format) interact with the individual differences in trait test anxiety. This process of appraisal repeats itself throughout the assessment period. So, if a highly test anxious individual encounters any difficulties, be it with question interpretation, information retrieval, response choice, or formulation of a response, it can result in an assessment being negatively reevaluated or seen as more threatening. Consequently, an increase in perceived threat, in turn, likely would lead to spiked levels of worry and anxiety. Inversely, less challenges encountered during any portion of the assessment process can result in decreased perception of threat.

**Self-Regulation Model**

Incorporating views of both study skills deficits and cognitive-attentional models, a Self-Regulation Model for explaining test anxiety and performance outcomes was proposed by Carver and Scheier (1990). This model is based on the assumption that intentional goal-directed behavior displays the functional characteristics of a feedback control system (Carver & Scheier, 1990). According to Carver & Scheier (1990), people establish goals and standards for themselves which they use as reference points in guiding and monitoring their behaviors. Present behaviors are continuously sensed and brought to mind and then compared against situational salient reference values and goals. Any observed discrepancies encountered between current behaviors or states and salient reference values or behavioral standards are handled by adjusting behavior in the direction of reference values or behavioral standards. Anxiety enters the model
when there is a major discrepancy between current behaviors and the processes required to achieve desired goals (Carver & Scheier, 1990).

The self-regulation model proposes that evaluative pressure makes everyone anxious. The difference lies in how individuals respond to the arousal and the situation as a whole. Low-test-anxious individuals retain confidence of being able to perform well despite the anxiety, whereas high-test-anxious persons are doubtful of being able to perform (Carver, 1996). Furthermore, in highly evaluative circumstances test anxious persons tend to focus on avoiding the experience of anxiety rather than on performing well (Carver et al., 1993). A major claim of the model is that the impact of test anxiety on performance depends on the person’s expectancy of being able to cope with the exam and carry out the expectancies and actions associated with the test at hand. Thus, individuals with test anxiety who have favorable expectancies even when highly anxious and self-focused, remained engaged in the task and actually performed better (Carver, 1996).

**Personality**

Determining the precise set of variables that predict patterns of students’ behaviors and their relationship to academic achievement has been a constant objective of researchers. Personality has been identified as one of the determining factors on how people learn (Myers, McCauley, Quenk, & Hammer, 1998), an influential variable in their response to different educational methods or learning settings (Myers et al., 1998), a component that affects success at work or in school (Hogan & Hogan, 1989; Day & Silverman, 1989), and a variable that can differentiate high- and low-anxious students (Lufi, Okasha, & Cohen, 2004). An interactive model proposed by Mayer and Salovey (1955) stated that both intelligence and personality comprise are important predictors of academic performance. Certain personality traits can either
facilitate or debilitate the use of one’s abilities (Busato, Prins, Elshout, & Hamaker, 1999; Eysenck, 1981; Furnham, 1992). Lufi, Okasha, and Cohen (2004) found that personality, particularly the measure of College Maladjustment (MT) on the Minnesota Multiphasic Personality Inventory (MMPI-2), differentiated high and low test anxious learners. Clinically, “high MT scores among college students is indicative of individuals who are pessimistic, anxious, worried, and who tend to procrastinate and somatize. In contrast, those who score low on MT are described as reliable positive thinkers who are free of emotional discomfort (Graham, 1990). Over the years, numerous theorists have attempted to study personality. Biological theories, behavioral theories, psychodynamic theories, humanist theories, social cognitive and trait theories have been proposed to explain personality and its relation to academic performance and test anxiety.

Most personality theorists make a distinction between personality traits and personality states (Spielberger, 1983). Personality traits are enduring patterns of thoughts, feelings and behaviors that remain stable and consistent across situations. Personality traits then are more reliable in differentiating among individuals by predicting likely patterns of acting and reacting that are used to characterize them (McCrae & Costa, 1999). On the other hand, McCrae and Costa (1999) define personality states as more transient reactions to circumstances and often are heavily influenced by environmental factors. They are momentary emotional reactions to internal and/or external triggers which also involve physical, behavioral, cognitive and psychological reactions. For instance, certain conditions such as test anxiety can increase the level of experienced anxiety beyond the trait level for a non-anxious person to have increased levels of anxiety.

**Bandura’s Social Cognitive Theory**
Trait theories of personality imply personality is biologically based, (Corr & Perkins, 2006; Fowles, 2006), whereas theories such as Bandura’s (1977) Social Learning Theory also emphasize the role of nurture and environmental influence, viewing personality as having both state and trait characteristics.

In Bandura’s (1999) social cognitive theory, he added the perspective of human agency, or people acting as agents over themselves. Bandura (1999) described four core features (intentionality, forethought, self-reactiveness, and self-regulation) which indicated individuals had more control over their lives – particularly with self-regulation. In his theory, Bandura also highlighted the importance self-efficacy or the belief of having the ability to achieve a certain task or goal. Bandura (1999) stated:

“In the agentic sociocognitive view, people are self-organizing, proactive, self-reflecting, and self-regulating, not just reactive beings shaped and shepherded by external events. People have the power to influence their own actions to produce certain results. The capacity to exercise control over one’s thought processes, motivation, affect, and action operates through mechanisms of personal agency. (p.2)”

Social cognitive theory explains psychosocial functioning in terms of the functional dependence between events. The triadic reciprocal causation model is comprised of internal personal factors in the form of cognitive, affective, and biological events; behavioral patterns; and environmental events. Internal personal factors, behavior, and the environment influence one another bi-directionally (Bandura, 1986). In this study of cognitive test anxiety, the three determinants that influence one another are goal orientation (behavior), personality (internal personal factor), and evaluative situation (environment).

Mischel’s Cognitive-Affective Model
Another behavioral and cognitive theorist influential in the field of personality research is Walter Mischel. He theorized that an individual’s behavior is influenced by the specific attributes of a given situation and the manner in which the individual perceives the situation. Mischel and Shoda (1995) suggested that personality signatures are formed by a consistent pattern of “if-then” behaviors. In other words, if a situation occurs, then a behavior may result. For example, one should avoid saying, “he is an anxious person,” and instead say, “He is an anxious person when he knows he is being evaluated.”

Mischel and Shoda (1999) emphasized that an individual’s values and expectancies must be considered in predicting a person’s behavior and personality. Mischel and Shoda (1999) identified five person variables that contribute to the conditions of a specific situation. These five variables – competencies, cognitive strategies, expectancies, subjective values, and self-regulatory systems – are used in predicting a person’s behavior. Competencies refer to an individual’s intellectual capabilities and social skills. Cognitive strategies are the different perceptions of a specific event. For example, tests may be a threat for an individual with high test anxiety but may be perceived as a challenge for someone with low test anxiety. Expectancies are the anticipated results of different behaviors that are realized by the person in his mind, such as failing an exam. Subjective values are the respective worth or significance of each possible outcome of various behaviors. Lastly, self-regulatory systems are the groups of rules and standards that people adapt in order to regulate their behavior.

Eysenck’s Taxonomy

Eysenck (1975) developed the Hierarchical Model of Personality based on traits that had a psychophysiological foundation that he believed were highly heritable. The three main traits
that met these criteria according to Eysenck (1975) were Extraversion-Introversion (E), Neuroticism-Emotional stability (N), and Psychoticism (P) or what is more familiarly referred to as PEN. Eysenck (1975) uniquely associated physiological functions to each trait: Extraversion with the central nervous system reactivity, Neuroticism with the degree of lability of the autonomic nervous system, and Psychoticism with the testosterone levels and MAO levels (a neurotransmitter inhibitor).

He described extroverts as typically liking parties, having many friends, and seemingly requiring the need to be around people to interact with. He stated they have high activity levels, and easy going. In contrast, introverts like to spend more time alone, tend to be more serious, prefer routines and predictability, and prefer to pursue quiet activities (Eysenck, 1975).

Neuroticism (N) consisted of the following traits: anxious, irritable, guilty, tense, lacking self-esteem, and moody. The higher scorers on Neuroticism tend to be worriers. They have been described to typically be anxious, have low moods, have problems regulating sleep, and experience somatization (Weinstock & Whisman, 2006). In addition, individuals who have high Neuroticism scores have overactivity on the negative emotions, making the high-N scorers more susceptible to emotional arousal than a low-N scorer. In addition, high-N individuals also have more difficulty regulating their emotions during and after an emotionally arousing event. In comparison, low-N scorers are characterized as being even-tempered and more able to regulate emotions during stressful events. These individuals also more easily return to their normal selves quickly after an upsetting event (Maltby, Wood, Day, Kon, Colley, & Linley, 2008).

The third trait in Eysenck’s taxonomy is psychoticism (P). Individuals who are high on P are described as aggressive, impulsive, creative, and at times, antisocial. These are individuals who lack the ability to empathize or see a perspective other than his or her own (Eysenck, 1975).
The PEN model has contributed to the study of personality several ways (Eysenck, 1997; Stelmack, 1997). First, it is a model that combines both descriptors of personality and its causal aspects (Eysenck, 1997; Stelmack, 1997). Second, the comprehensive description of the PEN model is easily observable through the four hierarchical levels and the clear distinction among those levels (Stelmack, 1997). The four-tiered hierarchical structure of Eysenck’s system identified super traits (P, E, N) at the top, followed by narrower traits at the second level, subsumed by habitual acts in the third level, and at the lowest level of the hierarchical structure are the specific acts. Third, its experimental approach to the study of personality makes the model more testable (Stelmack, 1997). Although experiments may not uniformly support the PEN model (Anderson & Revelle, 1994), overall, the PEN model has contributed to the advancement of the study of personality by calling attention of the importance of a scientific approach to personality.

**Cattell’s Taxonomy**

Raymond Cattell’s goal was to identify and measure the basic units of personality. In 1946, Cattell identified what he referred to as surface and source traits. Surface traits represent clusters of correlated variables and source traits represent the underlying structure of the personality. Cattell considered source traits much more important in understanding personality than surface traits (Hall & Lindzey, 1978). Cattell’s pioneering work began with 4,500 trait terms which he reduced to 35 variables. Through factor analytic techniques, Catell identified source traits from these 35 variables, which then became the primary basis for the 16 Personality Factor Model (16 PF Model): Abstractedness (imaginative versus practical), Apprehension (worried versus confident), Dominance (forceful versus submissive), Emotional Stability (calm versus high strung), Liveliness (spontaneous versus restrained), Openness to Change (flexible versus
attached to the familiar), Perfectionism (controlled versus undisciplined), Privateness (discreet versus open), Reasoning (abstract versus concrete), Rule Consciousness (conforming versus non-conforming), Self-Reliance (self-sufficient versus dependent), Sensitivity (tender-hearted versus tough-minded), Social Boldness (uninhibited versus shy) Tension (impatient versus relaxed) Vigilance (suspicious versus trusting), and Warmth (outgoing versus reserved).

Cattell’s hierarchical structure is based on the idea that all traits are intercorrelated in the real world (Cattell & Mead, 1989). Due to the natural intercorrelation of the basic 16PF primary researchers, through factor analysis found that these primary traits consistently amalgamated into five broad dimensions. (Ashton, 1998; Paunonen & Ashton, 2001). Cattell’s pioneering work was used as a basis by Fiske (1949) to construct a simpler description of personality. Fiske’s factor structures resemble what we now know as the Big Five. These five factors were reanalyzed by Tuples and Christal (1961). In every analysis, Tuples and Christal (1961) found five recurrent factors. These five factors, Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism, derived from Cattell’s original 35 variables, were consistently replicated by Norman (1963), Borgatta (1964), and Digman and Takemoto-Chock (1981), this five-factor structure. More recently, a similar set of Big Five factors has been rediscovered by other researchers (Costa and McCrae, 1992; Goldberg, 1990).

Five-Factor Model of Personality

The Big Five was originally derived in the 1970’s by two independent research teams – Paul Costa and Robert McCrae (at the National Institutes of Health), and Warren Norman (at the University of Michigan) and Lewis Goldberg (at the University of Oregon). The two teams arrived at the same conclusion: most human personality traits can be reduced to five broad dimensions of personality, across language and culture. In their respective studies, five
dimensions emerged from their analyses of the data. In current practice “Big Five” is often used interchangeably with the term Five-Factor Model (FFM). However, there are differences between the two empirically related yet conceptually distinct models, the Big Five and the FFM (John & Srivastava, 1999). The Big Five is based on a lexical hypothesis, meaning individual differences that are most salient and socially relevant will come to be encoded as terms in the natural language. On the other hand, the FFM is based on theoretical constructs, that is, traits are situated in a comprehensive model of genetic and environmental causes and contexts. Goldberg’s Big Five is comprised of Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Intellect. McCrae and Costa (1999) list Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (OCEAN) as factors of FFM. One of the strengths of the FFM is its ability to capture the commonalities among the numerous existing systems of personality traits (John & Srivastava, 1999). By offering a standard nomenclature, the FFM provides a viable model for facilitating the communication of empirical findings among researchers interested in studying personality traits. For this study, McCrae and Costa’s OCEAN model is used.

**Openness.** Atkinson, Atkinson, Smith, Bem, and Nolen-Hoeksema (2009) describe Openness to experience (*inventive/curious vs. consistent/cautious*) as possessing traits of curiosity, creativity, being imaginative, and having a willingness to explore the unfamiliar and consider new ideas and opportunities. Atkinson et al. identified one possible cause lies in individual differences in processing information. Individuals who are high on Openness are receptive to receiving information from a variety of sources, while those who are low on Openness have a more constricted view of their environment, possibly relying heavily on past experiences to interpret their environment.
**Conscientiousness.** Conscientiousness (efficient/organized vs. easy going/careless) was described as having a tendency to be organized and dependable, to show self-discipline, to act dutifully, to aim for achievement, and to prefer planned rather than spontaneous behavior. They also avoid breaking rules. These traits have been shown to result in desirable life outcomes such as a higher GPA, greater job satisfaction and security, higher grade point average, and more positive and committed social relationships (Langford, 2003). Two key characteristics have been identified as to why highly conscientious individuals succeed in the work domain. According to Lee, Kelly, and Edwards (2006), highly conscientious individuals do not procrastinate and they are exceptionally industrious, organized, and diligent (Lund, Tamnes, Moestue, Buss, & Vollrath, 2007).

**Extraversion.** Extraversion (outgoing/energetic vs. solitary/reserved), on the other hand is described as having high energy, being sociable, garrulous, and assertive, and feed off the energy of others. Extraverts also have a greater impact on their social environment, often asserting themselves and assuming leadership roles. Social attention has been identified as the cardinal feature of Extraversion by Ashton, Lee and Paunonen (2002). They gain energy from engaging in social interaction. Those who are low on Extraversion are called introverts. Not to be confused with shyness, introverts tend to be quiet, reserved, and less involved in social situations (Martin, 2014). They are not afraid of social situations. These individuals simply prefer to spend time alone and do not need as much social stimulation (Hammick & Lee, 2014).

**Agreeableness.** Agreeableness (friendly/compassionate vs. analytical/detached) is described as having the tendency to be trusting, helpful, compassionate and cooperative. Individuals low on Agreeableness are more suspicious, more aggressive, and antagonistic toward others. It is also a measure of whether a person is well-tempered or not. Individuals who are high
on Agreeableness possess traits such as kind, generous, fair, selflessness, sympathetic, courteous, gentle, tolerant, and good-natured (Digman, 1990; Goldberg, 1992) Hogan (1996) likened Agreeableness to likeability.

**Neuroticism.** Neuroticism (*sensitive/nervous vs. secure/confident*) is defined as having the tendency to easily experience unpleasant emotions (e.g., fear, sadness, embarrassment, disgust, anger, anxiety, depression, vulnerability). Neuroticism also refers to the degree of emotional stability and impulse control. Individuals who score low on Neuroticism are usually calm and even-tempered, someone who can be referred to as an emotionally intelligent person. A person characterized as emotionally intelligent is aware of and able to recognize the potential consequences of his or her various emotional states. Consequently, the individual is able to regulate and control his or her emotions. Schneiderjan and Kim (2005) found a strong correlation between emotional stability and academic success in a web-based business course.

**Personality and Test Anxiety**

Social cognitive theory explains psychosocial functioning in terms of the functional dependence between events or what is called triadic reciprocal causation (Bandura, 1986). Reciprocal causality happens when internal personal factors in the form of cognitive, affective and biological events; behavioral patterns; and environmental events have bi-directional influences on one another (Bandura, 1986). In this study of cognitive test anxiety, the three determinants that influence one another are goal orientation (behavior), personality (internal personal factor), and evaluative situation (environment).

Part of the social mechanism that contributes to test anxiety is modeling or observational learning during childhood. Test anxiety can develop through vicarious reinforcement or learning by observing the behavior of others. For example, an individual with high test anxiety will have
lower self-efficacy – prompting feelings of helplessness over the ability to influence the process and outcomes of evaluative events (Schunk, 1991). As a result, the individual then believes on a cognitive level that any efforts to succeed on any tests are ineffective. So, when other cognitive obstructions and distractions occur during the test, individuals with high test anxiety would likely quickly give up, especially when initial efforts prove unsuccessful in overcoming their worries.

Personality factors impact recourses and mechanisms in confronting tension and anxiety. Studies have found that the Big Five personality measures are significantly correlated with test anxiety. A study by Chamorro-Premuzic, Ahmetoglu and Furnham (2008) (N=388) of university students from the US and UK showed that there was a strong direct path from Neuroticism to test anxiety. Furthermore, the relationship between core self-evaluations (CSE) and test anxiety was fully accounted for by personality traits (Chamorro-Premuzic, Ahmetoglu, & Furnham, 2008). The following paragraphs list studies that specifically have linked Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism to test anxiety.

**Openness**: Studies examining the relationship between Openness and test anxiety have found that open-minded individuals use a wider set of strategies and learning techniques, including critical evaluation, in-depth analysis, and flexibility (Chamorro-Premuzic, 2011). Kumaran and Kadhiravan’s (2015) study of 133 ninth graders using the Friedben Test Anxiety Scale (Friedman & Bendas-Jacob, 1997) and the Big Five Locator (Howard, Medina & Howard, 1996) found Openness to experience had a significant negative association with the tenseness component of test anxiety.

**Conscientiousness**: Research on Conscientiousness and test anxiety found that conscientious people have a tendency to carry out tasks in a careful manner until their completion (Tross, Harper, Osher, & Kneidinger, 2000). An important part of Conscientiousness
involves the ability to adapt to goals that are set by others (Hough & Schneider, 1996). This aspect of Conscientiousness is important in academic achievement as the goals (i.e., tests, grades, other forms of assessments) are set by other people. Conscientiousness has been positively related to problem-focused coping skills (Zellars, Perrewe, Hochwarter, & Anderson, 2006). Skills associated with Conscientiousness such as self-discipline, organization, and need for achievement help prevent self-imposed strains associated with poor time management and lack of organization. Based on the study-skills deficit model of test anxiety we could presume that test anxious students are unlikely characterized as conscientious. Kumaran and Kadhiravan (2015) found significant negative association between Conscientiousness and the cognitive obstruction and tenseness components of test anxiety. Similarly, Piedmont (1995) concluded that this personality domain was relevant to test anxiety and Lim and Ortiz-Bance (2013) stated that Conscientiousness was inversely a significant predictor of the occurrence of test anxiety.

**Extraversion:** Studies on Extraversion and test anxiety found introverts had higher test anxiety levels. Individuals who are extroverted tend to be sociable, assertive, and have positive emotionality – traits which are not associated with anxiety. Arousal theory which states that the resting level of cortical arousal for introverts is higher (Eysenck & Eysenck, 1985). This denotes that introverts tend to avoid arousing stimuli, while extroverts tend to seek them. A study by Liu, Meng, and Xu (2006) took 538 senior high school students and examined the relationship of test anxiety, personality, and self-esteem using the Test Anxiety Scale (TAS), Eysenck Personality Questionnaire (EPQ), and Self-Esteem Scale (SES). They found that test anxiety levels were higher in students who were introverted. The Extraversion or Introversion (E) score was indirectly proportional to test anxiety. The prevalence of test anxiety in introverted students was higher than in extroverted students. Other studies had similar findings of Extraversion having a
negative association with test anxiety but not at a significant level (Kumaran & Kadhiravan, 2015).

**Agreeableness:** There is limited research on the relationship between Agreeableness and test anxiety. Studies which look at personality and test anxiety largely do not identify a significant relationship between Agreeableness and test anxiety. Agreeable people may often be high-performing individuals due to their willingness to adapt to and understand their environment (Mkoji & Sikalieh, 2012). Lim and Ortiz-Bance (2013), found Agreeableness predicted the occurrence of test anxiety in Filipino high school students. Similarly, Kumaran and Kadhiravan (2015) found significant negative association between Agreeableness and the social derogation component of test anxiety.

**Neuroticism:** Literature on the relationship between Neuroticism and test anxiety consistently finds that this personality trait has the strongest association with CTA. Neuroticism is associated with traits wherein individuals have bias towards negative stimuli, their attention initially directed towards threatening stimuli (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van IJzendoorn, 2007), overestimate negative outcomes (Eysenck & Derakshan, 1997), and perceive ambiguous stimuli as threatening (Calvo & Castillo, 2001). Liu, Meng, and Xu (2006) using the Test Anxiety Scale (TAS), Eysenck Personality Questionnaire (EPQ) and Self-Esteem Scale (SES) found that test anxiety levels were higher in students who were emotionally unstable, with apparent psychoticism or low self-esteem. Psychoticism (P) and Neuroticism (N) in students with test anxiety was significantly higher than their non-test anxious counterparts. They found that the prevalence of test anxiety in students with unstable emotion (81.4%) and in students with apparent psychoticism (84.1%) were also higher than in individuals with stable emotion and without psychoticism (41.0%) (Liu, Meng, & Xu, 2006).
In 2012, Das Gupta and Dutta examined whether personality and behavioral factors were associated with test anxiety among school-aged students (N=143). The Reactive-Proactive Aggression Questionnaire, Test Anxiety Inventory, Self-Report Emotional Intelligence Scale, and Junior Eysenck Personality Questionnaire were used to assess reactive and proactive aggression, test anxiety, emotional intelligence, and personality dimensions. Results showed that reactive aggression, Neuroticism, and Psychoticism were significantly positively correlated with test anxiety, whereas emotional intelligence was significantly negatively correlated with it. Similarly, Lim and Ortiz-Bance (2013) found Neuroticism predicted the occurrence of test anxiety in Filipino high school students. Furthermore, Kumaran and Kadhiravan’s (2015) study of 133 ninth graders using the Big Five Locator supported findings that negative emotionality is positively related with all three dimensions (social derogation, cognitive obstruction, tenseness) of test anxiety as measured by the Friedben Test Anxiety Scale.

**Achievement Motivation**

Motivation is an internal state that activates, directs, and sustains behavior (McInerney & McInerney, 2006). All students are influenced by motivation. Everyone has a need to achieve and a fear of failure, but these vary from person to person and from situation to situation. Individuals with need to achieve have high attitude toward success and work hard to ensure they are successful (Atkinson, 1974). They participate in the activity either for the sake of learning or improving their ability or with expectation of reward (Eskeles-Gottfried, Fleming, & Gottfried, 1998). On the other hand, fear of failure predisposes some students to have little desire to accomplish a certain goal (Atkinson, 1999) - they avoid failure at all costs. When students think they have low ability, to avoid failure and protect their self-worth, they may actually decrease effort (Alderman, 1999) or choose not to have a goal or even attempt the task (Atkinson 1974).
One of the studies conducted by Abu-Bakar, Tarmizi, Mahyuddin, Elias, Luan, and Ayub, (2010) on 1484 local university students who were majors in education, science, humanities, and agriculture/technical/engineering showed that there was a significant positive relationship between student's attitude and academic achievement. In addition, Mahyuddin, Elias, and Noordin (2009) found a low but significant positive correlation between students’ academic motivation and academic achievement.

Komarraju, Karau, Schmeck, and Avdic (2011) also supported this link in a study of 308 undergraduate students who reported their college Grade Point Average (GPA) and completed the Five Factor Inventory (NEO-FFI) and the Academic Motivations Scale (AMS). The result showed that intrinsic motivation was the strongest predictor of GPA when mediated by Conscientiousness (Komarraju et al., 2011). Additionally, a study by Law, Elliot, and Murayama (2012) found that performance-approach goals were correlated with high effort, high persistence, high level of aspiration, and high academic performance. The same study concluded that performance-avoidance goals correlated with disorganized study strategies, high test anxiety, low academic performance, and low intrinsic motivation.

Furthermore, studies focused on intrinsic motivation have found that children who have well developed intrinsic motivation are more likely than others to demonstrate strong conceptual learning, improved memory, positive affect while doing homework (Foiland, 2011), improved psychological well-being (Deci & Ryan, 2008), high overall academic achievement (Foiland, Oros, Smith, & Hirchert, 2012; Gottfried, 1990). Studies have also shown that students with higher intrinsic motivation at the beginning of the semester displayed more persistence throughout the year and were less likely to drop out of school (Hardre & Reeve, 2003).

Achievement Motivation Theory
According to Atkinson’s (1964) classical achievement motivation theory, when a person’s motive to achieve success is stronger than his motive to avoid failure the result of the conflict is to approach the task at hand. However, if the motive to avoid failure is stronger than the motive to achieve success, then the result will be avoidance behavior. High-test anxious individuals are predicted to be more motivated to avoid failure than they are to approach success (Zeidner & Matthews, 2005). Students who engage in failure-avoidance will most likely display poor study skills which lead to procrastination, underachievement, poor time management, lack of organization. In contrast, an underlying motive to achieve may influence the achievement goals (i.e., challenging oneself) and behaviors of individuals.

**Self-Determination Theory**

Self-Determination Theory is a theory of motivation that aims to explain individuals’ goal-directed behavior (Deci & Ryan, 1985; Ryan & Deci, 2000). The theory proposes three universal and innate psychological needs - competence, autonomy or freedom of choice, and psychological relatedness. Competence is defined as a subjective belief in one’s ability to perform well in a task. Perceived autonomy or freedom of choice is when individuals engage in an activity on their own free will, not because they feel pressured by other people (e.g., teacher, parent, coach) or external factors such as expectations. Psychological relatedness is that sense of shared experience and meaningful relationships. Individuals, therefore are motivated by activities which allow them to form and enjoy good relationships. People feel motivated by activities which allow them to satisfy those three needs. The Self-Determination Theory (SDT) proposes and distinguishes between different reasons as to why individuals are compelled to act. SDT is multidimensional, and does not view motivation merely as a dichotomy (i.e., intrinsic and
extrinsic motivation). SDT proposes that behavioral regulation towards a task can be driven intrinsically, extrinsically, or with amotivation.

Intrinsic motivation corresponds to the highest level of self-determination (Deci & Ryan, 1985). It is when individual tasks are carried out mainly for the satisfaction of completing the activity and from merely participating in the activity. Individuals with intrinsic motivation are also characterized by their desire to experience adventure and novelty, constant strive for excellence or improvement, and finding purpose or meaning in what one is doing (McInerney & McInerney, 2010). Furthermore, the SDT proposes three forms of intrinsic motivation: motivation for knowledge (i.e., understanding a newly introduced concept in a classroom setting, motivation for accomplishment (i.e., earning a Ph.D. for the pleasure of reaching a new personal objective), and for experiencing stimulation (i.e., engaging in a competition to experience a burst of adrenalin). Students who are intrinsically motivated are more likely to persist and try novel ideas in order to achieve the goals they have set for themselves (Vansteenkiste, Lens, & Deci, 2006).

Extrinsic motivation is experienced when engaging in an activity because it is a means to an end. It is the motive that keeps individuals working on a task through the application of external rewards (Ryan & Deci, 2000), therefore, once the prompts, external rewards or punishments were removed, an individual will unlikely continue with the activity (Biggs, 1991). In addition, extrinsic motivation often makes once compare his or her performance in comparison to others. Three types of extrinsic motivation were proposed by Deci & Ryan (1985; 1991): external regulation, introjected regulation, and identified regulation. The lowest level of self-determination is external regulation. This happens when the source of control is external to the individual. Introjected regulation happens when the individual only has partially internalized
previous external pressure. Lastly, the identified regulation involves an individual’s recognition and acceptance of the value and importance of a behavior, followed by the integration of the value and importance as though it had always been part of the self (Burton, Lydon, D’Alessandro, & Koetner, 2006). For example, a student may not like to pursue graduate studies but may decide to go because he or she feels that a graduate degree is important to enter the job market in the field of psychology. However, extrinsic motivation can backfire for students who do not consider the extrinsic motivator equivalent (too demanding or not enough of a reward) to the time and effort invested. Lepper, Corpus, and Iyengar (2005) found the effects of prolonged extrinsic motivation may lead to a reduction in one’s sense of competence and a subsequent loss of interest in the task.

Lastly, Deci and Ryan (1985) identified a third motivational set, amotivation, which refers to the relative absence of motivation. Amotivated individuals are neither intrinsically nor extrinsically motivated – they do not perceive contingencies between outcomes and their own actions (Deci & Ryan, 1985). Amotivated individuals experience feelings of incompetence and they perceive their behaviors are caused by external influences and factors. Abramson, Seligman and Teasdale (1978) likened this final form of motivation to the concept of learned helplessness. Amotivation towards test performance may result in a person not doing well on a test, which subsequently lowers their grades, and then possibly dropping their studies.

**Achievement Goals**

Goal orientation theory is a social-cognitive theory of achievement motivation which originated in the early 20th century. The focus of goal orientation theory is on examining what determines or influences the level of participation and individual exerts when accomplishing academic work. Nicholls (1975) posited the most important factor of achievement motivation
was how an individual chose to define success. He had two conceptions of success, task involvement and ego involvement. Task involvement is when one compares his or her current performance to past performance. Ego involvement happens when an individual compares his or her current performance to that of others. A different approach in studying achievement motivation was taken by Dweck. She and her colleagues explored achievement motivation from a developmental perspective (Dweck & Elliot, 1983; Dweck & Leggett, 1988). Dweck’s (1986) research findings showed that when children came upon difficult tasks, they would make negative comments about the task or their ability. The children would also use maladaptive strategies, such as failing to establish reasonable goals or maintaining effort to accomplish those goals. Eventually, the children develop feelings of helplessness. Dweck (1986) postulated that children who approach a task in pursuit of mastery held learning goals. These children seek challenges and persist despite of obstacles. In contrast, children who approach a task to gain favorable judgements of their competence or avoid negative judgements from others regarding their competence held performance goals. These children avoid challenges and falter or have low persistence in the face of difficulty.

A recent cognitive-dynamic conceptualization of achievement goals view competence from two dimensions – definition and valence (Maehr & Nicholls, 1980). The definition dimension forms the basis of what distinguishes mastery from performance. Mastery orientation is competence relative to an intrapersonal or absolute standard. Individuals who are mastery-oriented are interested in self-improvement, becoming skilled at or proficient in the task at hand, and tend to compare their current level of achievement to their prior personal achievement. Mastery goals correspond to intrinsic interests in personal learning, which arguably are similar to intrinsic motivation. On the contrary, performance orientation is competence relative to a normal
standard. Individuals who are performance-oriented use other people’s achievements as points of comparison and are interested in outperforming others and competition. Comparatively, individuals who pursue performance goals similarly are extrinsically motivated because the emphasis is on achieving goals external to the self.

Dykman (1998) proposed that one’s goal orientation determines the manner in which an individual appraises and interprets events. Inversely, when people with learning goals encounter stressful situations, they seek to better themselves by learning from the experience (Baer, Grant, & Dweck, 2008). Similarly, when dealing with negative feedback, these individuals tend to use constructive strategies such as increasing effort, seeking help, and being open to information about their mistakes (Kaplan & Maehr, 2007). In contrast, when people with performance goals encounter stressful situations, they seek to avoid evidence of low ability because they associate this with low self-worth (Grant & Dweck, 2003). When dealing with negative feedback, they tend to use defensive strategies such as withdrawing effort, making excuses, and altogether avoiding what they perceive to be difficult tasks (Urdan, Ryan, Anderman, & Gheen, 2002). Thus, mastery goal oriented individuals are less likely to experience the debilitating consequences often associated with performance-goals.

They are facilitative of intrinsic motivation because they foster perceptions of challenge, encourage task involvement, and support self-determination (Elliot & Harackiewicz, 1996). Performance goals, on the other hand, undermine intrinsic motivation. It does this by increasing anxiety, disrupting concentration, dividing attention between task-relevant and irrelevant thoughts, and intensifying perceptions of threat (Elliot & Harackiewicz, 1996).

The other fundamental dimension of competence is valence. Valence forms the basis of distinction between approach and avoidance goals (Elliot & Harackiewicz, 1996). Competence
focused on a positive or desirable possibility (i.e., success) evoke approach behavioral predispositions. Competence focused on a negative or undesirable possibility (i.e., failure) evoke avoidance behavioral dispositions.

Combining the two dimensions, a 2 x 2 achievement goal framework emerges: mastery-approach, master-avoidance, performance-approach, and performance-avoidance goals (Elliot & McGregor, 2001). Individuals with mastery-approach goals are likely to choose tasks which maximize opportunities for learning and seek out challenges. Those with performance-approach goals are likely to choose tasks which maximize opportunities to show competence. Individuals with performance-avoidance goals are focused on avoiding tasks that would make them look incompetent or below par when compared to others. Those with mastery-avoidance goals are likely to focus on striving not to stagnate or not to lose prior skills and abilities. However, due to its ambiguity and counterintuitive nature, more recent studies have eliminated the mastery-avoidance goal (Ciani & Sheldon, 2010). Ciani and Sheldon further posited that mastery-avoidance goals may be uncommon and that high ratings may indicate misinterpretation of the item rather than actual avoidance goals.

Achievement goals are presumed to guide students’ behaviors, cognitions, and affect in an academic setting (Ames, 1992). It could be potential explanatory variables of students’ coping with an evaluation, such as an exam. In an academic setting, mastery-approach goals were unrelated to test anxiety (Elliot, McGregor, & Gable, 1999). Surprisingly, although achievement was low for performance-approach students (Siberis, 2005), performance-approach goals also were unrelated to anticipatory test anxiety (Elliot, McGregor, & Gable, 1999). On the other hand, individuals who have performance-avoidance goals engage in surface processing and are often disorganized (Elliot, McGregor, & Gable, 1999). Performance-avoidance goals have been linked
to threat appraisal and anticipatory test anxiety (McGregor & Elliot, 2002). Similarly, mastery-avoidance goals are related to anticipatory test anxiety and disorganization in exam preparation (McGregor & Elliot, 2002). In 2010, Putwain, Woods and Symes, investigated the relationship between test anxiety, achievement goals and perceived academic competence, parental pressure/support, and teachers’ achievement goals (N=175). Putwain, Woods, and Symes (2010) found results revealed student mastery-avoidance goals, parental pressure, perceived academic competence, and teacher’s performance-avoidance goals were related to worry and tension (Putwain, Wood, & Symes, 2010).

**Goal Orientation and Test Anxiety**

Tracy (1993) observed that whatever we accomplish is determined by the way we think and use our mind. Studies have shown that people with limited self-beliefs (Simon, 1988) and low self-efficacy (Alderman, 1999) often lack confidence, are negative and pessimistic and they expect to fail. Since exam results are decisive for educational and occupational careers today, test anxiety remains an important variable in basic research into cognitions and emotion (Dutke & Stober, 2001) as well as achievement motivation (Elliot & McGregor, 1999), playing major role for student's academic self-concept and career advancement (Pekrun, Gotz, Titz, & Perry, 2002; Stober & Pekrun, 2004). High test anxiety has also been observed to be significantly associated with low achievement motivation (Sud, 2001).

Smith, Arnkoff, and Wright (1990) posited that test anxiety was related to psychological variables including self-efficacy and outcome expectations. Smith, Arnkoff, and Wright’s (1990) findings suggested that cognitive processes, social learning factors, and academic skills are important factors in test anxiety; however, using hierarchical regression analyses, motivation emerged as the single most important factor contributing to test anxiety. A study by Bembenutty
(2009) supported their findings that extrinsic motivation was a positive and significant predictor of test anxiety. Furthermore, Bembenutty (2009) concluded that patients with clinical levels of test anxiety clearly differ with regard to their learning and achievement motivation from students with normal levels of test anxiety. Highly test-anxious individuals are motivated to protect their egos and self-esteem and tend to avoid failures. Performance-avoidance goals in relation to test anxiety have been linked to loss of intrinsic motivation (Elliot, 1999). Therefore, it was recommended to design interventions for test anxiety which focus on changing dysfunctional motivational dispositions and to increase attention on internal reference standards (Herzer, Wendt, & Hamm, 2014).

In a 2011 study by Urhahne, Chao, Florineth, Luttonberger, and Paechter, the researchers examined the consequences of students’ mathematical performance potential. Results showed that students whose potentials were underestimated expressed more test anxiety and did not perceive themselves to be as academically capable as overestimated students. Contrary to previous studies, Rastegar, Akbarzadeh, and Heidari (2012) identified that test anxious persons have low intrinsic and extrinsic motivation but had high levels of amotivation. Results showing test anxiety positively correlating with amotivation were supported by Saravanan, Kingston, and Gin (2014) when studying 154 first year undergraduate medical students. However, in both studies, they concluded that test anxiety was a significant predictor of amotivation, not amotivation predicting test anxiety.

Numerous studies have documented general deleterious effects of extrinsic motivation on learning outcomes. Students who are extrinsically motivated are more likely to have lower academic achievement (Becker, McElvany, & Kortenbruck, 2010; Lepper, Corpus, & Iyengar, 2005) and to engage in surface learning (Biggs, 1991), experience greater anxiety (Wolters, Yu,
& Pintrich, 1996), report less positive emotions in school (Sénécal, Koestner, & Vallerland, 1995), and have a poorer ability to cope with failures (Deci and Ryan, 2000). Interestingly, test anxiety studies have resulted in similar outcomes. In addition, Tallis, Eysenck, and Matthews (1991) state that worriers potentially have elevated evidence requirements - they must know the perfect answer to the problem or they do not respond at all. These findings were supported by Einat (2000) who claimed that debilitating test anxiety is caused by having high personal standards and still expecting maximum levels of success but are exceedingly apprehensive that they cannot meet their own standards, which is characteristic of perfectionism (Zeidner & Matthews, 2005). A study by Stoeber, Feast and Hayward (2009) found that socially prescribed perfectionism (SPP) is a maladaptive form of perfectionism associated with higher anxiety in exams and being driven by extrinsic motivation when studying. SPP as defined by Masson, Hoyois, Cadot, Nahama, Petit, & Anseau (2004) is the subjective belief that exaggerated expectancies of others are imposed, thereby uncontrollable. This perceived loss of control then leads to anxiety, feelings of failure, and feelings of helplessness, which they indicated corresponded to extrinsic motivation (Masson et al., 2004). They defined SOP as perfectionism that involves adhering to self-imposed unrealistic standards, coupled with rigorous self-evaluation and an inability to accept flawed outcomes, in pursuit of subject mastery. Similarly, self-oriented perfectionism (SOP) was associated with intrinsic motivation for studying and with both higher and lower anxiety in exams (Stoeber, Feast, & Hayward, 2009).

Reeve, Jang, Carrell, Jeon, and Barsh, (2004) concluded that student motivation is of high quality when primarily based on intrinsic, integrated and identified regulations, and is of poor quality when based on external and introjected regulations. Thus, intrinsic motivation, unlike
extrinsic motivation, is related to more positive academic and psychological outcomes (e.g., test anxiety) (Reeve et al., 2004).

**Goal Orientation and Personality**

The relationship between state test anxiety and personality states may be best explained using the framework of approach and avoidance orientation. The primal tendency for organisms to approach positive stimuli and avoid negative stimuli is fundamental to understanding behavior and motivation (Elliot, 2006; Gray, 1991). Personality states are expected to shift depending upon which orientation functions as motivation. Approach orientation motives are consistent with Conscientiousness, Extraversion, Agreeableness, and Openness (Carver & White, 1994; Elliot & Thrash, 2002; Read, Monroe, Brownstein, Yang, Chopra, & Miller, 2010). Events driven by mastery or learning goals should be linked to Openness and Conscientiousness (McCrae & Costa, 1998). While avoidance orientation motivated experiences often result in Neuroticism or emotional instability (De Young, Quilty, & Peterson, 2007; McCrae & Costa, 1987).

A study by Law, Elliot, and Murayama (2012) found that performance-approach goals were correlated with high effort, high persistence, high levels of aspiration, and high academic performance. On the contrary, performance-avoidance goals correlated with disorganized study strategies, high test anxiety, low academic performance, and low intrinsic motivation (Law, Elliot, Murayama, 2012). Another study examining the relationship between the Big Five and a two-factor model of achievement motivation (N=777) found that Conscientiousness, Openness, and Extraversion were positively associated with intrinsic achievement motivation, whereas Extraversion, Conscientiousness, and Neuroticism were positively related to extrinsic achievement motivation (Hart, Stasson, Mahoney, & Story, 2007). In the same study,
Agreeableness was also found to be negatively associated with extrinsic achievement motivation. Conscientiousness was both positively and negatively related to both intrinsic and extrinsic motivation (Hart et al., 2007). More recently, Komarraju et al. (2011) investigated the effects of Big Five personality traits on 217 college students’ motivational states and academic performance. As a result, they found that Conscientiousness and Openness were positively related to intrinsic motivation; Conscientiousness and Extraversion explained variance in extrinsic motivation (Watanabe & Kanazawa, 2009).

Common trait descriptors of Openness are original, imaginative, creative curious, adventurous. In addition, people who are high on Openness tend to accept and respect new experiences and desire to explore and understand things that are unfamiliar to them. It then can be assumed that they would vigorously pursue challenge and have patterns of thoughts and behaviors aligned with intrinsically motivated individuals.

Conscientiousness is frequently associated with being achievement-oriented, hardworking, meticulous, careful, thorough, responsible, organized, scrupulous, and persevering. According to Barick and Mount (1991), achievement and self-determination are major components of Conscientiousness, thus making it reasonable to assume that this personality factor can also have a direct effect on intrinsic motivation. Furthermore, in a study (N=113) by Carbonneau, Vallerand and Lafreniere (2012) the curious personality style (which may be likened to Openness) was a significant predictor of intrinsic motivation to know, the achieving-oriented personality (which may be likened to Conscientiousness) significantly predicted intrinsic motivation toward accomplishment, and sensation-oriented personality (which has similar characteristics with Extraversion) significantly predicted intrinsic motivation to experience stimulation. A study by Masson et al. (2004) looked at the relationship between
perfectionism and motivation (i.e., intrinsic and extrinsic). The Multidimentional Perfectionism Scale was used to distinguish Self-Oriented Perfectionism (SOP), Socially Prescribed Perfectionism (SPP), and Perfectionism Oriented to Others (POO). They defined SOP as perfectionism which involves self-imposed unrealistic standards with an inability to accept faults in order to know and master a subject, which they stated corresponded to intrinsic motivation. SPP as defined by Masson et al. (2004) is the exaggerated expectancies of others which are subjectively believed as imposed and uncontrollable leading to anxiety, feelings of failure or helplessness, which they indicated corresponded to extrinsic motivation. They described POO as having unrealistic demands and expectations from significant others. They viewed test anxiety as a defense mechanism to ward off negative self-evaluation. Test anxiety was seen as a manifestation of perceived incompetence, particularly in females (Masson et al., 2004). Masson et al.’s (2004) findings supported Conscientiousness as having a positive relationship with intrinsic motivation and Neuroticism having a positive relationship with extrinsic motivation. This findings were supported by cross-sectional studies on the relationship between perfectionism and the Big Five personality traits (Enns and Cox, 2002; Molnar, Reker, Culp, Sadava, & DeCourville, 2006).
CHAPTER III

Participants

The data used in the study were collected from participants recruited through a research participant pool in the Department of Educational Psychology at Ball State University. This research pool draws from a variety of courses and participation in the research pool is one of several options required to meet a course requirement. The students in the research pool traditionally are predominantly Caucasian and female.

For the current study, the initial sample consisted of 500 students (81.2% female and 18% male). Excluding graduate students and removing participants with missing data (listwise deletion), the final sample consisted of 458 students (81.2% female and 18% male) of whom 8.1% were freshmen, 32.3% were sophomores, 33.8% were juniors, and 25.8% were seniors. Student grade point average (GPA) mean was 3.20 (SD=0.52). Their mean age was 20.77 (SD=2.70), and 83.8% were 22 or younger. Self-reported race categories were consistent with the university population: 90% Caucasian, 4.4% African-American, 2% Hispanic, and 1% Asian Pacific Islander. The remaining members (approximately 2% of the sample) identified as multiracial, “other” or declined to respond.

Measures

Cognitive Test Anxiety Scale – Revised Short Form. The Cognitive Test Anxiety Scale-Short Form (CTA-SF) is a modification of the original Cognitive Test Anxiety Scale (CTAS) developed by Cassady and Johnson (2002). While the CTAS was demonstrated to be a reliable and valid measure of cognitive test anxiety (Cassady, 2001; 2004), analyses
conducted during a cross-cultural validation study in the United States and Argentina of the CTAS revealed that the use of reverse-coding on the original scale produced an unintended two-factor model representing cognitive test anxiety and a construct they termed as test confidence (Furlan, Cassady, & Perez, 2009).

The Cognitive Test Anxiety Scale-Revised (CTAR) was created to overcome the issues with the reverse-coded items as well as expand the scale to more effectively review all three phases in the Learning-Testing Cycle (Cassady & Finch, 2014). In the process of that scale validation, the short-form version used in this study was also explored (Cassady & Finch, 2014). The short form scale is composed of seventeen items that are common to both the original CTAS and the CTAR. Results of exploratory factor analyses revealed eight (8) items as potential detractors from a unitary measure represented primarily by the first factor in the EFA. Confirmatory factor analysis used two proposed models: two-factor with 24 items, and one-factor with 17 items. The overall model fit statistics revealed both the one- and two-factor solutions were viable with the fit for the one-factor model being slightly better than that of the two-factor model. Overall scale reliability for the reduced single-factor 17-item scale revealed a strong internal consistency value of .96 (Cassady & Finch, 2014).

Participant responses to the CTA-SF are completed with a 4-point Likert-type response that includes the following response options: 1 – “Not typical of me”; 2 – “Somewhat typical of me”; 3 – “Quite typical of me”; 4 – “Very typical of me”. The score range obtainable by any respondent to the CTA-SF falls between 7 and 68.

**Motivated Strategies for Learning Questionnaire.** The Motivated Strategies for Learning Questionnaire (MSLQ) was designed to assess motivation orientations and learning strategies of college students enrolled in a course. The Motivated Strategies for Learning
Questionnaire (MSLQ) is an 81-item instrument developed by Pintrich, Smith, Garcia, and McKeachie (1991). It is divided into two broad sections, motivation and learning strategies. The motivation section consists of six subscales, and the learning strategies has nine. Students rate themselves on a seven-point Likert scale from 1 (not at all true of me) to 7 (very true of me).

According to the MSLQ manual, the original MSLQ validation study, Pintrich et al. (1991) used scores from 356 midwestern college students to assess the survey. They reported internal reliability alphas for the subscales ranging from .52 to .93. Pintrich et al. based the motivation scales on a socio-cognitive model of motivation with three main domains: expectancy (belief that one can successfully accomplish a task); value (the reason one engages in a task); and affect (the emotional aspects of learning). The MSLQ contains two expectancy domains: self-efficacy for learning and performance (confidence that one’s abilities are sufficient to succeed, α=.93), and control of learning beliefs (belief that outcomes depend on effort and ability rather than external factors, α=.68). The three value domains are intrinsic orientation (studying for the purpose of mastery, α=.74), extrinsic goal orientation (studying for grades and approval, α=.62), and task value beliefs (studying because the course content will be useful, α=.90). Test anxiety is the only affect domain. For the purposes of this study, two of the motivation value subscales were used. Specifically, student responses to the intrinsic goal orientation (items 1, 16, 22, and 24) and extrinsic goal orientation (items 7, 11, 13, 30) were included.

**Big Five Inventory.** Oliver John (1991) constructed a 44-item self-report instrument that measures the Big Five dimensions: Openness (10 items, e.g. “I am someone who has an active imagination”), Extraversion (8 items, e.g. “I see myself as someone who is talkative”), Neuroticism (8 items, e.g. “I see myself as someone who gets nervous easily”), Agreeableness (9 items, e.g. “I am someone who has a forgiving nature”), and Conscientiousness (9 items, e.g. “I
am someone who perseveres until the task is finished”). Students rate themselves on a five-point Likert scale from 1 (disagree strongly) to 5 (agree strongly). In U.S. and Canadian samples, the alpha reliabilities of the BFI scales typically range from .75 to .90 and average above .80; .81 for openness, .88 for extraversion, .79 for neuroticism, .79 for agreeableness, and .82 for conscientiousness. The BFI has significant convergent and divergent relations with other Big Five measures (John & Srivastava, 1999).

**Procedure**

All data collection from participants occurred in a manner consistent with procedures approved the university’s Institutional Review Board (IRB). Data collection occurred online and participants were prompted to read and digitally sign an informed consent document. Participants were informed that they could take breaks whenever they wish and could withdraw from the study at any time and for any reason. Only after agreeing to the conditions of the study were students allowed to proceed to the materials. Students were first prompted to provide demographic data including age, gender, ethnicity, undergraduate level, and cumulative university GPA. Subsequently, participants completed the following self-report instruments in the same order: the Cognitive Test Anxiety Scale- Revised Short Form (CTAR-SF; Cassady & Finch, 2015), Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, 1988), and the Big Five Inventory (BFI; John, Donahue & Kentle, 1991). Participants were also given additional measures as part of a larger study that are not under investigation in the present study. Participants received 1 research participation credit for their educational psychology course, and most students completed all study materials within 35-40 minutes.
Statistical Analysis

Descriptive analysis was used to describe the basic features of the data (i.e., demographics). Preliminary analyses of the correlation of personality factors, goal orientation measures, and cognitive test anxiety were conducted. Regression analyses and mediation analyses were conducted to examine the major research questions. The Harman’s single-factor test was performed to test the presence of common method effect. All the variables were entered into an exploratory factor analysis, using principal axis analysis with varimax rotation to determine the number of factors that are necessary to account for the variance in the variables. If a substantial amount of common method variance is present, either (a) a single factor will emerge from the factor analysis, or (b) one general factor will account for the majority of the covariance among the variables (Martin, & Noorderhaven, 2006; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To test the level of internal consistency, Cronbach’s alpha was computed for each measure (Cronbach, 1951).

For the primary analyses, regression analysis was performed in order to generate an equation to describe the statistical relationship between the predictor variables, personality and goal orientation, and the response variable, CTA. Predictor variables that were found to have a meaningful and significant standardized regression weight in this analysis were maintained in the primary SEM mediation analysis because it met the first criterion for mediation analysis, indicating a relationship with the outcome variable. Finally, common fit indices (i.e., chi-square test statistics $\chi^2$, chi-square by degrees of freedom $\chi^2/\text{df}$, Bentler Comparative Fit Index [CFI], and root mean square error of approximations [RMSEA]) were examined to see the fit of the hypothesized partial and fully mediated models. The following values were used as guidelines to determine good model-data fit. First, $\chi^2$ and $\chi^2/\text{df}$ test is not statistically
significant. However, Kline (2011) cautioned that large sample sizes will cause most chi-square-base statistics to almost always report a statistically significant difference between the observed data and model expectations. This will lead the researcher to erroneously conclude that it is a poor fit between observed data and model expectations regardless of the true situation (Kline, 2011). Second, CFI values that approach 1 indicate acceptable fit. CFI is not too sensitive to sample size (Fan, Thompson, and Wang, 1999). RMSEA values indicate better model fit when results are closer to zero and higher values indicate worse fit. Browne and Cudeck (1992) state RMSEA ≤ .05 indicates close approximate fit, .05 > RMSEA < .08 suggest reasonable error of approximation, and RMSEA ≥ .1 suggests poor fit.
CHAPTER IV

RESULTS

Common Method Variance

A potential weakness of research such as this, where all data were collected using the same method (self-reports in this case) is that of common method variance, a systematic error that may distort relationships and coefficients (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). One diagnostic test that can be used to identify the presence of a common method variance is the Harman single factor test. Items are entered into a principal axis factoring and the presence of a general factor accounting for a large portion of covariance may indicate the presence of systematic error related to a common method (Podsakoff et al., 2003). When all BFI, MSLQ, and CTA-SF items were entered into a principal axis factoring with a varimax rotation (Kaiser-Meyer-Olkin (KMO) =.584), three factors were extracted with eigenvalues greater than 1.0, rather than a single factor. The three factors together accounted for 33.84% of the total variance; the first factor accounted for 18.67% of the variance. This finding would suggest that common method variance was not producing a systematic error in this research.

Descriptive Statistics and Bivariate Correlations

Descriptive statistics and bivariate correlations for personality, goal orientation, and cognitive test anxiety are reported in Table 1. Previous research has demonstrated that the Big Five Inventory (BFI) includes item content relevant to the Trait Descriptive Adjectives (TDA; Goldberg, 1992), the 40-item mini marker version of the TDA (Saucier, 1994), and the NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Results from confirmatory factor
analyses conducted by John, Naumann and Soto (2008) indicated that BFI and TDA showed the strongest overall convergence, followed by BFI and NEO-FFI, and TDA and NEO-FFI showing the weakest overall convergence. The BFI achieved equivalence with the TDA for Extraversion and Openness with NEO-FFI for Agreeableness and Neuroticism, and converged well with both TDA and NEO-FFI for Conscientiousness. Results from confirmatory factor analyses conducted by Pintrich et al. (2003) indicated that the MSLQ showed reasonable factor validity. In addition, the means for extrinsic goal orientation and intrinsic goal orientation (showed significant predictive validity with final grades (Pintrich et al., 1993). During the development of the original CTAS, it was compared with the Sarason (1984) Reactions to Tests, Spielberger’s Test Anxiety Inventory (1980) and Benson’s Revised Test Anxiety scale (Benson, Moulin-Julian, Schwartz, Seipp, & El-Zahhar, 1992). Cassady and Johnson (2002) identified high correlations between all test anxiety scales and determined that the Cognitive Test Anxiety scale was measure the same basic construct as the existing scales. To test the level of internal consistency - that is how closely related a set of items function as a group - Cronbach’s alpha was computed for each measure (Cronbach, 1951). Cronbach’s alpha determines the average correlation of items in a survey instrument to gauge its reliability with 0.70 as the accepted cutoff value for being acceptable (Streiner & Norman, 1989). The alpha coefficient of BFI’s openness is 0.75, BFI’s conscientiousness is 0.70, BFI’s extraversion is 0.87, BFI’s agreeableness is 0.74, BFI’s neuroticism is 0.81, MSLQ’s extrinsic goal orientation is 0.63, MSLQ’s intrinsic goal orientation is 0.61, and CTA-SF is 0.96. By this criteria the CTA-SF and BFI showed high reliability, while the MSLQ measures were below the considered acceptable range. In addition to computing the alpha coefficient of reliability, the dimensionality of the scale was also investigated using Dillon-
Goldstein’s rho. Composite reliability values of BFI’s Openness, MSLQ’s extrinsic and intrinsic motivation, and CTA-SF were all above the suggested value of 0.7.

Table 1

*Bivariate Correlations and Reliability Coefficients for Personality, Goal Orientation, and Cognitive Test Anxiety (CTA)*

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Openness</td>
<td>--</td>
<td>.136*</td>
<td>.202*</td>
<td>.166*</td>
<td>-.081</td>
<td>.061</td>
<td>.204*</td>
<td>-.141*</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>--</td>
<td>.144*</td>
<td>.481*</td>
<td>-.076</td>
<td>.283*</td>
<td>.155*</td>
<td>-1.46*</td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>--</td>
<td>.203*</td>
<td>-.330*</td>
<td>.024</td>
<td>.031</td>
<td>-.061</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>--</td>
<td>-.205*</td>
<td>.253*</td>
<td>.084</td>
<td>-.094*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroticism</td>
<td>--</td>
<td>.063</td>
<td>-.097*</td>
<td>.366*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic Goal</td>
<td>--</td>
<td>.163*</td>
<td>.116*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intrinsic Goal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation</td>
<td>--</td>
<td>-.046</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Test Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cronbach’s α</td>
<td>0.75</td>
<td>0.70</td>
<td>0.87</td>
<td>0.74</td>
<td>0.81</td>
<td>0.63</td>
<td>0.61</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Note. *p < .05. ** p < .01.

As seen in Table 1 strong significant positive correlation was observed between conscientiousness and agreeableness and a moderate significant positive correlation between cognitive test anxiety and neuroticism. Weak, but significant, positive correlations were observed between openness and conscientiousness, openness and intrinsic motivation, openness and conscientiousness, openness and agreeableness, conscientiousness and extraversion, conscientiousness and extrinsic motivation, conscientiousness and intrinsic motivation, cognitive test anxiety and agreeableness, extrinsic and intrinsic motivation, agreeableness and extrinsic motivation, and cognitive test anxiety and extrinsic motivation (See Table 1). Weak, but significant, inverse correlations were reported between neuroticism and intrinsic motivation,
neuroticism and agreeableness, cognitive test anxiety and openness, cognitive test anxiety and agreeableness, cognitive test anxiety and conscientiousness, and cognitive test anxiety and intrinsic motivation. The relationship between extraversion and neuroticism was inversely moderately significant (See Table 1). As expected, significant inverse relationships were reported between personality, with the exception of neuroticism, and CTA. Also consistent with predictions, a significant positive relationship was reported between extrinsic motivation and cognitive test anxiety (see Table 1).

Table 2

*Regression Coefficient Summary: Personality and Cognitive Test Anxiety (CTA)*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness</td>
<td>-.132</td>
<td>-3.063</td>
<td>.002</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.127</td>
<td>-2.651</td>
<td>.008</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.107</td>
<td>2.357</td>
<td>.019</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.040</td>
<td>.804</td>
<td>.422</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.388</td>
<td>8.691</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Regression Analysis**

Regression analysis was performed in order to generate an equation to describe the statistical relationship between personality variables and the response variable, CTA. Predictor variables that are found to have a meaningful and significant standardized regression weight in this analysis will be maintained in the primary analysis because it will meet the first criterion for mediation analysis, indicating a relationship with the outcome variable. As demonstrated in
Table 2, openness, conscientiousness, and neuroticism were significant at the $p<.01$ level. The beta weight for extraversion combined with (a) no statistically significant correlation with cognitive test anxiety and (b) no prior research supporting the inclusion precluded keeping that variable in the model. Similarly, agreeableness was omitted from the final analysis as no direct relationship was observed between this predictor variable and CTA.

A second regression analysis was conducted to examine the predictive strength of the two motivation variables, examining the second requirement for the proposed mediational analysis. As illustrated in Table 3, only extrinsic goal orientation met the level of expectation needed to be retained in the next phase of the analysis.

Table 3

<table>
<thead>
<tr>
<th>Regression Coefficient Summary: Goal Orientation and Cognitive Test Anxiety (CTA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
</tr>
<tr>
<td><strong>t</strong></td>
</tr>
<tr>
<td><strong>p</strong></td>
</tr>
<tr>
<td>Extrinsic Goal Orientation</td>
</tr>
<tr>
<td>Intrinsic Goal Orientation</td>
</tr>
</tbody>
</table>

**Mediational Analysis**

The main aim of this study was to establish whether goal orientations played a mediating role in the CTA-personality relationship. Variables were selected for meditational analysis using Baron and Kenney’s (1986) preconditions that significant relationships should be observed between predictor, outcome and mediator variables. Based on regression analysis, the predictor variables, openness, conscientiousness, extraversion, and neuroticism and mediator variables, extrinsic and intrinsic motivation and between mediator variable, intrinsic motivation and the outcome variable, CTA. The meditational analysis proceeded using personality
measures openness, conscientiousness, agreeableness, and neuroticism as predictor variables, extrinsic motivation as the meditational variable, and CTA as the outcome variable. Three structural equation models were tested: a direct (non-mediational) model in which paths were specified separately from personality to CTA (Model 1), a fully mediated model in which paths were specified from personality to CTA through goal orientation (Model 2) and a partially mediated model in which there were paths specified from personality to CTA through goal orientation (Model 3).

The next step in testing the hypothesis for a mediated relationship was to examine both partial and fully mediated models of regression. In the full mediation model (see Figure 5), the three personality variables (Openness, Conscientiousness, and Neuroticism) were modeled to predict cognitive test anxiety level only through extrinsic goal orientation. This model tests the proposition that all of the variance explained by the personality variables can be accounted for by extrinsic goal orientation (EGO) – that is, EGO fully mediates the relationship between the personality variables and CTA. Examination of model fit indices (Table 4) demonstrate that the model had poor fit. As such, this model was determined to be a poor solution for the data.

![Figure 5. Standardized regression estimates for the fully mediated model.](image)

The next step was to test the partial mediation model, which predicts that only a portion of the CTA variance explained by the personality variables can be accounted for by EGO.
Analyses reported in Table 4 indicate that only the partial mediation model showed acceptable fit indices (RMSEA ≤ .08; CFI ≥ 0.95) and thus is the accepted final model.

Table 4

*Fit Indices for Full and Partial Mediation Models*

<table>
<thead>
<tr>
<th>Models</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\chi^2$/df</th>
<th>CFI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully mediated model</td>
<td>102.080**</td>
<td>3</td>
<td>.000</td>
<td>.328</td>
<td>.269</td>
</tr>
<tr>
<td>Partially mediated model</td>
<td>3.424</td>
<td>2</td>
<td>.180</td>
<td>.99</td>
<td>.039</td>
</tr>
</tbody>
</table>

*Note.* *p < .05. **p < .01.

The partially mediated model is diagrammed in Figure 6 accounting for 18.7% of variance in CTA results. As expected, a significant positive relationship was observed between extrinsic motivation and CTA (β = .13, p < .001) and neuroticism and CTA (β = .34, p < .001). Consistent with the hypotheses significant negative relationships were shown between openness and CTA (β = -.10, p < .001) and conscientiousness and CTA (β = -.13, p < .001). Contrary to what was hypothesized, a positive correlation was observed between conscientiousness and extrinsic motivation (β = .22, p < .001). The standardized indirect effects of conscientiousness on CTA was .02. The standardized direct effects of conscientiousness on CTA was -.13. The standardized total effect of conscientiousness on CTA was (.02) + (-.13) = -.11. As predicted, CTA levels decrease when attention is focused solely on the effects of conscientiousness on CTA that is not mediated by goal orientation. However, this model tests the proposition that part of the variance explained by the personality variables can be accounted for by extrinsic goal orientation (EGO). This analysis suggests that extrinsic goal orientation does indeed mediate the relationship
between conscientiousness and CTA. This means students with traits of conscientiousness who report higher levels of CTA and also report being more extrinsically motivated tend to hold higher levels of CTA.

Figure 6. Standardized regression estimates for the partially mediated model.
CHAPTER V
DISCUSSION

Overview

The principal aim of this study was to examine the relationships among personality variables, goal orientation, and cognitive test anxiety. Specifically, the goal of the study was to extend prior research by examining these three broad dimensions simultaneously, bridging the gap in literature that previously has failed to examine the potential mediating influence of goal orientation on the relationships among personality characteristics, goal orientations, and test anxiety, as well as examine the potential for goal orientations as a mediator. Collectively, the results largely supported prior research regarding the simplified relationships among the personality variables, goal orientation, and cognitive test anxiety. However, the primary contribution of this research comes in the findings in the mediation analyses. Specifically, the findings confirmed that a partial mediation model was the best fit to the data, with extrinsic goal orientation serving to mediate the relationship between Conscientiousness and cognitive test anxiety. The outcome of this mediation model illustrates the errors that may arise in drawing conclusions from research examining related variables in isolation.

Personality and Cognitive Test Anxiety

Personality factors impact recourses and mechanisms in confronting tension and anxiety. Studies have found that the Big Five personality measures significantly correlated with test anxiety. Consistent with prior studies with the Big Five personality traits, this study illustrated in a simple regression analysis significant relationships between specific personality traits
(Openness, Conscientiousness, and Neuroticism) and cognitive test anxiety. While some studies have identified potential relationships among Extraversion and Agreeableness (Liu, Meng & Xu, 2006), the results of the regression analysis did not find that those variables provided significant meaning to the prediction of cognitive test anxiety when considered alongside the stronger personality predictor variables. Individuals who are extroverted tend to be sociable, assertive, and have positive emotionality – traits which are not generally associated with anxiety. Various studies have shown a link between high quality relationships characterized by warmth, trust, mutual acceptance, and low degrees of conflict (Baker, Grant, & Morlock, 2008) and various positive outcomes (Ringeisen & Buchwald, 2008), such as lower levels of emotional distress (Resnick et al., 1997). These are traits associated with Agreeableness and may be one possibility for it not to have a significant association with cognitive test anxiety.

As expected, the results of the study supported prior research identifying Neuroticism having a significant positive relationship with cognitive test anxiety (Chamorro-Premuzic, Ahmetoglu, & Furnham, 2008; Das Gupta & Dutta, 2012; Kumaran & Kadhiran, 2015; Liu, Meng, & Xu, 2006). Neuroticism is associated with traits of being biased towards negative stimuli, having attention initially directed towards threatening stimuli (Bar-Haim et al., 2007), overestimating negative outcomes (Eysenck & Derakshan, 1997), and perceiving ambiguous stimuli as threatening (Calvo & Castillo, 2001). This means individuals who are emotionally unstable are vulnerable to cognitive test anxiety (Matthews & MacLeod, 2005).

In this study, Openness was also found to provide predictive utility in identifying levels of cognitive test anxiety in undergraduate learners. This finding is consistent with previous studies that found Openness has a negative relationship with cognitive test anxiety. Open-minded individuals use a wider set of strategies and learning techniques, including critical evaluation, in-
depth analysis, and flexibility (Chamorro-Premuzic, 2011; Howard, Medina & Howard, 1996). As such, individuals who are more open to experience may analyze and interpret the testing situation in a manner that is more consistent with views of “challenge” rather than “threat,” which may reduce the manifestation of cognitive test anxiety (Kumaran and Kadhiran, 2015).

Finally, Conscientiousness was found to provide a significant, negative predictive path to cognitive test anxiety in the simple regression model, confirming other studies with similar analytic strategies. The interpretation of this effect in the literature has been based on the observation that characteristics associated with Conscientiousness (i.e., self-discipline, organization, need for achievement) help prevent test anxiety by reducing self-imposed strains associated with poor time management and lack of organization (Kumaran & Kadhiran, 2015; Lim & Ortiz-Bance, 2013; Piedmont, 1995; Zellars, Perrewe, Hochwarter, & Anderson, 2006). Consequently, students who are conscientious were viewed as more likely to have habits and skills that are protective toward developing high levels of test anxiety. However, as identified later, this perspective is a limited view and misrepresents the complex relationship between personality characteristics and test anxiety by overlooking individuals’ motivational orientations.

**Goal Orientation and Personality**

This study was developed to test the hypothesis that the theoretical framework of intrinsic and extrinsic goal orientations may prove useful for understanding the relationships among test anxiety and personality. The basic organismic tendency to approach positive stimuli and avoid negative stimuli has long served as a principle for models of motivation, emotion, and behavior (Elliot, 2006). Current findings support much of what has been found before, however, this researcher attempted to look at a more complex model than simple correlations.
In this study, Conscientiousness was the only personality measure that was correlated with intrinsic motivation, which is consistent with prior research on the two constructs (Barick & Mount, 1991; Carbonneau, Vallerand & Lafreniere, 2012; Law, Elliot, & Murayama, 2012; McCrae & Costa, 1998). Openness, Extraversion, and Agreeableness did not have a significant association to intrinsic goal orientation. This finding opposed Komarraju, Karau, Schmeck and Avdic’s (2011) findings that Openness and Extraversion were positively associated with intrinsic motivation.

While the findings did not mirror prior studies with the relationships among select personality variables and intrinsic goal orientation, there was greater consistency with prior research when reviewing the extrinsic goal orientation. Consistent with prior work, Openness, Agreeableness, and Conscientiousness were all found to have positive associations with extrinsic goal orientation (e.g., Hart et al, 2007; Watanabe & Kanazawa, 2009). Hough and Schneider’s (1996) interpretation of the connection between Conscientiousness and extrinsic goal orientation centered on the tendency for individuals to adopt goals set by others. This aspect of Conscientiousness is common in academic settings as many explicit goals (i.e., tests, grades, standardized assessments) are externally established by teachers, parents, or institutional bodies but are consistently identified to learners.

**Goal Orientation and Cognitive Test Anxiety**

Intrinsic motivation and extrinsic motivation are the two primary types of motivated academic behavior (Cokley, 2003). Reeve et al. (2004) concluded that student motivation is of high quality when primarily based on intrinsic, integrated and identified regulations, and is of poor quality when based on external and introjected regulations. Thus, intrinsic motivation, unlike extrinsic motivation, is related to more positive academic and psychological outcomes.
A number of studies have demonstrated the innumerable advantages of intrinsic motivation in the context of learning. Intrinsically motivated students tend to have higher academic achievement (Areepattamannil & Freeman, 2008), higher intellectual performance (Gottfried & Gottfried, 2004), higher self-esteem (Deci & Ryan, 1995), greater persistence (Vansteenkiste, Lens, & Deci, 2006), less academic anxiety (Gottfried, 1990), likelihood to increase effort or engage in remedial actions when faced with failure (Dweck, 1975), enhanced deep or conceptual learning (Ames & Archer, 1988; Vansteenkiste, Simons, Lens, Soenens, Matos, & Lacante, 2004), enhanced cognitive flexibility and engagement (McGraw and McCullers, 1979), and enhanced subjective/psychological well-being (Burton, Lydon, D’Alessandro, & Koetner, 2006; Sheldon, Ryan, Deci, & Kasser, 2004). Undoubtedly, intrinsic motivation significantly contributes to successful academic performance (Gottfried et al., 2008). Additionally, studies indicated that intrinsic motivation is undermined when self-perceived autonomy is negated by socially controlling events, such as evaluation (Harackiewicz, Manderlink, & Sansone, 1984). For example, being closely watched or surveilled under certain circumstances, is linked to performance evaluation and attempts to compel individuals to comply with rules or standards (Lepper & Greene, 1975).

On the other hand, Deci and Ryan (1985) define extrinsic motivation, which is commonly externally regulated, as behavior that is determined through means external to the individual. In other words, rewards and constraints regulate these behaviors. Extrinsic motivation may also appear as behaviors that are controlled in part by internal reward or punishment contingencies, such as guilt, shame or obligation (Areepattamannil, Freeman, & Klinger, 2011). For example, an individual strives to excel academically because he or she does not want to shame his or her family. Numerous studies have documented the effects of extrinsic motivation on learning.
outcomes. Students who are extrinsically motivated are more likely to have lower academic achievement (Becker, McElvany, & Kortenbruck, 2010; Lepper, Corpus, & Iyengar, 2005) and to engage in surface learning (Biggs, 1991). Furthermore, extrinsically motivated students experience greater anxiety (Wolters, Yu, & Pintrich, 1996), less positive emotions in school (Sénécal, Koestner, & Vallerland, 1995), and have a poorer ability to cope with failures (Deci and Ryan, 2000).

This study confirmed prior research that identified extrinsic motivation as a positive and significant predictor of test anxiety (Bembenutty, 2009; Einat, 2000; Elliot, 1999; Herzer, Wendt, & Hamm, 2014). Individuals who tend to be driven to meet external goals or goals set by others are more likely to hold high levels of cognitive test anxiety. The critical point with this relationship is to illustrate that merely having high expectations is not the risk factor for anxiety detected in this study, rather it is the source of the goal.

There was no significant relationship with intrinsic goal orientation in this study, supporting prior research – however because the current study did not include a measure of amotivation, it was not possible to support or contradict studies illustrating test anxious learners tend toward a state of amotivation rather than intrinsic orientation (Rastegar, Akbarzadeh, & Heidari, 2012; Saravanana, Kinston & Gin, 2014).

**Goal Orientation Mediating the Personality-Cognitive Test Anxiety Relationship**

The mediational analysis in this study looked at the potential role of extrinsic goal orientation as a mediator for the relationships observed between three personality variables (Openness, Conscientiousness, and Neuroticism) and cognitive test anxiety. While the initial intention was to examine both intrinsic and extrinsic goal orientations as mediators, intrinsic goal
orientation was not related to the other variables, thereby failing to meet the assumptions for inclusion in a mediation investigation.

Consistent with Hart et al. (2007) and Watanabe and Kanazawa’s (2009) research findings of this current study indicate that motivation is an important factor in predicting CTA – albeit not the single most important one contributing to test anxiety (Smith et al., 1990). The evidence in this study illustrates that one way motivation influences test anxiety is through mediating the effect of overarching personality constructs. In the partial mediation analysis, Openness and Conscientiousness were illustrated to essentially maintain their direct effect on cognitive test anxiety, with small mediational effects noted for both variables with extrinsic goal orientation. However, the mediating effect of extrinsic goal orientation on the influence of Conscientiousness on test anxiety is a significant contribution to this study and the field.

That is, the results of this study illustrate that prior research on the relationship between Conscientiousness and test anxiety may be providing an incomplete representation of these constructs. The negative direct path from Conscientiousness to CTA is small but significant when extrinsic goal orientation is mediating. This is consistent with prior research indicating students possessing characteristics associated with Conscientiousness (i.e., self-discipline, organization, need for achievement) were viewed as more likely to have habits and skills that are protective toward developing high levels of test anxiety (Kumaran & Kadhiran, 2015; Lim & Ortiz-Bance, 2013; Piedmont, 1995; Zellars, Perrewe, Hochwarter, & Anderson, 2006). However, interestingly and unexpectedly, there is also a significant positive path from Conscientiousness to extrinsic goal orientation, which is a positive predictor of CTA. This is explained as individuals with high levels of Conscientiousness – when accompanied by a tendency to maintain an extrinsic goal orientation – tend to have high levels of cognitive test
anxiety. In contrast, individuals with high levels of Conscientiousness accompanied by low levels of extrinsic goal orientation do not experience cognitive test anxiety. This finding reemphasizes the critical point that merely having high expectations is not the risk factor for anxiety detected in this study, rather it is the source of the goal. Consistent with studies suggesting that the increase in levels of test anxiety is attributable to the type of motivation that is driven by external contingencies (Bembenutty, 2009; Einat, 2000; Herzer, Wendt, & Hamm, 2014; Putwain & Best, 2012), this finding shows that the source of the goal determines whether they will be test anxious, but particularly for conscientious individuals.

The present study illustrates the complex nature of the relationship between Conscientiousness and cognitive test anxiety. Findings clearly indicate the importance of extrinsic goal orientation as a predictor of cognitive test anxiety. This indicates that conscientious individuals who tend to be driven to “please others” or meet goals set by others may engage in more behaviors that increase levels of cognitive test anxiety. This study supports the notion that Conscientiousness may not always be good for well-being (Carter, Guan, Maples, Williamson, & Miller, 2015). Conscientious individuals are organized, dutiful, and self-disciplined; however, these individuals also engage in obsessive-compulsive behavior, experience greater negative affect (Fayard, Roberts, Robins, & Watson, 2012), react more poorly to negative performance feedback (Cianci, Klein, & Seijt, 2010), have a tendency to set high goals for themselves, strive to meet high goals set by others, and possess high levels of motivation. Given the strong motivational and achievement orientation of this personality disposition, high levels of Conscientiousness may be a liability under evaluative conditions when driven by extrinsic motivation (e.g., obligation). Two possible mechanisms for the effect of Conscientiousness, when driven by extrinsic motivation, on cognitive test anxiety are: (1)
viewing failure as more threatening because achievement is a more central life goal; and (2) subjectively believing that the exaggerated expectancies of others are imposed, subsequently experiencing loss of control, thereby leading to anxiety.

Limitations and Future Directions

Several limitations are noted in this study. A primary limitation to the current study is based on the volunteer population from whom the data were collected. Second, intrinsic motivation was studied as a unidimensional concept instead of a tripartite model (IM to know, IM toward accomplishment, IM to experience) as proposed by Vallerand, Blais, Brier, & Pelletier (1989). Third, cognitive test anxiety was only tested as a general concept, not evaluated during each of the three phases of the learning-testing cycle. Lastly, tests, rating scales, and inventories can possibly change the events that a researcher is attempting to measure. Since test anxiety research often involves the administration of such measures, reactivity becomes a concern.

The findings of this study provide limited insights toward potential interventions aiming to decrease levels of test anxiety, which in turn may support test-related beliefs and behaviors as well as achievement for test anxious students. Motivation orientated interventions would benefit from specifically addressing the type of goal orientation being harnessed by educators or parents (less extrinsic motivation). Supporting the study outcomes of Maehr and Zusho (2009) and Wigfield and Cambria (2010), challenging students in a way that steers them to develop mastery approach goals (intrinsic motivation) and deemphasizing performance approach goals (extrinsic motivation) should be facilitated in classrooms. On a systemic level, results of this study support previous research that admonish the importance placed on the function of statewide standardized test results, or high-stakes testing. In general, “high stakes” means that test scores are used to
make important decisions about students, educators, schools, or districts, most commonly for the purpose of accountability. Prior research findings stated, by attaching rewards and punishments to tests scores, students reported significantly more overall test anxiety in relation to high-stakes testing versus classroom testing and also reported significantly more cognitive and physiological symptoms of test anxiety in relation to high-stakes testing (von der Embse & Hasson, 2012; Segool, Carlson, Goforth, von der Embse, Barterian, 2013). This study adds to the test anxiety literature by demonstrating that students experience heightened anxiety in response to extrinsic motivation associated with testing situations.

The findings of this study also point to possibilities for further research. First, follow-up research should further investigate the possibility of a distinction between participants with moderate and high levels of cognitive test anxiety. In the present study, the mean CTA scores were within the average range of possible scores. Future research could improve upon this design and confirm this interpretation by obtaining a sample of individuals with high levels of cognitive test anxiety. Also, future work with a sample including primary learners with high levels of reported cognitive test anxiety would help identify the importance of examining the relationships among personality and goal orientation when examining test anxiety. Additionally, a more reliable and valid measure of goal orientation would be valuable in follow-up studies. The MSLQ had low internal consistency in this and related studies, and also fails to include the construct of amotivation. Related to this, identifying scales that focus more directly on performance and mastery goals instead of extrinsic and intrinsic may help link this work to more contemporary models of motivation. Furthermore, the results of this study illustrate the impact of meditational analyses on simple effects predicting cognitive test anxiety. There are several additional variables that may very serve to mediate predictive relationships in the literature that
bear attention. It would also be interesting to extend this research to examine not only meditational effects but also the utility of motivation as a moderating variable.

References


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Yerkes, R. M. & Dodson, J.D. (1908). The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurology and Psychology, 18*(1), 459-482.

