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An Exploration of the Relationship between Academic Emotions and Goal Orientations in College Students before and after Academic Outcomes

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AN EXPLORATION OF THE RELATIONSHIP BETWEEN ACADEMIC EMOTIONS AND

GOAL ORIENTATIONS IN COLLEGE STUDENTS BEFORE AND AFTER ACADEMIC

OUTCOMES

by

STEPHANIE L. DIETZ

Under the Direction of Christopher Henrich

ABSTRACT

In this dissertation, the intersection between emotion and motivation was explored. Participants in this study were given a survey at two time points during the semester. Using this data, the factor structure for the motivation construct as described by Elliot and colleagues were explored using a MTMM model. Leading from the measurement model from the CFA, results indicated that emotion and motivation are highly related, but in different ways depending on if the students have had academic feedback. The academic feedback also may change some students' motivational orientations, based on their emotional reaction.

INDEX WORDS: Emotion, Motivation, Goal orientation, Academic achievement

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DEDICATION

I dedicate this dissertation to the love and support of my friends and family that has pushed me

through to completion, and without which I would have surely failed.

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I would like to acknowledge my dissertation chair, Dr. Christopher Henrich, for all of his patient, supportive advice and guidance throughout this process. I would also like to acknowledge my committee members for helping to stretch and challenge me. Finally, I acknowledge the Psychology department at Georgia State University for all of their understanding and support during what was, at times, a somewhat unorthodox graduate school time.

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INTRODUCTION

Overview

In 2010, researchers at Georgetown University's Center on Education and the Workforce published projected workforce education needs for the nation in order for the United States to remain globally competitive. Finding ways to help students stay in college is needed. They argue that by 2018, the majority of all jobs will require a post-secondary degree, with most jobs requiring a bachelor's degree (4-year degree) or higher (Carnevale, Smith, & Strohl, 2010). Yet, in 2011, more than a third of students dropped out during their first year of college. Only 53 percent of college students finished a four-year degree in less than six years, down from about 55 percent in 2006. If this trend continues, not only will there be a shortage of people with the education or training levels required for the types of jobs available in the marketplace, but also a shortage of lower-skilled work. In other words, there will be a mismatch between the required education levels of the jobs available and the potential workers.

One way to increase the education levels of potential workers is to increase college retention. Although the number one reason for leaving college is reported to be financial need (Bridgeland, DiIulio, & Morison, 2006), financial need may not be most the most prominent reason for dropout among first year college students (Ishitani & DesJardins, 2003). Thus, researchers have begun looking for social, emotional, or cognitive reasons, such as academic reactions to test grades, or motivational factors that relate to dropout early in college. Ishitani and DesJardins (2003) found that level of college aspirations (Bachelor's, Master's, and PhD) were significantly negatively correlated with dropout levels. Researchers also have found that feelings of peer support and faculty warmth are significant predictors of college retention past the first year. Moreover, feelings of belongingness and a focus on attainable goals (such as getting a job)

also lead to higher levels of college persistence (Hull-Blanks et al., 2005; Jackson, Smith, & Hill, 2003; Morrow & Ackermann, 2012). In a study of UK undergraduates, researchers have found that students who eventually dropout tend to be focused on, or even be overwhelmed by emotional influences, such as pride or shame; while "persistent students" were able to find ways to control their emotional reactions to academics (Kingston, 2008). Dropouts were found to have lower levels of emotional adaptation, as well as fewer techniques for dealing with negative situations (Kingston, 2008). Motivation also has been shown to be a contributor to early college dropout. Lack of interest in academic work has been given as a self-reported reason for dropping out of college, especially when combined with general feelings of dissatisfaction or unhappiness (Kowalski, 1982). In summary, motivation and emotion may be key elements in academic achievement and persistence, especially in first year students. Given these findings of the influence of emotion and motivation on student persistence and achievement, the focus of this dissertation is to directly examine the relationship between emotions, motivation and academic achievement, in an attempt to help further elucidate the reasons college students disengage.

CHAPTER ONE

Literature Review

One area of interest in the field of academic achievement is the link between emotion and motivation in the classroom. Some literature reviews have been conducted on this topic. For example, based on a review of student motivation literature, including academic self-efficacy, attributions, intrinsic motivation, and achievement goals, Linnenbrink and Pintrich (2002) explored the intersection of emotions and motivation in an attempt to explain academic achievement. They posited a theoretical model in which the link between emotions and motivation before an exam may influence future emotions about the classroom environment, which then in turn influences changes in goals or motivation. They also argued that current models rely too heavily on the cognitive aspects of motivation and need to include emotions, as these variables should lead to more nuanced and intervention-based models. To expand on this idea, they include an example of a child who is experiencing significant behavioral problems in school. They argue that instead of just focusing on either the emotional aspects, such as anger or externalizing behaviors or the cognitive aspects, such as goal orientation or self-efficacy, an examination of the intersection of affect and cognitive structures is needed to fully support this student.

Some empirical findings supporting this theoretical link between emotion and motivation also have been found. For example, Pekrun and colleagues (2009) measured the emotions and goals of students before a major exam, and then measured their exam performance. The results suggested that the achievement goals were predictors of the exam performance, as mediated by emotion, specifically shame, pride, hope, joy, anxiety and relief. Other researchers also have found a link between emotion and motivation, such that motivation has been demonstrated to be

positively correlated with academic emotions such as pride and anxiety in students ranging from elementary school to college. In addition, motivation and emotion were demonstrated to be both individually positively related to academic achievement, and have an interaction effect on academic achievement as well. It may be that the feelings a student experiences in a classroom environment may magnify the influence of motivation on academic achievement. In other words, the effect of motivation on academic achievement may change based on the emotions of the student. (See Examples: A. R. Artino, La Rochelle, & Durning, 2010; Chien & Cherng, 2013; González, Paoloni, Donolo, & Rinaudo, 2012; Kim & Hodges, 2012; Lin & Cherng, 2012; Sakiz, 2012; Villavicencio & Bernardo, 2013). Whereas there have been many studies examining the association of motivation and emotion in academics, most of these studies have been across one time point. Investigating how motivations may change before and after an academic outcome, as posited byLinnenbrink and Pintrich (2002) has not been empirically tested yet. Therefore, the focus of this dissertation is the relationship of emotions and motivation both before and after a testing outcome. The remainder of Chapter One is an overview of motivation orientation and emotion. Chapter Two is then an examination of the details of goal orientation theory, specific emotions of interest, and the relationship between goal orientation and specific emotions.

Motivation

Motivational Orientation

One of the first researchers to directly assess motivational orientations was Eison (1981). In previous works, a theoretical basis for grouping students' academic attitudes was established (Becker, Geer, and Hughes (1968), but no instrument for directly assessing motivational orientation existed. Eison's 1981 work used a self-report survey to place students in categories of

motivational orientations. Eison suggested that students were either learning oriented or grades oriented (Eison, 1981). These orientations were conceived to be polar opposites of each other, such that statements with which learning oriented students agreed, grades oriented students would disagree. Eison proposed that these orientations were important to understand educational achievement in postsecondary education, especially among students with similar academic abilities (Eison, 1981).

Taking Eison's two-dimensional model of motivation, Dweck and colleagues integrated it with their work on intelligence beliefs. In Dweck's work, individuals can hold two beliefs about intelligence: entity or incremental (growth). Entity beliefs tend to center around the idea that intelligence is fixed and innate, whereas those who hold incremental intelligence viewpoints believe that practice and experience can change or alter one's intelligence (Diener & Dweck, 1978, 1980; Dweck, 1986; Dweck & Dienstbier, 1991; Dweck & Leggett, 1988; Dweck, Leggett, Higgins, & Kruglanski, 2000). These ideas were then posited to be the anchors for Eison's motivational orientations. Entity beliefs can often lead to the grades-oriented, maladaptive, helpless, challenge-avoidant motivation, whereas incremental beliefs often lead students to be more resilient to grade outcomes, and more positive towards academic learning (Dweck, 1986).

In 1995, Harackiewicz and Elliot wrote a critique of Dweck's model. They claimed it only labeled individuals, but did not allow for much change or gradation within each group, as individuals were only given one label: performance or mastery. For example, one student may be fully performance-oriented, while another may be right in between performance and mastery. Both would be given a performance-orientation label. According to the authors, this was an issue because any detailed predictive ability from the orientations would be lost.

In an attempt to address the single-label issue, Elliot and Church (1997) added a second characteristic to the performance-mastery dichotomy: approach and avoidance. This original framework was a three-category model, with three areas: mastery, performance-approach and performance-avoidance, such that students were placed into one of the three groupings. Performance-approach and avoidance were considered to be opposite of each other, while mastery-orientation was an individual category. Mastery orientation students were focused on internal growth, and personal understanding of the material. Performance-approach predicted increased focus on outcomes, such as grades, while performance-avoidance was rooted in fear of failure, and was negatively related to both intrinsic motivation and grades (Elliot & Church, 1997). However, this model was still used to classify individuals.

Following this trichotomous model, Elliot and colleagues then added the idea of motivational valance to their theory, to help correct the need for variations of motivation of individuals within each category in Dweck's model. Instead of labeling individuals into categories (i.e., entity vs. incremental or performance vs. mastery), this theory had two main orthogonal axes for motivation valances: approach-avoidance and performance-mastery. The approach-avoidance axis measured if the individual is interested in achieving something (approach) or preventing something (avoidance). The other axis measured the focus of the individual. A purely performance-oriented individual would be focused only on the necessary elements of a task required for completion, whereas the mastery motivated individual would be focused on learning all there is to know about a given task (Elliot & Covington, 2001; Elliot & McGregor, 1999, 2001). This model allowed for individuals to be measured continuously across the two axes instead of categorizing people into different groups.

One additional approach to motivational orientation theory, which was formulated alongside goal orientation theory, is Deci and Ryan (1985) Self Determination Theory. Self Determination Theory (SDT) posits that humans have evolved the needs to grow and change through learning and investigating the world around them. This growth predisposition has led to inherent psychological needs. The fulfillment of these psychological needs is what then leads to self-motivation, or the internal desire to pursue a goal (Ryan & Deci, 2000b). According to Ryan and Deci (2000a), the fundamental need for autonomous self-regulation and self-growth is related to three psychological factors: autonomy, competence, and relatedness (attachment). Autonomy measures how much choice an individual has in his or her task. Competence assesses the level at which the individual both feels qualified and is qualified to complete the task, while relatedness examines the degree to which the individual feels encouraged or assisted by others while doing the task. In order for intrinsic motivation to flourish, people must feel free to choose their task, competent in the task they choose, and supported in their work. Without these factors in place, the task will not become internalized, and the individuals may need external regulators such as rewards in order to complete the task (La Guardia, Ryan, Couchman, & Deci, 2000; Ryan & Deci, 2000a, 2000b; Vansteenkiste & Ryan, 2013).

Recently, motivation researchers have been investigating these three needs and their relationship to both each other and to outside factors, such as academic achievement. For example, Sheldon and Filak (2008) manipulated levels of competence, autonomy and relatedness while participants learned the rules to a new game. Results indicated that all three influenced game-performance, general mood, and motivation to play the game, especially when the needs are impeded. Competence appeared to be the strongest experimental predictor of the outcomes (Sheldon and Filak, 2008). Additionally, Radel, Pelletier and Sarrazin (2013) found that

autonomy seeking relies on competence, such that participants in a controlling environment only sought to regain autonomy when perceived competence was high. Participants with low perceived competence focused on increasing their competence first. They argue that competence seeking may be an automatic process while autonomy seeking may be reliant upon context and not as automatic. These findings indicated that the three needs of SDT are related to academic achievement.

Some researchers have suggested the integration of SDT with the goal orientation framework (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Sheldon & Filak, 2008). In their latest iteration of the goal orientation framework, Elliot and colleagues have incorporated Ryan and Deci's(1985, 2000a) idea of the psychological need for competence as they attempt to explain why approach and avoidance are highly positively correlated in most empirical studies (Elliot, et al., 2011). They posited that goals have a purpose, and the purpose is related to the need to demonstrate competence. According to Elliot et al., there are three main areas of competence: normative comparisons (others), intrapersonal comparisons (self), and objective measures (task). For example, if someone is playing chess, he or she may wish to win the game (task), or he or she may be focused on capturing more of his or her opponent's pieces than in previous games (self). If that person is other focused, he or she may be centered on doing better than other people have against this particular opponent.

According to the Elliot and colleagues, these three areas are the underlying justifications for mastery and performance, such that mastery oriented students are focused on self and task while performance oriented students are focused on others (Law, Elliot, & Murayama, 2012). However, in replacing performance with other-orientation and mastery with task-orientation and self-orientation, Elliot and colleagues (2011) proposed another goal orientation model with six

unique factors. In this revised model, individuals are rated as approach or avoidant for three main

areas of competence: task, self, other-based goals. For task-competence, an approach individual

is focused on doing as well as possible on the exam. This person would be concerned with

getting answers right and their overall grade in the class. Task-avoidant individuals would be

focused on preventing failure on the test. Self-competent approach individuals are orientated

towards doing better on a task than they have done in the past, while self-avoidant individuals

would want to prevent doing worse than they have done previously. Finally, other-competent

approach individuals are concerned with doing better on a task than their peers, while other-

avoidant individuals want to prevent doing worse than their peers. In the current model, this idea

of competence and approach-avoidance creates six factors, as described in figure 1.

Figure 1

   A 3x2 Goal Orientation Model (Elliot, et al.,

2011)

	Approach	Avoidance
Task	Task-Approach	Task-Avoidance
Self	Self-Approach	Self-Avoidance
Other	Other-Approach	Other-Avoidance

Some researchers take issue with this 3x2 model. Johnson and colleagues (2012) point

out two potential problems with the model. First, this structure does not take into account

students who may not be motivated at all – so called 'a-motivated' students. Secondly, they also

question if these factors are stable, intrinsic states that the individual brings to the situation, or if

they are reactions to the situational factors. In other words, the 3x2 model does not appear to

address the context of the motivation.

Furthermore, some theorists argue that approach and avoidance are not separate factors.

They point out that some empirical studies have labeled performance-avoidance and other-

avoidance as redundant with performance-approach and other-approach, respectively. These authors state that the relationship between performance-avoidance and most other outcomes, such as academic achievement, is already captured within the approach-performance relationship. They assert that further research is needed to see if avoidance is uniquely predicting other factors, such as emotions or neuroticism (Heinz & Steele-Johnson, 2004).

Finally, even though perceived competence has been proposed as the cause of the positive correlation between approach and avoidance, the research surrounding this theory appears to be mixed (Linnenbrink-Garcia, et al., 2012). If perceived competence is the driving force between the high correlations, as Elliot and colleagues suggest (2011), students with high perceived confidence should be more likely to hold both performance approach and performance avoidance goals. Some data do support the idea that students with high perceived competence are more likely to endorse both performance-avoidance goals and performance-approach goals (Middleton, et al., 2004), while other findings suggest that the correlation between approach and avoidance is higher in students with low perceived competence (Law et al., 2012), and others even fail to find a relationship (Linnenbrink-Garcia, et al., 2012). Therefore, more research is required to fully understand the motivational factors that may be involved in goal orientations.

While there has been a lack of clarity about the structure of motivation throughout the different iterations of motivational theory, the general consensus has shifted from one of a categorical perspective to placing individuals on a continuum. One of the most current theories is Elliot and colleagues' ideas around motivation with a focus on competence, which draws from Ryan and Deci's Self Determination Theory. In both theories, the motivation of an individual appears to depend upon which task he or she is completing, as well as both internal and external variables. One major critique of these motivational factors is that they do not take into account

the context of the testing outcome (Johnson, et al., 2012). Although the individual factors within the goal orientation model are still being debated, it appears that a person's motivational orientation provides some pathway for individuals to meet different psychological needs.

Development of Motivational Orientations from Childhood to Adulthood

The emergence of motivational orientation increases as people age. According to theorists, many children begin their self-awareness of motivation and competencies with a general understanding of if they are "smart" or "dumb". These understandings then become more differentiated as the child develops, which in turn influences his or her motivation towards learning (Renninger, Sigel, Damon, & Lerner, 2006). Ideas about competencies in individual domains form early in elementary school, such that even kindergarteners will rate themselves differently on math and reading skills (Marsh, Craven, & Debus, 1998). However, these self-ratings tend to be higher than the student's test results. As the child progresses into middle and high school, the highly positive self-ratings drop, and begin to correlate with academic grades (Nicholls, 1979). These changes have been explained in two major ways. First, children's skills grow quickly early on in schooling, which may lead children to believe they will continue to grow rapidly. Secondly, testing, grading, and other forms of comparative evaluation become more salient the older the children become, leading to a focus on the testing results (Dweck, 1986). In general, children move from a state of general competence beliefs to more domain-specific, outcome-focused competence beliefs as they age.

Interestingly, although children have changes in competency beliefs, no differences have been found across age for Dweck's entity and growth beliefs. While there are a number of individual differences between students within grades, there does not appear to be a universal developmental trajectory of change in beliefs for students as they age (Cain & Dweck, 1995b).

However, while there is little evidence for a trend of development with intelligence beliefs, experimental manipulation has been able to change intelligence beliefs in adolescents and adults, indicating that outside forces and education may be able to influence intelligence beliefs throughout development (Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2006; Yeager, Miu, Powers, & Dweck, 2013). One such example is praise in young children from 1 years of age. Praise that exemplifies the "goodness" or "smartness" of the child may lead the child to adopt an entity belief five years later. Conversely, praise that focuses on the hard work or the good job of the young child is correlated with future growth beliefs in children (Gunderson et al., 2013). In contrast, comforting failing elementary students also may lead to an increase in entity beliefs, as students begin to believe that "not everyone can be good at this task", unless the comfort promotes further engagement in the field (Rattan, Good, & Dweck, 2012). In summary, any outside force that causes a student to focus on his or her internalized attributes or abilities rather than his or her external work or attempts may lead to an increase in entity beliefs (Yeager et al., 2013).

Little longitudinal research has been conducted on the development of goal orientation in children (Wentzel & Wigfield, 2009; Wigfield, Eccles, & Rodriguez, 1998), but some empirical studies with different age groups have been conducted. Researchers have found that younger children compare themselves to others based on how well they have mastered a task, such as on how well they can complete a puzzle or hit a ball. Older children, on the other hand, compare themselves to others based on how well they performed, such as on test or class grades. The influence of these social comparisons becomes stronger for older children, such that smaller and smaller differences are noticed by the child and may lead to changes in self-concepts and motivation (Wigfield et al., 1998). Adolescents also appear to endorse performance goals over

mastery goals more often than elementary school children (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006). Researchers theorize that children's beliefs about intelligence may have an influence on their goal orientation, but no empirical studies of this have been conducted (Wigfield & Cambria, 2010).

Some research has been done on intrinsic and extrinsic motivation in college students. The focus of this body of research has been on different factors that influence intrinsic and extrinsic motivation in young adults, such as self-efficacy and meta-cognition. For example, Conti (2000) found that students who purposefully reflect on their academic goals while transitioning to college have both high intrinsic and extrinsic motivation, whereas students who do not reflect are high in extrinsic motivation only (Conti, 2000). Intrinsic motivation has been positively linked to effort in college students (Goodman et al., 2011). In a similar vein to Dweck, self-efficacy also has been connected to higher intrinsic motivation and deeper studying behaviors (Prat-Sala & Redford, 2010). Finally, Faye and Sharpe (2008) demonstrated that college-aged students with a higher sense of identity have higher levels of intrinsic motivation, possibly because these students have the ability to internalize the task and make it part of the self. Specifically, the researchers have found that a deeper sense of self leads to a more accurate understanding of one's own competence level. As competence is one of the psychological factors involved with intrinsic motivation, identity therefore has an effect on intrinsic motivation, through competence (Faye & Sharpe, 2008).

In college students, the different goal orientations have been linked to a number of outcomes as well. For example, approach motivations have been shown to be positive predictors of effort or persistence (Gao, Podlog, & Harrison, 2012). Mastery goals also have been shown to be related to deep processing strategies, whereas performance goals are not related to any

academic learning strategy. In addition, performance goals are negatively related to conceptual change, indicating that students with performance goals are less likely to restructure schemas or thoughts to incorporate new ideas (Ranellucci et al., 2013).

In addition to being related to cognitive factors, such as schemas and new ideas, motivation and emotion are linked to other internal factors as well. Self-efficacy is one such area. For example, when Dweck's theorized entity beliefs interact with low self-efficacy, the interaction can lead to increased detrimental effects, while high self-efficacy also increases deep studying in college students (Mueller & Dweck, 1998; Prat-Sala & Redford, 2010). Some researchers argue that the act of setting goals or being motivated causes internal reflection and cognitive appraisals. In order to protect their self-esteem and self-efficacy, people tend to reflect on previous attempts at a task in the most favorable light possible. They then set a future prediction of how they will appear to others if they attempt a given task. According to this progression, the combination of the past appraisal and the future prediction is what leads to motivation and the emotions surrounding it (Masland & Lease, 2013; Peetz & Wilson, 2008).

As a result of these findings, and those discussed in the general overview, this dissertation examines the relationship between motivation and emotion in order to further elucidate the relationship both may have with academic outcomes. Therefore, the remainder of this chapter presents an overview of theories of emotion. Further relationships between specific emotions and motivational goals are discussed in Chapter 2.

Emotion

Emotional Theory

James (1884) was among the first psychological theorists to speak about the causes of emotions. According to the James-Lange theory of emotion, outside stimuli create bodily

responses. These bodily responses are the complete emotional experience (James & Dennis, 1884). However, subsequent research demonstrated that the artificial induction of bodily responses do not produce the emotional experience (Cannon, 1987). Also, if organ feedback is disconnected from the central nervous system, emotions are still experienced. For example, artificial increases in heart rate do not necessarily lead to an emotional experience of fear or anger (Cannon, 1987). Therefore, James' theory has been largely questioned.

Moving on from James' theory, Schachter (1964) added a component of attribution between the physiological arousal and the emotional experience. According to Schachter, one has to consciously attribute the bodily arousal to both the stimulus and the emotional experience in order to experience an emotion. For example, if a student is studying for an exam and cannot solve a given problem, the student may experience an increase in heart rate and adrenaline. Within Schachter's view, in order for the student to feel 'frustrated' he or she must cognitively attribute the increase in heart rate to the studying. Without this attribution, the student will not feel frustrated. Work with subliminal messaging has raised a few issues with this theory. For example, researchers working with arachnophobes found increased cortisol responses in these individuals when presented with masked (subliminal) spider shapes (Sebastiani, Castellani, & D'Alessandro, 2011). This finding indicates that the stimulus does not always need to be perceived before the emotional reaction occurs. Nevertheless, Schachter's (1964) cognitive aspect was a large turning point in defining emotions, (Schachter, 1964).

Currently, the main emotional theory debate revolves around discrete emotion theory and appraisal theory (Hamann, 2012). Proponents of discrete emotion theory argue that there are somewhere between seven and ten "core" emotions: joy, sadness, anger, disgust, surprise, fear and contempt (Ekman & Friesen, 1971; Lench, Flores, & Bench, 2011). All of the different

semantic words humans have for emotions are simply synonyms for these emotions. Also, experience of these emotions are universal in nature, regardless of ethnic or cultural differences (Izard, Malatesta, & Osofsky, 1987). This is evidenced by studies done with cultures that had not been exposed to any outside media or contact. People in these cultures still expressed emotions in a similar manner to others around the world. They also were presented with three photographs, and asked to recognize which person was experiencing a specific emotion. For example, participants were asked "which of these women just found out her son died". The researchers found that these people still pointed to the "sad" face, despite never seeing any other cultures express emotion in this manner (Ekman & Friesen, 1971).

Appraisal theorists, on the other hand, argue that there are no one-to-one stimulus-emotion responses, and therefore emotions are learned and not biological. Emotional experiences are based on how relevant the stimulus is to the individual (De Houwer & Hermans, 2010). Campos (1994) argues that one way to make an event important is when an event is related to a goal. Evidence suggests that children as young as three will construct emotions about a hypothetical situation based on how goal-relevant the hypothetical situation was to the person in the story. Therefore, according to these theorists, because goals are learned, emotions must be learned as well (Campos, Mumme, Kermoian, & Campos, 1994; De Houwer & Hermans, 2010). While the issue of learned versus innate emotions may be irreconcilable, the main points of the two theories are compatible. It is possible to have a set of core emotions that are on a continuum and also respond when a stimulus is goal relevant. This is a main tenet of Dynamical Systems Theory (DST), which has become an influential approach for studying emotion.

Dynamical Systems Theory

According to Dynamical Systems Theory (DST), emotions occur when internal

components interact with each other and with external conditions to produce preferred behaviors

(Thelen & Smith, 1996). There are no codes or rules for how these components will interact; it is

all based on the context of the interaction. In this way, different behavioral patterns may emerge

for different individuals, based on the environment of the individuals; additionally different

behavioral patterns may emerge for the same individual within different environments as well.

Thinking of emotional responses as a behavioral pattern, Mascolo and colleagues (2000, 127)

gave an outline for dynamical systems in emotional responses, as follows:

1. Emotional states are composed of multiple component processes.
2. Emotional experiences emerge through mutual regulation of component systems.
3. Component systems are context sensitive.
4. As emotions adjust to each other and to context; this forms a stable pattern of emotional responses, in a given context.

It is important to note, however, that the context also includes the interpreted meaning of the

situation by the individual, in a similar idea to that suggested by the appraisalists (Barrett,

Mascolo, & Griffin, 1998; Mascolo, Harkins, Harakal, Lewis, & Granic, 2000).

To help clarify how the DST would classify an emotion in an academic situation, Eydne

and Turner (2006) provide an example in which a student is reading a novel for which she has to

write a paper. However, as the night progresses, she is not as far along in the book as she needs

to be. The authors then suggest that the different psychological components begin to act together

to form an emotion about the given situation. Her cognitive appraisal of the time and the amount

of work to be done will lead to arousal. The interpretation of both the situation and the arousal

may lead to internal feelings and outward expressions of anxiety. She then will have an action,

based on this emotion, perhaps to skip pages or read faster. These actions will then feed back

into her cognitive appraisal of the situation and change her arousal levels. According to the

authors, "The interdependent and interrelated functioning of component systems is the necessary

condition for the occurrence of an emotional experience." (Eynde & Turner, 2006, p. 364). To

elaborate on this further, Eynde and Turner (2006) described the process of the component

systems of the emotional experience as follows:

> 1. a cognitive evaluation of the internal self and the external environment (noticing the time);
> 2. a neurophysiological response to this cognitive evaluation and regulation of arousal (arousal from noticing the time);
> 3. a motor emotional expression, such as smiling or frowning (furrowing the brow due to anxiety);
> 4. and a motivational response with future action planning based on the interaction of the previous components (quickening the reading).

However, because a cognitive evaluation is a piece of the emotional response, meanings of

actions are based in knowledge and beliefs an individual has about a given situation. In other

words, emotions are socially constructed and situated.

Although dynamical systems as they relate to emotions can be hard to study empirically,

the tenets of DST have influenced how research has operationalized emotion. For example,

emotion as a reaction to events has been studied in preschool children (Nelson, Welsh, Trup, &

Greenberg, 2011) psychoanalysts (Miller, 2004), and moral judgments (U. Kaplan, Crockett, &

Tivnan, 2014). These researchers believe that emotional experiences can change future behavior.

DST researchers agree that emotional experiences can change future behavior, but only in

a given context. As such, dynamical systems theorists would support the idea that an emotional

reaction (processes 1-3) would then influence future goal orientations (process 4), especially

considering that the motivational processes of process 4 include a future action planning. For

instance, a cognitive evaluation of a failed test could lead to arousal in a student. Depending on

the perception of the failure, the student may then experience a shame motor response, such as

blushing or sweating. This may feedback into the cognitive appraisal of the internal self, with the student labeling the internal self as a "failure". In an attempt to stymie these unwanted responses (outward blushing and internal labeling), the student may then choose to disengage from the failed activity, leading to a change in goal orientation based on the emotional response to failure. In summary, according to dynamic systems theory, emotional reactions to a testing outcome may lead to changes in future motivation.

Emotions and Motivation

Considering the intersection of cognitive appraisals, biological arousals, and internal feedback loops used in the emotional experience as described by DST (Eynde & Turner, 2006), theorists have posited a relationship between emotions and motivation. Leutner (2013) reviewed articles examining emotions and motivation as factors in online learning. All of the reviewed papers look at emotion and motivation as state factors in learning, but none look at the "crucial link" (pg. 175) between emotion and motivation. He argues that specific emotions should elicit specific motivation responses, and the pathways between emotion and motivation should be examined. He also suggests that individual traits may influence the experience of emotion and therefore also should be included in future studies (Leutner, 2013).

Similarly, Linnenbrink and Pintrich, (2002) argued that previous successes or failures may influence or change future goal orientations. They also call attention to the fact that much of motivational research has come out of the cognitive processing literature, and affective processes should be included in any future research. As a result, they suggest that the link between emotion and motivation should be investigated and compared before and after a testing outcome. Artino, Holmboe, and Durning (2012) reiterate the argument that "non-cognitive" processes such as emotion and affect should be included in motivational research, in a review of achievement

literature in medical students. These theorists also agree that emotion and motivation should be researched, especially within the context of testing outcomes.

The above theorists argue for the use of emotion in motivational research because of the influence of attributions. Just as cognitive appraisals can lead to an emotional reaction, attributions about success or failure can also lead to changes in motivation. For instance, if a student attributes a success to a stable component of the self by saying "I made an A because of my intelligence", that student is more likely to want to approach the task again. However, if that same student fails a task, the inverse is true. By saying "I made an F because of my intelligence", the student is less likely to want to approach the task again (Linnenbrink & Pintrich, 2002; Weiner, 1985). Circling back to the tenets of DST, these same appraisals also should elicit an emotional reaction as well. In other words, it may be the case that a student attributes a success to his or her own intelligence, feels good about that success, wants to continue to feel good in the future, and therefore will seek out ways to be successful at the task again.

Emotions and cognitive appraisals appear to be most linked to goal orientations after a period of feedback (Pekrun, 2006; Pekrun, Elliot, & Maier, 2006, 2009; Pekrun, Goetz, Titz, & Perry, 2002). There is some empirical evidence for these claims. For example, students who receive academic feedback and perceive failure have been shown to focus on preventing the failure again. Dweck and colleagues found that when presented with an impossible puzzle task, many children will begin to have negative outlooks of their ability to complete the task in the future, and may begin to have lower levels of persistence during the task (Cain & Dweck, 1995a). In a study with children with learning disabilities, researchers also found that experiences of failure may lead children to produce negative future expectations of academic outcomes. Their motivation to "do their best" also decreased, especially with repeated failures

(Zentall & Beike, 2012). In addition, when students are high in fear of failure and low in mastery orientation, it can lead to high levels of helplessness and self-handicapping. Among college students, students with an avoidance goal orientation are more likely to have a negative emotional reaction to failure than those with a different goal orientation (Pekrun, 2006), leading students to set a lower academic goal for future tests. Therefore, future motivation may be directly related to the type of emotional reaction students have to the testing outcome.

Further, different negative emotions have been shown to have varying effects on future motivation. For example, shame, which is usually associated with a negative internal attribution (M. Lewis, Haviland-Jones, & Barrett, 2008) typically elicits an avoidant response. In contrast, anger, which is usually associate with a negative external attribution (M. Lewis et al., 2008; M. Lewis, Sullivan, Stanger, & Weiss, 1989; Mascolo et al., 2000) may increase an approach motivation, as the individual attempts to "prove the teacher wrong" (Carver & Harmon-Jones, 2009). It may be that the differences in attributions (internal vs external) allow students to avoid or approach a task(Vanoverwalle, Mervielde, & Deschuyter, 1995). If a student is more concerned with self-protection than with correcting a perceived wrong, that student may be more likely to withdraw.

Positive academic emotions also have been demonstrated to be linked to motivational orientations. Positive emotions have been shown to be linked to increased levels of interest and may also lead to increased general motivation in students (Chien & Cherng, 2013), as well as increased levels of mastery orientation (Pekrun et al., 2009), which may create a positive spiral. However, positive emotions only lead to increased academic performance when paired with strong study skills and appropriate academic behaviors, such as completing homework (Mega, Ronconi, & De Beni, 2013; Villavicencio & Bernardo, 2013). As a result of these findings for

positive and negative emotions, the effect of individual positive and negative emotions with motivational orientations on academic achievement should be considered.

Taking these findings regarding emotion and motivation in combination, it is possible that if students attribute an academic outcome to their own abilities, they may experience an emotion about that outcome. This emotion may then lead to a change in motivational orientations. For example, if a student attributes a failure to his or her intelligence level, the student may feel negatively about his or her intelligence level or competence in the task. That student may then avoid doing the task in order to prevent future negative feelings, and become academically behind. Moving a step forward, if students are likely to avoid subjects in which they feel academically incapable (Perez-Felkner, McDonald, Schneider, & Grogan, 2012), and negative emotions are causing them to fall behind, students may be more likely to avoid majors or drop out of areas where they feel badly. In contrast, positive emotions may increase feelings of competence, and lead to increased academic engagement. Therefore, looking at the relationship between motivation and emotion in the context of both competence and testing outcome is important.

Chapter 1 Summary

Given the projected need for college graduates and the rates of dropout, research into the reasons why students dropout is crucial (Bridgeland et al., 2006). Researchers have found that motivation and emotions both individually play a role in student achievement (Conti, 2000; Faye & Sharpe, 2008; Kowalski, 1982; Lepper, Corpus, & Iyengar, 2005; Linnenbrink & Pintrich, 2002). Previous researchers have also found that motivations are associated with emotions before a testing outcome. Additionally, DST suggests that cognitive appraisals, such as "I am not competent enough" may feed into both the emotional and motivational reaction, leading to

potential, related changes in both. For example, if a student feels ashamed of his or her perceived incompetence, he or she may avoid doing a task, leading to a failure in the task. As the student continues to feel incompetent, he or she may have increased shame or other negative emotions, such as anxiety or fear, as he or she does not want to "prove" that he or she is a failure, thus linking previous motivation with future emotions. Therefore, these negative emotions may mediate the response between motivation and testing outcomes

Similarly, positive emotions have been demonstrated to be linked to motivation as well, and the individual negative emotions have been demonstrated to have unique, opposing effects (Carver & Harmon-Jones, 2009). Previous levels of confidence in a task and perceived competence can predict future confidence, especially in successful students(Martin, Colmar, Davey, & Marsh, 2010). As a result, this dissertation will examine different emotions in order to test the relationship between different motivation factors and emotions. Further rationales and arguments for the inclusion criteria for these emotions are discussed in Chapter 2.

Researchers of motivation and emotions call for an extension of their model in further research that examines at goal reassessment after a success or failure. Longitudinal studies also highlight the possibility that the relationship between the goals and the emotions may be bi-directional (Pekrun, 2006; Pekrun et al., 2006, 2009). Referencing the four qualities of a DST based emotional response, as well as the recommendations of theorists such as Pekrun and colleagues (2009), and Leutner (2013) to examine the relationship between emotion and goal orientation, especially after an academic outcome, this dissertation examines the relationship of emotion and motivation over two time points, before and after a test result.

CHAPTER TWO

Current Study

Since Eison proposed his ideas about motivational orientations in the late 70s, the

relationship between emotion and motivation has been of interest to researchers of academic

achievement**.** Because of attribution theory, many researchers theorize a relationship between

emotion and motivation (Fowler & B., 2003; Reeder, 1988; Van Overwalle, Halisch, & van den

Bercken, 1989; Vanoverwalle et al., 1995; Weiner, 1985). Attribution theory states that

whenever a student experiences a success or a failure, that student will look for the causes of the

success or the failure, either in internal factors, such as intelligence or likability, or external

factors, such as studying habits (Weiner, 1985). Based on these attributions, the student may then

change his or her academic strategies and motivation towards a task (Van Overwalle et al.,

1989). For example, if a student attributes a failure to poor studying habits, that student may then

change or increase his or her studying behavior. However, if a student attributes a failure to low

competence, that student may withdraw from the task, as the maladaptive attribution leads to

self-protective behaviors (Fowler & B., 2003).

Some researchers have suggested that these attributions may actually be eliciting

emotions, which are the driving force behind the changes in behavior (Linnenbrink & Pintrich,

2002). In this framework, if a student attributes a failure to low ability, that student may

experience a negative emotion, which he or she does not wish to experience again. In order to

avoid feeling bad again, the student will then withdraw from the task (Covington & Omelich,

1985b; Cron, Slocum, VandeWalle, & Fu, 2005). In 2013, Leutner conducted a literature review

of motivation in online students. Within this review, he proposed a model in which the "crucial

link" (p. 175) of emotion and motivation is examined. As he argued that different emotions

should elicit different motivational responses, Leutner (2013) suggested that individual emotions be examined to see what unique effects they may have on motivation, in lieu of looking at positive and negative moods, or combining emotions, such as shame and anxiety. In addition,Linnenbrink and Pintrich (2002) also examined the state of the literature surrounding academic goal orientations, and concluded that much of the literature was based in the cognitive appraisal framework. They proposed that future research should include affective responses as they relate to goal orientation. They also pointed out that much of the research existing at the time only used one time point. They make the argument that previous successes or failures may influence goal orientations, and so two or more time points should be used.

One model of motivation that has begun to incorporate these ideas is the goal orientation model (Elliot & McGregor, 2001; Elliot, Murayama, & Pekrun, 2011). In the original model, a person is rated on two dimensions: approach-avoidance, and performance-mastery. Recently, Pekrun and colleagues (2006, 2009) used these scales from the goal orientation framework to create a model in which the goal orientations predict emotions towards the academic task, and these academic emotions in turn mediate the link between goal orientation and later performance. Pekrun and colleagues (2009) measured the emotions and achievement goals of students before a major exam, and then measured their exam performance (grades). The results suggested that the achievement goals were predictors of the exam performance, as mediated by emotions. In this study, they discussed the possibility of a bi-directional model in which the relationship between emotions and motivation may change after a testing outcome, (Linnenbrink & Pintrich, 2002; Pekrun et al., 2006).

Using the theoretical proposals from previous researchers, and building from the findings from Pekrun and colleagues (2006), this dissertation examines the relationship between emotion

and motivation before and after a testing period in a sample of college students enrolled in a lower division course. Following the recommendation of Leutner (2013), individual emotions are analyzed to investigate their relationship to goal orientations. This dissertation also explores the patterns of emotions, motivation, and academic achievement before and after a testing outcome. Given the maladaptive self-protective behaviors found to be comorbid with shame, shame should be a salient variable in this theoretical relationship, and is focused on in this dissertation. However, dynamic systems theory (DST) suggests that emotions should be looked at simultaneously (Eynde & Turner, 2006).

To address this recommendation, positive emotions are also examined. Positive emotions have been demonstrated to be linked to motivation as well, and the individual negative emotions have been demonstrated to have unique, opposing effects (Carver & Harmon-Jones, 2009). Previous levels of confidence in a task can predict future confidence, especially in successful students (Martin et al., 2010). As a result, this dissertation also includes one additional positive emotion, pride, in order to examine it as a counterfactual to shame.

Emotions

Shame

Defining Shame

Wilson argued that every individual has an internalized desired self. Shame occurs when an action or event does not align with one's internal view of self (Wilson, 2001). In other words, shame occurs when one takes this same responsibility, but also attributes it to a flawed self. According to Wilson, shame elicits a new behavior, in an attempt to protect the internal self. In this dissertation, shame is defined as a negative affective reaction to an unwanted outcome, associated with a cognitive perception that someone is negatively assessing one's own

competencies, and therefore damaging the participant's self-image. This interpretation is in line with DST, which posits that the cognitive appraisal of damage to the internal self would lead to a future reaction of new behaviors aimed at protecting the self (Eynde & Turner, 2006; Turner & Husman, 2008a).

As individuals attempt to protect their internal self, shame also can lead to strong and debilitating reactions, from disruption of behavior and an inability to speak (M. J. Lewis & Haviland, 1993) to wanting to disappear (Erikson, 1950). For example, imagine if a student is called up to the board to do a math problem, cannot do the problem, and has the class laugh at him or her. If the student then has a cognitive appraisal that states that he or she could not do the problem because he or she is universally stupid (problematic self), he or she will most likely experience shame from this event, especially if he or she believes that the laughter was due to the fellow students perceiving him or her as stupid as well.

Emotional Development and Shame

Because shame is operationalized in this dissertation as an emotional reaction to a negatively judged self, the individual experiencing the shame response must therefore have an internalized view of the self. The ability to reflect on the internalized view of self and how others may perceive it changes throughout childhood. Theory of mind researchers indicate that the ability of children to take the perspective of others increases across the preschool years (Wellman, Cross, & Watson, 2001). Therefore, if children are able to understand that others have different views, and are able to take on those different views, they will then also be more likely to understand that others are disappointed with them. This can then cause increases in shame responses (Peetz & Wilson, 2008; Wilson, 2001).

These changes in shame responses have also been empirically demonstrated in longitudinal studies. In a cross-sectional study of 3000 people aged 13-89, Orth and colleagues (2010) found differences in shame across age. Shame had a u-shaped quadratic function, peaking at adolescence and old age (Orth, Robins, & Soto, 2010). Orth argued that adolescents experience more shame than adults because of the perception that they are always being watched, in combination with hormonal and pubescent changes (Orth et al., 2010). According to DST, these differences in cognitive appraisals and 'internal self' feedback (due to hormones and other pubescent occurrences) may be driving these shaming differences between adolescents and adults (Turner & Husman, 2008a).

One of the major life changes many young people face around the end of adolescence is the transition to post-secondary education. According to the Bureau of Labor Statistics, 66 percent of the 2012 high school graduating cohort are enrolled in a post-secondary institution (BLS, 2012). Studies have found that first-year students overestimate their ability to emotionally adjust academically and socially to college. This overestimation can lead to shame responses as students feel they should be able to handle the transition better (Gerdes & Mallinckrodt, 1994). The combination of task importance and competence also has been demonstrated as a necessary component to degree major choices, as students will avoid majors they feel to be unimportant outside of academia, or that they feel unable to academically pursue (Perez-Felkner, McDonald, Scheider, & Grogan, 2012), potentially to avoid unwanted shame responses.

Consequences of Academic Shame

As individuals attempt to avoid unwanted future shame, shame is often associated with future behavior and motivation to hide or distance oneself from failure i.e., self-worth protection. Several mechanisms of self-worth protection from a shame or embarrassment reaction have been

documented, including skipping class, running away, repression of behavior, self-handicapping, and announcements of one's own shortcomings (Bibby, 2002; Chen, Wu, Kee, Lin, & Shui, 2009; Thompson, Sharp, & Alexander, 2008). Students self-identified some academic behaviors associated with shame, including refusal to answer a question and hiding written work from the teacher's scrutiny (Newstead, 1998). Shame is not just associated with completion of schoolwork, but also the social aspect of being discovered to be incompetent (Bibby, 2002; Newstead, 1998). Shame also has been linked to truancy, which in turn was linked to low achievement (Munns, 1998). This research suggested that students would rather drop out than admit they did not know the answer to a question, but this link between goal orientation and shame has not been explicitly empirically studied as of yet.

Avoiding school, questions, homework and other academic tasks also has been proposed as a consequence of shame. A cycle of school avoidance has been put forward, in which students initially adopt this position as a self-worth protective measure. Among college students, students with an avoidance goal orientation are more likely to have a negative emotional reaction than those with a different goal orientation, leading students to set a lower academic goal for future tests (Cron, Slocum, Vandewalle, and Fu, 2005). As students avoid learning required material, they continue to fail, and eventually "become convinced of their inability" (Covington & Omelich, 1985a). While some may be more resilient to this cycle than others (Turner & Husman, 2008b), at some threshold, shame can become detrimental to nearly all students' performance (Newstead, 1998). These findings support the need to look at the intersection of goal orientation with shame specifically.

Pride

Defining Pride

In the same way that shame requires a concept of the self in order to feel badly about the self, pride is also a self-conscious emotion. In this dissertation, pride will be defined as occurring when an action or event aligns with one's internal view of self (Wilson, 2001). Sometimes viewed negatively, pride is often conflated with hubris, or an inflated sense of self-worth or personal abilities. However, pride and hubris are not the same concept (Trumbull, 2010). Pride is a positive emotional reaction to an event that brings a person closer to his or her desired sense of self (M. Lewis et al., 2008; M. Lewis et al., 1989; Trumbull, 2010). Pride requires less of a perceived audience than shame (Seidner, Stipek, & Feshback, 1988). In contrast to shame, an individual experiencing pride usually wishes to be seen, and may even take a physical stance to try and appear larger, such as tilting the head back and/or raising the arms above the head. These physical displays of pride are often socialized out of adults for fear of appearing hubristic, but are frequently seen in toddlers and young children after a success (Tracy & Robins, 2007). Pride includes feelings of accomplishment, satisfaction and higher self-esteem (Tracy & Robins, 2007). According to researchers, pride motivates a maintenance of the self and pro-social behaviors, whereas hubris leads to a sense that one need not do anything more to be special or perfect (Hart & Matsuba, 2007; Tracy & Robins, 2007; Trumbull, 2010).

Development of Pride

Given that pride is also a self-conscious emotion; it too requires several social-cognitive pre-cursors in order to emerge. First, an internalized view of the self, as well as an understanding that one's own views are different from others is required (Stipek, 1986). Researchers suggest

that this ability to take others' views correlates with the emergence of pride at around 4 years of age (Arimitsu, 2010). Children also get better at identifying pride with others from ages 4 to 7, as their understanding of other's mindsets increases (Tracy, Robins, & Lagattuta, 2005). Finally, as children begin to understand that their own actions have consequences, they begin to attribute success or failure to their own actions or abilities, which leads to self-conscious emotions Seidner, Stipek, and Feshbach (1988) also theorize that while shame is based in fear, pride may be based in feelings of self-efficacy.

Developmental analyses suggest some changes in pride across the lifespan. Little research has been done on pride from beyond early childhood (Arimitsu, 2010), Developmental analyses of pride indicate a decrease of pride in academics throughout adolescence (Ahmed, van der Werf, Kuyper, & Minnaert, 2013). Longitudinal analyses also indicate a decrease in authentic pride over the lifespan of an individual (Orth et al., 2010). Adults often talk about being proud of another person, such as a child, rather than of their own accomplishments (Choi & Jun, 2009), but this may be due to socialization rather than actual feelings (Tracy & Robins, 2007).

Consequences of Academic Pride

Although expressing pride is sometimes socially viewed negatively, the anticipation of feeling pride had been demonstrated to be a strong motivator. While shame elicits a desire to hide work, pride leads one to display it publically (Hart & Matsuba, 2007). Pride, in conjunction with empathy, can lead individuals to altruistic behaviors (Hart & Matsuba, 2007). Pride is also a strong motivator in school. Since pride is a feeling of a successful inner self and self-representation, many researchers believe it evolved as a social barometer of the standing of an individual. Pride not only feels good, it provides a sense of status and social standing (Eisenberg

et al., 2001; Tracy & Robins, 2007). Therefore, people will act in a way that will potentially increase feelings of pride, such as studying for a test or striving to do well in school.

As many researchers have focused on hubris in schooling and academics, little research on pride has been done. A few empirical studies have found a relationship between pride and academic achievement. Students at the age of five are able to experience academic pride and attribute it correctly to the cause of the success (Seidner et al., 1988). Pride has been shown to be positively correlated with grades, and also to moderate the relationship between self-regulation and grades. For students who reported higher pride, self-regulation was associated with higher grades. However, for students who reported lower pride, self-regulation was unrelated to grades (Villavicencio & Bernardo, 2013). Researchers believe this is related to pride's link with task value – the more important the task, the more pride felt after a success. Therefore, lower levels of pride may lead students to devalue the task, become bored, and no longer try (Villavicencio & Bernardo, 2013).

In first year college students, new opportunities for pride emerge as they enter a new academic setting. This transition into a more challenging academic setting may break the cycle of boredom, thus resetting the feelings of task-value and ultimately increasing the prospects for feelings of pride, and even hubris (Hall, Perry, Ruthig, Hladkyj, & Chipperfield, 2006). In the same way that shame may cycle and cause students to spiral in failure, pride may lead to increases in motivation, which can lead to more pride. However, the transition to college may break these cycles. Therefore, since college is a new time for students to experience pride or shame, both are examined in this dissertation, both before and after an academic outcome.

Goal Orientation

Emotions and motivation have been theorized to be related to one another. Researchers have found that shame may lead to performance avoidance goals, whereas pride may be related to performance approach goals or even mastery approach goals (Pekrun et al., 2006, 2009). Goal theory is one method of measuring motivational orientation often used in academic settings (Elliot & McGregor, 2001; Elliot et al., 2011).

The most commonly used theory of goal orientation has two main axes for motivation valances: approach-avoidance and performance-mastery (Elliot & Covington, 2001; Elliot & McGregor, 2001). However, many studies have found high intercorrelations between performance approach and performance avoidance, with some papers reporting correlations above .50 (Linnenbrink-Garcia et al., 2012), and others as large as .82 (A. Kaplan, Lichtinger, & Gorodetsky, 2009; Ross, Shannon, Salisbury-Glennon, & Guarino, 2002). To address these unexpected intercorrelations, Elliot et al. (2011) took the suggestions of Sheldon and Schüler (2011) and included competence in their theoretical model of goal orientation. In it, he and his colleagues postulated that competence, or the "referent used to determine if one is doing well or poorly" (633) should be included in order to further elucidate the ways in which people direct their behavior.

In this model of goal orientation, they define three referents for competence: task, self and other. A task referent measures how well the individual perceives himself or herself doing on a given task, such as an exam. Individuals with a self-based standard measure competence based on a trajectory for a given task. When given an exam, for example, these individuals will measure competence on the exam based on if they did better or worse on the present exam versus

past exams. Finally, individuals eliciting the other based referent use the scores of others to evaluate their own competence.

Elliot and colleagues posited that these three referents should be used to replace mastery and performance, such that other-based goals are used in lieu of performance-based goals and mastery-based goals are split into two new categories: task-based goals and self-based goals. They argued that mastery was used to encompass task-based goals and self-based goals because task referents and self referents are often intermingled. For example, a student who is focused on doing well on a test may be focused on the test due to task-based goals (to do well on the test) or self-based goals (to do better on the test based on previous attempts). However, they postulated that other and self-based goals should be separated, as these goals encompass different ideals. Task-based goals are more focused on the task at hand, while self-based goals are focused both on the task at hand and on previous attempts. Additionally, according to their theory, task-based goals are more optimal for self-regulation than self-based goals, as the self "opens the door for self-worth and self-presentation concerns" (Elliot, et al., 2012, 633).

In this study, Elliot and colleagues conducted a series of CFAs which confirmed the six factor structure. However, in this research, they combined task, self, other-based goals with approach and avoidance to create the six factors described above. In this model, the area of goal-reference is bifurcated with the valance of approach and avoidance. A direct examination of the higher order structure of the five factors (task, self, other-based goals, approach and avoidance) has not yet been completed. Therefore, while they did find evidence to support the idea that task-approach, task-avoidance, self-approach and self-avoidance are unique factors, if task and self should really be separated, or if the use of the mastery orientation is more accurate, has not yet been fully explored.

Additionally, in the 2012 *Handbook of Motivation*, Elliot states that approach represents the positive concerns for the reference and avoidance represents the negative concerns (Elliot, 2012). Therefore, it is possible that approach and avoidance represent the anchors for competence (A. Kaplan et al., 2009; Law et al., 2012; Linnenbrink-Garcia et al., 2012; Ross et al., 2002). In other words, the strong correlation between performance-approach and performance-avoidance comes from the fact that other-based goals are used in both performance-based goals. Some researchers even argue against the use of approach and avoidance in this model (Johnson, 2012). Given the debates around the inclusion of competence, the replacement of mastery with task and self, the high intercorrelations between approach and avoidance, and the changes to the motivational factors, before examining the relationship between emotion and motivation, this dissertation will investigate the factor structure of the six motivational scales in an introductory-level college classroom, attempting to tease apart goal referents (self, task and other) from goal valance (approach and avoidance).

Goal Orientation & Emotion

Research suggests that goal orientation and emotions like shame and pride are related. McGregor and Elliot (2005) conducted a two part study that tested the link between shame and fear of failure. The authors used similar constructs to the one presented in this dissertation for shame, pointing out that shame is acutely painful. In two studies (one naturalistic and one laboratory manipulation) they found that failure elicits shame. However, these studies may only be looking at one part of an overall pattern. It is possible, as suggest by DST, that shame also leads to avoidant behavior. For example, students who experience failure in academic settings have been shown to focus on preventing the failure again. Dweck and colleagues found that when presented with an impossible puzzle task, many children will begin to have negative

outlooks of their ability to complete the task in the future, and may begin to have lower levels of persistence during the task (Cain & Dweck, 1995a). In a study with children with learning disabilities, researchers also found that experiences of failure may lead children to produce negative future expectations of academic outcomes. Their motivation to "do their best" also decreased, especially with repeated failures (Zentall & Beike, 2012). It appears that shame and testing outcomes may be reciprocally related.

In another example of the link between emotions and motivation, Pekrun et al. (2006, 2009) found that the 2x2 academic goal orientations (mastery/performance and approach/avoidance) predicted academic emotions, and these emotions in turn accounted for the link between the goals and the exam performance in college students. This model was theorized in part because Pekrun and colleagues argue that the goals themselves elicit focus on different parts of the task. For example, mastery goals were hypothesized to draw out a focus on the positive aspects of the task, and therefore lead to positive emotions, such as pride and joy. In contrast, performance avoidance was claimed to focus on the negative aspects of the task, and therefore can bring out negative emotions, such as shame. Conversely, positive emotions have been shown to be linked to increased levels of interest and may also lead to increased general motivation in students (Chien & Cherng, 2013), as well as increased levels of mastery orientation (Pekrun et al., 2009). In conclusion, Pekrun and other researchers have demonstrated that emotions and motivations are related before a testing outcome (Murayama & Elliot, 2009; Pekrun et al., 2006, 2009; Pekrun et al., 2002). Dynamic systems theory suggests that emotions and motivation also may be related after a testing outcome (Eynde & Turner, 2006; Turner & Husman, 2008a), but this has not been empirically studied as of yet.

Research Questions

This dissertation examines the relationship of emotion and motivation at two time points, specifically looking at the time after a test result is handed back to the student. Some research, as done by Pekrun and colleagues (2007), has found that emotion mediates the link between motivation and testing outcome in the time before an exam. However, dynamic systems theory theorizes that emotions will be the first reaction after an exam and lead to changes in motivation. To test this idea, a second time point of measuring emotion and motivation is included to address the concerns of theorists such as Leutner (2013) and Pekrun (2009). This also may reconcile the different approaches in understanding the link between emotion and motivation as posited by Pekrun (2007) and DST theorists.

The purpose of the modeling process in this dissertation is to investigate the relationship between emotions and motivation across two time points, with the goal of examining any changes in the relationship between emotion and motivation before and after a testing outcome. In other words, goal orientation and academic emotions are examined both as predictors and consequences of a testing outcome. Pekrun and colleagues (2007) found emotion to be a mediator between goal orientations and testing outcomes in previous studies. Therefore, emotion and motivation should be related at time point one. However, while DST suggests a relationship, the effect of the testing outcome on the relationship between academic emotion and goal orientation has received less empirical attention despite strong theoretical predictions, and will be explored.

Other covariates will be included with this hypothetical model. Age is the first covariate explored. Shame has been shown to have a quadratic trajectory throughout the lifespan, with shame peaking at adolescence and decreasing throughout adulthood, while pride decreases

throughout adolescence and young adulthood , leveling off at around age 25 (Orth, 2006).

Because a limited age group was sampled due to the nature of the typical college population, a

binary age variable was included to explore the potential differences in the relationship between

emotion and goal orientation in younger and older students.

The second covariate is self-efficacy. Self-efficacy has also been shown to be positively

related to grades for students with positive emotions, but have no effect for students who have

negative emotions about a task (Villavicencio & Bernardo, 2013). Additionally, the motivational

factors in this dissertation, as described by Elliot (2011) are rooted in SDT's ideas of

competence. Competence occasionally has been compared to Bandura's concept of self-efficacy,

with some theorizing them to be the same construct (Bong & Skaalvik, 2003). In this area, some

researchers have found differing effects of perceived competence and self-efficacy on academic

outcomes. For instance, high school GPA has been shown to be positively related to self-

efficacy, while perceived competence had neither a main effect nor a moderating effect (Fenning

& May, 2013). However, a factor analysis of 778 participants revealed that self-efficacy and

perceived competence do not measure distinct factors (Hughes, Galbraith, & White, 2011). Other

theorists state that perceived competence is the core of self-efficacy, and to separate them would

be inappropriate (Fenning & May, 2013). In order to address this potential confound between

self-efficacy and competence within the motivational factors, the relationship between goal

orientation and emotion alone is expanded after controlling for self-efficacy.

Gender also is included as a covariate as previous researchers have found that women

have higher baseline levels of shame and anxiety than men (Else-Quest, Higgins, Allison, &

Morton, 2012). Gender has also been linked to academic emotionality and shame in general.

Stereotypically, women are considered to be "more emotional" than men. To test this idea, Else-

Quest, Higgins, Allison, and Morton (2012) conducted a meta-analysis of 697 reported effect sizes of self-conscious emotions (shame, guilt, embarrassment, and pride). They found a slight gender difference for shame, with women being slightly higher than men (d = -0.29). No other significant differences were found for emotions (Else-Quest, Higgins, Allison, & Morton, 2012). Therefore, any differences in emotions between the genders are explored.

Figure 2

Hypothesized Saturated Structural Equation Model
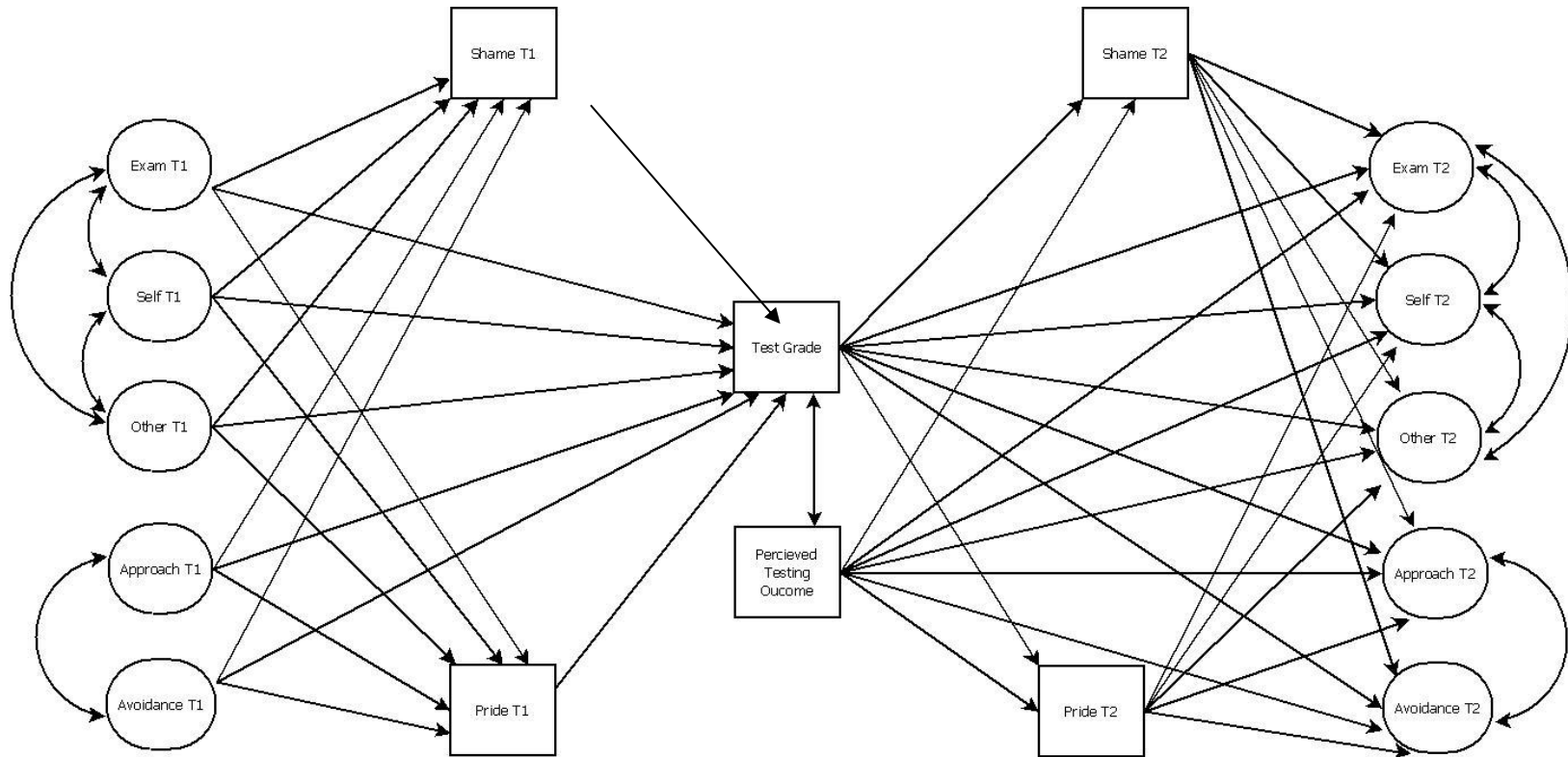
Note: Model does not include autoregressive paths

or covariates.

Figure 3

Hypothesized Multitrait-Multimethod Measurement Model
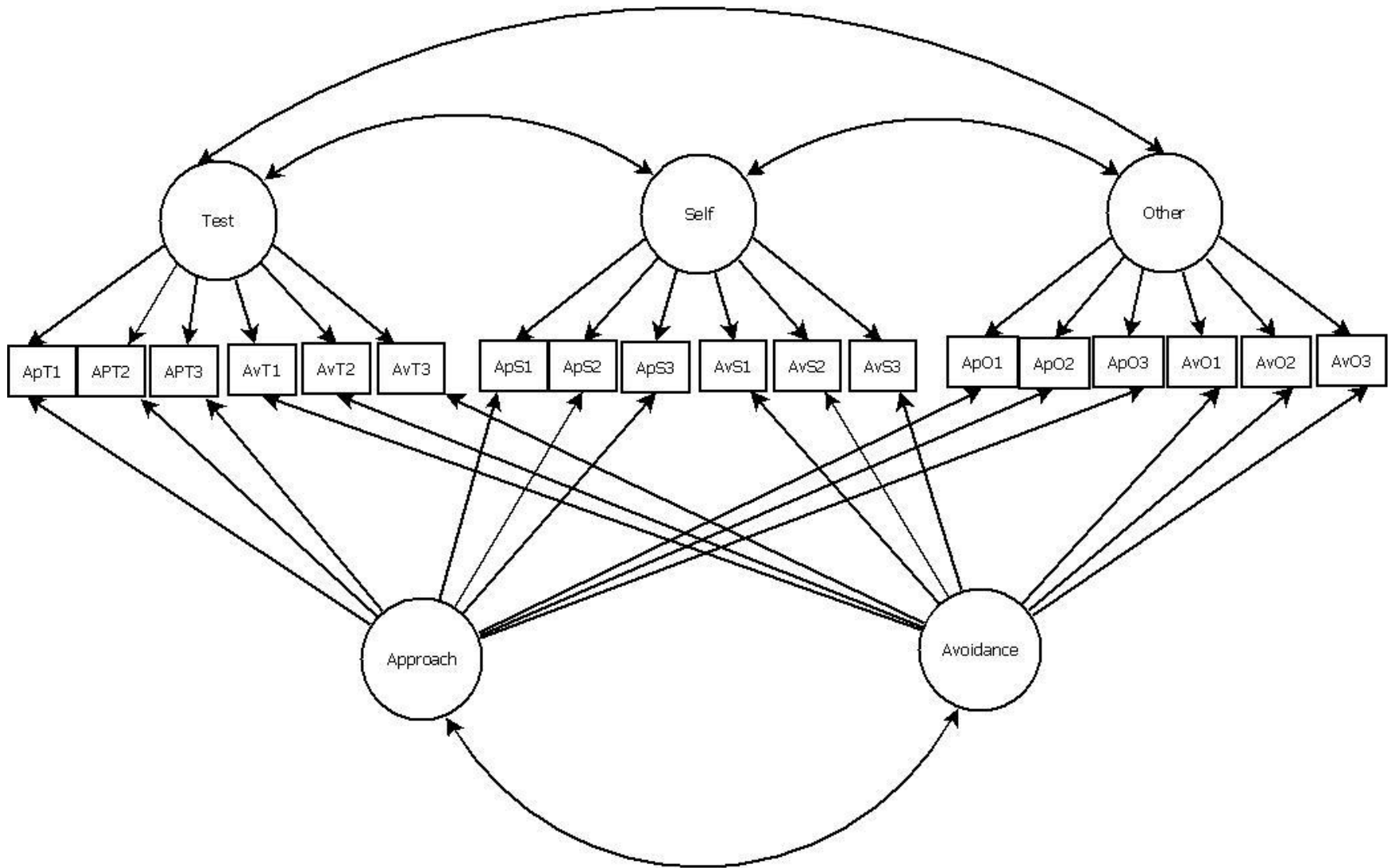
This dissertation has two main areas of interest for examination. First, given the lack of clarity surrounding the 3x2 model of goal orientation (Elliot, 2012; Johnson 2012; Linnenbrek-Garcia; 2012), the factor structure for goal orientation is explored. Second, the relationship between emotion and motivation before and after a testing outcome also is investigated. Specifically, the research questions are as follows:

1. What is the factor structure of goal orientation?

> Hypothesis 1: As postulated by Elliot et al. (2012) the method (task, self, other-based goals) of goal orientation will be unique from the trait (approach and avoidance) of goal orientation (Figure 1).

2. How are the goal orientation factors related to shame and pride before the testing outcome?

> Hypothesis 2: Based on previous works (Pekrun, 2007), the goal orientation factors will be related to emotions before the testing outcome and uniquely predict performance.

> Hypothesis 2B: Based on the findings from Pekrun, et al. (2007), emotion at time point one will mediate the relationship between goal orientations at time point one and testing outcome (Figure 2).

3. How are the goal orientation factors related to shame and pride after the testing outcome?

> Hypothesis 3: Based on the works of dynamic systems theory in academic settings (Eynde & Turner, 2006) testing outcome is hypothesized to uniquely predict all variables at time point two. Because shame and pride are both self-conscious emotions, the self-orientation will be related to shame and pride. Approach (demonstrating success) will be related to pride, and avoidance (hiding failure) will be related to shame.

Hypothesis 3B; Hypothesis 3: Based on the ideas of dynamic systems theory, emotion at time point two will mediate the relationship between testing outcome and motivation at time point two (Figure 2).

CHAPTER THREE

Methods

Participants

Participants for this study were recruited through an online system called SONA. Participants were enrolled in an Introduction to Psychology course, in which they were required to participate in approved studies or write a certain number of literature reviews. A total of 201 people participated in this study at time point one, with 120 completing survey two (60%). None of the measured factors significantly increased or decreased the odds of completing the survey at time point two. Several outside factors may have contributed to attrition within this study. First, issues with IRB approval led to a delay in survey distribution for time point two during the fall semester. Secondly, unexpected snow storms during the spring semester may have changed the testing dates for some participants, causing them to be ineligible for the survey at time point two. Finally, some participants may have withdrawn from the course after receiving a low test grade, and not had access to the second survey as a result.

Demographics

The participants' demographics were fairly varied for an Introduction to Psychology course. The original participants' age ranged from 18 to 46 years of age, with 72 percent reporting between 18 to 20 years of age. The data for the participant who was 46 was removed as an outlier ($z = 6.15$), making the new range 18 to 36 years of age. The median age was 19, with 5 participants' ages missing. 78.6% of the sample reported as female, with 2 not answering. 20% self-identified as Asian, with 30% self-identifying as Black or African American, 10% self-identifying as Hispanic or Latino, and 32% self-identifying as White, not of Hispanic origin. The remaining 8% self-identified as Other. All participants reported an ethnicity. The mean GPA (n =

158) was 3.3, s = 0.51, figure 4. Some participants in the Fall semester reported not having a GPA. 44% were Freshmen, with 30% Sophomores, 12% Juniors, and 7% Seniors. 12% reported being a Psychology major, with 83% choosing "something other than Psychology". Less than one percent reported being undeclared.

Procedure

Data were collected through survey methods using Georgia State University's online SONA system. Participants for this survey were enrolled in an Introduction to Psychology course. As part of this course, students are required to participate in approved studies, or write a certain number of literature reviews. This survey counted for 1 credit hour towards that requirement. All scales in this study were piloted by students enrolled in Introduction to Psychology during the semester before final data collection. Participants in the pilot study were not included in the final data. This study was given in both the Fall and Spring semesters. A t-test was conducted for all the variables (goal orientation, emotion, test grade, perceived testing outcome, and self-efficacy) to test for systematic differences between the two semesters. No differences were found between participants in the two semesters (Table 1).

Table 1

Mean Differences Between Semester 1 and Semester 2

Variable	T-Test	DF	SD Fall	SD Spring
Shame T1	0.09	198	1.68	1.48
PrideT1	0.84	199	1.21	1.13
Exam T1	0.44	198	1.14	1.14
Self T1	0.74	198	1.74	1.83
Other T1	0.74	199	1.74	1.84
Approach T1	0.36	198	1.05	1.01
Avoidance T1	0.86	197	1.36	1.15

Participants in this study were given a survey before and after their first major exam of the semester. All surveys were given online. The first survey was given to all participants at the beginning of the semester, before any major exams or other grades have been given out. This survey established a baseline goal orientation, and measured some important covariates, specifically age, gender, and self-efficacy.

After grades from the first major exam were handed back, the full second survey was given to all participants, using the same online method. Students who completed the first survey were invited to complete the second survey, which contained all of the same questions from survey one, and also included questions about test grade and perceived test performance. Scales in the survey were pilot tested prior to the main study

Basic demographics, including age, year in school, test performance, perceived test performance, gender, ethnicity, GPA and self-reported test grade also were collected at each time point, to ensure consistency. One participant's data with mismatched data on all questions was removed. Information about in which introductory psychology course the participant is enrolled was also recorded, to test for any unwanted classroom-level differences. After removing the mismatched participant and one outlier, 201 participants were involved in this study at time point one.

Survey Questions

Survey questions can be seen in Appendix A. All reported alphas and validity measures are from the current data, unless otherwise noted.

Goal Orientation

Scales from the 3x2 Achievement Goal Questionnaire were used for the goal orientation portion of this study (Elliot et al., 2011). College undergraduates were used to test and create this scale. This survey has six scales, as reported in the original article: task-approach ($\alpha = .84$), task-avoidance ($\alpha = .80$), self-improving-approach ($\alpha = .77$), self-improving-avoidance ($\alpha = .83$), other-approach ($\alpha = .93$), and other-avoidance ($\alpha = .91$). Items from these scales were used for the confirmatory factor analysis described in the analysis section. In previous work done by Elliot and Murayama (2011), task orientation and self orientation were linked to different sets of consequences. Task-approach positively predicted intrinsic motivation, self-efficacy, and absorption in class, while self-approach was unrelated to these outcomes and positively related to energy in class. Chronbach's alpha for the six scales was not run using these data as these scales were not used. Factor loadings can be seen in Appendix B.

Shame and Pride

The Achievement Emotions Questionnaire (AEQ) (Pekrun, et al., 2010) was used for this portion (Appendix 1). The original items for this study were drawn from exploratory qualitative studies conducted by the authors (Pekrun et al., 2002). Confirmatory factor analyses were run by Pekrun et al. (2002) to test both convergent and divergent scale validity and determined the final 24 items for the different emotions. The scales were correlated to measures of control value, appraisal value, and learning performance. All emotion scales were correlated to these validity checks as theoretically hypothesized.

All alpha levels for the scales of this questionnaire are above 0.7, as measured in this study. The shame scale is also strongly correlated with previous measures of shame ($r = 0.30$-0.50). This survey defined emotions as interrelated psychological components including affective, cognitive, physiological, and motivational processes, which is supported by the chosen DST approach to motivation. The AEQ does allow for individual constructs of emotion (joy, pride, anger, shame, and hopelessness), but considers the academic context in the question structure (Pekrun, et al., 2010). Therefore, this survey fits both the study definition and theoretical viewpoint of academic emotions. For this survey, questions at time point one were adapted to say "in this class", while questions at time point two were more focused on the test (Appendix 1). This survey also was used as it was the questionnaire originally used in the original Pekrun model (Pekrun, et al., 2010).

Test Performance (Post-Test)

Two different data sources were used to look at test performance. First, the actual score on the test was acquired through self-report. Secondly, four questions were asked of the participants during the after-testing round, in order to measure perceived success (Appendix 1).

This scale was created by the researcher, and was piloted beforehand. Chronbach's alpha for this scale was 0.90 (n = 201).

Self-efficacy (covariate)

Five questions from the Academic Efficacy Scale from the Patterns for Adaptive Learning measurement (Midgley et al., 2000) were adapted to reference the class (Appendix 1). This variable was used as a covariate, as self-efficacy has been correlated with goal orientation in previous research (Elliot, Pekrun, & Schutz, 2007; Fryer & Elliot, 2007). This scale has an alpha value of 0.78 for 5th grade students (ages 10-11). It is also slightly correlated with the task-approach scale (r = .20, p < .05), other-approach (r = .24, p < .05) and other-avoidance goals (r = -.31, p < .01) in middle school students (Midgley et al., 2000). In the data with college students, this scale had a Chronbach's alpha of 0.86 (n = 201).

Analysis

Missing data analysis was conducted for completion of survey 2. A logistic regression was conducted using the demographics (age, gender, ethnicity, year in school, and GPA) and variables (shame, pride, and self-efficacy) from survey one to predict completion of survey two. No significant predictors were found (Table 2). Missing data were handled using full information maximum likelihood methods (FIML). FIML uses the data from other participants to estimate a likelihood function, allowing all of the known data to be used (Kline, 2010). FIML was chosen because data were assumed to be missing at random (Graham, 2009). Further discussion of the implications of the missing data is included in the limitations section.

Table 2

Logistic Regression Outcomes: Missing Data Predictors

Variable	B	S.E.	df	Sig.	Exp(B)
Age	-.002	.002	1	.354	.998
Female	1.098	.694	1	.114	2.997
White, not of Hispanic origin	.358	.670	1	.593	1.430
Asian, all groups	-.800	.563	1	.156	.449
Black or African American	-.306	1.103	1	.782	.737
Hispanic or Latino	1.084	1.358	1	.424	2.958
GPA	.000	.001	1	.683	1.000
Freshmen	-1.155	.594	1	.060	.315
Sophomore	-1.424	.885	1	.108	.241
Junior	-1.498	1.008	1	.137	.224
Senior	-.641	1.408	1	.649	.527
ShameT1	.001	.002	1	.633	1.001
PrideT1	.000	.001	1	.836	1.000
SE	.370	.212	1	.081	1.447
Constant	-1.703	1.487	1	.252	.182

Basic statistics and demographic information were measured using PASW v. 18.All other analyses were conducted using MPlus v. 7. All structural equation modeling will also be done using MPlus v. 7. Model fit was assessed using chi-squared measurements of model fit, as well as the Root Mean Square Error of Approximation (RMSEA), and the Confirmatory Fit Index (CFI) (Bollen & Long, 1993; Hu & Bentler, 1998). Unless otherwise indicated, robust maximum likelihood (MLR) estimation was used. MLR was chosen as the estimator because it is robust to violations of distributional assumptions (Kline, 2010). All confidence intervals are at the 95% level, and all estimates were standardized, unless otherwise noted.

CHAPTER 4

Results

Demographic Control Variables

To test the impact of the demographics on goal orientation, emotion, and testing outcomes, linear regressions were ran to compare males and females on each category. No significant differences were found between men and women on shame, pride, or test grade (Table 3). These outcomes were also regressed on age. Age was not a significant predictor of shame, pride, test grade, or testing outcome. Because age and gender were not associated with model variables, they are not included as covariates in the final models (Table 3).

Table 3

Linear Regression on Gender and Age

	Age			Gender		
Outcomes	β	SE	p-value	β	SE	p-value
ShameT1	-0.06	0.04	0.13	-0.17	0.52	0.74
ShameT2	0.04	0.10	0.67	0.12	0.84	0.89
PrideT1	0.04	0.04	0.28	-0.13	0.39	0.75
PrideT2	-0.02	0.09	0.88	0.03	0.80	0.97
Test	-0.06	0.03	0.54	0.15	0.34	0.14
Self	-0.12	0.03	0.26	0.15	0.41	0.15
Other	-0.17	0.34	0.10	0.04	0.42	0.70
Approach	-0.08	0.03	0.45	0.10	0.31	0.32
Avoidance	-0.18	0.03	0.08	0.15	0.40	0.15
Test Grade	-0.17	0.86	0.85	21.42	10.68	0.06

Factor Analysis

To address the first research question (What is the factor structure of goal orientation?), a multitrait-multimethod factor analysis was conducted (Figure 3). In this type of model, each factor loads onto both its trait (task, self and other) and its method (approach and avoidance). For

example, "My goal in this class is to get a lot of questions right" would load onto both the task trait and the approach method. The traits are all correlated, as are the methods. The correlations between the traits and the methods were constrained to zero. A model was first analyzed with the factor loadings constrained to equality across the time points, such that all of the items for each factor loaded the same for time points one and two. The residual variances for the items across time remained correlated. This model had good fit. Freed model: χ^2 (538, N = 201) = 942.51, p < 0.01; RMSEA = 0.06 (CI = 0.05, 0.07), CFI = 0.90. A second model then estimated factor loadings for both time points, with each time point freely estimated and residual variances for the items across time correlated. This model did not fit better than the fixed model: χ^2 (507, N = 201) = 915.55, p < 0.01; RMSEA = 0.06 (CI = 0.05, 0.07), CFI = 0.90. The Satorra-Bentler scaled chi-difference test indicated that the freed model did not fit significantly better than the fixed model (χ^2_{diff} (31) = 39.21, p = 0.14). All of the items loaded significantly positively onto their hypothesized factors (appendix B), with the exception of Approach-Other question 3 (To do better than my classmates on the exams in this class.) on the approach factor, β = 0.43, SE = 0.23, p = 0.06. The fixed model for time one and time two fit the data well, indicating that the trait factors are unique from the method factors, and that all five are present in the data.

Figure 4

Standardized Correlations for Multitrait Multimethod Model
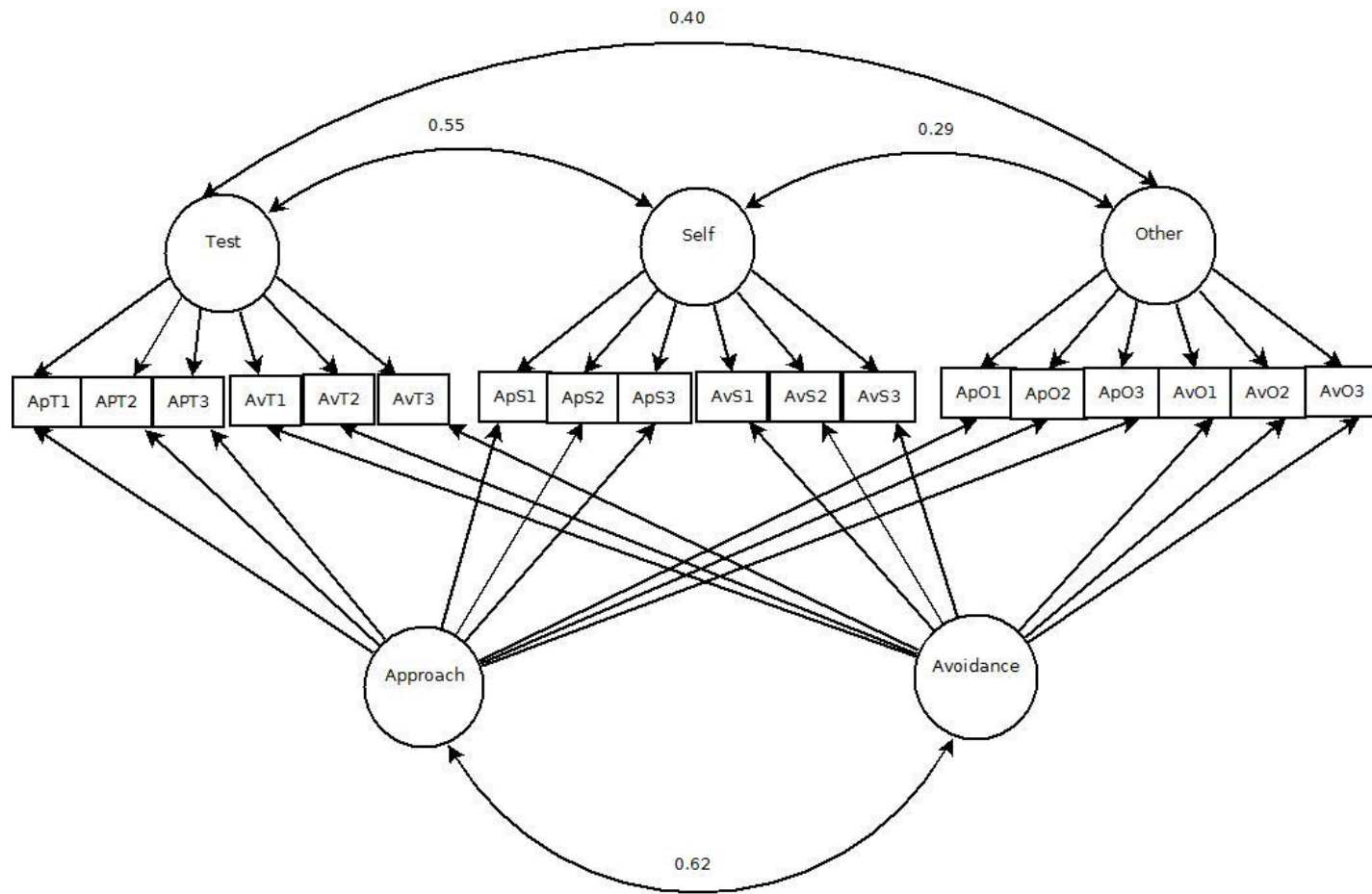
Correlations between factors are significant at p < 0.05; correlations presented are from time one.

Structural Models

To address the second and third research questions (How are the goal orientation factors related to shame and pride before/after the testing outcome?) a structural equation model was conducted to explore the bivariate correlations between goal orientation and emotion (Figure 5). The factor structure from the multitrait-multimethod model (Figure 3) was used to estimate the exam, self, other, approach, and avoidance factors at both time points. The individual average for the shame items and pride items at each time point were used to measure shame and pride. The individual average for perceived testing outcome items was used to measure perceived testing outcome. Test grade was self-reported. In this model, all of the variables from time one were estimated to predict test grade. Test grade and perceived testing outcome were then estimated to predict all of the variables at time two. Time one goal orientation factors and time one emotion variables were correlated, as well as the time two goal orientation factors with the time two emotion variables (Figure 5).

Figure 5

Correlation Model without Self-Efficacy
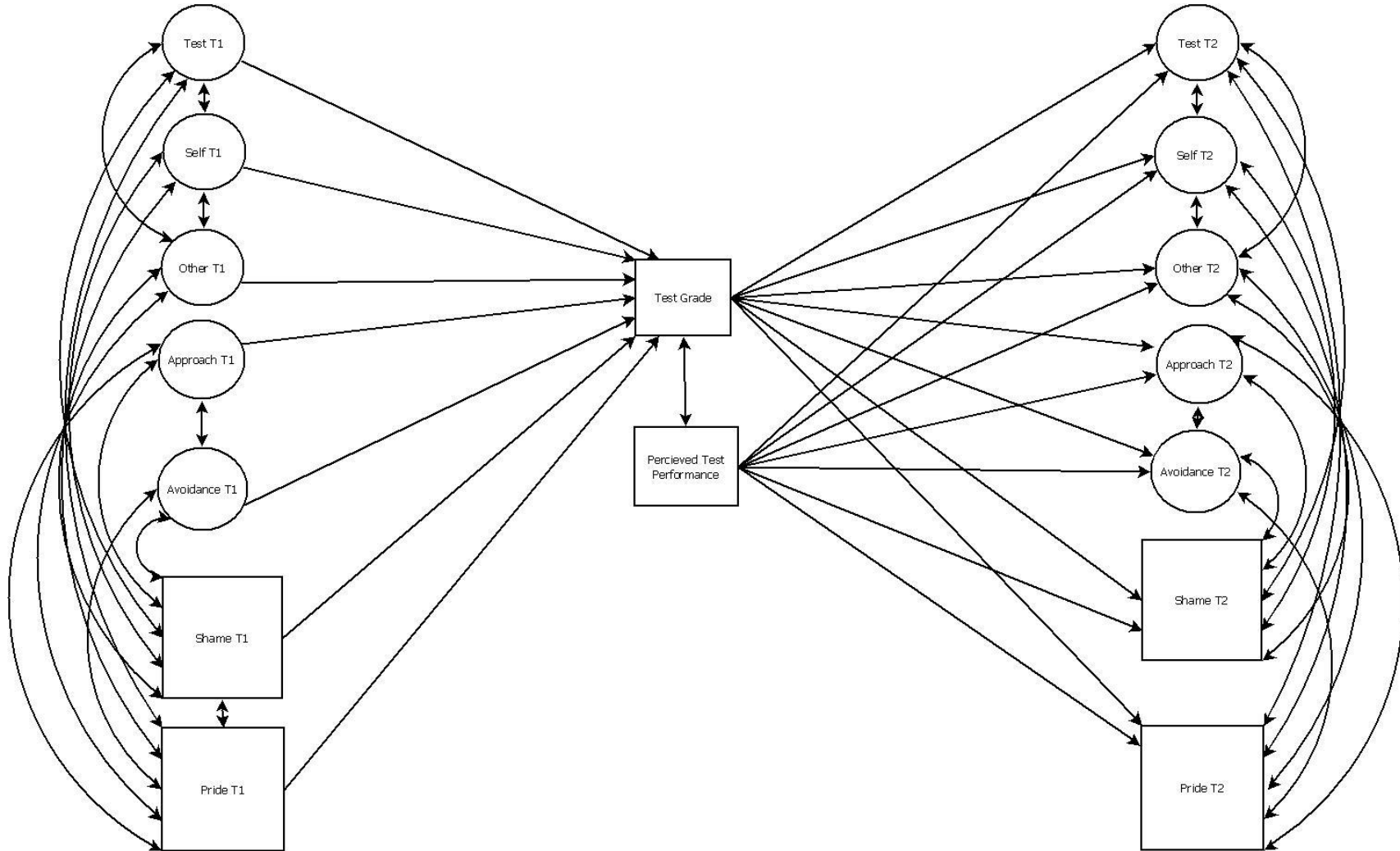
Note: autoregressive paths included, but not pictured in figure.

Figure 6

Correlation Model with Self-Efficacy
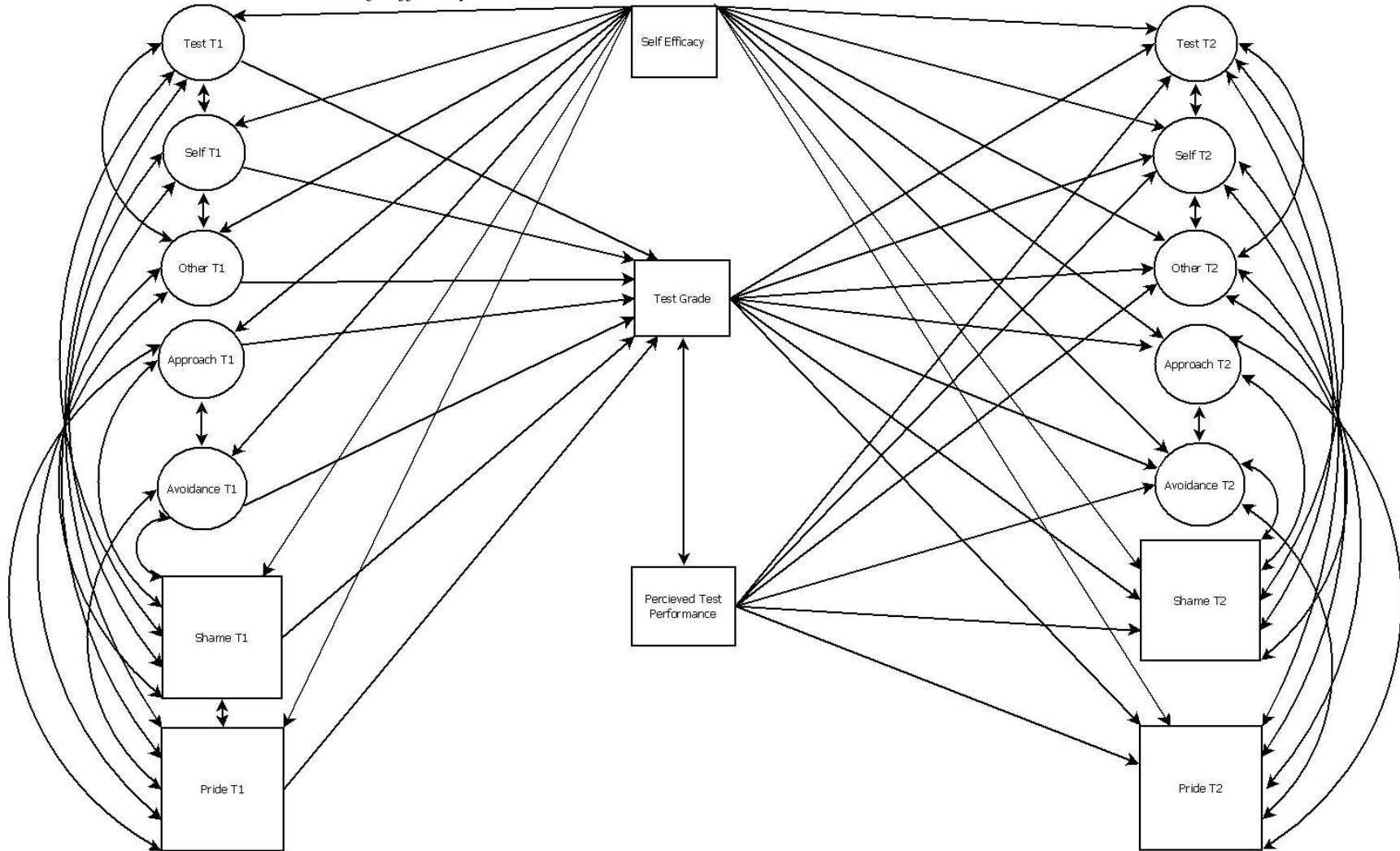
Note: autoregressive paths included, but not pictured in figure.

In the first model, self-efficacy was not included. This model fit was borderline, most likely due to the inclusion of a misfitted measurement model in this SEM: χ^2 (705, N = 201) = 1224.36, p < 0.01; RMSEA = 0.06 (CI = 0.05, 0.07), CFI = 0.89.

At time one, self (r = 0.15, SE = 0.09, p = 0.08) and other (r = 0.18, SE = 0.07, p = 0.01) were correlated with pride. No goal orientation factors were correlated with shame at time one. In this model, shame at time one unique effect on (β = -0.15, SE = 0.09, p = 0.05) test grade and shame at time two was unique effect on by test grade (β = -0.28, SE = 0.11, p = 0.01). None of the goal orientation factors unique effect on test grade, nor were they predicted by test grade or perceived test performance. Pride at time two was predicted by test grade (β =0.29, SE = 0.09, p = 0.01) and perceived test performance (β =0.24, SE = 0.07, p = 0.01). At time two, none of the motivation factors were correlated with either pride or shame (Figure 7, Appendix B).

To try and improve fit, the errors for the items within the multtrait multimethod measurement model were correlated. This did not improve fit. Additionally, modification indices did not suggest any interpretable paths or correlations for either the measurement model or the structural model. Therefore, since the measurement model fit only marginally well, and the measurement model was included in the structural model, the structural model will not fit better than the measurement model alone (Kenny, 2011). The inclusion of the multitrait multimethod measurement model within the structural model is the likely cause of the misfit. However, the relatively small sample size for such a complex model may also factor into the misfit as well.

In the second model, self-efficacy was included as a covariate of all variables, in order to examine self-efficacy's effect on the model. This model fit borderline poor: χ^2 (766, N = 201) = 1278.49, p < 0.01; RMSEA = 0.05 (CI = 0.05, 0.06), CFI = 0.89, again likely due to the inclusion of the measurement model. At time point one, test was correlated with shame (r = 0.27,

SE = 0.09, p = 0.05), self was correlated with shame (r = 0.24, SE = 0.08, p = 0.01), and other

was correlated with shame (r = 0.16, SE = 0.08, p = 0.04). Approach was correlated with pride (r

= 0.18, SE = 0.08, p = 0.03), and avoidance was unrelated to either shame or pride at time one. In

this model, shame at time one had a unique effect on test grade (β = -0.15, SE = 0.09, p = 0.05),

and was predicted by test grade at time two (β = -0.25, SE = 0.10, p = 0.02). Pride at time two

was predicted by test grade (β =0.26, SE = 0.09, p = 0.01) and perceived test performance (β =

0.26, SE = 0.08, p = 0.01). Test grade and perceived test performance were unrelated to the goal

orientation factors at either time point. At time two, none of the goal orientation factors were

correlated with either shame or pride (Figure 8, Appendix B).

Figure 7

Significant Results for the Correlation Model without Self-Efficacy
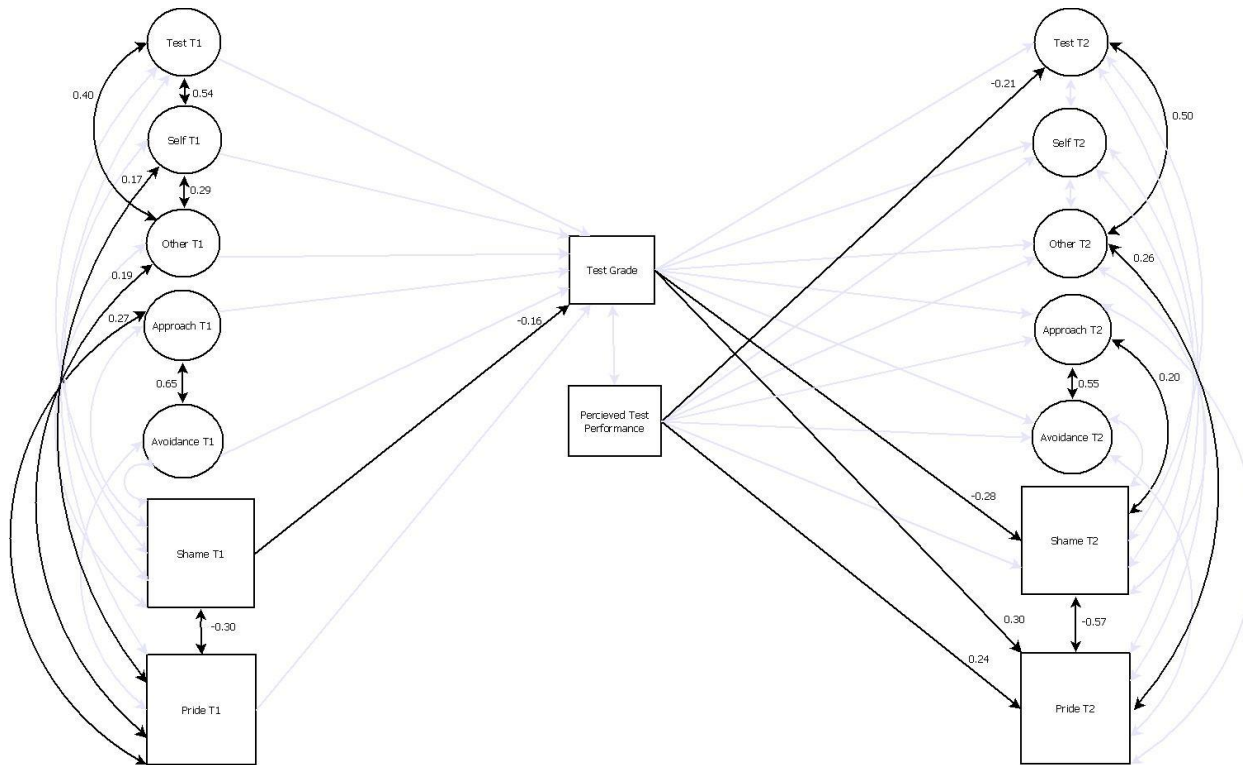
Note: autoregressive paths included, but not pictured in figure.

All solid paths are significant at p <0.05.

All dashed paths trend to significance at p<0.10, but p>0.05.

Figure 8

Significant Results for the Correlation Model with Self-Efficacy

Note: autoregressive paths included, but not pictured in figure.
All solid paths are significant at p <0.05.
All dashed paths trend to significance at p<0.10, but p>0.05.

To address the final questions (What is the pattern between emotions and motivation before/after the testing outcome?) a structural equation model was fit to the data to investigate any mediation effects (Figure 2). All tests of mediation are within one time point. The first model looked at emotion as a mediator between goal orientation and testing outcome at time point one, and between testing outcome and goal orientation at time point two, as described in hypotheses 2 and 3 (Figure 9). This model did not include self-efficacy. This model fit was mixed: χ^2 (743, N = 201) = 1248.67, p < 0.01; RMSEA = 0.05 (CI = 0.05, 0.06), CFI = 0.89. None of the motivation factors at time one were related to shame. Other (β =0.17, SE = 0.07, p = 0.02) and approach (β =0.38, SE = 0.12, p = 0.01) had a unique effect on pride, while self (β =0.12, SE = 0.09, p = 0.08) trended towards significance for pride. None of the motivation factors had a unique effect on test grade. Shame had a unique effect on test grade (β =-0.17, SE = 0.09, p = 0.05), while pride was unrelated to test grade. At time point two, shame was significantly predicted by test grade (β =-0.28, SE = 0.11, p = 0.01), while pride was significantly predicted by test grade (β =0.30, SE = 0.09, p = 0.01) and perceived testing outcome (β =0.25, SE = 0.09, p = 0.01). Test motivation was predicted by perceived testing outcome (β =-0.26, SE = 0.10, p = 0.01), while shame (β =0.27, SE = 0.12, p = 0.02) had a unique effect on avoidance. Shame trended towards significance for approach (β =0.23, SE = 0.13, p = 0.07; figure 8, appendix B). The indirect path from test grade to avoidance through shame at time point two was significant (β = -0.07, p = 0.05).

For the final model, self-efficacy was included in the model described above as a predictor of all variables, to examine how self-efficacy changes the model. This model had borderline fit: χ^2 (769, N = 201) = 1278.98, p < 0.01; RMSEA = 0.05 (CI = 0.05, 0.06), CFI = 0.89. At time point one in this model, self had a unique effect on shame (β =-020, SE = 0.07, p =

0.01), while other ($\beta = 0.12$, SE $= 0.07$, p $= 0.07$) and approach ($\beta = 0.22$, SE $= 0.13$, p $= 0.07$) trended towards significance for pride. Neither shame, pride, nor any of the goal orientation factors had a unique effect on test grade. At time two, perceived testing performance predicted test ($\beta = -0.24$, SE $= 0.10$, p $= 0.01$) and pride ($\beta = 0.27$, SE $= 0.09$, p $= 0.01$), and trended towards significance for self ($\beta = -0.18$, SE $= 0.10$, p $= 0.08$), approach ($\beta = -0.18$, SE $= 0.08$, p $= 0.08$) and avoidance ($\beta = -0.17$, SE $= 0.10$, p $= 0.08$). Test grade significantly predicted shame ($\beta = -0.25$, SE $= 0.12$, p $= 0.02$) and pride ($\beta = 0.27$, SE $= 0.09$, p $= 0.01$). Test grade, shame and pride were not significantly related to the goal orientation factors at time two (Figure 10, appendix B). The indirect effect from self to test grade through shame at time point one was not significant ($\beta = -0.03$, p $= 0.24$).

Figure 9

Significant Results for Final Structural Model without Self-Efficacy

Note: autoregressive paths included, but not pictured in figure.
All solid paths are significant at p <0.05.
All dashed paths trend to significance at p<0.10, but p>0.05.

Figure 10

Significant Results for Final Structural Model with Self-Efficacy
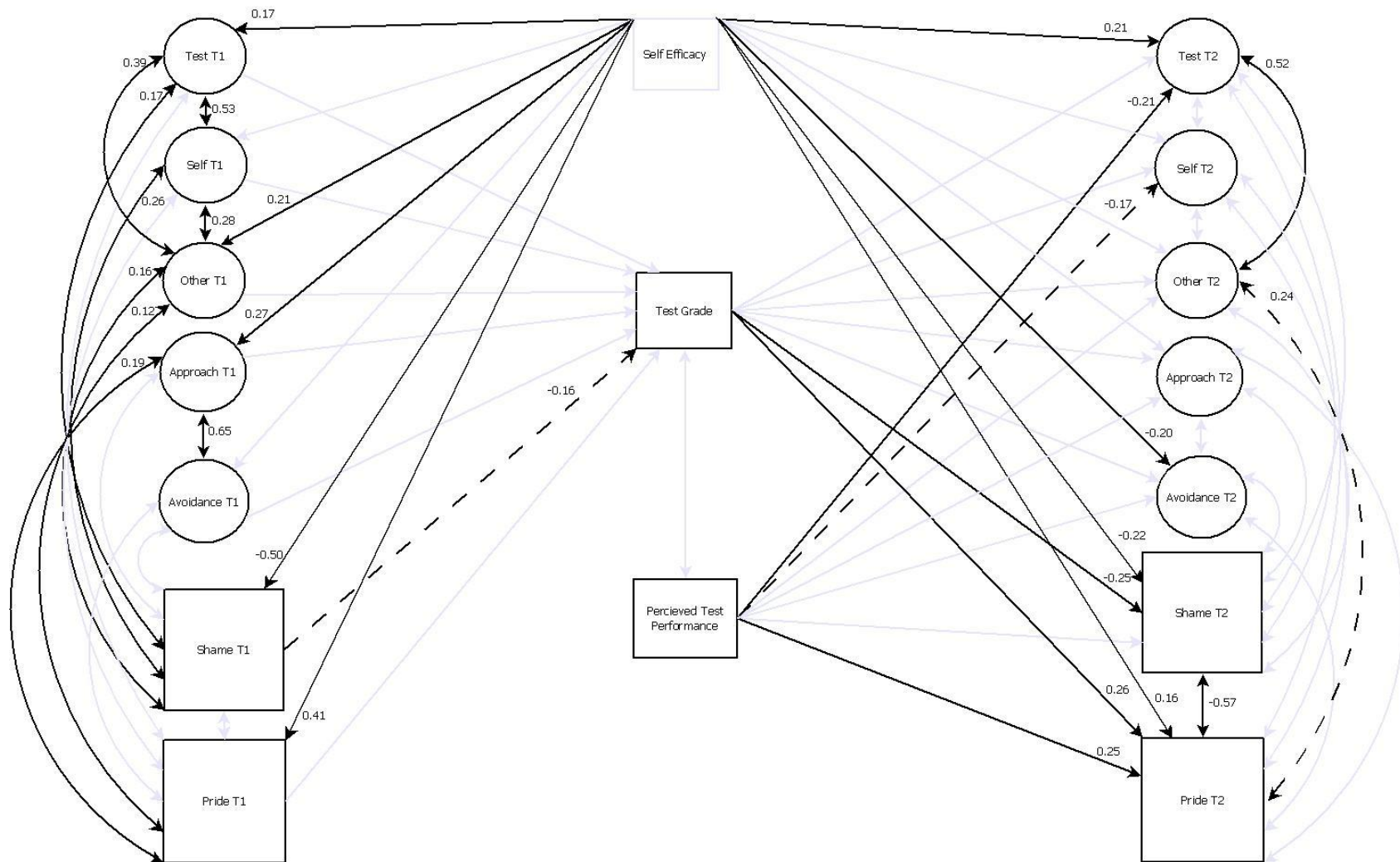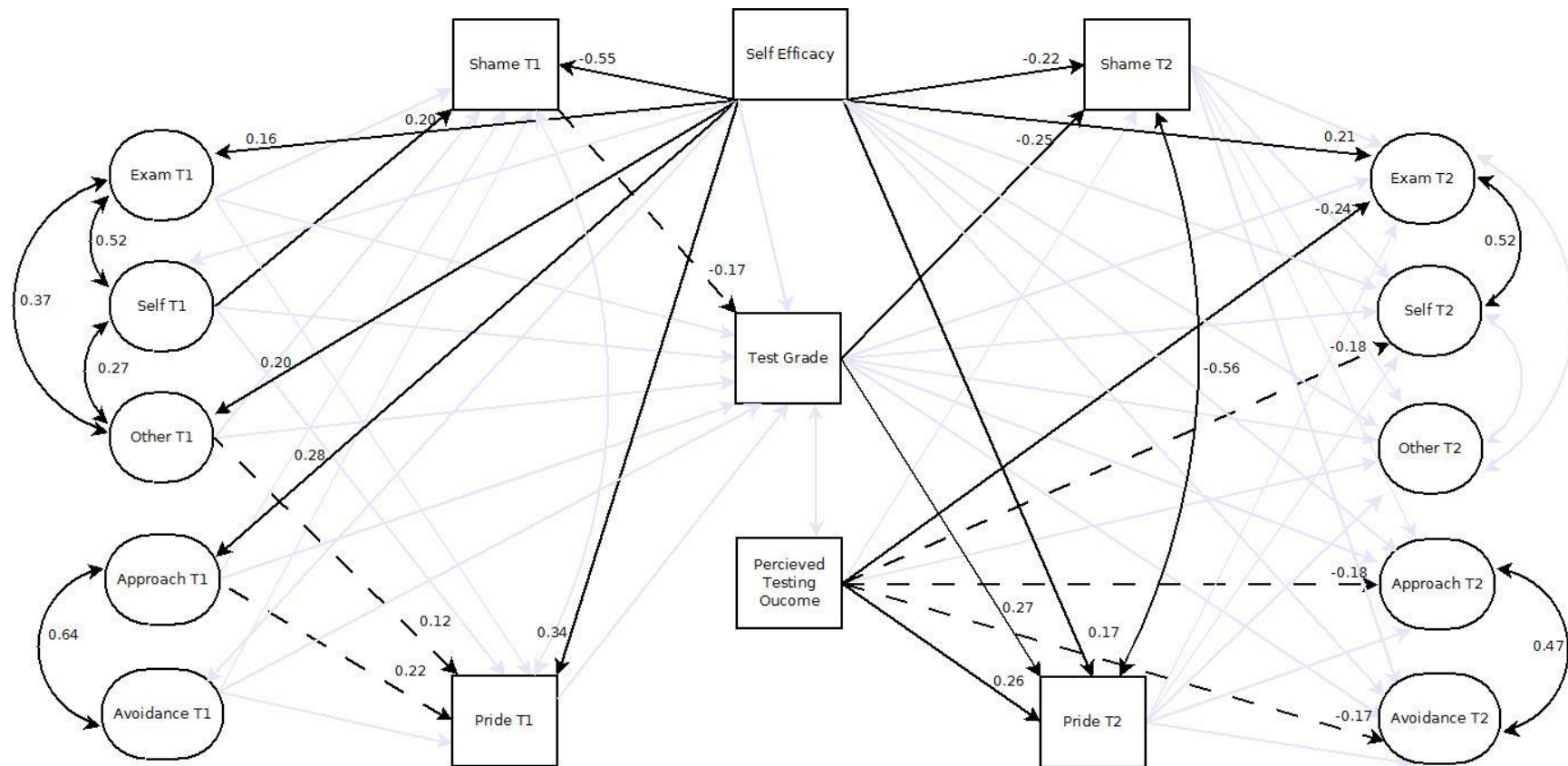

Note: autoregressive paths included, but not pictured in figure.
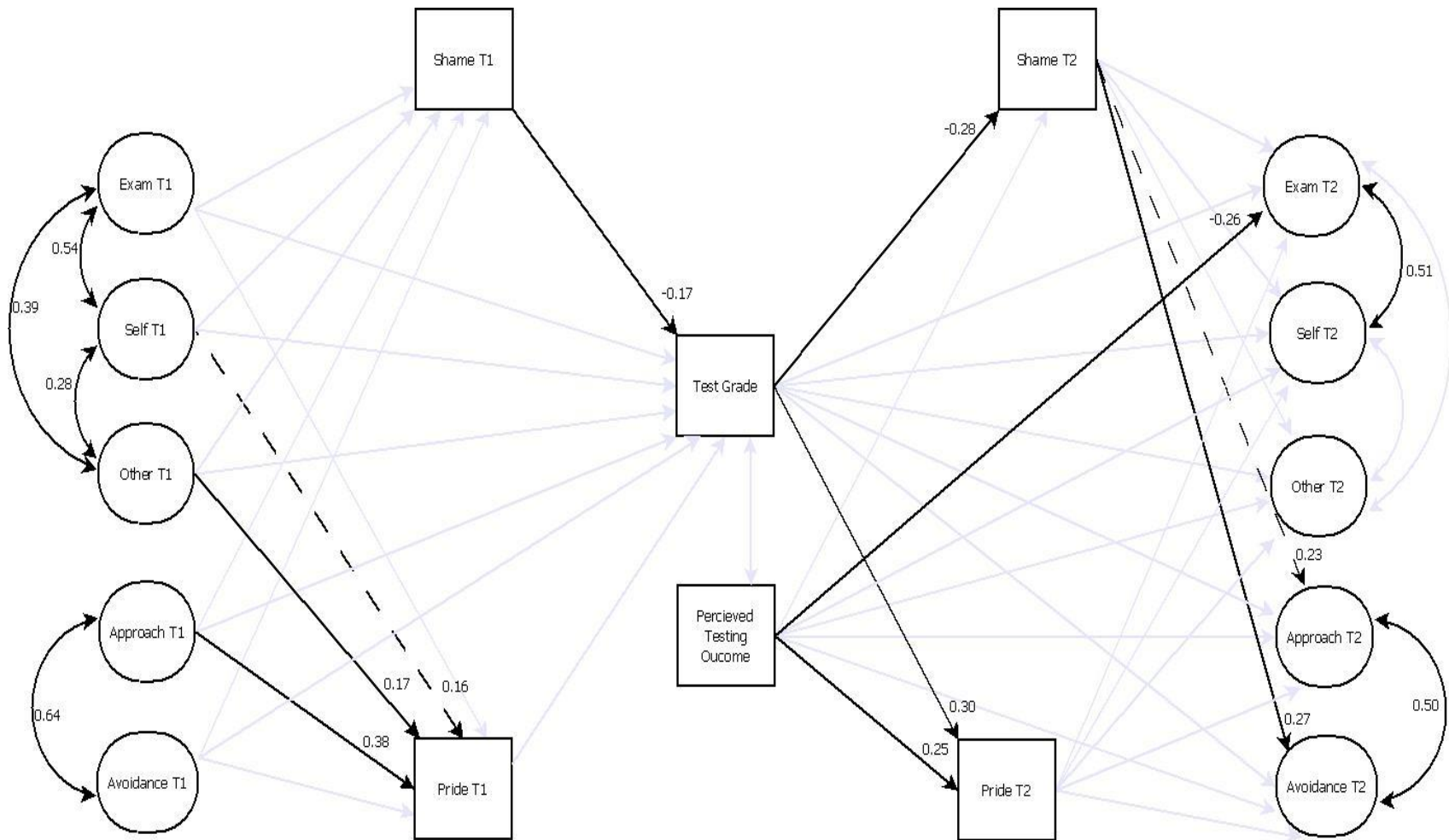All solid paths are significant at p <0.05.
All dashed paths trend to significance at p<0.10, but p>0.05.

CHAPTER 5

Discussion

The overall goal of this dissertation was to investigate the relationship between emotion and goal orientation in an academic context. First, the factors for the goal orientation survey were examined using a multitrait-multimethod CFA, in order to test the construct validity of the goal factors when split among competence area (task, self and other-based goals) and valence (approach and avoidance-based goals). Secondly, relationships between emotion and goals before and after a testing outcome were investigated using different structural equation models. These models also tested the extent to which emotions and goal orientations predicted testing outcomes and were predicted by testing outcomes.

Factor Structure of Goals

In 2012, Elliot and colleagues proposed a new factor structure for goal orientation that included the concept of competence. The three areas of competence (task, self and other-based goals) were merged with the pre-existing dimension of approach and avoidance, in order to create six constructs. The previous construct of mastery was replaced with task-based goals and self-based goals, while performance-based goals was replaced with other-based goals. Using a multitrait-multimethod model, results indicate that the 3x2 goal orientation survey does assess both areas of competence (task, self, other-based goals) as well as distinguishing approach and avoidance goals, in support of hypothesis one.

Some questions surrounded the use of task and self to replace mastery. Previously, task-based goals, self-based goals, other-based goals, approach-based goals and avoidance-based goals (Figure 1) had been empirically studied using a CFA for the six factor structure. This CFA was compared with other factor structures that combined the area with the valance in different

ways. The researchers also compared the six factor structure with structures that only used either area or valence factors. However, given that mastery was replaced by task-based goals and self-based goals, whereas previously the two had been merged, a direct examination of the higher order factors was needed. The findings from this dissertation suggest that the higher order factor structures do exist in the manner suggested by Elliot (2012), and therefore task and self should not be combined into one factor, or mastery-based goals.

This dissertation also attempts to address the debate surrounding approach and avoidance-based goals. Some researchers debate the existence of a separate approach and avoidance construct, arguing that since they are so strongly positively correlated, they should be viewed as one construct (Johnson, et al., 2012). However, others say that performance approach and performance avoidance are positively correlated because they share common items under the performance (other) factor (Elliot, et al., 2012). Results from this dissertation showed that approach goals and avoidance goals were positively correlated, but distinct constructs, and had distinct relationships with both the emotions variables and the testing outcomes. Only approach was related to the emotions in the correlational models. In summary, the approach and avoidance items are related, but unique, and were also differentially related to emotion and testing outcomes. Therefore, while the two constructs are still positively correlated after teasing out the competence factors, given their unique relationships to emotion and testing outcome, approach and avoidance should not be considered the same construct.

Goals and Emotions

Previous theorists have suggested that the relationship between emotion and motivation be investigated within the context of a testing outcome (Leutner, 2013). The data tentatively supported the second and third hypotheses regarding the relationship between emotion and

motivation. Goal orientation and emotion do appear to be related at time point one. However, this relationship is not seen at time point two, controlling for the time one variables. Test grade predicts both shame and pride at time point two, controlling for the levels of shame and pride at time point one. However, no evidence exists to support the idea that testing outcomes predict changes in motivation from before to after a testing outcome. Given these findings, it could be possible that something in the testing outcome event may be changing the experience of shame and pride such that they are no longer related to goal orientation. Dynamic systems theory would suggest that the influence of context (testing outcome) should influence the experience of emotion (Eynde & Turner, 2006; Turner & Husman, 2008a). This interpretation should be taken as speculation, as these data findings are based on cross sectional data for both time points. More research should be done to investigate the impact of testing outcomes on the phenomenological experience of shame and pride over time.

Longitudinal studies suggest that emotion and motivation may have a more bidirectional or cyclical relationship (Cron et al., 2005; Hall et al., 2006; Linnenbrink & Pintrich, 2002). For example, cyclical effect of fear of failure has been demonstrated in some students who are "convinced of their inability" (Covington & Omelich, 1985a). As students have higher fear of failure, they tend to have higher levels of shame (Linnenbrink & Pintrich, 2002). This shame may lead to self-handicapping behaviors, such as avoidance or withdrawal. As students withdraw from the task, they become more likely to actually fail the task. This failure then feeds back into the fear of failure, which can lead to a downward spiral (Budden & B., 2008; Chen et al., 2009). Evidence of this downward spiral may be seen in the structural model. Shame at time one negatively predicts test grade, while test grade negatively predicts shame at time two. Shame may lead to the self-handicapping behavior found in previous studies (Bibby, 2002; McGregor &

Elliot, 2005; Mills, Arbeau, Lall, & De Jaeger, 2010; Turner & Husman, 2008a), thus preventing students from actually increasing their grades. However, the self-handicapping behaviors should be measured as a potential moderator of the relationship between shame at time one and test grade. This finding should also be interpreted with caution, however, as self-efficacy changes the significance of these paths.

When self-efficacy is controlled for, it first has an effect on the relationships between approach, avoidance and emotions. Self-efficacy appears to suppress some of the findings from motivation to emotion. The path from self-goal orientation to shame becomes significant within both the correlational model and the structural model when self-efficacy is added. Additionally, many of the paths form perceived testing outcome to the goal orientations at time point two begin to trend towards significance.

It may be that self-efficacy changes the effect of approach on pride. For instance, if a student is studying hard for a test in order to receive a good grade (high approach), but does not believe the good grade is attainable (low self-efficacy), he or she may not feel proud about his attempts (low pride). A similar relationship has been demonstrated between competence and autonomy. Students will not strive for autonomy in a task without first feeling competent in the task (Radel, Pelletier, & Sarrazin, 2013). In other words, if students do not believe they can reach success (self-efficacy), they may not feel proud about wanting to be successful.

Secondly, the inclusion of self-efficacy appears to create some suppression effects within the structural model. For example, the path from self to shame at time one is only present when self-efficacy is included in the model. From a theoretical standpoint, the motivation goal orientation factors each measure three dimensions: the area of focus (task-oriented, self-oriented, other-oriented); the valence of that focus (approach-oriented or avoidance-oriented) and an

assumed focus on demonstrating competence (or, in the case of avoidance, avoiding demonstrating incompetence). Some researchers argue that self-efficacy and competence are the same construct (reference). Therefore, when self-efficacy is included in the model, the goal factors may only uniquely measure valence or focus for the goal, and these dimensions may be more salient for emotional responses. For example, the self-orientation without a focus on demonstrating competence then changes from "I want to do better (competence) than I have done in the past (self)" to "I have done poorly in the past", which then leads to the association with shame.

In these models, none of the time one motivation factors predicted test grade. This is different from previous researchers' findings (Pekrun, et al., 2007; Elliot and some other people, 2009; Linnenbrek etc., 2004). However, all of these studies only used the 2x2 performance/mastery approach/avoidance model, and did not have task, self and other-based goals as part of their study. It may be that the combinations of area (task, self, other-based goals) and valence (approach and avoidance) into task-approach, task-avoidance, self-approach, self-avoidance, other-approach and other-avoidance are significant. Previous research used these combinations in a more simplistic form, i.e.: performance-approach, performance-avoidance, mastery-approach and master-avoidance based goals.

Additionally, unmeasured moderators of the effect between motivation and test grade may play a role. For example, fear of failure has also been shown to moderate the effect between emotions and academic outcome, such that those with higher fear of failure experience higher levels of negative emotions(McGregor & Elliot, 2005). Fear of failure is also negatively associated with academic emotional well-being and positively correlated with disorganization while preparing for an exam (Berger & Freund, 2012).

At time two, perceived testing outcome appeared to be a more salient predictor of emotion and motivation than the absolute test grade. However, perceived testing outcome and test grade were not correlated, indicating that what is perceived as a good grade for one student may not be perceived as a good grade for a second student. DST theorizes that cognitive interpretations of events are the first step in eliciting emotions (Eynde & Turner, 2006; Turner & Husman, 2008a). Perceived testing outcome is most likely a measurement of this cognitive interpretation. Therefore, the finding that perceived testing outcome is related to emotion and motivation while testing outcome is generally would be predicted by the framework of DST (Eynde & Turner, 2006; Turner & Husman, 2008a). Given that perceived testing outcome seems to be more related to the changes in motivation, using test grade alone as a predictor of motivational changes may not capture the complete picture.

Additionally, at time two, there appears to be a significant indirect path from test grade to avoidance through shame. As students' test grades go down, it increases shame at time two. The shame response is in turn uniquely associated with avoidance at time two. This is in line with other findings in which shame leads to self-handicapping behavior. Students most likely do not wish to feel ashamed again, and thus are more likely to be focused on avoiding failure, which they attributed to be the cause of their shame.

Limitations and Future Directions

Sample size caused by attrition was one of the main limitations of this study. Only 60 percent of participants from survey 1 completed survey 2. Missing data and attrition were both issues within this study. While it is possible that students with low test grades dropped out of the class, and therefore did not take the second survey, it is more likely that uncontrollable outside variables attributed to the attrition. In the first semester, technical issues prevented the survey

from being released on time. As a result, some participants may have hit their survey limit and did not need to take the second survey. In the second semester, two unexpected university-wide closings may have changed the dates of the tests in the courses, thus making some students ineligible to take the second survey (as they did not have a test grade at the time of the release). However, it is also possible that, it is low test grades may have prompted students to withdraw from the course before completing the second study withdrawal, which would call into question the accuracy and generalizability of results.

Other sampling issues with this dissertation centered on the demographic makeup of the participants. Because this was an Introduction to Psychology course, most of the participants were 18 year old freshmen, with the majority being under 20. This did not allow for much comparison across the age ranges. Similarly, nearly 80% of the participants reported being female. Therefore, some of the effects of gender on the variables may be dampened due to the imbalance of the groups.

In addition to attempting to diversify the age and gender within college students, similar studies should be conducted with younger participants. Previous studies have found that shame peaks during adolescence (Orth, 2005), and therefore middle school may prove to be an interesting time to measure the relationship between emotion and motivation. The transition from middle school to high school may also be of interest, as students begin to redefine themselves (Faye & Sharpe, 2008; Weinstein, Deci, & Ryan, 2011) and many self-defining factors may be in flux (Elkind & Bowen, 1979), which may influence both the concept of the self-orientation and the salience of the self-orientation.

There are also limitations to the study's research design. The exact exam date for the participants was unknown. However, the survey had to be made available to all participants at

the same time. As a result, some participants took their survey right after getting their test result back, while others waited up to two months to take the survey. Some participants may have an initial emotional reaction that is not carried over long term, but still affects their motivational processes. The differences in the timing of the survey amongst participants may be a confounding variable. Ideally, emotional responses would be captured immediately after the testing outcome, with motivational responses being measured later, but at the same time for all participants.

Additionally, to be able to test full mediation across two time points, four data collection times would be needed: two at time point one and two at time point two. Maxwell, Cole, and Mitchell (2011) make the argument that mediators in cross-sectional data (as is present in this study) may not be mediators in full longitudinal data. Indirect effects in cross-sectional data may in fact be zero in longitudinal data. They suggest a full autoregressive model of change be conducted, which would require the four time points discussed below (MacKinnon & Tofighi, 2013). The results from this dissertation provide some evidence for a model in which emotion mediates the relationship between goal orientation and testing outcomes. However, there are a myriad of other potential causal models for that could be applied to this data that would have equal fit measures. Therefore, claims of the uniqueness of this structure to this data cannot be fully made. While previous research has found emotion to be a mediator between emotion and testing outcome at time point one, to fully test this structure, more time points, and ideally experimental manipulation, are needed to provide a more definitive test of mediation.

To address issues one and two, future researchers should consider some design changes to this dissertation. First, researchers should attempt to have each data collection done all at once, perhaps in-class to control the timing of the testing outcome and the measurements. Additional

data collection times should be included as well, to measure any mediation effects of emotion and motivation. Ideally, motivation would be assessed on the first day of class, with emotion being tested closer to the testing date. Emotion at time two would then be measured immediately after receiving the test result, with motivation at time two being measured at a later date equal to the time between motivation and emotion at time one. Additional study designs should be considered as well, especially if the micro level steps of emotion listed in DST are to be captured. For instance, an experimental design in which participants are made to feel shame or pride via reflections on previous experiences with the emotion or other manipulations may help elucidate the timing of emotions and motivation. If the elicited emotion changes the goal orientation for a task, it may be that emotion predicts goal orientation. Similarly, testing outcome could be manipulated within an experimental design as well. This could be used to test the impact of moderators, such as self-efficacy, as well as the influence of testing outcomes on emotions at time two. However, once again, perceived testing outcome would also need to be measured along with the manipulation. Finally, previous studies have attempted to experimentally manipulate goal orientations through instructions, with limited success (Tripathi & Chaudhary, 2003)

Other research designs should include more variables to attempt to examine possible mediators between shame and test grade. Self-handicapping behaviors, such as withdrawal or avoiding answering questions could be measured, and may be a mediator to the relationship between shame and test grade. Additionally, self-efficacy and fear of failure may be a moderator between motivation and emotions, especially within any longitudinal designs, as either may feed into the cycle of emotions and testing outcomes described previously (Baldwin, Baldwin, &

Ewald, 2006; Bibby, 2002; Covington & Omelich, 1985b; Frenzel, Pekrun, & Goetz, 2007;

Turner & Husman, 2008a).

Finally, this dissertation provided some evidence for a factor structure that includes

competence as part of the goal orientation framework. There was also evidence of metric

invariance in the factor loadings over time; however, the mean structure was not included in this

assessment. Future research should address stronger tests of measurement invariance over time.

Additionally, if researchers continue to integrate goal theory with self-determination theory, the

needs for autonomy and relatedness should be incorporated as well. While it is the case that

competence has been demonstrated to be a potential pre-requisite for autonomy (Radel et al.,

2013), autonomy-seeking behavior may also be related to approach and avoidance. For instance,

a student wishing to have more autonomy within a classroom environment may wish to

demonstrate success and avoid failure to the teacher. In the same manner, relatedness should be

investigated as well. For example, if students feel strongly related to their counterparts, they may

feel less pressure to "measure up" to them, thus making the 'other' goal orientation less salient.

Both of these should be included in any further iterations of goal orientation theory.

Conclusions and Implications

Despite the study's limitations, clear findings emerged that there are emotional correlates

of different types of academic goals and that at least shame and test performance are reciprocally

related. These findings have potential implications for college retention. Any interventions

designed to impact motivational goals should include or consider self-conscious emotions like

shame and pride. In addition, the interventions should consider where the student is in the testing

cycle. If the student has had a testing outcome, one should not assume that he or she perceives

the outcome in a certain direction, as the testing outcome and perceived testing outcome were not

correlated. Finally, the relationship between emotions and motivation may change depending on the time point in the academic semester, and as such, interventions that work at one time point may not have an impact at a different time point. There is also evidence for a downward spiral of shame and test grade. If administrators are interested in increasing retention and persistence, a focus on both study skills (to increase absolute grades), and managing perceived testing outcomes and shame responses should be included.

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APPENDIX A

Survey Materials

How old are you? _____ years old.

What classification do you have?
a. Freshman
b. Sophomore
c. Junior
d. Senior
e. Other: _____
f. Don't know

What is your gender?
a. Male
b. Female
c. Prefer not to say

What do you consider to be your ethnic origin? (check as many as apply)

[ ]   Alaskan Native   [ ]   Asian, Other

[ ]   Native American / Indian   [ ]   Black or African American

[ ]   Asian, Chinese   [ ]   Hispanic or Latino

[ ]   Asian, Japanese   [ ]   White, not of Hispanic origin

[ ]   Asian, Pacific Islands   [ ]   Other

What is the day and time of your psych class?
List of options here.

What is your declared or intended major?
a. Psychology
b. Something other than Psychology
c. Don't Know/Haven't decided
d. Prefer not to say
What is your GPA? _____

Instructions: The following statements represent goals, feelings or ideas that you may or may not have for this class. Circle a number to indicate how true each statement is of you. All of your responses will be kept anonymous and confidential. There are no right or wrong responses, so please be open and honest.							
Question	Not at all like me	Not much	Not like Me	Neither like it...	Like me	Really like me	Very Much Like me	
1. To get a lot of questions right .	1	2	3	4	5	6	7	Goal orientation
2. To know the right answers in this class.	1	2	3	4	5	6	7	
3. To perform better on the test in this class than I have done in the past.	1	2	3	4	5	6	7	
4. To outperform other students on the tests in this class.	1	2	3	4	5	6	7	
5. To avoid incorrect answers.	1	2	3	4	5	6	7	
6. To avoid getting a low score in this class.	1	2	3	4	5	6	7	
7. To avoid doing worse in this class than I normally do.	1	2	3	4	5	6	7	
8. To avoid doing worse than other students in this class.	1	2	3	4	5	6	7	
9. I'm certain I can master the skills taught in class this year.	1	2	3	4	5	6	7	Self-Efficacy
10. I'm certain I can figure out how to do the most difficult classroom tasks.	1	2	3	4	5	6	7	
11. I can do almost all the work in this class if I don't give up.	1	2	3	4	5	6	7	
12. Even if the work is hard, I can learn it.	1	2	3	4	5	6	7	
13. I can do even the hardest work in this class if I try.	1	2	3	4	5	6	7	
14. This class is very important to me.	1	2	3	4	5	6	7	Goal Value

15. This class is a priority in my life.	1	2	3	4	5	6	7	
16. I value this class.	1	2	3	4	5	6	7	
17. I did not do as well as I wanted on this test.	1	2	3	4	5	6	7	Perceived Test Outcome
18. I do not like how I did on this test.	1	2	3	4	5	6	7	
19. I am happy with this test result	1	2	3	4	5	6	7	
20. I did as well as I wanted in this test.	1	2	3	4	5	6	7	

21. I am optimistic that everything will work out fine.	1	2	3	4	5	6	7	Emotions: Time One
22. I have great hope that my abilities will be sufficient.	1	2	3	4	5	6	7	
23. I am very confident about this class.	1	2	3	4	5	6	7	
24. I feel less stressed.	1	2	3	4	5	6	7	
25. I feel very relieved.	1	2	3	4	5	6	7	
26. I finally can breathe easy again.	1	2	3	4	5	6	7	
27. I feel panicky in this class.	1	2	3	4	5	6	7	
28. I worry whether I will do well in this class.	1	2	3	4	5	6	7	
29. I get so nervous; I wish I could just skip the next test.	1	2	3	4	5	6	7	
30. I feel ashamed about this class.	1	2	3	4	5	6	7	
31. My performance in this class embarrasses me.	1	2	3	4	5	6	7	
32. I am ashamed of my poor preparation.	1	2	3	4	5	6	7	

33. I am proud of myself.	1	2	3	4	5	6	7	
34. To think about this clas makes me feel proud.	1	2	3	4	5	6	7	
35. After class, I feel like I achieved something.	1	2	3	4	5	6	7	
36. I look forward to the next test.	1	2	3	4	5	6	7	
37. I feel excited about the next test.	1	2	3	4	5	6	7	
38. For me the test is a challenge that is enjoyable.	1	2	3	4	5	6	7	

21. I am optimistic that everything will work out fine.	1	2	3	4	5	6	7	Emotions: Time Two
22. I have great hope that my abilities will be sufficient.	1	2	3	4	5	6	7	
23. I am very confident about this class.	1	2	3	4	5	6	7	
24. I feel less stressed.	1	2	3	4	5	6	7	
25. I feel very relieved.	1	2	3	4	5	6	7	
26. I finally can breathe easy again.	1	2	3	4	5	6	7	
27. I feel panicky when taking tests.	1	2	3	4	5	6	7	
28. I worry whether I will do well in this class.	1	2	3	4	5	6	7	
29. I get so nervous; I wish I could just skip the next test.	1	2	3	4	5	6	7	
30. I feel ashamed	1	2	3	4	5	6	7	

about my test score.							
31. My score on this test embarrasses me.	1	2	3	4	5	6	7
32. I am ashamed of my poor preparation.	1	2	3	4	5	6	7
33. I am proud of myself.	1	2	3	4	5	6	7
34. To think about my test makes me feel proud.	1	2	3	4	5	6	7
35. After this test, I feel like I achieved something.	1	2	3	4	5	6	7
36. I look forward to the next test.	1	2	3	4	5	6	7
37. I feel excited about the next test.	1	2	3	4	5	6	7
38. For me the test is a challenge that is enjoyable.	1	2	3	4	5	6	7

APPENDIX B

All estimates included in this appendix are standardized unless otherwise noted.

Multitrait-multimethod Factor Loadings for Motivation Scale

Item Name	Test Estimate	Test S.E.	Test p-value	Self Estimate	Self S.E.	Self p-value	Other Estimate	Other S.E.	Other p-value	Avoidance Estimate	Avoidance S.E.	Avoidance p-value	Approach Estimate	Approach S.E.	Approach p-value
AppTest1	0.61	0.08	>0.01										0.70	0.08	>0.01
AppTest2	0.50	0.08	>0.01										0.54	0.10	>0.01
AppTest3	0.66	0.07	>0.01										0.65	0.08	>0.01
AvoidTest1	0.72	0.05	>0.01							0.37	0.10	>0.01			
AvoidTest2	0.77	0.09	>0.01							0.35	0.12	>0.01			
AvoidTest3	0.76	0.09	>0.01							0.37	0.11	>0.01			
ApproachSelf1				0.63	0.08	>0.01							0.39	0.12	>0.01
ApproachSelf2				0.68	0.07	>0.01							0.32	0.11	>0.01
ApproachSelf3				0.73	0.07	>0.01							0.37	0.10	>0.01
AvoidSelf1				0.74	0.06	>0.01				0.34	0.08	>0.01			
AvoidSelf2				0.77	0.06	>0.01				0.32	0.08	>0.01			
AvoidSelf3				0.78	0.05	>0.01				0.36	0.08	>0.01			
ApproachOther1							0.87	0.04	>0.01				0.24	0.11	0.03
ApproachOther2							0.73	0.05	>0.01				0.37	0.08	>0.01
ApproachOther3							0.93	0.04	>0.01				0.23	0.10	0.01
AvoidOther1							0.58	0.07	>0.01	0.74	0.06	>0.01			
AvoidOther2							0.56	0.07	>0.01	0.79	0.05	>0.01			
AvoidOther3							0.58	0.07	>0.01	0.75	0.06	>0.01			

Residual Variances for Multitrait-Mutlitmethod Model

	Time 2	App Test 1	App Test 2	App Test 3	Avoid Test 1	Avoid Test 2	Avoid Test 3	App Self 1	App Self 2	App Self 3	Avoid Self 1	Avoid Self 2	Avoid Self 3	App Other 1	App Other 2	App Other 3	Avoid Other 1	Avoid Other 2	Avoid Other 3
Time 1	App Test 1	0.40																	
	App Test 2		0.04																
	App Test 3			0.11															
	Avoid Test 1				-0.05														
	Avoid Test 2					-0.06													
	Avoid Test 3						0.14												
	App Self 1							0.29											
	App Self 2								0.19										
	App Self 3									-.14									
	Avoid Self 1										-0.06								
	Avoid Self 2											0.14							
	Avoid Self 3												0.18						
	App Other 1													0.25					
	App Other 2														0.22				
	App Other 3															-0.96			
	Avoid Other 1																-0.16		
	Avoid Other 2																	-0.38	
	Avoid Other 3																		0.03

Correlation Model without Self Efficacy Correlation Path Results

	Approach T1	Approach T2	Avoidance T1	Avoidance T2	OtherT1	OtherT2	SelfT1	SelfT2	ShameT1	ShameT2	TestT1	TestT2
Approach T1			0.65/0.00*		0.00/999		0.00/999				0.00/999	
Approach T2				0.55/0.00*		0.00/999		0.00/999				0.00/999
Avoidance T1					0.00/999		0.00/999				0.00/999	
Avoidance T2						0.00/999		0.00/999				0.00/999
OtherT1							0.29/0.00*				0.40/0.00*	
OtherT2								-0.04/0.80				0.01/0.97
PrideT1	0.27/0.00*		0.08/0.37		0.17/0.01*		0.17/0.05*		-0.30/0.01*		0.08/0.36	
PrideT2		0.00/0.97		-0.01/0.96		0.26/0.05*		-0.04/0.73		-0.57/0.00*		0.12/0.34
SelfT1											0.54/0.00*	
SelfT2												0.51/0.00*
ShameT1	-0.08/0.31		0.03/0.67		0.01/0.86		0.09/0.27				0.01/0.72	
ShameT2		0.20/0.04*		0.14/0.26		-0.07/0.58		-0.03/0.80				-0.17/0.20

Estimate/p-value

Correlation Model without Self Efficacy Prediction Path Results

		Outcomes							
		ApproachT2	AvoidanceT2	OtherT2	PrideT2	SelfT2	ShameT2	Test Grade	TestT2
Predictors	ApproachT1	0.48*						0.22	
	AvoidanceT1		0.45*					-0.22	
	OtherT1			0.64*				0.14	
	PTP	-0.14	-0.10	0.04	0.24*	-0.14	-0.01		-0.21*
	Pride T1				0.46*			-0.07	
	SelfT1					0.46*		0.07	
	Shame T1						0.57*	-0.16*	
	Test Grade	0.07	0.08	-0.01	0.30*	0.03	-0.28*		0.00
	TestT1							-0.09	0.51*

Correlation Model with Self-Efficacy Correlation Paths Results

	ApproachT1	ApproachT2	AvoidanceT1	AvoidanceT2	OtherT1	OtherT2	SelfT1	SelfT2	ShameT1	ShameT2	TestT1	TestT2
ApproachT1			0.65/0.00*		0.00/999		0.00/999				0.00/999	
ApproachT2				0.51/0.01*		0.00/999		0.00/999				0.00/999
AvoidanceT1					0.00/999		0.00/999				0.00/999	
AvoidanceT2						0.00/999		0.00/999				0.00/999
OtherT1							0.28/0.00*				0.39/0.00*	
OtherT2								-0.04/0.79				0.20/0.91
PrideT1	0.19/0.02*		0.08/0.33		0.12/0.08*		0.08/0.30		-12.00/0.35		-0.01/0.90	
PrideT2		0.02/0.87		0.02/0.86		0.24/0.08*		-0.04/0.74		-0.57/0.00*		0.10/0.42
SelfT1											0.53/0.00*	
SelfT2												0.52/0.00*
ShameT1	0.06/0.46		0.02/0.78		0.16/0.03*		0.26/0.00*				0.17/0.05*	
ShameT2		0.17/0.11		0.12/0.39		-0.04/0.75		-0.03/0.79				-0.13/0.33

Estimate/p-value

Correlation Model with Self-Efficacy Prediction Paths

	AppT1	AppT2	AvoidT1	AvoidT2	OtherT1	OtherT2	PrideT1	PrideT2	SelfT1	SelfT2	ShameT1	ShameT2	Test Grade	TestT1	TestT2
Outcomes															
AppT1		0.47/0.00*											0.13/0.32		
AvoiT1				0.45/0.00*									-0.21/0.12		
OtherT1						0.64/0.00*							0.14/0.25		
PTP		-0.16/0.12		-0.12/0.20		0.04/0.70		0.25/0.00*		-0.17/0.08*		-0.03/0.65			-0.21/0.07*
Pride T1								0.42/0.00*					-0.07/0.49		
Self-Efficacy	0.27/0.01*	-0.13/0.34	0.02/0.84	-0.20/0.06*	0.21/0.01*	0.05/0.66	0.41/0.00*	0.16/0.07*	0.13/0.18	-0.03/0.82	-0.50/0.00*	-0.22/0.01*		0.17/0.06*	0.17/0.05*
SelfT1										0.45/0.00*			0.07/0.66		
Shame T1												0.49/0.00*	-0.16/0.08*		
Test Grade		0.11/0.30		0.12/0.18		-0.02/0.82		0.26/0.01*		0.04/0.66		-0.25/0.02*			-0.02/0.84
TestT1													-0.08/0.65		0.47/0.00*
	Estimate/p-value														

Final Model without Self-Efficacy Correlation Paths

	AvoidanceT1	AvoidanceT2	OtherT1	OtherT2	SelfT1	SelfT2	ShameT1	ShameT2	Test Grade	TestT1	TestT2
Approach T1	0.64/0.00*		0.00/999		0.00/999					0.00/999	
Approach T2		0.50/0.01*		0.00/999		0.00/999					0.00/999
Avoidance T1			0.00/999		0.00/999					0.00/999	
Avoidance T2				0.00/999		0.00/999					0.00/999
OtherT1					0.28/0.00*					0.38/0.00*	
OtherT2						-0.04/0.81					-0.02/0.91
PTP									-0.20/0.14		
PrideT1							-0.30/0.01*				
PrideT2								-0.57/0.00*			
SelfT1										0.54/0.00*	
SelfT2											0.51/0.00*

Estimate/p-value

Final Model without Self-Efficacy Prediction Paths

	Outcomes										
		ApproachT2	AvoidanceT2	OtherT2	PrideT1	PrideT2	SelfT2	ShameT1	ShameT2	Test Grade	TestT2	TestT2
Predictors	ApproachT1	0.45/0.00*			0.39/0.00*			-0.18/0.12		0.18/0.33		
	AvoidanceT1		0.44/0.00*		-0.16/0.24			0.15/0.19		-0.19/0.13		
	OtherT1			0.63/0.00*	0.16/0.02*			-0.01/0.87		0.14/0.24		
	PTP	-0.16/0.11	-0.14/0.15	-0.02/0.84		0.25/0.01*	-0.16/0.13		0.00/0.98			-0.26/0.01*
	PrideT1									0.06/0.52		
	PrideT2	0.14/0.31	0.18/0.18	0.21/0.11			0.05/0.72					0.17/0.12
	SelfT1				0.16/0.08*		0.43/0.00*	0.12/0.22		0.07/0.66		
	ShameT1					0.45/0.00*			0.58/0.00*	-0.17/0.05*		
	ShameT2	0.23/0.08*	0.27/0.02*	0.15/0.18			0.08/0.53					0.02/0.87
	Test Grade	0.12/0.28	0.12/0.16	-0.02/0.78		0.30/0.00*	0.05/0.59		-0.28/0.01*			-0.04/0.72
	TestT1				0.08/0.44			-0.03/0.74		-0.05/0.70	0.50/0.00*	

Estimate/p-value

Final Model with Self-Efficacy Correlation Path Results

	AvoidanceT1	AvoidanceT2	OtherT1	OtherT2	SelfT1	SelfT2	ShameT1	ShameT2	Test Grade	TestT1	TestT2
ApproachT1	0.64/0.00*		0.00/999.00		0.00/999.00					0.00/999.00	
ApproachT2		0.47/0.01*		0.00/999.00		0.00/999.00					0.00/999.00
AvoidanceT1			0.00/999.00		0.00/999.00					0.00/999.00	
AvoidanceT2				0.00/999.00		0.00/999.00					0.00/999.00
OtherT1					0.27/0.00*					0.37/0.00*	
OtherT2						-0.04/0.77					-0.02/0.91
PTP									-0.19/0.20		
PrideT1							-0.17/0.17				
PrideT2								-0.56/0.00*			
SelfT1										0.52/0.00*	
SelfT2											0.52/0.00*

Estimate/p-value

Final Model with Self-Efficacy Prediction Paths

Predictors	ApprT1	AppT2	AvoidT1	AvoieT2	OtherT1	OtherT2	PrideT1	PrideT2	SelfT1	SelfT2	ShameT1	ShameT2	Test Grade	TestT1	TestT2
ApproachT1		0.44/ 0.00*					0.22/ 0.08*				0.07/ 0.53		0.17/ 0.41		
AvoidanceT1				0.44/ 0.00*			-0.06/ 0.66				-0.01/ 0.89		-0.19/ 0.17		
OtherT1						0.62/ 0.00*	0.12/ 0.07*				0.07/ 0.26		0.13/ 0.31		
PTP		-0.18/ 0.08*		-0.17/ 0.08*		-0.01/ 0.89		0.26/ 0.00*		-0.18/ 0.08*		-0.03/ 0.70			-0.24/ 0.02*
PrideT1													-0.06/ 0.51		
PrideT2		0.15/ 0.29		0.20/ 0.18		0.21/ 0.11				0.03/ 0.82					0.17/ 0.11
Self-Efficacy	0.28/ 0.01*	-0.06/ 0.73	0.03/ 0.72	-0.17/ 0.13	0.20/ 0.02*	0.08/ 0.46	0.34/ 0.00*	0.17/ 0.05*	0.13/ 0.20	-0.01/ 0.95	-0.55/ 0.00*	-0.22/ 0.01*	0.02/ 0.90	0.16/ 0.07*	0.21/ 0.09*
SelfT1							0.10/ 0.23			0.43/ 0.00*	0.20/ 0.00*		0.07/ 0.70		
ShameT1								0.40/ 0.00*				0.50/ 0.00*	-0.16/ 0.18		
ShameT2		0.20/ 0.14		0.19/ 0.13		0.18/ 0.11				0.06/ 0.67					0.12/ 0.36
Test Grade		0.13/ 0.28		0.12/ 0.19		-0.02/ 0.83		0.27/ 0.00*		0.06/ 0.52		-0.25/ 0.02*			-0.03/ 0.82
TestT1							-0.11/ 0.23				0.01/ 0.93		-0.06/ 0.72		0.46/ 0.00*

Estimate/ p-value