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EXPLORING THE DYNAMIC RELATIONSHIP OF EXPECTANCY VALUE THEORY AND TRANSFORMATIVE EXPERIENCE FOR FIRST-GENERATION COLLEGE STUDENT ACADEMIC ACHIEVEMENT

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EXPLORING THE DYNAMIC RELATIONSHIP OF EXPECTANCY VALUE THEORY AND TRANSFORMATIVE EXPERIENCE FOR FIRST-GENERATION COLLEGE STUDENT ACADEMIC ACHIEVEMENT

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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Dedication

This dissertation is a culmination of all my time in academia as a student. I know my educational journey does not end here as I have always considered my path to be that of a lifelong learner, but my role as an official student is ending. It seems surreal and overwhelming, but at the same time a very exciting adventure to embark on. I dedicate this work to my family, especially my parents, for instilling in me the passion and drive to get to this point. Prompting me to always remember that no matter how hard it gets that "at least nobody died." You always inspired me to believe in myself and my own abilities to shape my future.

I also want to dedicate this to my incredibly supportive wife who I married April 21st, 2018... 4 whole days prior to my dissertation defense. Nothing says love like constant mental breakdowns.

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Abstract

First-generation (FG) college students have been a popular subpopulation to study within educational literature as these students experience many unique challenges in their academic careers compared to their peers. Much of this research has focused on the shortcomings and obstacles these unique students face in striving for a four-year college degree, but less focus has been on the unique underlying motivational challenges. This study used a longitudinal design to follow up on a pilot study that looked at FG college students' experience of task values regarding their engagement with transformative experience (TE). Participants were 193 undergraduate students who completed surveys on task values, more specifically their intrinsic, attainment, utility, and cost values, and their engagement in TE at three different time points across the semester. Students' exam scores were also reported as a measurement of academic achievement. My analyses showed that FG college students reported higher levels of cost value and growth in cost value across the semester compared to non-first-generation (NFG) college students. Analyses also indicated that FG college students had significantly lower exam scores compared to NFG college students. Both FG and non-NFG college students engaged in TE at similar levels across the semester. Results of this study indicate FG college students experience academic challenges that may be related to their valuing of their educative experience, which TE may be able to help reframe their valuing of their experience. Implications for further teaching practices and interventions are discussed.

Keywords: first-generation, transformative experience, expectancy value theory, task values, academic achievement

CHAPTER ONE: INTRODUCTION

Background

Research indicates that first-generation (FG) college students have a more difficult time transitioning to higher education than non-first-generation (NFG) students (Engle & Tinto, 2008; Hottinger & Rose, 2006; Ishitani, 2008; Pascarella, Pierson, Wolniak, & Terenzini, 2004). One possible path to a better socioeconomic status is through earning a 4-year degree (Bowen, Kurzweil, & Tobin, 2005), but students whose parents have not themselves received a 4-year degree are more likely to drop out at higher rates and receive worse grades than students who have at least one parent with a 4-year degree (Hicks, 2003; Engle & Tinto, 2008; McConnell, 2000; Pascarella et al., 2004; Prospero & Vohra-Gupta, 2007; Willet, 1989). This finding is most troubling given that students who are least likely to obtain a college degree are the ones who are most likely to benefit economically from it in the long-run (Brand & Xie, 2010).

The foundational question driving the purpose of this research is "Why are FG students less likely to succeed in higher education than NFG students?" Many prior researchers have explored a number of psychological factors contributing to the difference between FG and NFG academic performance in higher education, including self-efficacy, socio-economic status, connectedness, and study strategies (Engle et al., 2006; Inkelas, Daver, Vogt, & Leonard, 2007). Although these studies have provided valuable information on differences between FG and NFG students, there are further aspects of cognitive and motivational differences that have yet to be explored. The purpose of this study is to go beyond these findings by examining new perspectives of FG students that may further explain retention and achievement hindrances, as well as

addressing a possible avenue that may support FG students' valuing of their educative experience.

In my review of previous research conducted on the relationship between generation status and academic achievement, there was little literature that focused on the role of task values and how high cost value beliefs may lead to poor academic outcomes for first-generation college students. For example, Bong (2001) conducted research that indicated the significant influence of task value, specifically utility and intrinsic value, on student retention. Bruinsma (2004) also demonstrated that intrinsic value had a positive relationship with number of earned academic hours and retention. Although these findings are important to the overall educational literature, they leave much to be explored in how these task values can be of benefit for first-generation college students who are more susceptible for dropping out after their first year of college (Ishitani, 2008).

Additionally, this research seeks to further explore and add to the transformative experience (TE) literature. Within the TE literature much attention has been directed to the benefits of engagement in TE in an academic setting. These benefits are seen in increasing student achievement (Heddy & Sinatra, 2013; Pugh, 2004); increasing the valuing of course content (Heddy, Sinatra, Seli, Taasoobshirazi, & Mukhopadhyay, 2017), and increasing student engagement (Pugh, Linnenbrink-Garcia, Koskey, Stewart, & Manzey, 2010a). Although these findings demonstrate TE's benefit in education settings, it has yet to be explored in how it may be effective in differing contexts with students of different backgrounds. There has been no research outside of the pilot study that has examined TE's relationship to first-generation college students. It is unclear

whether differences in participant backgrounds will change the effectiveness of TE and its academic advantages. This research is designed to address these gaps within the literature.

Within the first-generation literature there are competing ideas of the definition of a first-generation college student. Some factions of educational researchers who study first-generation college students define a first-generation student as a current college student with neither parent having more than a high school degree (Pascarella et al., 2004; Engle & Tinto, 2008). This would exclude any student who has a parent that obtained an associate's degree or had some college and then dropped out as a first-generation student. Since the experiences of an associate's degree or an incomplete degree vastly differs from that of a 4-year institution, many researchers make the argument that students who have parents who have either obtained an associate's degree or have dropped out of a four-year degree program should be included in the definition (Hicks, 2003; McConnell, 2000; Prospero & Vohra-Gupta, 2007; Wilbur & Roscigno, 2016; Willet, 1989). Given that this definition and rationale is the most widely cited and used in current educational research, this research project will be using this definition when discussing FG students. Using this definition for FG students the current study will be focusing on the unique academic challenges these students experience to better understand how we as educators can best facilitate their success.

Rationale for the Present Study

The purpose of this study is to go beyond previous findings by exploring FG students' motivational characteristics through the lens of Expectancy Value Theory (EVT; the theory that behavior is a result of the judgments of value toward a goal) and

Transformative Experience or TE (a theory focused on how in-class content can enrich out-of-school experience by expanding perception, promoting value, and meaning to future experiences) to gain a better understanding of how to facilitate FG student academic success. This study will be building upon a pilot study that examined the role of TE, task value and generation status (Goldman, Wilson, Cavazos, Heddy, & Pugh, 2017). Although this study brought to light the dynamic relationship that generation status has on task value, the study was only conducted at one time point at the beginning of the semester and so does not allow for indicators of growth and change over time. The current study will examine these relationships over the course of the semester to gain a greater understanding of how they interact and change over time, which may shed light on how to design an effective intervention for FG students in the future.

Given the findings of the pilot study, further understanding of the relationship of these constructs over time related to academic achievement is needed. The current study will administer a survey design over three-time points to measure the change over time of students' task value as well as TE. I have discerned that the unique cognitive and motivational challenges that FG students experience could be positively benefited through TE, since TE has been shown to improve student cognitive, motivation, and achievement attributes (Heddy & Sinatra, 2013; Heddy, Sinatra, Seli, Taasoobshirazi, & Mukhopadhyay, 2017; Pugh, 2002; Pugh, Linnenbrink-Garcia, Koskey, Stewart, & Manzey, 2010a). The goal of this research is to develop further understanding of how these attributes fluctuate within FG students as measured by task value and course exam grades throughout the semester.

Given that many FG students' motivations for attending a four-year educational program is that of obtaining a means to a better occupation (Bilson & Brooks-Terry, 1987; Ishitani, 2008), a FG student may have differing levels and conceptions of the value of their educative experience (Goldman et al., 2017). Also, due to the nature of them being the first of their family to attempt the four-year track, their efficacy for doing so may also be different than that of a NFG student. In order to gain further understanding of these dynamics, students will be measured on their task value (utility, attainment, intrinsic, and cost) via Expectancy-Value Theory (Wigfield & Eccles, 2000). Because FG students have various unique cognitive and motivational challenges as compared to NFG students, I thought it pertinent to understand any differences in TE and task value FG students experience compared to NFG students over the semester, building on the pilot study that explored these constructs at a single time point (Goldman et al., 2017).

Research Questions

1. Do first-generation college students experience differing levels of TE, exam scores, and task value over the course of the semester as compared to non-first-generation students?
2. Does generation status affect the growth parameters for TE and task values over time?

Definition of Terms

It is imperative to be clear how the constructs and terms are used and defined in the literature and used within this study. Thus, the following section provides a definition of the key terms used within this study.

First-Generation College Students: The term "first-generation" has been widely used in education literature as a descriptive term for students who are enrolled in a four-year college that may experience academic challenges and obstacles due to a distinct disadvantage from neither parent having obtained a four-year degree. First-generation (FG) college students have been defined in various way throughout educational literature including definitions where a FG student has neither parent having more than a high school degree (Pascarella et al., 2004; Engle & Tinto, 2008). Due to the restrictive nature of that definition which would exclude students who with a parent that has obtained an associate's degree, which is still a vastly different experience than a four-year degree, the definition for this study will be a college student with neither parent having completed a four-year degree (Hicks, 2003; McConnell, 2000; Prospero & Vohra-Gupta, 2007; Wilbur & Roscigno, 2016; Willet, 1989).

Transformative Experience: Transformative Experience (TE) is a form of engagement that occurs when students apply course content to their everyday life (Pugh, 2011; Heddy & Sinatra, 2013). TE is comprised of three dimensions that reflect the three components of engagement presented by Pekrun and Linnenbrink-Garcia (2012): behavioral, cognitive, and affective. The dimensions of TE include: 1) motivated use, 2) expansion of perception, and 3) experiential value (Pugh, 2011). Motivated use occurs when students actively search for academic concepts in their everyday life. An expansion of perception happens when course content changes the way students perceive phenomena in their everyday, out of school, experiences. Finally, experiential value occurs when a student places value on the course content for its ability to impact their everyday life. The three dimensions of TE map onto the three components of

engagement including behavioral (motivated use), cognitive (expansion of perception), and affective (experiential value).

Task Values: Task values are part of a socio-cognitive perspective of motivation called Expectancy Value Theory (EVT). Within this theory there are considered to be two components of a student's belief in regard to academic tasks. One being their belief in their ability to accomplish a task (self-efficacy) and their perception of if the task is worth being pursued given their valuing of the task (task values) (Eccles, 2005; Eccles & Wiglfield, 2002). Within this valuing, there are four task values that emerge: intrinsic value, attainment value, utility value, and cost value. Intrinsic value refers to a student's feelings of enjoyment for a task. Attainment value refers to a student's belief of if completing the task is valuable to them because they view success in that task as important to their identity. Utility value refers to a student's belief of how useful completing a task will be in reference to their future goals. Finally, cost value refers to a student's belief of how much effort and resources will be used to complete the task.

Organization of the Study

In the remainder of this dissertation, I thoroughly define the constructs relevant to the study including first-generation college students, transformative experience, and task values. Following those definitions, I provide an overview of the empirical research on the topics of first-generation college students, expectancy value theory, and transformative experience in relation to student academic achievement. After the review of the literature, I provide rationale for the current study and the research questions that drive the design and predictions of the study. I follow this with my description of the

design, procedures, analyses, and results of the study. I conclude with a discussion of implications, limitations, and future directions of this research.

CHAPTER TWO: LITERATURE REVIEW

The purpose of this dissertation is to build on the pilot study's findings, with the goal of further exploring the relationship between generation status, transformative experience, and task value. The literature review will provide a discussion of first-generation college students and their relation to academia through achievement and task values. Additionally, I will discuss expectancy value theory, and how task values promote academic achievement and their relationship to first-generation students. Finally, I will discuss transformative experience (TE) describing its effectiveness in promoting positive educational outcomes, including its potential for increasing task values to benefit first-generation college students. I conclude the review with my hypotheses for the study.

First-Generation College Students and Achievement

FG students have unique obstacles and challenges when it comes to engagement with academia and transitioning into higher education than most traditional students, which affects their academic progress (Oyserman & Destin, 2010; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). Many FG students are set up for failure in their higher education experiences due to poor pre-college academic characteristics that include inadequate math skills (Conley, 2007), low class rank (Engle, Bermeo, & O'Brien, 2006; Ishitani, 2008), and a lack of rigorous coursework (Engle & Tinto, 2008). Students that identify as FG also have a distinct academic disadvantage due to economic factors that prevent them from feeling fully connected to their academic environment (Pascarella et al., 2004; Wilbur & Roscigno, 2016).

Many FG students identify as low socio-economic status, and within a higher education context that is predominantly middle-class, can find the culture hard to relate to and find their place (Housel & Harvey, 2009). For example, because of lower economic status FG students are more likely to be working full or part time jobs for more hours than NFG students, making FG students less likely to be able to live on campus or engage in relationships with other peers or faculty (Pike & Kuh, 2005; Richardson & Skinner, 1992; Terenzini, Springer, Yaeger, Pascarella, & Nora 1996). Due to this disconnect, many FG students are unable to engage in campus activities and resources, which leads to FG students being more likely to experience less satisfaction with their campus environment as well as lower educational aspirations (Pike & Kuh, 2005; Terenzini et al., 1996). It is difficult for FG students to connect to the culture and content of their education when outside responsibilities dictate their resources, such as jobs and family responsibilities (Hodges-Payne, 2006; London, 1992; Petty, 2014). This disconnect from the college culture that FG students feel within their educative experience can account for lower persistence and achievement (Housel & Harvey, 2009; Johnson, Richeson, & Finkel, 2011). The difficulties that FG students experience prevent them from engaging in their academic environment and coursework at the same level as NFG students and generate distinct challenges.

First-generation students not only experience a lack of school engagement due to factors associated with their status, but FG students also have lower self-efficacy for their academic endeavors than NFG students given a lack of modeling from their immediate family members (Hidi & Harackiewicz, 2000). Self-efficacy refers to a person's own judgement of how well they believe they can execute a particular task or

action required in a situation (Bandura, 1982). A lack of self-efficacy for academics is related to many negative behaviors such as lack of motivation and interest (for a review, see Schunk, 1991). This lack of motivation due to low self-efficacy can lead to academic decline and eventual dropout (Chemers, Hu, & Garcia, 2001; Hidi & Harackiewicz; Engle & Tinto, 2008; Zimmerman, 2002). Low self-efficacy is one of many other factors that lead FG students to a high risk for early dropout.

First-generation students also have significant differences compared to NFG students in their cognitive skills and intellectual development (Pike & Kuh, 2005; Terenzini, et al., 1996). In a study by Terenzini and colleagues (1996) the relationship between student precollege traits, institutional context, and learning outcomes was examined. The study used a survey method with a random sample of over 5,000 college students nationwide. The survey measured students on critical thinking skills as well as other institutional contextual factors such as experienced discrimination, encouragement from peers, and academic participation. Results were then compared based on generation status to determine any significant differences between the groups. The findings from this study indicated that students with first-generation status had less encouragement from peers/family to attend college, but also had cognitive difficulties compared to NFG students. Within this study conducted by Terenzini and colleagues (1996) FG students were found to have lower scores on their cognitive skills in math, reading, and critical thinking. Researchers have concluded that these findings still exist when controlling for background characteristic differences between FG students and NFG students; Pike & Kuh, 2005; Terenzini et al., 1996, indicating the FG status presents unique challenges that are detrimental to academic progress and success.

For many FG students, the reason for attending college is based on utility, such as a better paying salary, not necessarily valuing the educative experience itself (Bilson & Brooks-Terry, 1987). Since the motivation for many FG students engaging in higher education is predominantly utility and cost value versus an intrinsic or attainment value, the current research study deems it appropriate to further explore how FG students' task values compare to NFG students across the semester.

Expectancy Value Theory

A central theory in contemporary socio-cognitive perspective of motivation is expectancy value theory (EVT). Pivotal to its socio-cognitive roots, EVT focuses on how students give meaning to their experience within their educational contexts and how that meaning gives motivation to pursue specific tasks (Eccles, 2005; Wigfield & Eccles, 2000). EVT breaks further down into two components of a students' belief; their belief in their ability to accomplish a task (self-efficacy) and their perception of if the task is worth being pursued (task value) (Wigfield & Eccles, 2000). The focus of this study will be on the latter component, task value.

According to the EVT model of motivation, task value is described as the reason students believe they should engage in a task (Eccles, 2005; Eccles & Wiglfield, 2002). Within this particular construct, there are four task values that emerge: intrinsic value, attainment value, utility value, and cost value. Intrinsic value (also referred to interest value) refers to a person's liking or feelings of enjoyment of a particular task. Attainment value refers to a person's belief of the value of the task for their sense of self, that doing well in a particular task is valuable to them because they view success in that area as important to how they identify. Utility value refers to a person's belief of

the usefulness of the task, especially in reference to their future goals. Finally cost value refers to a person's assessment of the amount of effort and resources are required to be successful at the task. These values have been associated with academic choice and success (Bong, 2001; Bruinsma, 2004; Wigfield & Eccles, 2000).

Although all task values can motivate a student to engage in a task, they may motivate them in differing ways which encourages differing types of engagement. For example, utility and attainment values have shown to be predictive of positive achievement outcomes, whereas intrinsic values have not predicted the same outcomes (Cole, Bergin, & Whittaker, 2008). Within a study conducted by Cole and colleagues (2008) 1,005 undergraduates were measured on task value, effort, and exam performance on low stakes tests. What the researchers revealed was that students who indicated a high importance and usefulness of the exam (as measured by utility and attainment values) also reported higher effort on the exams and performed better (Cole et al., 2008). Also, utility value has shown associations with deep cognitive engagement with high school students (Greene & Miller, 1996). In a study conducted by Greene and colleagues, 220 high school students were followed for a three-month period measuring cognitive engagement and achievement measures. The path analysis used indicated that student perceptions of classroom structures were important for motivation, but also the importance of perceiving the utility of course work for future success (Greene & Miller, 1996). Given that differing task values have distinct effects on engagement and achievement, it will be important to further explore their relationship to both TE and generation status.

Expectancy Value Theory and First-Generation College Students

Given that many first-generation college students' motivations for attending a four-year educational program is that of obtaining a means to a better occupation, a first-generation student may have differing levels and conceptions of the value of their educative experience. Building on the deficiency in motivation and engagement resources that FG students have in comparison to NFG students, it is likely that there will be marked differences in beliefs of utility, cost, and intrinsic value of their educative experience.

Other researchers have studied the connection between student retention and task value. As discussed earlier, FG students are more likely to drop out at the end of their first year and have poor graduation rates and so factors affecting retention are also critical to FG students (Collier & Morgan, 2008; Ishitani, 2006; Kuh, 2001). Research applying EVT to a predictive model of college student intent to enroll in future courses and course performance demonstrated that task value was a significant influence (Bong, 2001). In a longitudinal study conducted by Bong, in Korea among 168 female college students, measured their task value belief and self-efficacy, as well as exam performance and future enrollment. Using a path analyses and multiple regression analyses, Bong found that both the utility and intrinsic value students assigned to coursework influenced their continued enrollment. What should be considered within these findings is that Bong only measured utility, intrinsic, and attainment value and once they considered factor loadings, dropped attainment value since the factors loaded on to intrinsic and utility value (Bong, 2001). Further evidence on cost value and retention should also be explored. Within a study conducted by Bruinsma, 565 first-year

college students completed a questionnaire over the span of two years while measuring different time points measuring student task values, negative affect, college credits, academic performance, and cognitive engagement (2004). The results demonstrated a positive relationship between intrinsic value and number of earned academic hours earned (Bruinsma, 2004). Since FG students are at risk for dropping out and not returning to complete their degrees (Ishitani, 2008) this finding corroborates the importance of further exploring the relationship between EVT and FG students given the possible benefits for retention.

Outside of the relationship between retention and EVT, in many cases FG students attend college purely as a means to a better paying salary, not necessarily valuing the educative experience itself (Bilson & Brooks-Terry, 1987). Looking at the pilot study findings that I conducted within this line of research, FG students were consistently higher in cost value than NFG students (Goldman et al., 2017). These findings indicate that FG students perceive their educative experiences with high cost and importance to their future utility, which corroborates other studies that have found similar relationships (Wilbur & Roscigno, 2016; Vuong, Brown-Welty, & Tracz, 2010). In many instances FG students feel guilty for leaving their families and/or work to pursue a degree of which their family and peers may not understand the benefits. This can prevent facilitation of attainment or intrinsic valuing of tasks (Hodges-Payne, 2006; London, 1992; Petty, 2014). This becomes problematic when considering the benefits of task values to academic progress.

Expectancy Value Theory and Achievement

EVT and task value has shown promise in student retention as well as course performance; specifically, with intrinsic and utility value of course material (Bong, 2001; Bruinsma, 2004). With regard to academic achievement, Bong's (2001) research also demonstrated that utility value predicted midterm performance. Also, within that same study, perceiving value in tasks was more likely to lead students to adopt mastery-achievement goals for tasks, which has been shown to be positively related to academic performance (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Harackiewiez, Barron, Tauer, & Elliot, 2002; Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008). When it comes to task value, as students recognize the usefulness of an academic domain as well as its personal interest, they are more likely to persist when confronted with obstacles as well as be more willing to engage in new tasks (Bong, 2010). Given FG students' academic challenges (Pascarella et al., 2004) understanding FG students' task values and relationship to academic success will be an important component of the current study.

The pilot study indicated that FG students report high levels of cost value regardless of engagement in transformative experiences or TE (student's active use of course content in everyday life to experience the world in a new meaningful way), but this study was only conducted at one time point early in the semester (Goldman et al., 2017). This research was also lacking in an achievement measure to determine if EVT and TE have any positive relationship to academic achievement, especially when controlling for generation status. Given that previous research has indicated that both TE and EVT have positive relationships with academic achievement, research will need

to indicate whether this finding is consistent over time as well as true for both FG students and NFG students (Bong, 2001; Heddy & Sinatra, 2013). Further, research has also determined that task values fluctuate throughout the semester, with interest and perceived value dropping steadily throughout the semester (DeBacker, Miller, Walker, & Mansell, 2004; Stipek & Ryan, 1997; Wigfield & Eccles, 2000; Xie, DeBacker, & Ferguson, 2006). Given this phenomenon, further understanding of the relationship of generation status, achievement, task value, and TE over time will need to be explored.

Transformative Experience

In order to accurately understand the concept of transformative experience (TE), one must have a greater conceptualization of engagement, since TE is a form of engagement. TE models its own components from the engagement framework proposed by Fredricks, Blumenfeld, & Paris (2004) and so it is imperative to understand the conceptualization of engagement that further provides the theoretical foundation for TE. For the purpose of this literature review engagement is defined as student involvement with course material, with involvement encompassing behavioral, cognitive, and affective components (Fredricks et al., 2004; Pekrun & Linnenbrink-Garcia, 2012; Pugh, 2002). These aspects are seen in putting effort and continued perseverance (behavioral) via one's memory and attention (cognitive) in interacting and valuing (affective) course material and are mirrored in the three components of TE (Pekrun & Linnenbrink-Garcia, 2012; Pugh, 2002). When students have a transformative experience, they have engaged with the concept cognitively by relating the concept to their own experience, behaviorally by actively using the concepts, and affectively by valuing the material and constructs (Heddy & Sinatra, 2013). The focus of TE is for

students to have engagement with course content outside of the structured classroom that leads to enduring conceptual understanding (Pugh, 2002; Pugh, 2011).

The development of the transformative experience framework came from research by Pugh (2002) who based the construct on John Dewey's work on learning and aesthetics. Pugh and colleagues (Girod & Wong, 2002; Wong, Pugh, & the Dewey Ideas Group at Michigan State University, 2001) sought to apply Dewey's philosophy of engaging with ideas in everyday experience to educational realms (Dewey, 1933). Thus, a transformative experience, refers to using course content in an everyday experience to see and value the world in new ways (Wong et al., 2001). TE is also considered to be an integrative construct in how it takes several active and effective components from already existing theories such as transfer (the application of learning to a new task in a new context; Marini & Genereux, 1995), conceptual change (a cognitive reconstruction of knowledge; Dole & Sinatra, 1998), and task value (a students' belief of the degree to which an academic task is worth pursuing, (Wigfield & Eccles, 2000) and combines them into one experience. Further research by Pugh (2011) combines these pieces and defines TE as a learning episode with three specific characteristics: motivated use, expansion of perception, and experiential value.

Motivated use refers to the application of course content or subject matter into contexts where the application is not required (Pugh, 2011). This component focuses specifically on the individual's effort to apply the content or use the content outside of the classroom. An example of this would be a student using the concept of photosynthesis to see and understand why leaves are changing color during the different seasons. Whereas the student may have normally seen a tree in their back yard as just

part of the landscape, they now see the tree and its changing leaves through the lenses of photosynthesis and the fact that the tree is chemistry in action. Motivated use can also be seen as a type of transfer, or an application of learning to a novel task or in a novel context (Marini & Genereux, 1995). An important distinction to be made is that the application of the material is not required, but spontaneous, a free-choice transfer situation (Pugh & Bergin, 2005).

Expansion of perception focuses on how one's perceptions or existing schemas (mental constructs that influence how we perceive and interpret information to make sense of a situation; Anderson, 1984) have been altered in consequence of motivated use of a concept or idea (Pugh, 2011). By engaging in motivated use, the individual connects new ideas and information into a new pattern of understanding or undergoes an expansion of perception. Pugh (2011) describes expansion of perception as a potential result of motivated use. An example of this would be a student using their perception of photosynthesis to no longer perceive trees as mechanisms of photosynthesis. Whereas before they may have viewed the leaves changing in fall as simply a lovely change in foliage, they may now see the leaves as dying as a lack of light and sustenance that prevents them from getting nutrients via photosynthesis. The student comes to see everyday objects, or events through the lens of their course content.

The final component of TE is experiential value, which is defined in Pugh's (2011) research as the "valuing of content for the experience it provides" (Pugh, 2011, p. 113). A value is given to the meaningful experience with a concept in direct consequence of one's motivated use of that concept or idea. This component can be

thought of as an intersection between intrinsic value and utility value (Eccles &Wigfield, 1992) in the sense that intrinsic value refers to a subjective sense of enjoyment whereas utility value refers to the perceived usefulness of the task (Pugh, 2011). Looking back to our student who is now seeing trees through the lens of photosynthesis, the student now finds trees and other foliage more interesting because of their valuing and experiencing of their world in a new way and may now begin to collect different types of leaves to further understand how photosynthesis works with different species of trees and foliage. No longer can the student see trees the same way, but he/she has developed a greater value for understanding the function of trees based on comprehension of photosynthesis. Through student's combined experience of motivated use of their course content, followed by an expansion of perception, and experiential value, they have engaged in a transformative experience by engaging in all three components of the construct.

TE and First-Generation Students

TE is still in its youth as far as conceptualization, and therefore there is much room left for exploration into how it unfolds in differing contexts and participant pools. The pilot study (Goldman et al., 2017) conducted a single survey method to measure levels of TE and analyzed differences among generation status. This survey was only implemented once at the beginning of the semester, and so results are limited but provide findings that the current study builds upon. Within the study by Goldman and colleagues (2017) there was no significant difference found in levels of TE and generation status, but further analyses showed more complex relationships between the constructs when looking at the interaction of TE, generation status, and EVT.

For example, a pilot study that measured students on task value and TE at the beginning of the fall semester discovered differences between generation status, task values, and students' engagement in TE. When comparing FG sand NFG students who scored low on the TE scale, FG students scored significantly higher on cost value ($t(132)=2.82$, $p= 0.05$). This finding could indicate that FG students who are not engaging in TE have a greater sense of cost of their educative experience and so are less likely to put forth extra effort and engagement in course content. Theoretically this provides evidence of FG students' consideration of their higher education pursuit as not one of personal interest or enjoyment, but of high emotional and material cost as corroborated by previous research (Bilson & Brooks-Terry, 1987; Ishitani, 2008). This also may indicate that TE's academic benefits of facilitating interest and greater course engagement (Harackiewicz, Smith, & Priniski, 2016; Heddy, Sinatra, Seli, Taasoobshirazi, & Mukhopadhyay, 2017; Pugh et al., 2010b) could lower feelings of cost for FG students which could increase enjoyment and prevent dropout (Bong, 2001; Bruinsma, 2004; Ishitani, 2006; Kuh, 2007).

What should also be considered in light of the finding of FG students being significantly higher in cost value is if FG students are not engaging in TE because they think it will require too much effort and resources, they also might be considering other aspects of their education to be not cost effective, which might be indicative of other academic issues that are tied to a lack of engagement, such as achievement. In order to clarify this relationship, the predictive nature of generation status, TE, task value, and achievement should be explored.

TE and Academic Achievement

In educational literature, engagement (TE is a form of engagement in out-of-school experience) shows promising benefits for academic achievement (Kuh, 2001, 2003, 2009; Pekrun & Linnenbrink-Garcia, 2012). Previous researchers have demonstrated that student engagement has positive effects on achievement as well as student persistence across varying backgrounds, including those of first-generation (FG) status (Kuh, 2009). Due to TE's focus on facilitating student use of course content within everyday experience, the content becomes personally relevant, facilitating a sense of value of material as well as greater engagement (Harackiewicz et al., 2016; Heddy et al., 2017; Pugh, 2010). Not only does TE foster engagement leading to achievement, but TE also shows promise for increasing value beliefs about course content (Heddy et al., 2017). Previous research has demonstrated that students who perceive value in course topics show greater persistence, interest, complete degree programs, and have greater academic achievement (Harackiewicz et al., 2008; Hulleman, Durik, Schweigert, & Harackiewicz, 2008). Within TE, experiential value directs students to consider how their novel experience of course material is useful and valuable to them (Pugh et al., 2010b). This valuing of content has similarities to components of personal actualized interest, which leads to academic achievement and further engagement (Heddy et al., 2017; Pugh, 2011). Through TE's strong focus on student engagement as well as valuing of course content, students create new and meaningful connections with course material that has demonstrated an increase in student achievement (Heddy et al., 2017; Heddy & Sinatra, 2013; Pugh, 2004).

Given the motivational differences that FG students experience in relation to NFG students (Pike & Kuh, 2005; Terenzini et al., 1996) further exploration that analyzes more than just economic and academic skill deficiencies is needed (Oyserman & Destin, 2010; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). Building upon the pilot study (Goldman et al., 2017) findings of the relationship between TE, generation status and task value, this research will further examine these relationships across the semester to determine patterns of growth as well as effects on achievement over time.

TE and Task Value

As mentioned earlier, TE is a relatively new construct to the educational psychology field (Pugh, 2002) and so it is limited in the amount of exploration that has occurred with educational constructs, such as EVT. Given that the literature on this relationship is limited, I developed an exploratory study to further understand the possible relationship between EVT and TE, given that they are theoretically related. For example, the components of TE of motivated use and expansion of perception revolve around students placing a value on course content through their use of the concept in their everyday life which can be argued to be synonymous with intrinsic value and utility value (Pugh, 2011; Wigfield and Eccles, 2002). When students engage in course content in novel ways and place value on their experience of their changing perception, they may begin to see the benefit of engaging with their course material (utility value) as well as show an overall increased interest in their course content (intrinsic value) (Pugh, Schmidt, Russel, & Heddy, 2010; Heddy et al., 2017; Heddy & Sinatra, 2013). The results of the pilot study corroborated this theory, finding that students, regardless

of generational status, who engaged in TE at higher levels (as indicated by a quartile split) scored higher on intrinsic value, utility value, and attainment value (Goldman et al., 2017). When further parsing out these results based on generation status, for low TE groups it was revealed that FG students had significantly higher levels of cost value than NFG status. What this may indicate is since FG students are more likely to consider their education as a means to an end and less for intrinsic enjoyment (Bilson & Brooks-Terry, 1987), engagement with school material outside of the classroom may not be worth the resources.

Although these findings corroborate previous research, the measurements were only collected at one time point at the beginning of the semester, and as discussed earlier, task values, and interest declines over the semester (DeBacker et al., 2004; Stipek & Ryan, 1997; Wigfield & Eccles, 2000; Xie, DeBacker, & Ferguson, 2006) indicating that these relationships may not be consistent over time and need to be further explored. Given that both TE and EVT have been associated with positive academic achievement (Pugh et al., 2010a, 2010b; Heddy et al., 2013; Heddy & Sinatra, 2013) and FG status is highly associated with negative academic outcomes such as poor grades and eventual dropout (Engle & Tinto, 2008; Ishitani, 2008; Pascarella et al., 2004) the current study was deemed necessary to examine the relationship between these concepts to determine if FG students benefit from engagement in TE via their reported task values as well as their academic achievement. Since FG students are less likely to finish their degree or return after dropping out and task values have been shown to be positively related to future enrollment, engagement, and academic achievement (Bong, 2001; Bruinsma, 2004; Greene & Miller, 1996) it seems that FG

students can greatly benefit from engaging in utility, attainment, and intrinsic values which have been previously shown to be associated with high TE scores (Goldman et al., 2017).

Pilot Study

Given that the current study is building upon findings of the pilot study conducted by Goldman and colleagues; (2017) I thought it would be beneficial to include a brief description of the methodology and findings of the pilot study.

The goal of the pilot study was to explore the impact of transformative experience on FG college students' academic emotions and values. More specifically, I wanted to understand the relationship between transformative experience, emotions, and task values, and whether there was difference between FG college students and NFG students. Students enrolled in an introductory psychology class were given a short survey measuring their topic emotions, task values, and engagement in TE related to psychology. The students were given this survey after the first 8 weeks of the semester allowing them more opportunity to interact with the course material in a meaningful way. Group membership was created by conducting a quartile split based on scores on the TE instrument in order to discern relationships to TE engagement.

To determine if FG students exhibiting different levels of TE experienced differing levels of topic emotions, a quartile split was used to create a low and high TE groups for both FG and NFG students. Then a binary logistic regression was used to determine if topic emotions were related to TE group membership. The model was a good fit $\chi 2(1) = 63.766$, $p < .001$, indicating that the variables as a set reliably distinguished high and low TE group membership. The model also indicated that negative topic emotions were

a negative predictor to high TE group membership for NFG students (*b*=-.091, S.E.=.027, p=.001) but not for FG students (*b*=-.023, S.E.=.026, p=.378).

An independent samples t-test was used to compare the low and high TE groups separately for FG and NFG students. For FG students, the low and high TE groups significantly varied on their level of both negative ($t(157) = -2.01$, $p = .047$) and positive ($t(107) = 8.06$, $p < .001$) topic emotions. Likewise, for FG students, the low and high TE groups differed significantly on both negative ($t(157) = -2.79$, p=.006) and positive ($t(157) = 10.89$, p<.001) topic emotions.

To further expand on these differences, an independent samples t-test was used to compare the separate FG and NFG students' low and high quartiles of TE. For low TE groups, there were significant differences between FG college students and NFG college students negative emotions, $t(132)=2.24$, p=.026. For high TE groups, there were significant differences between FG college students and NFG college students negative emotions, $t(134)=2.66$, p=.009.

A binary logistic regression was used to determine if task values were related to TE group membership. The model was a good fit ($\chi2(3) = 135.142$, $p < .001$), indicating that the variables as a set reliably distinguished group membership. Utility value and intrinsic value were positive predictors for high TE for both FG students (*b*=.820, S.E.=.203, $p < .001$; *b*=.955, S.E.=.327, $p = .003$) and NFG students (*b*=.646, S.E.=.167, $p < .001$; *b*=.657, S.E.=.241, $p = .007$). On the other hand, cost value was a non-significant negative predictor for high TE for both NFG students (p=.196), and FG students (p=.619).

An independent samples t-test was used to compare the low and high TE groups separately for FG and NFG students. There were significant differences between low and high TE groups for both FG and NFG students on intrinsic value ($p<.001$), utility value ($p<.001$), and attainment value ($p<.001$), but not on cost value ($p=.642$, $p=.246$).

To further expand on these differences, an independent samples t-test was used to compare the separate FG and NFG students' low and high quartiles of TE. For low TE groups, there significant differences between FG college students and NFG students on cost value, $t(132)=2.82$, $p=.005$). For high TE groups, there was no significant difference between FG college students and NFG on cost value ($p=.342$).

Although the results provide evidence of cost value being a component that may be of importance when considering FG student obstacles in higher education, measuring these constructs on multiple occasions over the course of a semester will allow me to account for changes and growth over time creating a clearer picture of the relationship between these constructs. Given the analysis of the current literature the following research questions have been created:

1. To what extent do first-generation college students experience differing levels of TE, exam scores, and task value over the course of the semester as compared to non-first-generation students?
2. Does generation status affect the growth parameters for TE and task values over time?

Prediction

For question 1, it is predicted that FG students will experience TE at a non-significantly different rate than NFG students across the semester. Given the pilot study

findings (Goldman et al., 2017) as well as a study conducted analyzing group difference in relation to engagement in TE, interest and emotions that have found no difference in TE engagement across demographics using one time point measurements (Wilson, Pugh, Heddy & Goldman, 2017) the current study expects to see a similar effect across the semester.

I also posit that FG students are likely to experience lower levels of intrinsic and attainment values and higher levels of cost values, which is consistent with the pilot study (Goldman et al., 2017). Evidence suggests that FG students have more external responsibilities such as employment and family responsibilities as well as social pressures outside of their school context than NFG students (Hodges-Payne, 2006; Pascarella, Pierson, Wolniak, & Terenzini, 2004). Given these external and additional challenges, FG students are less likely to be intrinsically interested and engaged in their course material simply because they may not have the cognitive or motivational resources. Further, research suggests that a prime motivator for FG students to enroll in higher education is to obtain a higher or better paying job (Bilson & Brooks-Terry, 1987), their value of the material outside of its future utility will likely be minimal (Wilbur & Roscigno, 2016).

Given the research that indicates FG students' motivation to obtain a four-year degree is to obtain a better paying job (Bilson & Brooks-Terry, 1987), I also predict that FG students will exhibit higher levels of cost value and utility value. Many FG students feel deep guilt from families and peers for leaving their careers or family responsibilities in order to pursue an opportunity that these perspectives may not understand (Hodges-Payne, 2006; London, 1992; Petty, 2014). These feelings of guilt

may not only prevent FG students from experiencing intrinsic value but may also facilitate higher levels of cost value. Since FG students have a focus on obtaining a more materialistic goal and perceive their educative experience as a means-to-an-end they may experience higher utility value in place of intrinsic or attainment value (Wilbur & Roscigno, 2016; Vuong, Brown-Welty, & Tracz, 2010).

For question 2, it is predicted that generation status will significantly predict TE, exam scores, and task values over the course of the semester. FG students will have lower exam performance than NFG students, consistent with previous studies (Pascarella et al., 2004; Wilbur & Roscigno, 2016), which may also influence task values. Research by Wigfield and Eccles (2002) indicates that a student's interpretations of past performance directly affect their task value beliefs. If a student was to do poorly on an exam they may interpret that outcome as a reflection of their ability and adjust their values for the subject matter. Given this connection between previous experience interpretation and task value, it seems that previous exam performance may predict future task value. Given the pilot study's results indicating that FG students exhibit higher cost value than NFG students early in the semester (Goldman et al., 2017) and that task values decline throughout the semester (Xie, DeBacker, & Ferguson, 2006) it is predicted that this trend will become even more defined. TE has been shown to be positively related to motivation and interest in course material (Heddy & Sinatra, 2013; Pugh, 2011; Renninger & Su, 2012) as well as achievement (Heddy & Sinatra, 2013). The pilot study indicated that there was no significant difference between FG and NFG students' levels of TE at the start of the semester (Goldman et al., 2017), but given that course interest and motivation is usually higher at the beginning of the semester and

then begins to drop (DeBacker et al., 2004; Stipek & Ryan, 1997; Wigfield & Eccles, 2000) this trend may not occur across the semester. Since FG students traditionally have lower levels of motivation and engagement in course material (imperative aspects related to TE) compared to NFG students, they may experience a steeper decline and a generational difference in TE may become apparent.

CHAPTER THREE: RESEARCH METHODOLOGY

Design

According to the literature, engaging in transformative experience would be profitable for FG students in assisting in cognitive and motivation challenges. Given the complexity of TE and the lack of previous research on the effects of TE on FG students over the course of the semester, an exploratory study is needed to further understand the dynamic relationship between TE, task value, and generation status. Because FG students are most likely to drop out in year two (Ishitani, 2008) it was most practical to use an introductory course that has a large freshman population. What was also considered was the time of the semester that data collection occurred. To have a TE, students need to engage in the material in new and novel ways which cannot be achieved if the students have yet had the opportunity to fully engage with course material. Implementing the first data collection after the first month of courses begin was ideal, given that it will allow students time to have delved into course material. Also, looking at motivational measures, students tend to report high motivation levels at the start of the semester that tend to decline (Zusho, Pintrich, & Coppola, 2003). To avoid these possible issues and confounding contexts, having the first set of data collection a month into the semester was deemed to be the best option. If the survey was given too early, students would not have been able to engage with material and their TE scores would have not been useful, given that they were unable to engage in a TE. Also, since I am looking at changes over time, it is important to get a baseline measure of the participants motivation variables toward the start of the semester to be able to see a greater change over time.

The design for this study was a survey method with two groups. Given that the grouping variables are pre-determined the sampling methodology was non-randomized. Because this research focused on the differences found between these two groups, this was not seen to be problematic. The grouping variable of the study was generation status (first-generation versus non-first generation). The dependent variables were: exam scores; TE score; intrinsic, attainment, utility, and cost value scores. The independent variable in this study was generation status, FG or NFG. Participants were measured on TE, task value, and exam scores three times throughout the semester to determine relationships between variables with the change over time. Three time points were chosen in order to show change throughout the semester. Previous research determined that a student's level of motivation, efficacy, and task values decline throughout the semester (DeBacker, et al., 2004; Stipek & Ryan, 1997; Wigfield & Eccles, 2000; Xie, DeBacker, & Ferguson, 2006). Given this trend, I wanted to capture students' levels at a high point at the start of the semester, and capture changes throughout. Only three times of survey administration were used to prevent survey fatigue and prevent attrition given that FG students were already a small portion of the major sample. Also, since exam feedback may directly impact students' initial task value, the first survey administration will need to occur before the first exam, and the rest of the survey implementations will happen prior to the next exam. The measured variables are as follows: 1) Demographics 2) TE 3) Task Value (including four subcomponents of intrinsic, utility, attainment, and cost value) and 4) Exam scores.

Participants

This study utilized a convenience sampling of undergraduate students in a psychology course at a large mid-western university. A total of 193 students participated in the study. Of this number, 4 were eliminated for failing to meet the study criteria of being 18 or older. The participants were given extra credit toward their psychology course grade. Participants ethnicity was 75.6% white, 9.6% American Indian or Alaskan Native, 8.8% Latino/a, 8.3% Asian, and 5.7% African American (participants could choose multiple ethnicities). The gender of the participants was more female (64.5%) than male (35.9%) and most participants were between 18 and 22 years old. Looking at generational status, 25.9% of participants reported being FG students, whereas 74.1% reported being NFG students. Further demographic information for the participants can be found in **Table 1**, and demographic information separated by generation status can be found in **Table 2.**

Table 1
Demographic Information

	N	Percentage
Age		
18-22	185	97.88
23+	4	2.12
Gender		
Female	122	64.55
Male	68	35.97
Other	3	1.58
Generation Status		
First-generation	50	25.9
Non-First-Generation	143	74.1
Ethnicity		
White (non Hispanic)	146	75.6
American Indian or Alaska Native	18	9.3
Latino/a	17	8.8
Asian	16	8.3

Table 1

Demographic Information

	N	Percentage
Black or African American	11	5.7
Mixed Ethnicity	7	7.0
Other:	3	2.1
Native Hawaiian or Pacific Islander	2	1.0
Semesters completed at 4-year institution		
None.	18	9.3
1	123	63.7
2	11	5.7
3	25	13.0
4+	16	8.3
Living Situation		
On campus	132	68.4
Off campus	60	31.1
Currently Employed		
Yes	55	28.5
No	136	70.5
Annual Household Income		
Less than 30k	21	10.9
30k-80k	36	18.7
80k-100k	21	11.9
100k+	78	40.4
Financing Education		
Student Loans	69	35.8
Scholarships	107	55.4
Paying Own Way	47	24.4
Parental Support	135	69.9

Note: Participants could select multiple options for ethnicity and how they were financing their education.

Table 2

Demographic Information Separated by Generation Status

	NFG	Percentage	FG	Percentage
Age				
18-22	138	97.9	48	98
23+	3	2.1	1	2
Gender				
Female	90	62.9	32	64

Table 2

Demographic Information Separated by Generation Status

	NFG	Percentage	FG	Percentage
Male	51	35.7	17	34
Other	2	1.4	1	2
Ethnicity				
White (non Hispanic)	116	81.1	30	60
American Indian or Alaska Native	16	11.2	2	4
Latino/a	8	5.6	9	18
Asian	8	5.6	8	16
Black or African American	4	2.8	7	14
Mixed Ethnicity	6	4.2	1	2
Other:	0	0	4	8
Native Hawaiian or Pacific Islander	1	.7	1	2
Semesters completed at 4-year institution				
None.	14	9.8	4	8
1	92	64.3	31	62
2	9	6.3	2	4
3	17	11.9	8	16
4+	11	7.7	5	10
Living Situation				
On campus	104	72.7	28	56
Off campus	38	26.6	22	44
Currently Employed				
Yes	33	23.1	22	44.9
No	109	76.2	27	55.1
Annual Household Income				
Less than 30k	6	5.1	12	30
30k-80k	17	14.4	15	37.5
80k-100k	27	21.2	11	28.5
100k+	68	57.6	2	4
Financing Education				
Student Loans	50	35	19	38
Scholarships	75	52.4	32	64
Paying Own Way	26	18.2	21	42
Parental Support	111	77.6	24	48

Note: Participants could select multiple options for ethnicity and how they were financing their education.

Instruments

Below is a description of the measures used in this study. Internal consistency estimates from this sample are included in each description.

Demographics

To discern generation status, a demographic measurement was included. Students were asked to identify the highest level of education completed by either one of their parents/guardians as suggested by the literature (Hicks, 2003; McConnell, 2000; Prospero & Vohra-Gupta, 2007; Wilbur & Roscigno, 2016; Willet, 1989). To gather more definitive data on possible individual differences within generation status, students were also asked to indicate their gender, ethnicity, employment, living situation (on-campus or off), and household income.

These demographic questions were added to give further indications of differences between FG and NFG students. Previous research has indicated that even when controlling for household income, and outside responsibilities such as employment, that FG students still exhibit academic challenges compared to NFG students (Pike & Kuh, 2005; Terenzini et al., 1996). To prevent facilitating stereotype threat, the demographic survey was the last survey participants filled out within the first survey implementation (Steele & Aronson, 1995). Given that these demographic variables have been reported to be part of the reason for FG student academic deficits (Pascarella et al., 2004), including them to address individual differences in motivational constructs will be insightful. For the full scale see **Appendix A.**

Transformative Experience Survey

Students' engagement in TE was measured with a 27 item Likert-scale modified from a previously designed and validated instrument that measures all three components of TE (Pugh, Linnebrink-Garcia, Koskey, Stewart, & Manzey, 2010a). The survey was comprised of 9 questions from each component of TE (active use, expansion of perception, experiential value). For example, an item measuring active use was, "I talked about psychology ideas I've learned just for fun", whereas an item on expansion of perception was, "I think about my experiences differently now that I have learned these psychology ideas," and finally an example of an experiential value item was, "The psychology ideas are valuable in my everyday life" (Pugh et al., 2010a). According to research by Heddy and colleagues (2013) the reliability of the questionnaire performed at an acceptable level (Cronbach's $\alpha = .90$). The TE scale continuously yields patterns of validity and reliability in previous research (Pugh et al., 2010a, 2010b; Heddy & Sinatra, 2017; Heddy, Sinatra, & Seli, 2013). Within the current study the Cronbach's alphas ranged from .97 to .95 across time points, indicating that the scale demonstrated sufficient reliability. Pugh and his colleagues (2010) performed a Rasch analysis (Bond & Fox, 2001), which was used to develop the instrument so that all items fit the purpose of the scale.

The TE scale was used to assess student's levels of engagement in TE, which indicates student's levels of out-of-school engagement. Although the TE scale is still in its infancy as it was published in 2010, it is the only scale that has been validated for its measurement of behavioral (motivated use), cognitive (expansion of perception), and affective (experiential value) engagement in a student's everyday life. Also, the TE

scale has been shown to display high validity and reliability in previous research as indicated by Cronbach scores and correlation matrix with other related scales (Pugh et al., 2010a, 2010b; Heddy & Sinatra, 2013; Heddy et al., 2017), for full scale see Appendix B.

Task Value

Task value was measured by using an 18-item scale that includes the four components of task value, as adapted from previous research. Intrinsic (or interest) value refers to participants' liking or enjoyment of psychology (e.g. "I find psychology very interesting") and was measured using 6 items. Cronbach's alphas ranged from .97 to .95 across time points, indicating that the scale demonstrated sufficient reliability. Utility value refers to participants' beliefs of the usefulness of the area of study, (e.g. "Psychology is useful to me for things I do outside of school") and was measured using 5 items. Cronbach's alphas ranged from .93 to .91 across time points, indicating that the scale demonstrated sufficient reliability. Attainment value refers to the participants' belief of the value of the subject area for their sense of who they are (e.g., "Being someone who is good at psychology is important to me") and was measured using 6 items. Cronbach's alphas ranged from .95 to .94 across time points, indicating that the scale demonstrated sufficient reliability. Cost value refers to participants' assessment of the amount of effort required to be successful in the subject area (e.g., "Success in psychology requires that I give up other activities I enjoy"),and was measured using 2 items. Cronbach's alphas ranged from .92 to .88 across time points, indicating that the scale demonstrated sufficient reliability.

This scale is being used to measure task value's sub components of attainment, intrinsic, utility and cost value. Although there are other scales that have been used in education research that measure the same constructs, those scales have recently shown to have issues with confirmatory evidence of factor structure, something that is necessary for getting at the particular sub components of task value (for a review see Hilpert, Stempien, van der Hoeven Kraft, & Husman, 2013). The scale used in this study demonstrated appropriate factor loadings and construct validity as evidenced in previous research (Conley & Karabeneick, 2006). For the full scale, see **Appendix C.**

Exam Scores

To discern if there is a difference between generation status and achievement as well as differences in course performance with participants who show greater engagement in TE, exam scores for each participant were collected. Exam scores were collected to measure academic achievement instead of GPA or course grades due to the fact that GPA and course grades have shown to be increasingly inflated and have issues of subjectivity (Anglin & Meng, 2000; Compton & Metheney, 2000; Kuh & Hu, 1999; Sabot & Wakeman-Linn, 1991; Wongsurawat, 2009). Due to these issues, many research studies within the educational research field have switched to using exam scores or other standardized test scores to assess academic achievement (De Winter & Dodou, 2011; Elliot, McGregor, & Gable, 1999; Greene & Miller, 1996; Greene, Oswald, & Pomerantz, 2015; Heddy et al., 2017).

There were 4 exams administered throughout the semester in the course, but only 3 exam grades were collected that coincide with the timeline of the motivational measurements. These were obtained directly from the instructor to be a measure of

course content understanding. Once the exam scores were collected and paired with participants' other measures, they were de-identified.

Procedure

This study used a survey method, and the procedure was minimally invasive. The goal of this study was to further explore the relationship between TE, generation status, and motivational constructs. In order to explore these relationships, participants were asked to complete surveys at the beginning of the semester (one month in, as discussed previously in order to allow students time to engage with course material), half-way through the semester, and toward the end of the semester (following as closely with the exam schedule of the course).

After signing up for the study through an in-class recruitment by the researcher, participants were then sent e-mails from the researcher that directed them to a set of online surveys on Qualtrics which were given in the following order: TE, task value, and demographic scale. The demographics scale was the last measurement on the survey as to prevent stereotype threat (Steele & Aronson, 1995) and was removed after the first administration. All participants completed these measures at all three-time points, since there are no pre-described experimental and control conditions. The surveys took less than 20-minutes to complete to prevent fatigue and encourage completion.

CHAPTER FOUR: RESEARCH RESULTS

The descriptive information for the variables can be found in **Tables 3** and **4.** **Table 5** reports the correlational data between scales for evidences of validity for the scales used. The reported reliability coefficients are sufficient for the scales used during the study as each iteration reported a Cronbach's alpha of a .80 or higher (Cronbach, 1951). As reported in **Table 3,** there was an issue of attrition across the length of the study that should be addressed during future research projects. The differential between the condition group sizes can be seen in **Table 4** and should also be considered when interpreting results. Issues of sphericity, kurtosis, and homogeneity will be discussed within each analysis.

Table 3

Means, Standard Deviations and Other Descriptive Information

Variable Name	N	Minimum	Maximum	Mean	Std. Deviation	Cron. Alpha
TE Time 1	193	60	189	130.61	24.56	.95
Intrinsic Value Time 1	193	1	7	5.67	1.14	.97
Utility Value Time 1	193	1	7	5.33	1.24	.91
Attainment Value Time 1	193	1	7	4.42	1.36	.94
Cost Value Time 1	193	1	7	3.07	1.50	.88
TE Time 2	130	45	189	131.74	28.27	.97
Intrinsic Value Time 2	130	1.6	7	5.56	1.27	.96
Utility Value Time 2	130	1.33	7	5.15	1.32	.91
Attainment Value Time 2	130	1	7	4.42	1.39	.95
Cost Value Time 2	130	1	7	3.39	1.73	.92
TE Time 3	111	58	189	133.11	29.92	.97
Intrinsic Value Time 3	111	2.2	7	5.54	1.23	.95
Utility Value Time 3	111	1	7	5.27	1.29	.93
Attainment Value Time 3	111	1.33	7	4.47	1.43	.94
Cost Value Time 3	111	1	7	3.71	1.73	.84
Exam 1 Score	191	38%	104%	79.24%	11.94%	--
Exam 2 Score	130	40%	101.7%	80.41%	11.37%	--
Exam 3 Score	100	40%	100%	75.60%	13.38%	--

Note: Exam 1 was out of 50 points and the following exams were out of 100 points. Given this inconsistency, exam scores were translated into percentages.

Table 4

Means and Standard Deviations Separated by Generation Status

	N		Mean		Std. Deviation	
Variable Name	NFG	First-Gen	NFG	First-Gen	NFG	First-Gen
TE Time 1	143	50	131.06	129.31	25.45	21.98
Intrinsic Value Time 1	143	50	5.68	5.65	1.19	1.01
Utility Value Time 1	143	50	5.36	5.26	1.2	1.13
Attainment Value Time 1	143	50	4.38	4.51	1.40	1.24
Cost Value Time 1	143	50	3.5	2.91	1.49	1.48
TE Time 2	97	33	133.43	126.80	28.71	26.73
Intrinsic Value Time 2	97	33	5.62	5.38	1.28	1.23
Utility Value Time 2	97	33	5.26	4.87	1.36	1.14
Attainment Value Time 2	97	33	4.42	4.43	1.46	1.20
Cost Value Time 2	97	33	3.20	3.97	1.72	1.66
TE Time 3	81	30	135.47	126.74	29.73	29.96
Intrinsic Value Time 3	81	30	5.62	5.30	1.18	1.34
Utility Value Time 3	81	30	5.37	4.96	1.31	1.17
Attainment Value Time 3	81	30	4.5	4.28	1.44	1.41
Cost Value Time 3	81	30	3.53	4.2	1.77	1.55
Exam 1 Score	143	50	78.49%	75.27%	16.21%	12.41%
Exam 2 Score	97	33	81.45%	77.32%	10.95%	12.20%
Exam 3 Score	75	27	77.43%	70.53%	12.67%	14.23%

Note: Exam 1 was out of 50 points and the following exams were out of 100 points. Given this inconsistency, exam scores were translated into percentages.

Table 5
Correlation Matrix of Scales Used

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. TE Time 1	--	.71**	.72**	.72**	.01	.52**	.41**	.36**	.33**	.03	.51**	.37**	.36**	.32**	.15	-.01	.05	-0.04
2. Intrinsic Time 1	.71**	--	.67**	.58**	-.07	.49**	.62**	.42**	.29**	-.06	.46**	.57**	.38**	.28**	-.07	.14	.16	0.17
3. Utility Time 1	.72**	.67**	--	.75	.03	.43**	.38**	.57**	.40**	.00	.41**	.32**	.54**	.38**	.05	.03	.03	0.08
4. Attain.Time 1	.72**	.58**	.75	--	.21**	.44**	.37**	.47**	.59**	.11	.47**	.35**	.53**	.58**	.22*	-.09	-.02	-0.05
5. Cost Time 1	.01	-.07	.03	.21**	--	.01	-.06	-.07	.17	.55**	.09	-.12	-.06	.19*	.48**	-.19**	-.26**	-0.09
6. TE Time 2	.52**	.49**	.43**	.44**	.01	--	.82**	.75**	.67**	.18	.77**	.65**	.51**	.57**	.17	.12	.07	-0.02
7. Intrinsic Time 2	.41**	.62**	.38**	.37**	-.06	.82**	--	.73**	.58**	.05	.64**	.80**	.46**	.52**	.01	.19*	.11	0.09
8. Utility Time 2	.36**	.42**	.57**	.47**	-.07	.75**	.73**	--	.74**	.07	.58**	.55**	.70**	.61**	.09	.17	.05	0.07
9. Attain. Time 2	.33**	.29**	.40**	.59**	.17	.67**	.58**	.74**	--	.33**	.55**	.46**	.55**	.76**	.31**	-.04	-.07	-0.1
10. Cost Time 2	.03	-.06	.00	.11	.55**	.18*	.05	.07	.33**	--	.08	-.06	-.06	.23*	.65**	-.21*	-.16	-.23*
11. TE Time 3	.51**	.46**	.41**	.47**	.09	.77**	.64**	.58**	.55**	.08	--	.72**	.66**	.59**	.15	.02	.08	0.15
12. Intrinsic Time 3	.37**	.57**	.32**	.35**	-.12	.65**	.80**	.55**	.46**	-.06	.72**	--	.59**	.55**	.01	.22*	.22*	0.18
13. Utility Time 3	.36**	.38**	.54**	.53**	-.06	.51**	.46**	.70**	.55**	-.06	.66**	.59**	--	.68**	.09	.09	.07	0.08
14. Attain. Time 3	.32**	.28**	.38**	.58**	.19*	.57**	.52**	.61**	.76**	.23*	.59**	.55**	.68**	--	.37**	-.09	-.01	0.01
15. Cost Time 3	.15	-.07	.05	.22*	.48**	.17	.01	.09	.31**	.65**	.15	.01	.09	.37**	--	-.29**	-.17	-.22*
16. Exam Time 1	-.01	.14	.03	-.09	-.19**	.12	.19*	.17	-.04	-.21*	.02	.22*	.09	-.09	-.29**	--	.62**	.59*
17. Exam Time 2	.05	.16	.03	-.02	-.26**	.07	.11	.05	-.07	-.16	.08	.22*	.07	-.01	-.17	.62**	--	.55**
18. Exam Time 3	-.04	.17	.08	-.05	-.09	-.02	.09	.07	-.10	-.23*	.15	.18	.08	.01	-.22*	.59*	.55**	--
Listwise N=102																		

Note: *p < .05, two-tailed. **p < .01, two-tailed.

Preliminary Analysis of Data

Before analyses were conducted, the data were screened for missing data points, normality, and outliers. Since there were fewer than 20% missing data points for any particular item, an item-mean score replacement was deemed to be the most effective method for handling missing data points (Downey & King, 1998). Normality could be assumed in the remaining analyses given that the skewness and kurtosis levels were within 3 as an absolute value (Tabachnick & Fidell, 2001). Data were screened for outliers by using a boxplot examination with an inter-quartile range rule multiplier of 3 (Hoaglin & Iglewicz, 1987). Using this analysis, no outliers were found within the data.

Each research question will be individually addressed with rationale for statistical analyses provided for each. For questions where the same analyses will be used as a previous question, the rationale will not be repeated. Because groups were pre-determined and not randomly assigned they were unequal in size. To address this, each analysis will report any violation of the Levene's test of homogeneity. All analyses were done using statistical software SPSS 24.

Analyses

Correlation Analysis

A bivariate correlation matrix was reported to indicate reliability between scale administrations. Within the matrix, each scale was significantly related to each of its iterations at the .05 level, providing further evidence of reliability of the scales used. The correlation matrix also provided evidence of a significant negative correlation between cost value and exam performance. Exam one scores were negatively correlated

to time one cost value, $r(193) = -.187$, $p < .01$ and exam three scores were negatively correlated to time three cost value, $r(102) = -.222$, $p < .01$.

Chi-Square Test of Independence

A chi-square test was used to indicate demographic differences between generational status groups. The chi-square test was run on each demographic variable, but only significant results will be reported. Looking at ethnic differences, the FG student sample was significantly greater in Latino/a participants [X^2 (1, N=193) =7.098, p=.008], African American participants [X^2 (1, N=193) =8.651, p=.003], and significantly lower in the amount of White participants [X^2 (1, N=193) =8.969, p=.003] than the NFG student sample. Also, the FG student sample was significantly greater in the amount of students who did not live on campus [X^2 (1, N=192) =5.115, p=.024], who were currently employed [X^2 (1, N=191) =8.334, p=.004], and were significantly lower in their family annual income [X^2 (3, N=158) =29.895, p<.001].

Repeated Measures ANOVA

The first research question addressed the difference of a) TE b) exam scores c) and task value between FG students and NFG students across the semester. To address this question of change over time, a repeated measures ANOVA was performed on each of the components and will be reported separately. Participants who did not have scores for each time point were excluded from the analysis. Results from the Greenhouse-Geisser test are reported when sphericity is violated. According to Cohen (1988), a partial Eta squared of .01 is small, .06 is moderate, and .13 is large. Bonferroni-adjusted pairwise comparisons to determine which means were significantly different.

Transformative Experience. Research question 1 part a) addressed TE score difference between FG students and NFG students across the semester. The repeated measures ANOVA was conducted using time as the within-subjects factor and group (NFG and FG) as the between-subjects factor. The repeated measures ANOVA showed that the time by group interaction was not significant [$F(1.787,192.943)=.428$, $p=.630$, $\eta^2=.004$ (Greenhouse-Geisser)], nor was there a significant main effect for time [$F(1.787,192.943)=.144$, $p=.843$, $\eta^2=.001$ (Greenhouse-Geisser)] or between-subjects effect for generation status [$F(1, 108)= 1.406$, $p=.238$, $\eta^2=.013$].

Exam Scores. Research question 1 part b) addressed exam score difference between conditions across the semester. The repeated measures ANOVA was conducted using time as the within-subjects factor and group (NFG and FG) as the between-subjects factor. The repeated measures ANOVA showed that the time by group interaction was not significant [$F(1.972,193.221)=.349$, $p=.706$, $\eta^2=.004$ (Greenhouse-Geisser)], but there was there a significant main effect for time with a moderate effect size [$F(1.972,193.221)=9.557$, $p=.000$, $\eta^2=.089$ (Greenhouse-Geisser)] indicating that students overall had lower exam scores over the semester. Trend analyses indicated that a linear trend best fit the pattern of the means ($F(1,98)=10.221$, $p=.002$, $\eta^2=.094$). To better understand the differences between exam scores over time, Bonferroni-adjusted post hoc tests were examined and revealed there were significantly higher levels of exam scores at time 1 than at time 3 ($p=.006$), and significantly higher exam scores at time 2 than at time 3 ($p=.000$).

There was also a significant between-subjects effect for generation status with a moderate effect size [$F(1, 98)= 7.743$, $p=.000$, $\eta^2=.073$], indicating that first-generation

college students exhibited lower exam scores than non-first-generation students. Refer to **Figure 1.**

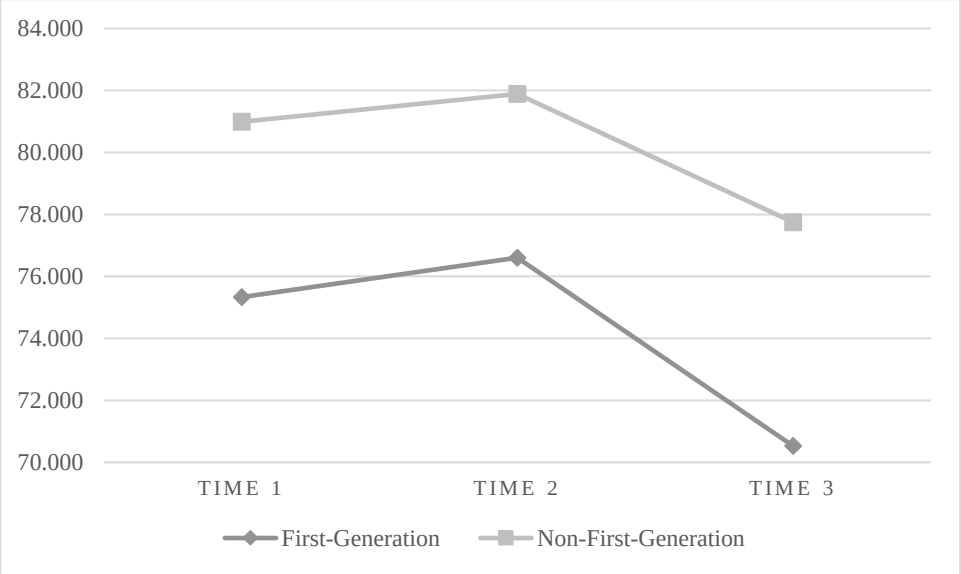

Figure 1. Means on exam scores at three different time points, separated by generation status.

Task Values. Research question 1 part c) addressed task value score differences between conditions across the semester. Because task value was broken up into its subcomponents (intrinsic, attainment, utility, and cost) the ANOVA results will be reported for each component. The repeated measures ANOVA was conducted using time as the within-subjects factor and group (NFG and FG) as the between-subjects factor.

The repeated measures ANOVA showed that for intrinsic value the time by group interaction was not significant [$F(1.720,185.76)=.091$, $p=.887$, $\eta^2=.001$ (Greenhouse-Geisser)], nor was there a significant main effect for time [$F(1.720,185.76)=1.740$, $p=.178$, $\eta^2=.016$ (Greenhouse-Geisser)] or between-subjects effect for generation status [$F(1, 108)= 1.331$, $p=.251$, $\eta^2=.012$] on intrinsic value.

The repeated measures ANOVA showed that for utility value the time by group interaction was not significant $F(2,216)=.403$, $p=.668$, $\eta^2=.004$, nor was there a significant main effect for time $F(2,216)=2.626$, $p=.075$, $\eta^2=.024$ or between-subjects effect for generation status $F(1, 108)= 1.394$, $p=.240$, $\eta^2=.013$ on utility value.

The repeated measures ANOVA showed that for attainment value the time by group interaction was not significant [$F(1.82,196.579)=.1.933$, $p=..151$, $\eta^2=.018$ (Greenhouse-Geisser)], nor was there a significant main effect for time [$F(1.820,196.579)=.095$, $p=.893$, $\eta^2=.001$ (Greenhouse-Geisser)] or between-subjects effect for generation status [$F(1, 108)= .026$, $p=.873$, $\eta^2=.000$] on attainment value.

Lastly, the repeated measures ANOVA showed that for cost value the time by group interaction was not significant $F(2,216)=.417$, $p=.660$, $\eta^2=.004$, but that there was a significant main effect for time with a moderate effect size $F(2,216)=6.796$, $p=.001$, $\eta^2=.059$ indicating that students had higher levels of cost value as the semester went on. Trend analysis indicated that a linear trend best fit the pattern of the means ($F(1, 108)=11.449$, $p=.001$, $\eta^2=.096$). To better understand the differences between levels of cost value over time, Bonferroni-adjusted post hoc tests were examined and revealed that there were significantly higher levels of cost value at time 3 than at time 1 ($p=.003$).

There was also a significant between-subjects effect for generation status with a moderate effect size, $F(1, 108)= 7.553$, $p=.007$, $\eta^2=.065$, indicating that first-generation college students exhibited higher levels of cost value than non-first-generation students. Refer to **Figure 2.**

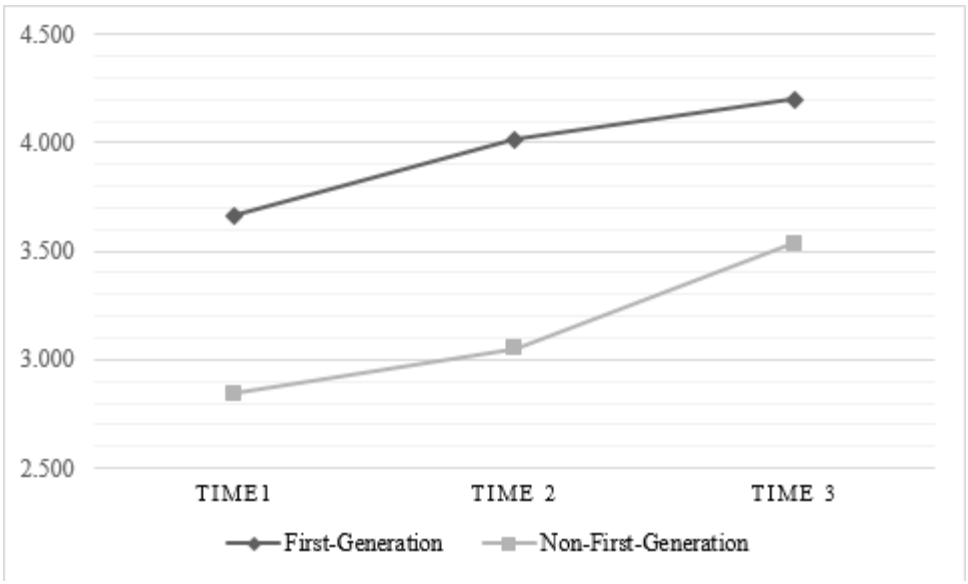

Figure 2. Means on cost value scales at three different time points, separated by generation status.

Growth Curve Analysis

The second research question addressed the question of whether generation status was associated with different growth rates over the course of the semester on TE and task values. The ANOVA results determined if the differences between groups across time, but to gain a clearer picture of the growth and change over the semester on TE and task value subcomponents, growth curve modeling (GCM) was used. This specific type of analysis has benefits over an ANOVA in that further exploration of the change between participants given time and condition, as well as if participants are different in their growth depending on condition, or in this case, generation status. For the parsimony, I decided to fit a linear trend to their growth trajectories. The GCM allowed for analysis of the starting point of growth, shape of growth, and rate of growth which will give a better idea of how FG students differed from NFG students over the course of the semester in regard to TE and task values (Singer & Willett, 2003). Growth curve analyses were performed on each of the task value components and will be

reported separately. Participants who did not have scores for each time point were excluded from the analysis.

To conduct the GCM a few assumptions were made regarding fixed and random effects, as well as error structure. Given that the structure of the study allowed for students to respond to the survey at differing time points within each survey administration (they had a week to respond to the survey, so time between iterations was not exact) time was considered a random effect within the model. An unstructured covariance matrix was used in this analysis due to its simplicity and theoretical fit. Since there was no reliable pattern on variables over the differing time points, putting constraints on the values did not make theoretical sense and so an unstructured covariance matrix was used.

Although the repeated measures ANOVA did not reveal any significant main effects or interaction effects on any variable except cost value and exam scores, a GCM was conducted on TE and all task values given that the GCM provides further information about differing growth parameters (intercepts and slopes) that the repeated measures ANOVA did not. Given that the trend analysis for cost value and exam scores indicated a linear trend ($p=.001$) the GCM was run using a linear time trend for each model. Each model was run using a restricted maximum likelihood (REML) estimation since there was no use of model comparison as well as REML being less biased with smaller sample sizes. For these analyses, Generation Status was coded 0=non-FG and 1=FG. Time was coded 0, 1, and 2.

Table 6 contains the parameter estimates from the growth curve model for TE. Model 1 included Time and Generation Status as fixed predictors of TE. Neither time,

nor generational status emerged as significant predictors in the model. Nevertheless, the variance estimates for students' intercepts and slopes were both statistically significant. Model 2 incorporated the previous fixed effects, along with a term reflecting the cross-level interaction between time and generational status. This effect was non-significant in the model, alongside the fixed effects of Time and Generation Status. Results are shown in **Table 6.**

Table 6
Growth Curve Model Output for TE

	Model 1			Model 2		
Fixed Effects	*b*	Standard Error	*P* Value	*b*	Standard Error	*P* Value
Time	.71	1.26	.574	-1.15	2.41	.632
Generation Status	4.91	4.91	.305	3.58	4.94	.471
Time X Generation Status	-	-	-	2.57	2.82	.363
Random Effects	Estimate	Standard Error	*P* Value	Estimate	Standard Error	*P* Value
Variance Intercept	391.86	88.98	.000	372.25	70.87	.000
Variance Slope	138.64	27.08	.000	132.15	35.62	.000

Time was coded 0, 1, and 2.

Table 7 contains the parameter estimates from the growth curve model for attainment value. Model 1 included Time and Generation Status as fixed predictors of attainment value. Neither time, nor generational status emerged as significant predictors in the model. There was between student variation in intercepts, suggesting between student differences at the start. However, the slopes did not randomly vary. Given that the slope coefficient was not significant, an interaction term was not included. Results are shown in **Table 7.**

Table 7
Growth Curve Model Output for Attainment Value

		Model 1	
Fixed Effects	*b*	Standard Error	*P* Value
Time	.035	.058	.541
Generation Status	-.07	.26	.780
Time X Generation Status	-	-	-
Random Effects	Estimate	Standard Error	*P* Value
Variance Intercept	1.07	.271	.000
Variance Slope	.204	.126	.104

Table 8 contains the parameter estimates from the growth curve model for utility value. Model 1 included Time and Generation Status as fixed predictors of utility value. Neither time, nor generational status emerged as significant predictors in the model. There was also no between student variation in intercepts or slope coefficients. Given that the slope coefficient was not significant, an interaction term was not included. Results are shown in **Table 8.**

Table 8
Growth Curve Model Output for Utility Value

		Model 1	
Fixed Effects	*b*	Standard Error	*P* Value
Time	-.047	.056	.405
Generation Status	.29	.24	.217
Time X Generation Status	-	-	-
Random Effects	Estimate	Standard Error	*P* Value
Variance Intercept	1.05	.127	.488
Variance Slope	.211	.117	.072

Table 9 contains the parameter estimates from the growth curve model for intrinsic value. Model 1 included Time and Generation Status as fixed predictors of

intrinsic value. Neither time, nor generational status emerged as significant predictors in the model. Nevertheless, the variance estimates for students' intercepts and slopes were both statistically significant. Model 2 incorporated the previous fixed effects, along with a term reflecting the cross-level interaction between time and generational status. This effect was non-significant in the model, alongside the fixed effects of Time and Generation Status. Results are shown in **Table 9.**

Table 9
Growth Curve Model Output for Intrinsic Value

	Model 1			Model 2		
Fixed Effects	*b*	Standard Error	*P* Value	*b*	Standard Error	*P* Value
Time	-.083	.051	.110	-.115	.096	.236
Generation Status	.278	.232	.229	.234	.247	.345
Time X Gen Status	-	-	-	.045	.113	.403
Random Effects	Estimate	Standard Error	*P* Value	Estimate	Standard Error	*P* Value
Variance Intercept	1.03	.081	.000	.904	.163	.000
Variance Slope	.199	.046	.000	.166	.063	.009

Table 10 contains the parameter estimates from the growth curve model for cost value. Model 1 included Time and Generation Status as fixed predictors of cost value. Both time and generational status emerged as significant predictors in the model. Also, the variance estimates for students' intercepts and slopes were both statistically significant. Model 2 incorporated the previous fixed effects, along with a term reflecting the cross-level interaction between time and generational status. This effect was non-significant in the model, alongside the fixed effects of Time and Generation Status. Results are shown in **Table 10.**

Table 10
Growth Curve Model Output for Cost Value

	Model 1			Model 2		
Fixed Effects	*b*	Standard Error	*P* Value	*b*	Standard Error	*P* Value
Time	.327	.079	.000	.264	.149	.080
Generation Status	-.803	.288	.006	-.897	.313	.005
Time X Gen Status	-	-	-	.088	.11	.615
Random Effects	Estimate	Standard Error	*P* Value	Estimate	Standard Error	*P* Value
Variance Intercept	1.81	.424	.000	1.37	.261	.000
Variance Slope	.486	.187	.009	.263	.122	.031

CHAPTER FIVE: DISCUSSIONS AND CONCLUSIONS

Based on gaps in the literature concerning TE, generation status, and task values, I made several predictions of the relationships among the variables in the study. Within this discussion section, I address the findings of the study in relationship to each prediction, and what the future implications for this research might entail.

Summary of Results

For question 1, the prediction was that FG students were likely to experience lower levels of intrinsic and attainment values, and higher levels of cost value across the semester compared to NFG students. The repeated measures ANOVA confirmed the higher level of cost value prediction for FG students which corroborated the results of the pilot study (Goldman et al., 2017). Although the levels of intrinsic and attainment value were lower with a η^2=.018 for attainment value and η^2=.001 for intrinsic value, both were non-significant at the p=.05 level. I also hypothesized that FG students would consistently have lower exam scores as compared to NFG students which did reflect this trend. Also consistent with the pilot study and prediction, there was no significant difference between FG students and NFG students' engagement in TE over the course of the semester.

Research question two predicted that generation status would be a significant factor in influencing participant's growth parameters on TE and task values over the course of the semester. Although the repeated measures ANOVA gave an indication at the change across the semester of the dependent variables as compared by generation status, a growth curve model was used to further expand on the rate of growth and change across time. The model was not statistically significant indicating that

generation status was not a predictor of TE, attainment value, utility value, or intrinsic value growth parameters. Generation status was a predictive factor in the level of cost value at time one (the intercept) as well as rate of change in cost value across the semester. This finding reflects similar results found within the repeated measures ANOVA as well as the pilot study indicating that FG students exhibit higher levels of cost value than NFG across the semester as well as at the start of the semester.

Contributions and Significance

Theoretical Implications

The findings of present study have implications for educational research and teaching. As discussed previously, FG students experience unique academic challenges compared to NFG students due to a plethora of external factors (low SES, feelings of guilt, lacking support and modeling; Brand & Xie, 2010; Ishitani, 2008; Pacarella et al., 2004). Previous literature has explored these factors at great length, but the current study adds to the previous literature through exploring FG students motivational drive in higher education through the lens of TE and EVT.

This research has theoretical implications that will inform future research and exploration. Since research on the influence of TE is still being understood, the exploration of TE and other motivational constructs such as EVT adds important understanding and expands the TE literature base. Within the TE literature, TE has been shown to have a positive relationship to interest in course material (Heddy & Sinatra, 2013; Pugh, 2011). Previous research has theorized that TE's component of motivated use and expansion of perception facilitates valuing of course content and interest via students relating course content to their own experience, making it self-relevant (Heddy

& Sinatra, 2013; Pugh, 2011). These components have been theorized to be related with intrinsic value and utility value, a finding that was corroborated with the pilot study (Goldman et al., 2017) demonstrating the important relationship between these constructs that hold academic benefits. If this relationship is also supported in the current study, this may build upon the TE literature in further defining the connection between task value and TE, and how TE may be able to illicit task values in students.

Within the TE literature the relationship between experiential value and task value has been relatively undefined. Research on TE has proposed that through the student's use of course content within everyday experience, the content becomes personally relevant, facilitating a sense of value of material as well as greater engagement leading to experiential value (Harackiewicz, Smith, & Priniski, 2016; Heddy et al., 2016; Pugh, 2010). TE research has considered experiential value as an intersection between intrinsic value and utility value (Eccles &Wigfield, 2002) in the sense that intrinsic value refers to a subjective sense of enjoyment whereas utility value refers to the perceived usefulness of the task (Pugh, 2011). Due to this theoretical relationship TE research has drawn connections between TE's component of experiential value and task value, but this research has been lacking in defining the specifications of that relationship. The pilot study (Goldman et al., 2017) and the current study provides valuable information that can help further define and understand the inner workings of this relationship, which can further expand on both the TE literature and composition of experiential value as well as the EVT literature.

Within the EVT literature, little has been done to demonstrate the effectiveness or differences of task values in differing group contexts. The findings of the current

study and pilot study brings light to the different contextual factors that play a role in task value development, which can further add to the literature about diverse learners and motivation. This research will also help bring light to further understanding task value and how it interplays academic achievement, especially within students of differing generational status.

Previous research has indicated that both TE and EVT facilitate academic success through increased motivation, interest, retention, and achievement (Bong, 2001; Bruinsma, 2004; Heddy & Sinatra, 2013; Pugh, 2011; Wigfield & Eccles, 2002). Given that FG students are more likely to have worse retention and poorer grades than NFG students (Ishitani, 2008; Pascarella et al., 2004), these academic benefits that are demonstrated through TE and EVT are important for these diverse learners in succeeding in higher education. The results of this research further expand on understanding the relationship between TE and EVT and how this connection can be further beneficial in overcoming motivational and academic shortcomings. The findings of this study can be used to develop an in-class TE intervention that can be further tailored to be most effective for FG students. Given the findings of this study that indicate FG students experience high cost value compared to NFG, future in-class interventions and pedagogical practices will need to focus on helping FG students to perceive their educative experience as less costly.

Further, recent research within educational psychology have focused on the lack of diversity when studying motivation research. In an article by Usher, (2018) a lack of cultural relevance within motivation research is discussed regarding the issues of generalizability and effectiveness of educational practices. Usher discusses the

importance of contextualizing motivation research to provide more inclusive understanding of motivational processes that may differ by ethnicity. The findings of this study relate to the call to diversify motivational research because we explored a diverse population in FG students. Specifically, the difference of cost value and academic achievement within FG students may be multifaceted and include components of diversity. For instance, within the current study's sample FG students were significantly different in their ethnic makeup compared to the NFG student sample. The FG student sample was significantly greater in Latino/a participants, African American participants, and significantly lower in the number of White participants. Given this difference between groups in the percentage of ethnic minority participants, differences between FG students and NFG students in their levels of cost value and FG students' experience of cost value could be more complex than the current measure has assessed.

Looking at the conceptual framework for the construct of cost value, researchers may argue that the foundational research defining this construct may be biased in its assumption of a mostly White participant group (Usher, 2018). Since current motivation research is not yet culturally grounded, the current framework of cost value may not be sufficient to effectively assess diverse learners' conception of cost in reference to their educative experience. The current research project defined cost value as a student's belief of how much effort and resources will be used to complete a task (Eccles & Wigfield, 2002). What is lacking in this definition is how a student may interpret 'effort' and 'resources' considering their own background. For FG students who primarily view their educative experience as a means to a better occupation (Bilson & Brooks-Terry, 1987; Ishitani, 2008) and experience guilt from peers and family

(Hodges-Payne, 2006; London, 1992; Petty, 2014) their interpretation of 'effort' and 'resources' could focus more on monetary components and stress on family, versus a NFG student who may interpret 'resources' as emotional or cognitive in nature. Given these considerations, future research should consider this issue of ecological validity of cost value and seek to further understand the complexity of perception of cost value for diverse groups.

What should also be discussed are the theoretical implications for the non-significant results. The pilot study (Goldman et al., 2017) and the current study indicated that FG students and NFG students do not significantly differ in their engagement in TE. This could be due to the fact that there was no TE intervention (which has been shown to significantly increase instances of TE (Pugh et al., 2010b; Heddy & Sinatra, 2016)) and that the same instructor taught all students, so engagement in TE should be similar across all students. Since TE has been shown to be related to positive academic outcomes such as perceiving the benefit of engaging in course material (utility value) and increased interest in course content (intrinsic value; Pugh, Schmidt, Russel, & Heddy, 2010; Heddy et al., 2017; Heddy & Sinatra, 2013) we would expect to see that FG students and NFG students having similar levels of utility and intrinsic value which was confirmed in the current study's analyses. Given that FG students did engage in TE at a similar level to NFG students and yet still had significantly higher levels of cost value, it could be theorized that TE may not have any effect on cost value. In order to confirm this relationship between TE and any task value change within different generational status students, a study using an experimental design that utilizes a TE intervention to parse out causal relationships is needed.

Looking at the results of the study a curious conundrum arises. Attainment value, utility value, and intrinsic values as well as engagement in TE have been shown in previous research to provide academic benefits such as increased engagement and positively predict exam scores (Bong, 2001; Bruinsma, 2004; Canning, Harackiewicz, Priniski, Hecht, Tibbetts, & Hyde, 2018; Heddy et al., 2017; Pugh, 2011). Given that FG students have similar attainment, utility, and intrinsic values and TE engagement compared to NFG students one may expect that they would have similar exam scores, but as seen in this study's results, they had significantly lower exam scores. What may be accounting for this difference could be cost value. Research on task values indicates that cost value, or perceptions of cost (Perez, Cromley, & Kaplan, 2014; Wigfield & Cambria, 2010) play a distinct role in academic decisions and achievement. When looking at the correlation table represented in **Table 5,** cost value was significantly negatively related to exam scores, indicating detrimental effects to academic achievement. Research by Wigfield and Eccles (2002) also demonstrated that a student's interpretation of past performance can directly influence their task value beliefs. Since task values were measured prior to each exam, it could be that FG students were using feedback from their previous exam performance that influenced their perception of cost which then influenced their future exam performance. This finding may assist in explaining the significantly lower exam scores and significantly higher cost values FG students exhibited compared to NFG students in the current study, even when other task values and TE levels were similar.

Practical Implications

Further understanding FG students and their relationship with both TE and task value over time gives greater understanding to the educational field in how to best facilitate learning in FG students. For instance, at the classroom level this study will inform learning and instruction. The results of this study demonstrated that FG students have a unique experience within their educational context in how they perceive their academic endeavor with high cost. Given this difference, an intervention may be conducted to determine how TE can be effectively implemented in the classroom to successfully facilitate growth in academic achievement for FG students. The pilot study revealed that students who exhibited high levels of TE showed an increase in utility and intrinsic valuing of course content (Goldman et al., 2017) which may help to facilitate academic benefits for FG students, such as increasing mastery goal orientation (Harackiewicz, et al., 2008), retention (Bong, 2001; Bruinsma, 2004), and academic performance (Bong, 2001; Bong, 2010). Future instructional methods may use modeling of TE (as used in Pugh, Linnenbrink-Garcia, Koskey, Stewart, & Manzey, 2010b) within their classrooms to facilitate these academic benefits that may help any FG students and other diverse learners who share similar struggles.

Further practical implications can be seen for task value in classrooms as well. The pilot study found students that engaged in TE showed higher levels of utility, intrinsic, and attainment values, and had reduced levels of cost value (Goldman et al., 2017). Since the pilot study demonstrated that FG students who did not engage in TE had higher cost value than NFG students who did not engage in TE, it would be beneficial to determine if there is a way to not only facilitate growth in utility,

attainment, and intrinsic values but to decrease cost value in students. Previous research has used in-class task value interventions to effectively increase intrinsic value and utility value (Harackiewicz, Rozek, Hulleman, & Hyde, 2012; Hulleman & Harackiewicz, 2009). Within the study by Harackiewicz et al., (2012) parents were tasked with conveying the importance of math and science courses to their high school aged children through brochures and a web site that highlighted the importance and usefulness of STEM courses. Results from this study indicated that students not only enrolled in more STEM courses, but the intervention was a significant positive predictor of students' utility values of math and science (Harackiewicz et al., 2012). In the study by Hulleman and Harackiewicz (2009), students were asked to connect science course material to their personal lives using a relevance intervention. Results of this study indicated students who engaged in the intervention had higher levels of intrinsic value of their course material (Hulleman & Harackiewicz, 2009). Using elements from these previous research studies with successful instances of increasing task values (Harackiewicz et al., 2012; Hulleman & Harackiewicz, 2009) a more appropriate intervention model may be used to facilitate growth in task value constructs for FG students. Because these previous interventions are lacking in their use with diverse groups (ethnically as well as varying generation status) there may be aspects that may not be as effective with FG students. Given the plethora of options for expansion of the literature and understanding of these motivational constructs, the findings of the study expand and contribute to the current educational literature in both practical and theoretical implications.

Limitations

There are limitations to the current investigation as there are with any study. More specifically within this investigation limitations exist related to the population, context, and research design. To begin, the current study had issues of attrition across the different time points of survey administration. Although the study began with a sizeable participant pool, it eventually dwindled down to 111 participants, with 30 being FG students, which provides issues of generalization and power with statistical analyses. However, although the participant pool did shrink over time, the ratio of FG students to NFG students remained similar. Another limitation in regard to the population, is that the university is considered to have students who are mid to high SES, which may affect other individual differences and access to resources. An eventual goal is to conduct a similar study within populations that sample from lower SES groups to parse out individual differences and increase external validity.

Another limitation to the current investigation's population choice was due to prior collegiate experience. Within the given sample population, students that enrolled in the Spring section may have had at least one semester of college under their belt (as indicated by over 90% of the sample indicating they had completed at least one semester at a four-year institution) and may be more apt at college life versus a first-semester student who still has some reservations about college and was still in development of task values in regard to their collegiate experience. In fact, there was no significant difference in amount of semesters completed at a four year institution between FG and NFG students ($t(191)=.697$, $p=.487$) indicating that the majority of FG and NFG students were in at least their second semester at a four-year institution. It may

behoove future researchers to access a fall semester course to investigate students who are within their first semester and have relatively unmolded task values.

Looking at limitations to the context outside of the participant pool, the current study sampled an introductory psychology course to have participants report their value of course content, but researchers have indicated that values are context dependent (Harackiewicz & Hulleman, 2010; Hulleman, Godes, Hendricks, & Harackiewicz, 2010). Given that a student may have a higher utility value for a course that is more in line with their future career may explain why utility value between FG and NFG students was not significantly different. It could be that within the current investigation's participant pool that many of the students did not identify with psychology as being personally relevant to their future careers and ergo did not place value on course content.

There were also limitations with the research design of the current study, one being that there was no experimental and control condition. Given that the goal of this study was to further understand the relationship between TE, EVT and generation status, I posited that an experimental design was unnecessary since the study was exploratory in nature. Given this limitation we cannot for certain indicate if TE is specifically influencing any change in motivation variables or exam performance, but we can further understand a role that it may play in the relationship of these constructs.

What also should be considered is that since there is no experiment or intervention being implemented, parsing out if individual differences or if a third outlying variable may be explaining differences that are seen between groups is difficult. Although engagement in TE overall was not significantly different across

groups, there could be further variables that influence the differences in task values seen between generational status. For instance, research indicates that sense of competence and/or prior performance experiences can influence task values (Hulleman et al., 2010; Usher & Pajares, 2008). Since FG students exhibited consistently lower exam scores than NFG in the current study, it could be that previous poor exam performance influenced FG students future task values.

Finally, this research design has a limitation in its statistical analyses. Although this study was exploratory, and the goal was to seek understanding about the interplay between TE, task values, and generation status, there was no predictive component used with the analyses. Without this component, it is difficult to parse out the relationship between these constructs and to determine if TE has a predictive relationship on task values, or if TE has a predictive value on task values when accounting for generation status.

Future Directions

This study is part of iterative steps taken in understanding the dynamic relationship between TE and first-generation college students. The first study in this line of research had the purpose of exploring differences between first-generation college students, motivation, and engagement in TE. Once it was concluded that there was a marked difference, it was clear that the need to study the growth and change of these measures over the course of a semester was needed within a typical instruction course. In the following section I will discuss five future studies to build upon the findings of the current investigation.

First, because the current study indicated that FG students report significantly higher levels of cost value across the semester compared to NFG students, a further study should explore this marked difference. As discussed in the limitations, a non-experimental design was used to explore the differences between FG and NFG students. This allowed the relationship between the constructs of interest to be explored and paved way for a future study that builds upon these findings. A future study that utilizes a TE intervention that is administered to an experimental and control group with an equal mixing of generation status students that looks at pre and post change of task values would allow for greater understanding of TE's affect not just on task values, but on students of varying generational status. The current study asked students to report their organic experiences of TE, but with the administration of the Teaching for Transformative Experience in Science (TTES) model (a TE intervention shown to increase instances of TE; Heddy et al., 2017; Pugh et al., 2010a, students will experience greater instances of TE which may further provide clear indications of TE's effect on task values and generation status differences.

Second, the current study only looked at TE, task values, and exam scores when considering changes over time. There are several other variables that TE could potentially impact. For instance, academic emotions, self-efficacy, and interest would be beneficial to consider given that task values are affectively laden and can be impacted by interest and competence (Hulleman et al., 2010; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Usher & Pajares, 2007). In an intervention conducted by Hulleman et al., (2010), utility value was manipulated through a self-relevance task which increased perceptions of utility value, interest, and performance. Given these

findings of the Hulleman et al., (2010) study along with the current investigation's findings of generational differences it seems that an intervention looking at these variables would provide important information not only on the impact of TE on these variables, but the differences in generation status as an effect of engagement in TE.

Third, in the present study the experiences and accuracy of TEs participants experienced were self-reported and not checked for accuracy. To ensure accuracy of reported TEs, both in identifying the experience as a TE and the accuracy of the use of course content, a qualitative component or feedback could be used. Previous TE research has made use of Use Change Value (UCV) discussions (Heddy et al., 2017) that allow students to come to class and discuss their instances of TE. This tool allows the researcher to discern the accuracy of students reported TEs and can provide further detail to individual differences in how students experience TE based on generational status, especially in the valuing component in a qualitative approach. This research may bring to light how TE may be benefiting FG students' task values and/or how a TE intervention may be best modified to best facilitate FG students' academic success.

A fourth potential future study based on the findings of the current study would be to further explore the individual differences of participants and their experience of TE. The current study explored individual differences based on generation status and a few demographic variables in a shallow method, but future research that further parses out these differences by SES, ethnicity, SAT scores, etc. could provide valuable information to not only the TE literature and its effectiveness in different subgroups, but also provide further explanations on the individual differences in FG students versus NFG students that explain their variance in task values. Research has indicated that

when controlling for factors such as SES and scholastic resources that FG students still experience academic challenges above and beyond NFG students (Pike & Kuh, 2005; Terenzini et al., 1996) but understanding what individual differences might be accounting for task value differences would help further add to the literature and could inform future interventions and teaching practices.

The fifth future direction based on findings of the current study is to explore the impact of TE on task values in differing contexts. Given that task values are context dependent (Harackiewicz & Hulleman, 2010; Hulleman et al., 2010) exploring how differing course context affects the valuing of content would help better understand the impact of context on the task values of FG students and to determine if more future utility relevant courses would provide higher levels of utility value and lower levels of cost value. Having students report their task values for both a course that is relevant to their future goals and a course that is considered an elective, or non-major course, could provide a better understanding of task values and its variance with FG students. The future directions stated above are just a few different directions that could be explored to better understand the dynamic relationship between TE, task values, and FG college students.

Conclusion

The goal of the present study was to investigate the relationship between TE, task values, and exam performance regarding generation status across the course of a semester. The findings of this study indicate that FG and NFG students experience TE at a similar level throughout the semester, but that FG students experience significantly higher levels of cost value than NFG students across the course of the semester. Further,

it was found that generation status was a contributor to the rate of growth and starting point of cost value over the course of the semester for participants, providing further evidence of the perception of higher education being of high cost to FG students. The findings have important theoretical and practical implications within education. Specifically, TE can increase interest in course material which may increase FG students' interest and valuing of course content. Although much more research needs to be conducted to determine the causal relationship between TE and task value in regard to FG students, the initial findings of the current study and the pilot study (Goldman et al., 2017) show potential for the development of an impactful intervention and/or instructional tool.

References

Anderson, R. (1984). Role of the reader's schema in comprehension, learning, and memory. In R. Anderson, J. Osborn, & R. Tierney (Eds.), *Learning to read in American schools: Basal readers and content texts* (pp. 243–257). Hillsdale, NJ: Erlbaum

Anglin, P. M., & Meng, R. (2000). Evidence on grades and grade inflation at Ontario's universities. *Canadian Public Policy/Analyse de Politiques*, 361-368.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122.

Billson, J. M., and Brooks-Terry, M. (1987). A student retention model for higher education. *College and University 62*(4): 290-305.

Bond, T., & Fox, C. M. (2001). *Applying the Rasch model: Fundamental measurement in the human sciences.* Mahwaw, NJ: Lawrence Erlbaum Associates.

Bong, M. (2001). Role of self-efficacy and task-value in predicting college students' course performance and future enrollment intentions. *Contemporary Educational Psychology*, 26(4), 553-570.

Bowen, W., Kurzweil, M., & Tobin, E. (2005). From bastions of privilege to engines of opportunity. *Chronicle of Higher Education,* 51(25), B18-B18.

Brand, J. E., & Xie, Y. (2010). Who benefits most from college? Evidence for negative selection in heterogeneous economic returns to higher education. *American Sociological Review*, 75(2), 273-302.

Bruinsma, M. (2004). Motivation, cognitive processing and achievement in higher education. *Learning and Instruction*, 14(6), 549-568.

Canning, E. A., Harackiewicz, J. M., Priniski, S. J., Hecht, C. A., Tibbetts, Y., & Hyde, J. S. (2018). Improving performance and retention in introductory biology with a utility-value intervention. *Journal of Educational Psychology.* Advance online publication.

Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology*, *93*(1), 55.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences,* 2nd edn.

Cole, J. S., Bergin, D. A., & Whittaker, T. A. (2008). Predicting student achievement for low stakes tests with effort and task value. *Contemporary Educational Psychology,* 33(4), 609-624.

Collier, P. J., & Morgan, D. L. (2008). "Is that paper really due today?": differences in first-generation and traditional college students' understandings of faculty expectations. *Higher Education*, 55(4), 425-446.

Compton, D. M., & Metheny, B. (2000). An assessment of grade inflation in higher education. *Perceptual and Motor Skills, 90*(2), 527-536.

Conley, A., & Karabenick, S. (March, 2006). Construct validity issues in the measurement of motivation to learn. Paper presented at *the Society for Research on Adolescence*, San Francisco, CA.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika,* 16, 297-334

Debacker, T. K., Miller, R. B., Walker, C. O., & Mansell, R. (2004). Perceptions of classroom climate, student motivation, and achievement: Changes and interrelationship across an academic year. *Ninth International Conference on Motivation. Lisbon, Portugal*.

Dewey, J. (1933) *How we think: A restatement of the relation of reflective thinking to the educative process* (Lexington, MA, Heath).

Dewey, J. (2007). *Experience and education.* New York: Simon and Schuster. (Original work published 1938).

De Winter, J. C. F., & Dodou, D. (2011). Predicting academic performance in engineering using high school exam scores. *International Journal of Engineering Education*, *27*(6), 1343.

Dole, J. A., & Sinatra, G. M. (1998). Reconceptalizing change in the cognitive construction of knowledge. *Educational Psychologist*, *33*(2-3), 109-128.

Downey, R. G., & King, C. V. (1998). Missing data in Likert ratings: A comparison of replacement methods. *The Journal of General Psychology*, 125(2), 175-191.

Duncan, T. G., & McKeachie, W. J. (2005). The making of the motivated strategies for learning questionnaire. *Educational Psychologist*, *40*(2), 117-128.

Eccles, J. (2005). *Evolution of the brain. Creation of the self*. Routledge, London.

Elliot, A. J., McGregor, H. A., & Gable, S. (1999). Achievement goals, study strategies,

and exam performance: A mediational analysis. *Journal of Educational Psychology*, *91*(3), 549.

Engle, J., Bermeo, A., & O'Brien, C. (2006). Straight from the source: What works for first-generation college students. *Pell Institute for the Study of Opportunity in Higher Education*.

Engle, J., & Tinto, V. (2008). *Moving beyond access: College for low-income, first-generation students*. Washington, DC: The Pell Institute.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59-109.

Girod, M., & Wong, D. (2002). An aesthetic (Deweyan) perspective on science learning: Case studies of three fourth graders. *The Elementary School Journal*, *102*(3), 199-224.

Goldman, J., Wilson, L., Cavazos, J., Heddy, B. C., & Pugh, K. J. (August, 2017). Relationship between Transformative Experience and Academic Emotions in an Intro Psychology Course. Paper presented at the annual meeting of the *American Psychological Association*. Washington, D.C

Greene, B. A., & Miller, R. B. (1996). Influences on achievement: Goals, perceived ability, and cognitive engagement. *Contemporary Educational Psychology*, *21*(2), 181-192.

Greene, J. A., Oswald, C. A., & Pomerantz, J. (2015). Predictors of retention and achievement in a massive open online course. *American Educational Research Journal*, *52*(5), 925-955.

Harackiewicz, J. M., Barron, K. E., Tauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short-term and long-term consequences of achievement goals: Predicting interest and performance over time. *Journal of Educational Psychology*, 92, 316–330.

Harackiewicz, J. M., Barron, K. E., Tauer, J. M., & Elliot, A. J. (2002). Predicting success in college: A longitudinal study of achievement goals and ability measures as predictors of interest and performance from freshman year through graduation. *Journal of Educational Psychology*, 94, 562–575

Harackiewicz, J. M., Durik, A. M., Barron, K. E., Linnenbrink-Garcia, L., & Tauer, J. M. (2008). The role of achievement goals in the development of interest: Reciprocal relations between achievement goals, interest, and performance. *Journal of Educational Psychology*, *100*(1), 105.

Harackiewicz, J.M. & Hulleman, C.S. (2010). The importance of interest: The role of achievement goals and task values in promoting the development of interest. *Social and Personality Psychology Compass*, 4, 42-52.

Harackiewicz, J. M., Rozek, C. S., Hulleman, C. S., & Hyde, J. S. (2012). Helping parents to motivate adolescents in mathematics and science: An experimental test of a utility-value intervention. *Psychological Science*, 23(8), 899-906.

Harackiewicz, J.M., Smith, J.L., & Priniski, S.J. (2016) Interest matters: The importance of promoting interest in education. *Policy Insights from the Behavioral and Brain Sciences*. doi:10.1177/2372732216655542

Heddy, B. C., & Sinatra, G. M. (2013). Transforming misconceptions: Using transformative experience to promote positive affect and conceptual change in students learning about biological evolution. *Science Education*, *97*(5), 723-744.

Heddy, B. C., Sinatra, G. M., Seli, H., Taasoobshirazi, G., & Mukhopadhyay, A. (2017). Making learning meaningful: facilitating interest development and transfer in at-risk college students. *Educational Psychology,* 1-17.

Hicks, T. (2003). Advising the first-generation college student: Effective retention tools for colleges and universities. *The Mentor: An Academic Advising Journal 4(*4).

Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research*, *70*(2), 151-179.

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist*, *41*(2), 111-127.

Hilpert, J. C., Stempien, J., van der Hoeven Kraft, K. J., & Husman, J. (2013). Evidence for the latent factor structure of the MSLQ: A new conceptualization of an established questionnaire. *SAGE Open,* 3(4), 2158244013510305.

Hoaglin, D. C., & Iglewicz, B. (1987). Fine-tuning some resistant rules for outlier labeling. *Journal of the American Statistical Association*, *82*(400), 1147-1149.

Hodges-Payne, T. (2006). Perceptions of first-generation college students: Factors that influence graduate school enrollment and perceived barriers to attendance (Doctoral Dissertation). *Available from ProQuest Dissertations and Theses Database.(UMI No. 3223320).*

Housel, T. H., & Harvey, V. L. (2009). *The invisibility factor: Administrators and faculty reach out to first-generation college students*. Boca Raton, FL: Brown Walker Press.

Hottiger, J. A., & Rose, C. P. (2006). First-generation college students. In L.A. Gohn, G.R. Albin (Eds.), *Understanding college student subpopulations: A guide for student affairs professionals,* (pp. 115-134). Washington, D.C.: National Association of Student Personnel Administrators (NASPA).

Hulleman, C. S., Durik, A. M., Schweigert, S. B., & Harackiewicz, J. M. (2008). Task values, achievement goals, and interest: An integrative analysis. *Journal of Educational Psychology*, *100*(2), 398.

Hulleman, C. S., Godes, O., Hendricks, B. L., & Harackiewicz, J. M. (2010). Enhancing interest and performance with a utility value intervention. *Journal of Educational Psychology,* 102(4), 880.

Hulleman, C. S., & Harackiewicz, J. M. (2009). Promoting interest and performance in high school science classes. *Science,* 326(5958), 1410-1412.

Hsaio, K. (1992). *First generation college students*. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California at Los Angeles.

Inkelas, K. K., Daver, Z. E., Vogt, K. E., & Leonard, J. B. (2007). Living–learning programs and first-generation college students' academic and social transition to college. *Research in Higher Education*, *48*(4), 403-434.

Ishitani, T. T. (2008). *Studying attrition and degree completion behavior among first-generation college students in the United States*. The Journal of Higher Education, 77(5), 861-885.

Jacobs, J. E., Lanza, S., Osgood, D. W., Eccles, J. S., & Wigfield, A. (2002). Changes in children's self-competence and values: Gender and domain differences across grades one through twelve. *Child Development,* 73(2), 509-527.

Johnson, S. E., Richeson, J. A., & Finkel, E. J. (2011). Middle class and marginal? Socioeconomic status, stigma, and self-regulation at an elite university. *Journal of Personality and Social Psychology*, *100*(5), 838.

Kuh, G. D. (2001). Assessing what really matters to student learning inside the national survey of student engagement. *Change: The Magazine of Higher Learning*, *33*(3), 10-17.

Kuh, G. D. (2003). What we're learning about student engagement from NSSE: Benchmarks for effective educational practices. *Change: The Magazine of Higher Learning*, *35*(2), 24-32.

Kuh, G. D. (2009). The national survey of student engagement: Conceptual and empirical foundations. *New Directions for Institutional Research*, *2009*(141), 5-20.

Kuh, G. D., & Hu, S. (1999). Unraveling the complexity of the increase in college grades from the mid-1980s to the mid-1990s. *Educational Evaluation and Policy Analysis*, *21*(3), 297-320.

London, H. B. (1992). Transformations: Cultural challenges faced by first-generation students. *New Directions for Community Colleges, 1992*(80), 5-11.

Marini, A., & Genereux, R. (1995). The challenge of teaching for transfer. *Teaching for Transfer: Fostering Generalization in Learning*, 1-19.

McConnell, P. J. (2000). ERIC Review: What community colleges should do to assist first-generation students. *Community College Review, 28*(3), 75-87.

Nagengast, B., Marsh, H. W., Scalas, L. F., Xu, M. K., Hau, K. T., & Trautwein, U. (2011). Who took the "×" out of expectancy-value theory? A psychological mystery, a substantive-methodological synergy, and a cross-national generalization. *Psychological Science, 22*(8), 1058-1066.

Oyserman, D., & Destin, M. (2010). Identity-based motivation: Implications for intervention. *The Counseling Psychologist,* 38,1001–1043.

Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education, 75*(3), 249-284.

Pekrun, R., & Linnenbrink-Garcia, L. (2012). *Academic emotions and student engagement.* In Handbook of Research on Student Engagement (pp. 259-282). Springer US.

Perez, T., Cromley, J. G., & Kaplan, A. (2014). The role of identity development, values, and costs in college STEM retention. *Journal of Educational Psychology,* 106(1), 315.

Petty, T. (2014). Motivating first-generation students to academic success and college completion. *College Student Journal, 48*(2), 257-264.

Pike, G. R., & Kuh, G. D. (2005). First-and second-generation college students: A comparison of their engagement and intellectual development. *The Journal of Higher Education, 76*(3), 276-300.

Próspero, M., & Vohra-Gupta, S. (2007). First generation college students: Motivation, integration, and academic achievement. *Community College Journal of Research and Practice, 31*(12), 963-975.

Pugh, K. J. (2002). Teaching for transformative experiences in science: An

investigation of the effectiveness of two instructional elements. *Teachers College Record*, 104, 1101-1137.

Pugh, K. J. (2004). Newton's laws beyond the classroom walls. *Science Education,* 88, 182-196.

Pugh, K. J. (2011). Transformative experience: An integrative construct in the spirit of Deweyan pragmatism. *Educational Psychologist,* 46, 107-121.

Pugh, K. J., & Bergin, D. A. (2005). The effect of schooling on students' out-of-school experience. *Educational Researcher*, *34*(9), 15-23.

Pugh, K. J., & Girod, M. (2007). Science, art and experience: Constructing a science pedagogy from Dewey's aesthetics. *Journal of Science Teacher Education,* 18, 9-27.

Pugh, K. J., Linnenbrink-Garcia, L., Koskey, K. L., Stewart, V. C., & Manzey, C. (2010a). Motivation, learning, and transformative experience: A study of deep engagement in science. *Science Education*, *94*(1), 1-28.

Pugh, K. J., Linnenbrink-Garcia, L., Koskey, K. L., Stewart, V. C., & Manzey, C. (2010b). Teaching for transformative experiences and conceptual change: A case study and evaluation of a high school biology teacher's experience. *Cognition and Instruction*, *28*(3), 273-316.

Pugh, K. J., Schmidt, K., Russell, C., & Heddy, B. (2010). Fostering transformative experiences in science: A design-based study. In *American Educational Research Association Annual Conference, Denver, CO.*

Renninger, K. A. (1987). *Do individual interests make a difference?* In Essays by the Spencer Fellows IV (pp. 228-253). Cambridge, MA: National Academy of Education.

Renninger, K. A. (1998). *The roles of individual interest(s) and gender in learning: An overview of research on preschool and elementary school-aged children/ students*. In L. Hoffmann, A., Krapp, K. Renninger, & J. Baumert (Eds.), Interest and learning: Proceedings of the Seeon Conference on interest and gender (pp. 165-175). Kiel, Germany: IPN.

Renninger, K. A., & Su, S. (2012). Interest and its development. In R. M. Ryan (Ed.), *The Oxford Handbook of Motivation* (pp. 167–187). Oxford, England: Oxford University Press.

Richardson, R. C., & Skinner, E. F. (1992). Helping first-generation minority students achieve degrees. *New Directions for Community Colleges, 1992*(80), 29-43.

Riconscente, M. M. (2014). Effects of perceived teacher practices on Latino high school students' interest, self-efficacy, and achievement in mathematics. *The Journal of Experimental Education*, *82*(1), 51-73.

Sabot, R., & Wakeman-Linn, J. (1991). Grade inflation and course choice. *Journal of Economic Perspectives*, *5*(1), 159-170.

Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational Psychologist*, *26*(3-4), 207-231.

Schiefele, U., Krapp, A., & Winteler, A. (1992). *Interest as a predictor of academic achievement: A meta-analysis of research.* In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), The role of interest in learning and development (pp. 183-212). Hillsdale, NJ: Erlbaum.

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence.* London: Oxford university press.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, *69*(5), 797.

Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, *102*(6), 1178.

Stipek, D. J., & Ryan, R. H. (1997). Economically disadvantaged preschoolers: Ready to learn but further to go. *Developmental Psychology*, *33*(4), 711.

Suter, L. E. (2014). Visiting science museums during middle and high school: A longitudinal analysis of student performance in science. *Science Education*, *98*(5), 815-839.

Tabachnick, B. G., & Fidell, L. S. (2001). *Multivariate statistics*. Needham Heights, MA: Allyn & Bacon.

Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher education*, *37*(1), 1-22.

Tibbetts, Y., Harackiewicz, J.M., Canning, E.A., Boston, J.S., Priniski, S.J., & Hyde, J.S. (2016). Affirming independence: Exploring mechanisms underlying a values affirmation intervention for first-generation students. *Journal of Personality and Social Psychology, 110,* 635-659

Usher, E. (2018) Acknowledging the Whiteness of motivation research: Seeking cultural relevance, *Educational Psychologist*, 53(2), 131-144.

Usher, E. L., & Pajares, F. (2008). Self-efficacy for self-regulated learning: A validation study. *Educational and Psychological Measurement*, 68(3), 443-463.

Vuong, M., Brown-Welty, S., & Tracz, S. (2010). The effects of self-efficacy on academic success of first-generation college sophomore students. *Journal of College Student Development*, 51(1), 50-64.

Weinberg, A. E., Basile, C. G., & Albright, L. (2011). The effect of an experiential learning program on middle school students' motivation toward mathematics and science. *RMLE Online*, *35*(3), 1-12.

Wigfield, A., & Cambria, J. (2010). Students' achievement values, goal orientations, and interest: Definitions, development, and relations to achievement outcomes. *Developmental Review*, 30(1), 1-35.

Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation. *Contemporary Educational Psychology*, *25*(1), 68-81.

Wigfield, A., & Eccles, J. S. (2002). The development of competence beliefs, expectancies for success, and achievement values from childhood through adolescence. *Development of Achievement Motivation*, *91*, 120.

Wilbur, T. G., & Roscigno, V. J. (2016). First-generation disadvantage and college enrollment/completion. *Socius*, *2*, 1-11.

Willet, L. H. (1989). Are two-year college students first-generation college students? *Community College Review*, 17(2), 48-52.

Wilson, L., Pugh, K. J., Heddy, B. C., & Goldman, J. A. (2017). Emotion and value profiles differentially predict deep engagement. Paper submitted to the bi-annual meeting of the *Southwest Consortium for Innovative Psychology in Education*. Las Vegas, NV.

Wong, D., & Pugh, K. the Dewey Ideas Group at Michigan State University. (2001). Learning science: A Deweyan perspective. *Journal of Research in Science Teaching*, *38*(3), 317-336.

Wongsurawat, W. (2009). Does grade inflation affect the credibility of grades? Evidence from US law school admissions. *Education Economics*, *17*(4), 523-534.

Xie, K. U. I., Debacker, T. K., & Ferguson, C. (2006). Extending the traditional

classroom through online discussion: The role of student motivation. *Journal of Educational Computing Research, 34*(1), 67-89.

Zimmerman, B. (2002). Becoming a self-regulated learner: An overview. *Theory Pract.* 41,64–71.

Ziomek, R. L., & Svec, J. C. (1997). High school grades and achievement: Evidence of grade inflation. *NASSP Bulletin, 81*(587), 105-113.

Zusho, A., Pintrich, P. R., & Coppola, B. (2003). Skill and will: The role of motivation and cognition in the learning of college chemistry. *International Journal of Science Education, 25*(9), 1081-1094.

Appendix A: Demographic Survey

1. What is the highest level of education either one of your parents/guardians has completed?

2. What is your gender?

3. What is your age?

4. Do you live on campus?

5. Are you currently employed/working?
    a. If yes, how many hours a week?

6. What is your family's annual household income?

Appendix B: Transformative Experience Scale

Instructions: For each question, select the response that best matches the extent to which you agree or disagree. "Outside of school" refers to your everyday life and experience when you are not in class or working on school assignments.

[Responses are on a 6 pt. Likert scale, Strongly Disagree to Strongly Agree]

1. I talk with others about science concepts during my science courses.
2. Outside of school, I talk with others about science concepts.
3. I talk with others about science concepts just for the fun of it.
4. During class time, I think about how science concepts apply to real-world objects and events.
5. Outside of school, I think about science concepts.
6. I find myself thinking about science concepts in everyday situations.
7. I apply the knowledge I've learned about science during class.
8. Outside of school, I apply the knowledge I've learned about science.
9. I apply the stuff I've learned about science even when I didn't have to.
10. I look for chances to apply my knowledge of science in my everyday life.
11. I think about the things differently now that I have learned about science concepts.
12. During class, I notice examples of science concepts.
13. If I see a really interesting natural thing (either in real life, in a magazine, or on TV), then I think about it in terms of science concepts.
14. The concepts I learned in my science classes changed the way I see the things.
15. I can't help but see the things in terms of science concepts now.
16. I notice examples of science in my everyday life that I would not have noticed before taking science courses.
17. Outside of school, I look for examples of science concepts.
18. Learning about science concepts is useful for my future studies or work.
19. Science concepts help me to better understand the world around me.
20. Knowledge of science concepts is useful in my current, everyday life.
21. I find that science concepts make my current, out-of-school experience more meaningful and interesting.
22. Science concepts make things much more interesting.
23. In class, I find it interesting to learn about science concepts.
24. I think science is an interesting subject.
25. I find it interesting in class when we talk about the science concepts.
26. I am interested when I hear things about science concepts outside of school.
27. Outside of school, I find it exciting to think about science concepts.

Appendix C: Task Value Scale

Task Value Items

Interest Value
How much do you like doing psychology?
I like psychology.
Psychology is exciting to me.
I am fascinated by psychology.
I enjoy doing psychology.
I enjoy the subject of psychology.

Utility Value
How useful is learning psychology for what you want to do after you graduate and go to work?
Psychology will be useful for me later in life.
Psychology concepts are valuable because they will help me in the future.
Being good at psychology will be important when I get a job or go to college.

Attainment Value
Being someone who is good at psychology is important to me.
I feel that, to me, being good at solving problems which involve psychology or reasoning with psychology is (*not at all important* to *very important*).
Being good at psychology is an important part of who I am.
It is important for me to be someone who is good at solving problems that involve psychology.
It is important to me to be a person who reasons psychologically.
Thinking psychologically is an important part of who I am.

Cost Value
I have to give up a lot to do well in psychology.
Success in psychology requires that I give up other activities I enjoy.