12-15-2019

Improving Community College Students' Interest, Utility-Value, and Performance: How Does Future Time Persective Influence a Utility-Value Intervention?

Elsa Maria Mason

IMPROVING COMMUNITY COLLEGE STUDENTS' INTEREST, UTILITY-VALUE, AND PERFORMANCE: HOW DOES FUTURE TIME PERSPECTIVE INFLUENCE A UTILITY-VALUE INTERVENTION?

By

Elsa M. Mason

Bachelor of Arts - Psychology
California State University, Long Beach
1995

Master of Arts - Industrial and Organizational Psychology
California State University, Long Beach
1998

A dissertation submitted in partial fulfillment
of the requirements for the

Doctor of Philosophy - Educational Psychology

Department of Educational Psychology and Higher Education
College of Education
The Graduate College

University of Nevada, Las Vegas
December 2019

UNLV | GRADUATE COLLEGE

Dissertation Approval

The Graduate College
The University of Nevada, Las Vegas

November 15, 2019

This dissertation prepared by

Elsa M. Mason

entitled

Improving Community College Students' Interest, Utility-Value, and Performance: How Does Future Time Perspective Influence a Utility-Value Intervention?

is approved in partial fulfillment of the requirements for the degree of

Doctor of Philosophy - Educational Psychology
Department of Educational Psychology and Higher Education

Lisa Bendixen, Ph.D.
Examination Committee Chair

Kathryn Hausbeck Korgan, Ph.D.
Graduate College Dean

Gwen Marchand, Ph.D.
Examination Committee Member

Lori Olafson, Ph.D.
Examination Committee Member

Kendall Hartley, Ph.D.
Graduate College Faculty Representative

ABSTRACT

The economic benefits of academic success and completion are long-lasting. Students who attend community colleges can stand to benefit a great deal by completing a 4-year degree or even a 2-year degree. Unfortunately, these students often begin their higher education journey not fully prepared for college-level coursework. Students often fail to see how their college coursework relates to their lives and in turn, don't hold interest or perceive value for the course and consequently do not perform well. Using Eccles et al. (1983) expectancy-value theory this study tested how community college students would respond to a utility-value intervention in which they generated either short-term value for the course (proximal) or long-term value for the course (distal). Future time perspective theory (Husman & Shell, 2008) was incorporated to determine whether a match between the type of utility-value that students generated and students' differences in time perspective (proximally-oriented or distally-oriented) would have differential effects on achievement outcomes such as situational interest, perceived utility-value, and performance. Neither proximal value prompts nor distal value prompts influenced these outcomes. Future time perspective did significantly predict students' situational interest and perceived utility-value in that students who were more proximally-oriented (shorter future time perspective) were more interested in the course and perceived more value for the course than students who were more distally oriented (longer future time perspective). Further, utility-value/time perspective match did not influence outcomes. The manipulation check revealed that students struggled to generate distal value for the course but did not for proximal value. Even students who were not prompted to generate value, generated proximal value. These findings have implications for designing techniques to increase interest, utility-value, and performance with community college students while considering individual time orientation.

ACKNOWLEDGEMENTS

I would like to acknowledge my participants, my students in my Psy 101 classes. Without your willingness to participate in in my study I wouldn't have finished.

I would like to wholeheartedly thank my advisors and mentors, Dr. Eusnook Hong – who got me started, Dr. Matt Bernacki - who kept me going, and Dr. Lisa Bendixen – who got me finished. I could not have done it without your support, advice, guidance, and mentorship over these past several years. Thank you all for challenging me, believing in me, checking in on me, and always assuming and expecting the best from me. I would also like to thank my committee for their advice and wisdom.

I would like to thank my colleagues and classmates Laura Bennett, Dr. Julian Smit, and Angel Clemens who helped with all my current and past research for helping me administer informed consents, enter data, code and rate answers, program writing assignments, and brainstorm.

I appreciate the encouragement and support I have received from my CSN colleagues and supervisors Dr. Kevin Rafferty, Dr. David Wangsgard, Dr. Shellie Keller, and Charlie Deitrich, Dr. Julian Smit.

Finally, I'd like to thank my wonderful, loving family (Mom, Lorena, Andrea, Nick, and Paul) for their love, support, and encouragement over these past long years. I know you had to sacrifice a lot so that I could reach this goal. I know you are all proud of me and that kept me going. Mom, even though you are not here anymore, I know that you wanted me to finish this and now it's done!

DEDICATION

To my Mom…

To Andrea…

To Nick…

To Lorena…

To Paul…

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

Problem Statement

Across American colleges and universities, students must often take courses that do not closely align with their chosen major. Business majors take biology and philosophy majors take chemistry. As these courses are not closely aligned with their respective majors, educators might facilitate interest by prompting connections between the course content and a student's major or professional future. According to expectancy-value theory, promoting interest and successful performance in a course depends on whether a learner expects to perform well and perceives the course to be of value (Eccles et al., 1983; Eccles & Wigfield, 2002; Wigfield & Eccles, 1992, 2000). Absence of either expectancies of success or value could result in a decrease of the learner's success.

Educational interventions to enhance value have previously been tested with students in 4-year institutions (e.g. Durik & Harackiewicz, 2007; Durik, Schechter, Moh, Rozek, & Harackiewicz, 2015; Harackiewicz, Rozek, Hulleman, & Hyde, 2012; Hulleman & Harackiewicz, 2009; Hulleman, Godes, Hendricks, & Harackiewicz, 2010). However, value-enhancement interventions with community college populations remain largely understudied (e.g. Canning 2016; Canning, Priniski, & Harackiewicz, 2019). Community college students have different characteristics and struggles than 4-year university students. They have more diverse goals, levels of academic preparation, and rates of completion (Atherton, 2014; Brock, 2010; Butcher & Visher, 2013; Provasnik & Planty, 2008, U.S. Department of Education, National Center for Education Statistics, 2019a; Wang, 2009). Questions remain as to whether value intervention findings at 4-year institutions apply to community college populations.

Although value interventions have been found to positively affect various academic outcomes, individual differences may influence the effect that a value-enhancement intervention can have on such outcomes (e.g. Canning & Harackiewicz, 2015; Hulleman et al., 2010; Hulleman & Harackiewicz, 2009; Schecter, Durik, Miyamoto, & Harackiewicz, 2011). One such individual difference may be whether a task influences a learner's present life or their future life (Canning & Harackiewicz, 2015; Schecter et al., 2011). Research studies show that some learners are able to connect present actions to future outcomes and some prefer to focus on more immediate rewards (Bembenutty, 2008a). Because a college education typically does not translate into immediate benefits, a business major must be able to perceive worth for a biology class in future time for a value-intervention to yield successful outcomes. Future time perspective theory (FTP) may help to explain the differential effects of a value intervention (De Volder & Lens, 1982). The aim of this study was to test the effectiveness of a value intervention while taking into account individual differences in community college students' time perspective within the frameworks of expectancy-value and future time perspective theories.

Expectancy-Value Theory

After a few decades of correlational and experimental research on the mechanisms and components of expectancy-value theory, much is now known about how students' perceptions of value influence their learning behavior and achievement (Eccles et al., 1983; Eccles & Wigfield, 1995; Hulleman, Durik, Schweigert, & Harackiewicz, 2008; Wigfield & Eccles, 1992; 2000). Relationships among constituent components of expectancy-value theory are becoming clear, and causal mechanisms are being uncovered. Expectancy-value theory proposes that students who have high performance expectancies and hold high value for a task are more motivated and perform better than those who do not (Eccles et al., 1983; Eccles & Wigfield, 2002; Wigfield &

Eccles, 1992, 2000). *Expectancies* consist of the probability of success on a task as determined by perceptions of competence, difficulty of the task, individual goals, and self- beliefs (Eccles et al., 1983). *Task values* are "the value attached to success or failure of a task determined by task characteristics and by how the task fulfills needs, goals, and values" (Atkinson, 1957; Eccles et al., 1983). We know that value is composed of three sub-constructs which include *attainment value* (personal importance of success), *intrinsic value* (inherent enjoyment in performing the task), and *utility-value* (usefulness of the task for future goals unrelated to the task itself) (Eccles, 1987; Eccles et al., 1983; Wigfield & Eccles, 1992, p. 280). Of the components of value, utility-value has been the most amenable to manipulation in interventions because of its external nature (Acee & Weinstein, 2010; Durik et al, 2015; Harackiewicz, Tibbetts, Canning, & Hyde, 2014; Hulleman et al., 2008, 2010; Hulleman & Harackiewicz, 2009; Rozek, Hyde, Svoboda, Hulleman, & Harackiewica, 2014; & Schecter et al., 2011). We also know that although expectancies are more strongly associated with future performance, value perceptions are more strongly associated with performance choice and persistence (Eccles & Wigfield, 1995; Hulleman et al., 2008; Wigfield & Eccles, 1992; 2000; Wigfield & Cambria, 2010). Often, students who possess high expectancies perform poorly in academic tasks because their task value is low (Eccles & Wigfield, 1995; Hulleman et al., 2008; Wigfield & Eccles, 1992; 2000; Wigfield & Cambria, 2010); however if their perceptions of value are positively influenced, their performance and interest will increase (Durik et al., 2015).

Some learners may lack both, expectancies and value. Although expectancies can generally be increased by promoting successful performance, experimental manipulations of performance success and failure conditions randomized within classroom settings pose ethical concerns (Bandura & Schunk, 1981; Campbell & Hackett, 1986; Cordero, Porter, & Brown,

2010; Durik et al., 2015; Hackett, Betz, O'Halloran, & Romak, 1990; Luzzo, Hasper, Albert, Bibby, & Martinelli, 1999). Such interventions require that students in one condition perform well and that students in another condition perform poorly. The academic confidence of students in the poor performance condition may be irrevocably harmed by invoking feelings of incompetence. A growing body of research has generally concluded that utility-value perceptions can indeed be more easily influenced than expectancies, and that enhancing such perceptions also yields increases in academic outcomes (Acee & Weinstein, 2010; Canning & Harackiewicz, 2016; Durik & Harackiewicz, 2007; Durik et al., 2015; Harackiewicz et al., 2012; Hulleman & Harackiewicz, 2009; Hulleman et al., 2010; Rozek et al., 2014; & Schecter et al., 2011). Thus, because interventions targeted at increasing utility-value perceptions seem more viable as compared to experimental manipulation of performance expectancies, this study tested the effects of a utility-value intervention on motivation and performance.

Utility-Value Interventions

Utility-value interventions enhance outcomes such as perceived utility-value, interest, effort, course choice, task involvement, and performance (e.g. Acee & Weinstein, 2010; Durik et al, 2015; Harackiewicz et al., 2014; Hulleman et al., 2008, 2010; Hulleman & Harackiewicz, 2009; Rozek et al., 2014; & Schecter et al., 2011). These interventions typically consist of at least one or more treatment groups in which students are prompted to generate value for the course content, while the control group either summarizes course content or completes a separate task. Motivation and achievement measures such as interest, perceived utility-value, and performance are typically collected before and after the intervention. Considering the additional academic and personal challenges that community college students face, helping them become more interested in course content and valuing course content is vital in helping them succeed.

For the past decade, such utility-value interventions have been tested in 4-year settings with varied success (e.g. Acee & Weinstein, 2010; Durik et al, 2015; Harackiewicz et al., 2014; Hulleman et al., 2008; 2010; Hulleman & Harackiewicz, 2009; Rozek et al., 2014; & Schecter et al., 2011). We need to understand these dynamics at 2-year institutions, as research has been scarce and is worthy of study (Canning, 2016; Canning et al., 2019).

Self-Generated Value vs. Directly-Communicated Value

Emerging evidence suggests that utility-value may be multifaceted. One way of unpacking utility-value is by differentiating its author/person characteristics. Most value-intervention studies have presented utility-value information in the form of direct-communication, in which the researcher or instructor informs participants of the usefulness of the task or course (Acee & Weinstein, 2010; Durik et al., 2015; Durik & Harackiewicz, 2007; Harackiewicz et al, 2012; Rozek et al., 2014; Schecter et al., 2011). In other studies, students self-generate utility-value for a task (Hulleman & Harackiewicz, 2009; Hulleman et al., 2010). Previous studies have found that directly-communicated utility-value has the potential to feel threatening for students with low expectancies and low performance, and it is likely a result of the perceived external control invoked by directly-communicated relevance (Canning & Harackiewicz, 2015; Deci, Ryan, & Koestner, 1999; Durik & Harackiewicz, 2007; Durik et al, 2015, Study 1; Hulleman et al., 2010). Although instructor-provided reasons (relevance) to explore the value of a subject can increase students' intentions to seek out more information, it offers no flexibility for relevance generation by students. Because of this lack of choice and flexibility, students may perceive lower autonomy-support (Azevedo, 2006). Consequently, an important question becomes whether these different value-enhancing methods with varying levels of perceived autonomy-support differentially influence a students' interest for a task.

Canning and Harackiewicz (2015) found that directly-communicated utility-value did indeed produce differential effects on interest, perceived utility-value, and performance. Students were asked to either generate examples of how a math technique was relevant to their own life and useful for their future classes or career (self-generated), presented with utility-value information through an instructional presentation (directly-communicated), or presented with no utility-value information (control). Interest and performance for students in the directly-communicated value condition decreased.

In contrast, Hulleman et al. (2010) found that using self-persuasion methods to generate relevance for an activity or a lesson increased interest, even when a task was initially perceived as boring or irrelevant (Wolters, 1998). In a study by Wolters (1998), students who found a task boring turned the task into a game to relate it to the material. Self-generated interest is triggered when students engage in a subject by using their available resources (Renninger & Hidi, 2011). Further, student-generated activities, such as self-generated vignettes, demonstrate highly autonomous behavior in student performance and are related to autonomy in a student's learning goals. When students encounter flexibility and sense competence within a task, they are more likely to self-generate interest (Azevedo, 2006). To decrease the potential threatening nature of directly-communicated utility-value with community college students, students in this study generated their own reasons for why the content was valuable.

Future Time Perspective

Future time perspective theory proposes that individuals' cognitive interpretation of psychological time influence thoughts and behavior and those with longer future time perspective more highly value goals in the far or distant future than in the near future (De Volder & Lens, 1982; Zimbardo & Boyd, 1999). Time perspective is a conceptualization of the

cognitive process of a dimension of "psychological time in past, present, and future time frames" which influence our "judgments, decisions and actions" (Zimbardo & Boyd, 1999). De Volder and Lens (1982) conceptualized future time perspective as the "disposition to ascribe high valence to goals in the distant future and to grasp the long-term consequences of actual behavior, as reflected in the concept of instrumental value of a behavioral act." Husman & Shell (2008) identified four dimensions of future time perspective in terms of a learner's perception of time which included *extension/distance* (how far one "plans into the future"), *valence* (how well one's future needs are distinguished), *connectedness* (how strongly the connection is between present and future), and *speed* (consideration of "time space" in future decision-making).

According to future time perspective theory, the instrumental value of goals decreases as the goals become more distant. Unless a learner has a long future time perspective, more distant goals are more likely to be avoided (Lens, Paixao, Herrera, & Grobler, 2012). When learners are faced with having to delay immediate gratification in favor of working harder for a larger long-term reward, they must evaluate the attractiveness of the short-term alternatives as compared to the attractiveness of the long-term goals. For example, a student may be faced with a choice between quitting school to work in a low-paying full-time job or work part-time to attend school full time for a better paying job later. If he opts for a part-time job to finish school and make more money later, he misses out more money in short-term. He must evaluate the attractiveness of making less money now compared to making a lot more money later. Although more valuable long-term goals are attractive in that they can bring more useful (utility-value) or more important (attainment value) rewards, if learners do not believe they can achieve that goal (expectancy) or believe that its effort is too costly (cost), they will not be motivated to pursue it as various theories of success expectancies and value have suggested (Bandura, 1977; Eccles et al., 1983).

future time perspective theory also proposes that the lowered incentive value of more distant goals becomes less prominent in students who possess a more distally-oriented time perspective (longer future time perspective) than for students with a more proximally-oriented time perspective (shorter future time perspective) (Lens et al., 2012). If a student is distally oriented (considers future consequences of present actions), he will not mind if he delays the full-time job even if he may not earn that much money right after he completes his schooling. A student who elects to delay gratification will postpone opportunities that are more immediately available in favor of pursuing a more valuable long-term academic reward (Bembenutty, 2008a). The influence of future time perspective as an individual difference can help to fine-tune utility-value interventions performed in classrooms. Future time perspective was included as an individual difference independent variable and moderator for this study's intervention because of its potential for direct effects and differential effects on the outcomes studied.

Time Orientation of Utility-Value Interventions

One way of differentiating utility-value prompts is by distinguishing the temporal characteristics in terms of time orientation. According to Eccles et al. (1983), utility-value is the perceived usefulness of a task in present or in future time. Studies have not always clearly distinguished between these temporal aspects when presenting utility-value information to students or when instructing them to self-generate utility-value. There has also been some inconsistency in the measurement of the temporal aspects of utility-value. Some studies present utility-value as both, a short-term (proximal) and a long-term (distal) construct by measuring the combined temporal aspects (Acee & Weinstein, 2010; Harackiewicz et al., 2012; Rozek et al., 2014; Schecter et al., 2011), whereas some studies only use distal utility-value (Hulleman &

Harackiewicz, 2009), and yet others do not specify the temporal characteristic utilized (Durik & Harackiewicz, 2007; Hulleman et al, 2010).

The following discussion addresses research efforts specifically intended to disentangle the differential effects of the temporal features of utility-value interventions. This set of studies illustrates the focused efforts intended to distinguish the methods by which utility-value can be communicated by contrasting proximal and distal temporal aspects of utility-value (Canning & Harackiewicz, 2015).

Some students display a preference for generating utility-value using examples of short-term, every day types of activities rather than long-term, career-related activities (Canning & Harackiewicz, 2015). It is possible that for some, generating value for every-day activities may be less threatening and less anxiety-provoking than generating examples that relate to higher-stakes goals such as for their future courses, careers, graduate school, or other long-term life goals. Consequently, instructing students to generate short-term rather than long-term examples of value likely diminishes the threat posed by directly-communicated utility-value (Canning & Harackiewicz, 2015).

Based on these findings, it seems important that we consider the frames by which students reflect on the value of a course. While this can be a bit idiosyncratic, there are features of students' perspectives that can be systematically identified and explored. For example, those who author short-term focused value statements are making connections to their current, every day activities, thus we can infer that they are more proximally oriented. It may be the case that proximal value prompts are more generative for learners based on their future time perspective because a short future time orientation typically brings immediate pleasure and rewards while a longer future time orientation requires more sacrifices for a larger reward (Zimbardo & Boyd,

2008, p. 106). The effects of performance anxiety are well documented in many areas of learning and have been found to be inversely related to performance (e.g. Beilock & Carr, 2001; Bembenutty, 2008b; DeCaro, Thomas, Albert, & Beilock, 2011; Jameson & Fusco, 2014; Peng, Hong, & Mason, 2014). An important consideration here is the potential of future-oriented statements generating anxiety for low-performing students because of the high-stakes nature of future consequences.

Utility-Value Prompts-Future Time Perspective Match

Preliminary support exists suggesting that students hold various degrees of preference for proximally-oriented value prompts as compared to distally-oriented value prompts (Canning & Harackiewicz, 2015; Schecter et al., 2011). Depending on students' characteristic time perspective, the prompts that require them to generate value may have either matched their time perspective or may have not. In the case of a student who holds a longer future time perspective and receives a value prompt which requires generation of utility-value in the distant future, the generation of value prompts would be facilitated and this student may respond more positively to the task than for a student who holds a shorter future time perspective. With the same reasoning, in the case of a student who holds a shorter future time perspective and receives a value prompt which requires generation of utility-value in the proximal future, the generation of prompts would also be facilitated in that the student would respond more positively to that task. Therefore, it is important to determine whether utility-value prompts matching students' time perspective can maximize their generativity. Then we could determine whether matching students' value prompts with their individual time perspective would promote higher task performance and generated task value and interest. An important question remains as to whether

a student who holds shorter future time perspective would be impeded in generating value as a result of a distal value prompt.

Implications of Expectancy-Value on Choices, Goals, and Behaviors

Value and expectancies for success can significantly predict a learner's willingness to delay immediate gratification in favor of a future long-term reward for a task (Bembenutty, 2008a). Students will delay immediate gratification of an activity in favor of a more valuable future reward based on the evaluation of the alternatives available, the value attributed to the alternatives, the effort required by them, and the likelihood that they will perform it successfully (Bembenutty, 2009; Sedghat, Abedin, Hejazi, Hassanabadi, 2011). Students with longer future time perspective have higher grade point averages and higher levels of course completion than students with shorter future time perspective (De Volder & Lens, 1982; Simons, Vansteenkiste, Lens, & Lacante, 2004). Furthermore, because students who have a longer future time perspective have been found to have higher expectancies for success than those with shorter future time perspective (Shell & Husman, 2001), they may respond positively to either proximal or distal utility-value. However, students with short future time perspective may likely only respond positively to proximal utility-value and may respond negatively to distal utility-value prompts. This prediction is according to previous evidence indicating that distal utility-value is perceived as threatening by low expectancy learners (Bembenutty, 2008a; Canning and Harackiewicz, 2015; Eccles et al., 1983).

The Present Study

Evidence from previous utility-value interventions in high schools and 4-year institutions indicates that relevance-enhancing interventions increase students' interest, perceptions of value, and performance. However, there is not much research to indicate whether these interventions

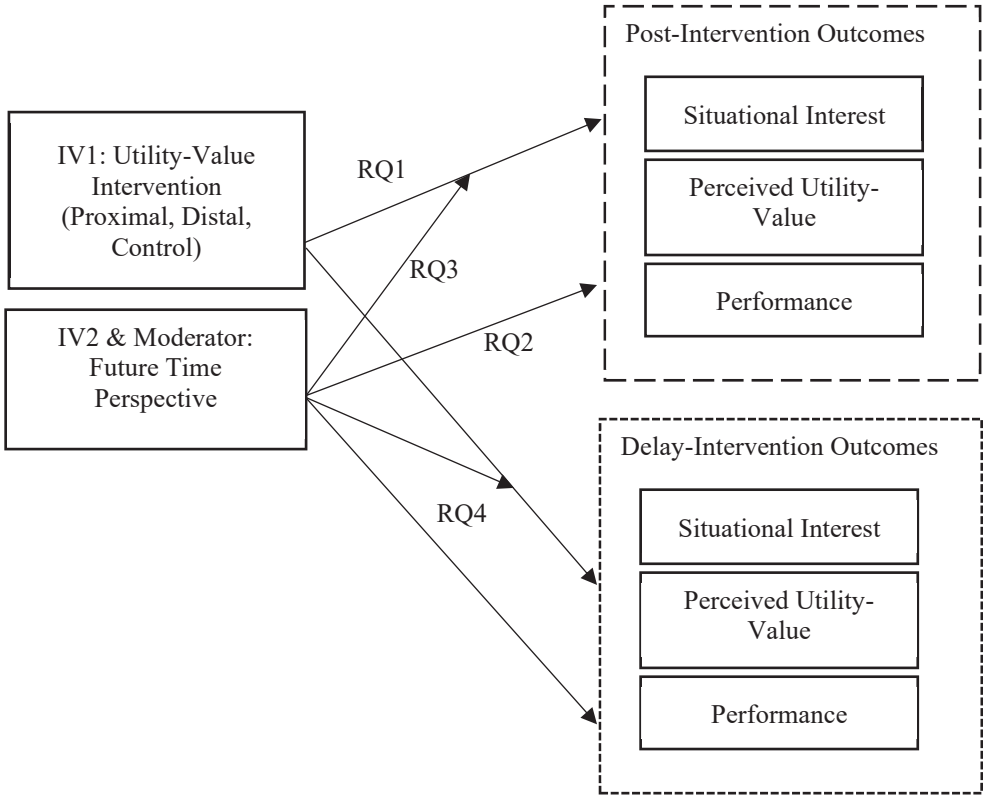
work equally well with community college students. Because self-generated utility-value has shown to lack the perceived threat posed by directly-communicated utility-value, the present study implemented self-generated utility-value. Also, the temporal characteristics of utility-value appear to contribute in different ways to motivational and performance outcomes. Students who struggle more academically seem to benefit from proximal utility-value generation whereas higher performing students benefit from both.

The alignment of temporal characteristics relevance generation activities to student individual characteristics may further be refined by considering students' future time perspectives. Students with a longer future time perspective are expected to respond positively to utility-value prompts regardless of whether they emphasize long-term or short-term goals whereas students with a short future time perspective are expected to respond more positively to value prompts which emphasize short-term goals and perhaps negatively to long-term goals. Consequently, prompts matched to students' time perspective may produce optimal outcomes.

The features of utility-value interventions and the implications of these features for students with differing time perspectives suggest there is a need to further the understanding of the multifaceted role of utility-value. Whereas Canning & Harackiewicz (2015) had contrasted directly-communicated proximal utility-value with directly-communicated distal utility-value, self-generated value had not been contrasted in terms of proximal and distal characteristics. Using Eccles and colleagues expectancy-value theory (1983), and building on previous utility-value interventions (Acee & Weinstein, 2010; Canning & Harackiewicz, 2015; Durik & Harackiewicz, 2007; Durik et al., 2015; Hulleman & Harackiewicz, 2009; Hulleman et al., 2010; Schecter et al., 2011) the current study investigated whether different types of utility-value prompting (proximal, distal, and control) would have differential immediate or delayed effects

on motivational and performance outcomes in community college students. This study further investigated whether future time perspective enhanced or suppressed the intervention effects on these outcomes. See Figure 1 for a conceptual model of the intervention and its variables and outcomes. See Figure 2 for the predicted effects of the intervention.

Figure 1. Model for the Effect of a Utility-Value Intervention and the Effect and Moderation Effect of Future Time Perspective on Post- and Delay- Situational Interest, Perceived Utility-Value, and Performance.



To expand the body of research investigating the effect of self-generated utility-value interventions on motivation and performance and to uniquely expand on it by evaluating the

moderating effects of future time perspective on this effect, the following research questions and hypotheses were addressed:

RQ1) To what extent does the effect of prompting students to self-generate proximal utility-value differ as compared to prompting them to generate distal utility-value have on their subsequent situational interest, perceived utility-value, and performance?

H1a) Students who generate proximal and distal utility-value will be more interested in the course immediately after the intervention than students who did not generate utility-value.

H1b) Students who generate proximal and distal utility-value will perceive more value for the course immediately after the intervention than students who did not generate utility-value.

H1c) Students who generate proximal and distal utility-value will perform better in the course immediately after the intervention than students who did not generate utility-value.

RQ2) To what extent does future time perspective influence situational interest, perceived utility-value, and performance?

H2a) Students with longer future time perspective will be more interested in the course than students with shorter future time perspective.

H2b) Students with longer future time perspective will perceive more value for the course than students with shorter future time perspective.

H2c) Students with longer future time perspective will perform better in the course than students with shorter perspective.

RQ3) To what extent does perspective moderate the effect of the utility-value intervention on situational interest, perceived utility-value, and performance?

H3a) The utility-value intervention will have differential effects on situational interest**.** Students with longer future time perspective will be able to generate both proximal and distal value and will show increased situational interest. However, students with shorter future time perspective will only increase situational interest if they are prompted to generate proximal value and will decrease situational interest if they generate distal value.

H3b) The utility-value intervention will have differential effects on perceived utility-value. Students with longer future time perspective will be able to generate both proximal and distal value and will show increased perceived utility-value. However, students with shorter future time perspective will only increase perceived utility-value if they are prompted to generate proximal value and will decrease perceived utility-value if they generate distal value.

H3c) The utility-value intervention will have differential effects on performance. Students with longer future time perspective will be able to generate both proximal and distal value and will show increased performance. However, students with shorter future time perspective will only increase performance if they are prompted to generate proximal value and will decrease performance if they generate distal value.

RQ4) To what extent do these effects persist 3 weeks post-intervention?

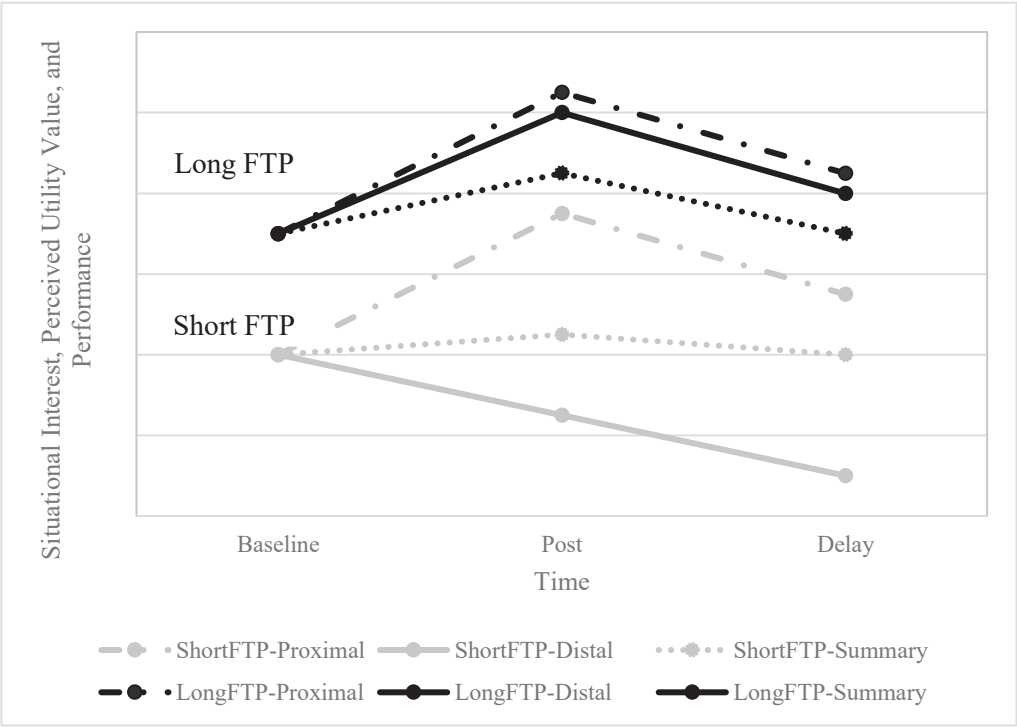
H4a) The utility-value intervention gains will decline for situational interest for all intervention groups (proximal, distal, control) from post-intervention levels. The

sharpest declines will be for the students in the distal utility-value intervention group with shorter future time perspective.

H4b) The utility-value intervention gains will decline for perceived utility-value for all intervention groups (proximal, distal, control) from post-intervention levels. The sharpest declines will be for the students in the distal utility-value intervention group with shorter future time perspective.

H4c) The utility-value intervention gains will decline for performance for all intervention groups (proximal, distal, control) from post-intervention levels. The sharpest declines will be for students in the distal utility-value intervention group with shorter future time perspective.

Figure 2. Predicted Effects of UVI x Future Time Perspective x Time on Situational Interest, Perceived Utility-Value, and Performance



Significance of the Study

American community colleges educate over one third of our college students, many of whom struggle with motivation and performance resulting in low success rates (Brock, 2010; Provasnik & Planty, 2008). Community college students don't succeed as much because of under preparation, lower rates of family college completion, lower performance expectancies, and a struggle to connect college prep curriculum with vocational outcomes (Atherton, 2014; Butcher & Visher, 2013; Wang, 2009). Because improving outcomes such as interest, value and performance con contribute to student success, this study can further our knowledge in helping community college students improve achievement outcomes. As a result of this study, the field of educational psychology, and in particular classroom intervention research, stand to benefit by demonstrating that simple interventions can be effectively implemented to improve motivation and performance in students who typically may have lower chances of success.

Definitions of Terms

The terms used in this study are identified using the following definitions:

Future time perspective: the "disposition to ascribe high valence to goals in the distant future and to grasp the long-term consequences of actual behavior, as reflected in the concept of instrumental value of a behavioral act" (De Volder & Lens, 1982) as measured by the following three components of perception of time: (1) how far one "plans into the future"; (2) how well one's future needs are distinguished; (3) and how strongly the connection is between present and future (Husman & Shell, 2008).

Perceived utility-value: reflects the relevance and usefulness of an activity or a task for other tasks or aspects of an individual's life such as a learner's current and future goals (to fulfill a work requirement or a degree, to attain a career goal, to fulfill the pursuit of other interests, to

please others) despite a lack of intrinsic value on the task and somewhat unrelated to the nature of the task itself (Canning & Harackiewicz, 2015; Eccles et al., 1983; Eccles & Wigfield, 2002; Hulleman et al., 2010; Wigfield & Eccles, 1992, 2000).

Situational interest: a situation-specific experience of positive affect in relation to an activity triggered by some external cue and by perceiving value and developing knowledge in the activity (Hidi & Renninger, 2006; Hulleman et al., 2010).

CHAPTER 2: LITERATURE REVIEW

Academic motivation is multifaceted and complex, and positively linked to academic outcomes such as persistence and performance (Allen & Robbins, 2010; Eccles et al., 1983; Wigfield & Eccles, 1992; Durik et al., 2015; Hulleman & Harackiewicz, 2009). This literature review will summarize and synthesize the elements and origins of a modern theory of motivation, namely Eccles and colleagues' (1983) expectancy-value theory and develop a rationale for studying the task value aspect of a theory within an intervention. In addition, this review will introduce and discuss future time perspective theory, an intersecting theory which adds the dimension of time perspective to the value ascribed to academic tasks. Additional theories of motivation will be summarized to help provide additional rationale for the variables prior to presenting the theoretical framework supporting this study.

Historical Antecedents of Expectancy-Value Theory

For decades now, achievement motivation has been a central area of research in educational psychology (Atkinson, 1957; Weiner, 1985), particulary within learning and educational contexts (e.g., Eccles et al., 1983; Wigfield & Eccles, 1992). Theorists have developed and continuously refined the expectancy-value theory of achievement motivation seeking to define and clarify the relationship between students' expectations of successful performance and the value that they assign to a particular task. Additionally, theorists have attempted to explain students' choices in pursuing a task, their level of confidence in successfully performing it, the amount of effort and persistence they put forth, the level of interest they hold, and their subsequent success in the performance of the task. Inarguably, educators stand to benefit from advances in knowing what drives students' achievement behaviors, as they are often the intermediaries between the students and their knowledge gained.

This section will explore the historical antecedents, development, and evolution of expectancy-value theory as it progressed from a classic theory and advanced into its contemporary version. The discussion will map out how the main constructs of the theory and its interrelationships have been redefined and their role in explaining academic motivation within school contexts.

Atkinson's Expectancy-Value Theory

Atkinson (1957) first formulated an expectancy-value theory to explain achievement motivation and resulting achievement behaviors. Atkinson sought to account for what makes someone select one path among many and to explain for the effort and persistence put forth in the direction of that chosen path. The constructs of modern expectancy-value theory such as task value and expectancies for success can be traced back to Atkinson's theory. He proposed that motives, expectancies, and incentives influence behavior in achievement-related tasks. A *motive* is a stable, inherent, individual trait with the purpose of either approaching success (maximizing satisfaction) or avoiding failure (minimizing pain) (Atkinson, 1957, p. 360). An *incentive* is the "relative attractiveness of a specific goal" and can be externally manipulated such as in the form of a reward or a punishment (p. 360). Thus, a task that is positively valued will be chosen over a task that is negatively valued. An *expectancy* is a "cognitive anticipation" of the probability that attempting a task will be followed by either success or failure and is a determinant of motivation to perform the task (p. 360).

Atkinson's (1957) predictions of the relationship between motivation to achieve and choice of task difficulty level produced mixed results (Schunk & Zimmerman, 2006). He proposed that for high achievers, the incentive to succeed is lowest when the subjective probability of success is extremely high or extremely low and highest when there is a moderate

probability of success. High-achieving children performed a task in which they took shots from a distance they selected that was deemed in the moderate range. However, low-achieving children positioned themselves where the level of difficulty would be extremely high or extremely low. This illustrated that although those with higher success-approach tendencies prefer moderately difficult tasks, those with higher failure-avoidance tendencies prefer very easy or very difficult tasks in support of Atkinson's prediction. In another study, subjects were provided a free choice of difficulty levels. Atkinson's theory would predict that upon repeated successes on a task, the incentive value for those with success-approach tendencies would diminish and they would lose interest in further performing the task. However, as subjects continued to successfully perform the task, they continued to select progressively more difficult tasks (Kuhl & Blankenship, 1979). This shift in task difficulty preference directly contradicts Atkinson's (1957) prediction.

Atkinson defined expectancy and task difficulty as comparable constructs. Later research found them to be two separate constructs and to be negatively related such that expectancies decrease with increasing task difficulty (Eccles et al., 1983; Eccles & Wigfield, 1995; Kuhl & Blankenship, 1979). Atkinson later acknowledged that due to the limited conceptualization of incentive value (task value), these outcomes were not always empirically supported and it was likely the reason that subsequent research focus on incentive value was less prominent than subsequent research focus on expectancy. Atkinson further concluded that expectancy and incentive value were inversely related; a relationship that was later uncovered as direct rather than inverse (Wigfield & Eccles, 1992). Whereas Atkinson focused on success-approach and failure-avoidance motivational dispositions, a student of his, Bernard Weiner, focused on studying cognitive interpretations of achievement-related outcomes in expectancy-value theory.

Weiner's Theory of Achievement Motivation and Emotion

Weiner (1985) continued to develop and refine the expectancy-value perspective in his theory of achievement motivation and emotion. According to Weiner, our attributions of causality influence whether we expect successful performance as a result of our efforts, rather than whether we apply a success-approach or a failure-avoidance disposition. This relationship between causal explanation and outcomes further contributed to the modern expectancy-value theory (e.g. Wigfield & Eccles, 1992; 2000). Outcomes that are attributed to stable causes will likely result in increased certainty that the outcome will occur in the future. For example, ability, which is considered stable, has a greater influence on expectancies than on effort, which is considered unstable. It's our interpretation of the outcomes rather than the outcomes themselves which influence our achievement choices. Three dimensions classify the causes of achievement attributions: *locus of causality*, *stability*, and *controllability*. The locus of causality of an outcome can be attributed to either internal or external to the individual. Whereas ability is considered an internal cause, events caused by other people or by natural forces are deemed as externally-caused. An outcome may also be considered stable or unstable. Whereas effort may be an unstable characteristic that can be increased or decreased at will, ability may be a stable characteristic that would be difficult to change at will. Controllability refers to whether an individual believes he or she has internal control of an outcome or whether the outcome is controlled by external forces, out of the individual's control. A trait such as laziness is thought to be controllable as opposed to a trait such as physical coordination (Weiner, 1985, p. 551). Weiner believed that these three dimensions of perceived causality (locus of causality, stability, and controllability) combine to produce different affective reactions when an individual assigns cause to behavior outcomes.

Weiner claimed that past expectancy-value theories had ignored the emotional component of behavior outcomes. Weiner proposed that "motivation is defined as what one can get (incentive) as well as by the likelihood of getting it (expectancy)" (Weiner, 1985, p. 559). Emotions are related to the goal-directed activity performed. Expectancies are formed based on past experiences and further influenced by the perceived stability of the cause of the event. For example, if a student performs well in an exam because she feels she studied a lot, she will consider her success as unstable. However, if she performs well because she believes she has high aptitude, she will perceive the success as stable. Stability of an outcome increases expectancy for successful or unsuccessful performance. Instability of an outcome causes no change in expectancy. Thus, if the student succeeded because she feels she has high aptitude, she will continue to expect success in the future. If she feels she succeeded because the exam was easy, her future expectancy will remain unchanged. In addition, the subjective value of attaining a goal determines whether someone chooses to pursue a goal. The *subjective value* is the affective reaction of attaining that outcome rather than the objective value of an object. Weiner argued that achievement outcomes have differing affective consequences such as effects on self-esteem, competence, pride, guilt, happiness, and frustration. One outcome can elicit completely different affective reactions to different individuals. The emotion of happiness as a result of successfully performing an achievement-related activity leads to repeating an action while failure at this activity will produce frustration. So, outcomes that produce positive emotions such as pride, will be valued more and pursued more than outcomes that produce negative emotions such as anger or guilt. Weiner's expectancy-value perspective proposed that expectancies, subjective values, and affective reactions to success and failure are influenced by locus of causality, stability, and controllability of achievement behaviors. However, other theorists argued that

utility of success goes beyond the influence of affective value. Many times, individuals may not relate a task to positive emotions, but will still perform the task because it is useful (Wigfield & Eccles, 1992). Some believe that Weiner's focus on expectancies and affective reactions to successful and unsuccessful task outcomes is likely one of the causes of the lack of research attention on task values (Wigfield & Eccles, 1992).

Historical Overview of Task Value

Task value is a key motivational construct within educational contexts that has received increased research interest in recent years. Expectancy-value constructs are considered the trigger for goal activation and effort allocation to a task (Winne, 2005). Task values refer to the incentives related to performing a task or an activity (Eccles & Wigfield, 2002). Individuals must understand the contingent relationships between actions taken toward a goal and the value placed on the goal (Husman, Derryberry, Crowson, & Lomax, 2004). In the expectancy-value tradition, achievement task values have been studied from the perspective of how a task meets a particular individual need such as personal enjoyment, or meeting short- or long-term goals (Wigfield & Eccles, 1992). Historical antecedents of subjective task-value within modern expectancy-value theory include work by Atkinson (1957), Weiner (1985), Rokeach (1979), and Feather (1988).

Atkinson (1957) defined task value (or incentive value as he termed it) as "the relative attractiveness of succeeding on a given achievement task" but later acknowledge that it was too broadly defined (Atkinson, 1957; Eccles et al., 1983 p. 89; Wigfield & Eccles, 1992). Achievement motives to approach success and to avoid failure combined to determine whether someone would attempt a task. Success-approach motives result in attempting the task while stronger failure-avoidance motives will not. Atkinson's definition resulted in task-difficulty being the sole influence on incentive value and didn't account for other potential influences on

value such as affective experiences and gender roles (Atkinson, 1957; Wigfield and Eccles, 1992). Additionally, as previously discussed, Atkinson theorized that within the expectancy-value relationship, value was inversely related to expectancy, which was later empirically revealed that it should be reversed to a direct relationship (Eccles et al., 1983).

As an attribution theorist, Weiner argued that it was our own individual cognitive interpretations of the outcome, rather than the actual outcomes for our success-approach or failure avoidance motivations that are what influence us to pursue a goal (Eccles & Wigfield, 2002). Each of the three causal dimensions of attributions (stability, locus, controllability) contribute to incentives for engaging in different activities and contribute to other achievement behaviors and beliefs (Weiner, 1985). Although Weiner performed limited research on incentives, he studied them as affective reactions to attaining or failing to attain achievement outcomes and not based on their objective value. He argued that objective value remains the same and is not influenced by perceived causality. He also contended that attributions mediate the relationships between affective reactions and achievement outcomes (Weiner, 1985; Wigfield & Eccles, 1992). Wigfield and Eccles (1992) would argue, though, that value for a task extends beyond affective reaction to the task.

Rokeach (1979) proposed a broad view of human values in which he considered values to be universal and shared by all cultures and individuals. Although he considered values as universal, he noted that there are individual differences in the patterning of the values such as in the priority, or *hierarchical ordering* that individuals place on values, the *universality of application* or whether an individual applies them broadly to the population or individually, and in the *consistency* of application by the individual across situations. He also suggested that careful consideration should be taken when defining value, because by defining it too broadly it

would be likened it to “preference, desire, liking, or satisfaction” (p. 19), and by defining it too specifically the distinctive features of the construct would fail to be captured. Rokeach (1979) defined value as an “organized set of preferential standards used in selecting objects and actions, resolving conflicts, invoking social sanctions, and coping with needs or claims for social and psychological defenses of choices made or proposed” (p. 20). He believed that values guide us to our goals and help us self-reflect to make causal attributions and justifications of past behaviors. Values are used to fulfill society’s demands and individual psychological needs and influence “attitudes, judgments, choices, attributions, and actions” (p. 2).

Feather (1988) agreed with Rokeach and Atkinson that values had been largely ignored in motivation research. He proposed that values are perceptions of how desirable a possible end would be. Values are personality-type aspects shaped by societal demands and psychological needs, relatively stable but not unchanging, transcend objects and situations, are hierarchical, serve as standards, widely affect thought and action, and not affectively neutral (Feather & Newton, 1982, p. 220). Values affect goal-directed motivation because they influence how attractive or unattractive a goal is perceived. Following in the expectancy-value tradition, Feather & Newton (1982) further proposed that a goal that is valued will likely not be attempted if individuals do not believe that their efforts will lead to success in achieving the goal, that is, if expectancy is low.

Contemporary Expectancy-Value Theory

Building upon classic expectancy-value theories (Atkinson, 1957; Weiner, 1985) and continuing in the expectancy-value tradition, Eccles’ and colleagues developed a framework for understanding children and adolescents’ achievement behaviors and achievement choices initially within the domain of mathematics (Eccles et al., 1983; Eccles & Wigfield, 1995, 2002;

Wigfield & Eccles, 1992; 2000). *Expectancies* refer to the probability of success on the task as determined by perceptions of competence, difficulty of the task, the individual's goals, and self-beliefs. Although Atkinson initially defined *task value* as "the value that an individual attaches to success of failure of a task," Eccles et al. (1983) expanded the definition to include the value an individual attaches to task performance as determined not only by the positive and negative task characteristics, but also by how the task fulfills someone's "needs, goals, and values" as well as influenced by cultural, social, affective, aptitude, and past experience variables (Eccles et al., 1983; Eccles & Wigfield, 2000; Wigfield, Tonks, & Klauda, 2009). Eccles and colleagues identified three initial sub-constructs for task value: attainment value, intrinsic value, and utility-value (Eccles et al, 1983). Initially, *cost* was identified as a fourth sub-construct of task value and then revised to be a third main construct along with expectancies and task value in modern expectancy-value theory (Conley, 2012; Flake, Barron, Hulleman, McCoach, & Welsch, 2015; Eccles et al., 1983; Eccles & Wigfield, 1995, 2000; Perez, Cromley, & Kaplan, 2013; Wigfield & Eccles, 1992).

One difference between Atkinson's (1957) classic and Eccles and colleagues' modern expectancy-value theories was the direction of the relationship between expectancy and value. Atkinson (1957) hypothesized that expectancies and values were inversely related, such that if expectancies were high, the subjective value for the task would diminish (Atkinson, 1957). In contrast, modern expectancy-value theory (e.g., Eccles et al., 1983; Eccles & Wigfield, 1995, 2002; Wigfield & Eccles, 1992, 2000; Wigfield et al., 2009) argues that the relationship between expectancies and values ascribed to a task is positive. The higher the expectancies for successfully performing a task, the higher the value attributed to performing said task. In other words, people hold more value for tasks in which they expect to perform well, and they expect to

perform well in tasks that they value. If people regard a particular goal as highly attractive and have the belief that they have the ability to attain it, they will be motivated to pursue the goal (Schunk, 1991). Although the relationship between expectancy and task value is initially weak during the early childhood years, it strengthens as children get older and better define their perceptions of competence (Wigfield & Eccles, 1992).

Expectancies and values influence both, how individuals perform a task and which task or tasks they choose to perform (Wigfield & Eccles, 1992). There is strong evidence that expectancy and value are empirically different constructs as early as first grade (Eccles et al., 1983; Wigfield, 1994; Wigfield & Eccles, 2000). Although Wigfield & Eccles considered expectancies and values as the main predictors of achievement behaviors, their theory did not address motive to achieve as in Atkinson's theory (Schunk & Zimmerman, 2006). In Wigfield and Eccles' model, expectancies include personal efficacy expectations, not outcome expectations (Wigfield, 1994).

Achievement related behaviors such as persistence, choice, and performance are influenced by the expectancy and value related to a specific task (Eccles et al., 1983; Wigfield & Eccles, 1992). Expectancies are influenced by task-specific self-concept and task perceptions which are in turn influenced by past achievement outcomes and causal attributions of those events. Task-value is influenced by goals, expectancies, causal attributions of past events, and a by perceptions of cultural socializers' characteristics (Wigfield & Eccles, 1992). The interpretation of the reality of past successes and past failures drives children's expectancies, values, and behavior and not necessarily the actual reality of the events (Eccles & Wigfield, 2002). The major constructs to be discussed from the modern expectancy-value model consist of task values and expectancies of success.

Task Values in Modern Expectancy-Value Theory

Educators often speculate as to why students academically underperform despite their apparent abilities to succeed and despite numerous opportunities afforded to them. The potential benefits to students of mastering subjects such as science and math are evident to these educators. However, to many students, learning these subjects may be of no interest, may have no apparent value, and may be regarded as merely just another academic duty.

The field of motivation research has documented both direct and indirect effects of task values on academic and motivational outcomes. Valuing a task positively influences an individual's intentions to perform a task, persistence, self-regulation, academic performance, teacher's perceptions of student motivation, subsequent interest, college enrollment plans, goal-setting, and strategy use (Acee & Weinstein, 2010; Anderman, Eccles, Yoon, Roeser, Wigfield, & Blumenfeld, 2001; Anderman & Wolters, 2006; Eccles, Vida, & Baber, 2004; Hidi & Renninger, 2006; Hulleman et al., 2008; Hulleman et al., 2010; Metallidou & Vlachou, 2010; Sedaghat et al., 2011; Simpkins, Davis-Kean, & Eccles, 2006; Wigfield & Eccles, 2000; Wigfield & Cambria, 2010; & Wolters, 1998). Research has revealed that a student's level of value assigned to a task may serve an activator, or "trigger" for initiation and sustainment of that task (Acee & Weinstein, 2010). The value that students assign to a particular task or achievement behavior may create the intensity or strength needed for engaging in that task or behavior (Wigfield & Cambria, 2010). Previous research indicates that for students to succeed at a task they must possess enough interest to initiate the task and sustain it over an extended period of time. This requires them to have enough motivation to persist and overcome obstacles that may interfere with, or obstruct their goals (Acee & Weinstein, 2010; Anderman & Wolters, 2006; Pintrich, 1999; 2000). In fact, value has been regarded as one of the strongest predictors of

intentions and actual persistence in a task (Wigfield & Eccles, 2000). In turn, successful learners attribute more value to tasks and are able to self-regulate more than unsuccessful learners (Bembenutty, 2008b; Hidi & Renninger, 2006; Pintrich, 1999). Studies have shown that lack of perceived value for a task decreases the likelihood that a student will engage in the task and self-regulate within the task (Acee & Weinstein, 2010; Anderman & Wolters, 2006; Pajares & Graham, 1999). Although expectancy constructs (Pajares & Graham, 1999) have significantly predicted student performance and grade point average, the perceived value of an academic task is what influences pursuit of engagement and use of self-regulation strategies (Anderman & Wolters, 2006: Pajares & Graham, 1999).

Other research has revealed that the level of value that a student holds for challenging or "threatening" subject such as mathematics, reflects on the teacher's evaluation of the student's motivation, their tendency to seek help and need for feedback, and their interest in the subject (Metallidou & Vlachou, 2010). Also, students who regard a task as important are more likely to continue to pursue that task in the future (Simpkins et al., 2006). Simpkins et al., (2006) found that middle and high school students' interest in math courses positively affected their math grades and the number of math courses taken, whereas interest in science and importance placed on science led to a greater number of science courses taken. In addition to influencing performance outcomes, interest has been shown to increase a student's value for a task and conversely, valuing a task positively influences interest in a task, demonstrating a reciprocal relationship between interest and task value (Anderman, et al., 2001; Hidi & Renninger, 2006; Hulleman, et al., 2010; Wigfield & Cambria, 2010). Eccles, Vida, and Barber (2004), found that the level of adolescents' academic values predicted college enrollment plans. Interestingly, both,

academic resiliency and ability self-concepts were significant in predicting college enrollment plans.

Expectancy-value researchers agree that high academic ability and high ability perceptions alone cannot produce high academic outcomes and that motivational factors play an essential role in the academic success of students (Eccles et al., 1983; Veeneman, 2010;). The field of motivation research has documented positive effects of motivational variables such as interest and values on academic achievement and on various motivational outcomes (Acee & Weinstein, 2010; Anderman & Wolters, 2006; Chouninard & Roy, 2010; Hidi & Renninger, 2006; Hulleman et al., 2008; Hulleman, et al., 2010; Metallidou & Vlachou, 2010; Pintrich & DeGroot, 1991; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004; Simpkins, et al., 2006: Wigfield & Eccles, 2000; & Wolters, 1998**).** Because of the well-documented contribution of task values on academic and motivational outcomes, researchers have called for more investigations on interventions aimed at strengthening the value that students hold for difficult academic subjects such as math (Metallidou & Vlachou, 2010; Simpkins et al., 2006) and science (Hulleman & Harackiewicz, 2009; Simpkins et al., 2006). Therefore, the present study investigated whether prompting students to generate value would increase their perception of value for that task.

As previously stated, the expectancy-value theory of Motivation (Eccles & Wigfield, 2002; Wigfield and Eccles, 2000) has identified three main components that constitute task value as it relates to academic tasks: *attainment value*, *intrinsic* or *interest value*, and *utility-value* for future goals as well as *cost* as a result of performing the task (Eccles et al., 1983).

Attainment value is the personal importance of success in performing a task or the needs or personal values it fulfills (Eccles, 1987; Eccles et al., 1983; Eccles & Wigfield, 2002). The

identity component of attainment value of may serve to help confirm or disconfirm beliefs about the self (Wigfield et al., 2009). Aspects of the self-schema can be demonstrated through task performance (Eccles & Wigfield, 2002). Some of those beliefs that can be affirmed include competence, masculinity/femininity, challenge, achievement, power, and social needs. A task that helps a male assert his masculinity is considered to have high attainment value. Because males and females differ in self-schema, tasks will differ in attainment value for each (Eccles, 1987). Attainment value is constructed from the perceived qualities of the task, the individual needs, and self-perceptions (Eccles et al., 1983).

Intrinsic value refers to the "enjoyment an individual experiences when performing the task itself or a subjective interest the individual has in the subject" (Wigfield & Eccles, 1992, p. 280) or the "inherent, immediate enjoyment one gets from engaging in an activity" (Eccles et al., 1983, p. 89). Intrinsic value is a similar construct to interest (Hidi & Renninger, 2006) and intrinsic motivation (Deci et al., 1999). According to self-determination theory, an activity that is intrinsically motivating to one person may not be for another individual because intrinsically motivating activities afford their own natural reward (Deci et al., 1999). The intrinsic reward emerges from the self experiencing freedom of choice and autonomy and aims to satisfy the inherent psychological growth needs of competence (encountering optimal challenges), autonomy (perceived locus of causality), and relatedness (the need for positive information feedback) as a result of performing the task (Levesque, Stanek, Zuehlke, & Ryan, 2004; Ryan & Connell, 1989; Ryan & Deci, 2000a; Ryan & Deci, 2000b; Vansteenkiste, Lens, & Deci, 2006).

Utility-value refers to how useful the task is viewed with regard to the individual's current and future goals despite lack of intrinsic value on the task and is somewhat unrelated to the nature of the task itself (Eccles et al., 1983; Eccles & Wigfield, 2002; Wigfield & Eccles,

1992; 2000). The usefulness of the task may represent the fulfillment of a requirement for a degree, attainment of a career goal, facilitation of the pursuit of other interests, or the pleasing of others. Utility-value is similar to extrinsic motivation (Deci, et al., 1999) and also relates to short- and long-term goals (Canning & Harackiewicz, 2015; Eccles et al., 1983; Schecter et al., 2011). Extrinsic motivation is the performance of an activity for its instrumental value (Ryan & Deci, 2000a). Self-determination theory states that, in the continuum of human motivation, extrinsic motivation exists between lacking the intention to act (amotivation) and performing activities out of interest, enjoyment, and inherent satisfaction (intrinsic motivation). Four categories of extrinsic motivation from least autonomous to most autonomous include *external regulatory* (to attain extrinsic rewards or avoid punishment), *introjected* (to avoid feelings of guilt or threats to the ego), *identification* (personal importance to attain a life goal that is personally valued) and *integrated* (fully assimilated to the self and congruent with an individual's values) (Ryan & Deci, 2000a). Instructional practices that emphasize task-dependent successful performance rather than personally meaningful learning have resulted in decreased value for the task (Anderman et al., 2001). Through the process of internalization, individuals are able to transform external regulatory behaviors intrinsically motivated (Ryan & Deci, 2000a). Understanding how perceptions of task value affect this internalization process can contribute to the improvement of academic achievement and among learners. Utility-value has shown to independently contribute to course selection (Eccles et al., 1983), subsequent interest (Hulleman et al., 2008) and higher grades (Hulleman et al., 2008). Research has found that students who have greater endogenous instrumentality (intrinsic, future-oriented task value), task utility-value (extrinsic, present-oriented task value), and intrinsic utility, reported spending more time studying than students with lower scores in these variables (Husman et al., 2004).

Luttrell, Callen, Alen, Wood, Deeds, & Richard (2010) found a strong relationship between intrinsic value and utility-value.

Utility-value has been used extensively by intervention researchers as the value of choice for measurement and manipulation in value-interventions (Acee & Weinstein, 2010; Caning & Harackiewicz, 2015; Durik et al., 2015; Harackiewicz et al., 2012; Hulleman et al., 2010; Rozek et al., 2014; Schecter et al., 2011;). Because of its external nature, utility-value is the most receptive value for manipulation within intervention research (Harackiewicz et al., 2014; Wigfield & Eccles, 1992). The challenge lies in selecting a mechanism by which the task, course, or academic subject can be connected with valued student needs, interests, and goals and thus increase the utility-value for that activity or subject. Researchers advocate for the use teaching strategies that provide meaning to students and make the content relevant to their lives.

In terms of how to promote utility-value, Deci and colleagues (1994) suggested that providing students a meaningful rationale for an activity is one of three key events that can provide an understanding as why it is relevant and of personal interest to complete the activity. The other two events are, *acknowledging the individual's perspective* and *conveying choice* rather than an obligation. Muddiman and Frymier (2009) identified four categories of teacher strategies that influenced student perceptions of relevance: *outside course relevance* (current life, interests, popular culture and media), *teaching style relevance* (instructor consideration, variety, interest, enthusiasm, knowledge), *methods and activities relevance* (discussion, participation, group activities), and *inside course relevance* (note-taking, assignments, study help). It seems as though outside course relevance would most influence perceptions of utility-value because it is related to goals external to the task itself.

Fostering relevance has the potential to enhance students' motivation and achievement in school. Assor et al. (2002) found that when teachers fostered relevance for the course content, students were more engaged in the course. Additionally, students who do not see the relevance of science to their chosen career may not exert the effort needed for success, leading to course failure (Glynn, Taasoobshirazi, & Brickman, 2007). In their study, Glynn, et al. (2007) investigated the effects of gender, relevance of science to a career, and motivation on science GPA. When students believed that a science course was relevant to their future career goals, they had higher motivation to do well in the course, significantly improving science achievement. These results highlight the importance of helping students identify connections between their current course and their future goals and aspirations. In the present study, utility-value was used to foster relevance and connection between the content and students' academic, personal, and professional lives.

Cost refers to negative aspects, losses, or necessary effort related to performing a task as well as lost opportunities when choosing one task over another (Anderman & Wolters, 2006; Eccles & Wigfield, 2002; Wigfield & Eccles, 1992; 2000). Early expectancy-value theorists studied cost in terms of perceptions of task difficulty (Atkinson, 1957). Eccles et al. (1983) first proposed that cost affects task value and would have an inverse relationship with an individual's perception of the value for a task. The higher the cost of a success or failure as a result of performing a task, the lower the value that an individual assigns to that task. Attempting a task will only occur if the benefits of performing an activity surpass the costs of engaging in it (Chen & Liu, 2009).

Developmental changes in task value involve two types of change: changes in level of task value across time and changes in the structure of task value across time (Eccles & Wigfield,

1995; Wigfield & Eccles, 1992; 2000). Researchers have explored developmental changes in levels of value that students allocate to tasks. Studies have found a significant negative relationship between task value and age. The value that students attribute to an academic task tends to decrease over time, such as from the beginning to the end of the year or from one grade level to the next, which often results in decreased effort and persistence in the task over time (Chouninard & Roy, 2010; Wigfield & Eccles, 2000). Alarmingly, as students transition into higher grades, their task value for subjects such as mathematics has been shown to decrease (Hong & Peng, 2008; Pajares & Graham, 1999). The change in the structure of value constructs shows two main patterns. During the very early years, there are two main distinguishable constructs which are interest and utility-value. In early and older adolescents, a pattern of three distinguishable task value constructs emerge which are attainment, interest, and utility-value (Wigfield & Eccles, 1992; 2000).

Expectancy in Modern Expectancy-Value Theory

Although expectancies were neither measured nor tested in the present study, they are an important component of expectancy-value theory and worthy of discussion. Expectancies influence task value as well as other variables in this study such as interest and performance. This section will further define and discuss sources of expectancies how they change across time within an individual.

Expectancy refers to an individual's assessment of the likelihood of successful performance of a task or an activity as determined by perceptions of competence, difficulty of the task, the individual's goals, and self-beliefs (Eccles et al., 1983; Eccles & Wigfield, 1995; 2002; Wigfield & Eccles, 1992; 2000). Expectancies strongly influence achievement performance (Perez et al., 2013; Schunk & Zimmerman, 2006; Sedaghat et al., 2011; Wigfield &

Eccles, 1992; 2000) although they don't predict task choice or task persistence as well as task value does (Eccles & Wigfield, 1995; Eccles et al., 1983; Wigfield & Eccles, 2000).

Expectancies are influenced by a variety of task-specific factors such as ability beliefs, perceptions of task difficulty, personal goals, and previous performance (Eccles et al., 1983; Eccles & Wigfield, 2002; Perez et al., 2013; Wigfield & Eccles 2000). In general, expectancies and value are positively related (Eccles & Wigfield, 1995). Eccles & Wigfield (1995) found that expectancies were more strongly related to attainment value and intrinsic value than to utility-value. Expectancies are rooted within attributions, which are how people assign cause to an event (Weiner, 1985). Students who believe that success and failure are due to low aptitude (stable) are less likely to expect successful performance from further attempts if they fail (Graham & Williams, 2009; Weiner, 1985). However, students can be re-trained to attribute their achievement failure to low effort (unstable) rather than to low aptitude (stable) which in turn, makes them more likely to expend more effort if they want to succeed.

Expectancies decrease across the school years and with increased age such that children become more negative about their abilities as they get older (Wigfield & Eccles, 2000). Expectancies also change over time from most optimistic and grounded in hope despite failure (ages 4 or 5) to more accurate and grounded in reality as children grow older (Wigfield & Eccles, 1992). Children also develop an increasingly negative view of math, reading, instrumental music, and sports ability-beliefs as they continue through the elementary school years and continue through high school with the most drastic decrease when they transition into junior high school (Wigfield & Eccles, 2000).

Summary

Over the past half-century, expectancy-value theory has evolved and become more complex and refined. The classic theory struggled to accurately define constructs and identify relationships between them (Atkinson, 1957). As research on these constructs and relationships has continued, the modern theory has begun to reveal consistent patterns of relationships and operationally defined construct that have become more useful in studying how motivation is linked to academic outcomes. See Table 1 for the historical evolution of expectancy-value theory and its related constructs. Now we turn to discussing other theories that are relevant for the current study.

Table 1. Historical Evolution of Expectancy-Value Theory and its Constructs

Expectancy-Value Theories					
	Atkinson (1957)	**Weiner (1985)**	**Rokeach (1979)**	**Feather & Newton (1982) Feather (1988)**	**Eccles et al., (1983); Eccles & Wigfield (1995; 2002); Wigfield & Eccles (1992; 2000)**
Theory Highlights	1. For high achievers (approach success), incentive is lowest when expectancy is very high or very low. Incentive is higher when expectancy is moderate. For low achievers (avoid failure), incentive is higher when expectancy is very high or very low. 2. Expectancy and value are inversely related. Upon repeated success on a task, interest in further performing the task decreases. (Actually, repeated success of the task results in choosing increasing task difficulty, so they are positively related 3. Expectancy = Task Difficulty. (Actually, expectancy and task difficulty are different constructs)	1. Locus of causality, stability, and controllability influence expectancies, subjective values, and affective reactions to success and failure. 2. Stability of an outcome increases expectancy; instability of an outcome produced no change in expectancy. 3. Outcomes that produce positive emotions will be valued more than those that produce negative emotions. 4. Attributions mediate the relationships between affective reactions and achievement outcomes.	1. Broad view of human values. 2. Values are universal and shared by all cultures and individuals. 3. There are individual differences in ordering and applying values. 4. Values guide us to our goals and help us self-reflect to make causal attributions and justifications of past behaviors. 5. Values fulfill society's demands and individual psychological needs; influence "attitudes, judgments, choices, attributions, and actions."	1. Values affect goal-directed motivation because they influence how attractive or unattractive a goal is perceived. 2. A goal that is valued will likely not be attempted if individuals if expectancy is low.	1. Value for a task extends beyond affective reaction to the task. 2. Expectancies and Values are positively related. 3. Expectancies and values influence persistence, interest, choice, and performance. 4. Value predicts task choice and persistence. 5. Expectancy predicts task performance.
Expectancy-Value Constructs					
Expectancy	**Expectancy:** Cognitive anticipation of probability that attempting a task will be followed by either success or failure and is a determinant of motivation to perform the task.	**Expectancy:** Likelihood of getting incentive. Formed based on past experiences and influenced by perceived stability.		**Expectancy**: Outcome expectancy is the probability that a given behavior will lead to a certain outcome.	**Expectancy:** The probability of success on the task as determined by perceptions of competence, difficulty of the task, the individual's goals, and self-beliefs in turn influenced by past achievement outcomes and causal attributions of those events. Involve personal efficacy, not outcome expectations
Value	**Incentive/Incentive Value:** The "relative attractiveness of a specific goal" which can be externally manipulated in the form of a reward or a punishment.	**Incentive:** What one can get. Affective reactions to attaining or facility to attain achievement outcomes. **Subjective Value:** Affective reaction of attaining an outcome rather than the objective value of an object.	**Value:** An organized set of preferential standards used in selecting objects and actions, resolving conflicts, invoking social sanctions, and coping with choices.	**Value:** Perception of the desirability of a possible outcome. Personality-type aspect, shaped by societal demands and psychological needs. Stable but not unchanging.	**Task Value:** The value attached to success of failure of a task as determined by the positive and negative task characteristics and by how the task fulfills "needs, goals, and values." Also influenced by cultural, social, affective, aptitude, and past experience variables. Composed of attainment, intrinsic, and utility-value.

Interest

Although interest is not a component of expectancy-value theory, it has a reciprocal relationship with its constructs. It is also similar to the sub-construct of intrinsic value, which is one of the components of task value (Deci et al., 1999; Eccles et al., 1983 p. 89). High interest initiates task performance and sustains effort over time, whereas high task value positively influences subsequent interest for a task (Acee & Weinstein, 2010; Anderman et al. (2001). Anderman & Wolters, 2006; Eccles et al., 2004; Hidi & Renninger, 2006; Hulleman et al., 2008; Hulleman et al., 2010; Metallidou & Vlachou, 2010; Pintrich 1999; 2000; Sedaghat et al., 2011; Simpkins, Davis-Kean, & Eccles, 2006; Wigfield & Eccles, 2000; Wigfield & Cambria, 2010; & Wolters, 1998). Interest also positively affects performance (Simpkins et al., 2006). Because of this important relationship, the construct of interest will be discussed and introduced as one of the outcome variables of this study.

Four-Stage Model of Interest Development

The four-stage model of interest development explains how interest evolves from a transient form of situational interest to a well-developed, self-sustaining form of individual interest (Hidi & Renninger, 2006). Interest develops through two progressive stages of situational interest and two stages of individual interest requiring increasing amounts of content knowledge and affect for the topic of interest. The first stage, *situational interest*, has two levels: triggered situational interest and maintained situational interest. The second stage, *individual interest*, is also comprised of two levels: emerging individual interest and well-developed individual interest.

Situational interest occurs first and with repeated engagement and increased knowledge, well-developed individual interest develops resulting in self-initiated pursuit of the activity and

on the acquisition of substantial domain-specific knowledge. Triggered situational interest is activated by the environment and may later transform into maintained interest consisting of more extended attention and persistence on the task, though still mostly externally-supported (Hidi & Renninger, 2006). Autonomy-supportive environments in which students perceive choice in their learning is one of the strongest predictors of situational interest (Linnenbrink-Garcia, Patall, & Messersmith, 2013).

Individual interest emerges when a person experiences more self-initiated engagement in a task, has increasing positive affect toward and increasing perceived value (Hidi & Renninger, 2006). The strengthening of positive affect, knowledge, and value further results in well-developed individual interest, often characterized by enduring self-generated engagement and expert knowledge. So far, no evidence has yet emerged to suggest that individual interest can develop without situational interest (Hidi & Renninger, 2006). Continuous exposure to a task and support by social partners further develops and maintains interest. Well-developed individual interest contains well-developed content-domain knowledge.

Empirical Findings

Educators must often overcome student subject matter disinterest while teaching. Interest-to-major congruence is positively related to performance and persistence outcomes (Allen & Robbins, 2010), thus underscoring the importance of students holding high levels of interest for their selected career choices. Students who hold low interest in their major are more likely to earn lower grades, take longer to graduate, and will be less satisfied with their academic program (Allen & Robbins, 2010). Interest-enhancing interventions have succeeded in increasing students' subsequent interest and performance, despite low initial expectancies for success in the subject. Hulleman and Harackiewicz (2009) encouraged students to make

connections between science and their lives which increased interest and performance in science. Students with low-success expectancies experienced a larger increase in interest related to a science course than students with already high-success expectancies. Interest is an important educational outcome because it influences other achievement outcomes. Interest in also influenced by value. Because situational interest is triggered by the environment, this study will aim to influence situational interest by prompting students to generate connections between the course content and their academic, personal, or professional lives.

Future Time Perspective Theory

Students attend school in the present to prepare for their lives in the future. However, this often presents a conflict between present and future behaviors. Valued long-term goals, such as completing school and getting a good job often conflict with desire to enjoy life in the present rather than study even if those long-term goals are highly valued. The theory of future time perspective can help to understand how temporal orientation influences motivation. Time perspective is an "individual's understanding of the psychological past, present, and future" (Kauffman & Husman, 2004; Lens et al, 2012). How students view their future can significantly influence motivation and academic choices. Future time perspective results from goals setting. Temporal distances can be short (having a nice dinner tonight) or very long (finishing an advanced degree). The longer the goal, the longer the future time perspective needed. People with short future time perspective tend to set shorter goals. Their motivation is energized by more immediate rewards rather than long-term goals (Lens et al., 2012). Those with longer future time perspective may be more motivated by the utility-value of a course (math) that is unrelated to their career (law) because its usefulness or utility than those with short future time perspective. People with longer future time perspective more easily anticipate future

consequences of present actions as those with shorter future time perspective do not. Future time perspective theory was treated as a moderator for the relationship between a utility-value intervention and academic outcomes in this study.

Utility-Value Interventions

This section will summarize relevant utility-value interventions along with background literature which have contributed to the development and refinement of methodology of this research study. In particular, distinguishing features of utility-value interventions will be contrasted to provide a historical rationale for the methodology selected for this study. These interventions studied student psychological and motivational characteristics and are grounded primarily in Eccles and colleagues' (1983) expectancy-value theory of achievement motivation with contributions from self-determination theory (Deci et al., 1994).

Promoting Utility-Value with Relevance

An effective means for promoting value for a task is to generate relevance between a task and a learner's current or future life or goals (Deci et al., 1994). Relevance is generated by establishing a relationship between one topic or idea and another (Hulleman, Kosovich, Barron, & Daniel, 2016). During formal academic learning, students must often perform learning activities that are important, but not personally interesting (Wolters, 1998). Promoting relevance is an instructional technique that can contribute to enhanced interest in the classroom (Assor et al., 2002; Frymier & Shulman, 1995; Glynn, et al., 2007; Newby, 1991). For example, to make math more interesting, teachers can help students connect the topic of math with the idea that math can be useful in their everyday lives or in their future careers.

The origins of utility-value interventions can be traced back to earlier efforts in defining and promoting the construct of relevance (Behrens, 1999; Frymier & Houser, 1998; Frymier &

Shulman, 1995; Muddiman & Frymier, 2009; Newby, 1991). Keller (1987; 2010) introduced ARCS, a motivational model of instruction consisting of four categories: Attention, Relevance, Confidence, and Satisfaction. Newby (1991) studied the frequency of 30 first-year elementary school teachers' use of ARCS strategies during 16-week observations and found that relevance-producing strategies were some of the least used strategies despite a significant increase of learner on-task behaviors when used. Newby found that when teachers provided reasons to students as to why the task was important and helped them relate the task to their personal experiences, students were much more likely to engage in the task. Newby speculated that the teachers' low use of relevance-producing strategies was due to their limited experience, limited knowledge of relevance-producing strategies, the responsibility of relevance-application placed on the student, and the amount of time and effort required by teachers to personalize content to make it relevant for each student. Perhaps also because these were elementary school-aged learners, their life and career goals were not as well formed as high school or college-aged students.

Early research investigating the effectiveness of relevance-enhancement techniques in the classroom found that conceptualizing relevance from an "other-perspective" produced different results than conceptualizing it from a "student perspective" (Behrens, 1999; Frymier & Shulman, 1995; Keller, 1983). When relevance was conceptualized as a content-related construct in which students perceive that the content satisfied their personal needs, personal goals, and/or career goals, it predicted unique variance on state motivation for studying (Frymier & Shulman, 1995; Keller 1983). Further, studies which defined relevance as a set of relevance-inducing teacher behaviors produced non-significant effects (Behrens, 1999; Frymier & Houser, 1998). This teacher-perspective did not appear to align to students' perceptions of relevance and suggested

the need for reconceptualization of relevance as a student-driven or receiver-based perception rather than as a strategy (Frymier & Houser, 1998) and suggested the additional need to consider how the context of the class affects relevance (Behrens, 1999).

Subsequently, researchers attempted to reconceptualize relevance from a student perspective. Students wrote down "strategies, techniques, and/or behaviors used by their teachers to make the content relevant to their needs, goals, and/or interests" producing five categories of responses: outside course, teaching style, methods and activities, inside course, and no relevance (Muddiman & Frymier, 2009). Although the "outside course" category shared elements from previous definitions of relevance, "teaching style" was related to the teaching and instruction categories more than to relevance. Students stated that behaviors such as humor, clarity, and immediacy caused relevance, but it could have been that students *perceived* these to cause relevance. Researchers concluded that relevance is likely a result of effective teaching rather than a component of effective teaching, and suggested that what should be studied are "perceptions of (student) relevance" rather than "relevance as a component of effective teaching."

The results from the strive for a concise conceptualization of relevance were beginning to suggest that student-driven relevance activities are the most effective. Further, the limited use of relevance-producing strategies by school teachers established the need to identify simple and easily-applicable relevance-enhancing strategies and confirmed the need to educate and encourage school teachers to consistently incorporate these strategies into their lessons. Researchers began to uncover the means to enhance relevance in the classroom and how these strategies could contribute to improvements in academic achievement.

Self-Generated vs. Directly-Communicated Utility-Value

One goal of utility-value interventions is to prompt students to generate value. This can be accomplished by communicating to students how the course material could be valuable to their lives while others prompt students to self-generate value by making their own connections between the material and their lives. One of the earliest utility-value interventions implemented the concept of "hold," from the perspective of Hidi and Renninger's interest theory (Durik & Harackiewicz, 2007; Hidi & Renninger, 2006), and showed that a value intervention can increase task interest, task involvement, perceptions of value, and competence valuation (caring about doing well). Students received directly-communicated messages emphasizing utility and relevance for everyday life. College students in the treatment condition who were informed about the utility of a mental math technique for day-to-day activities such as banking, taking notes during math lectures, and calculating tips and discounts perceived the mental math technique as more useful than students who did not receive utility-value information. Also, utility information had a strong positive effect on interest and performance for those with already high interest in the task. Students with low interest experienced a decrease in perceived competence providing the first hint that directly-communicated utility-value information may have been perceived as threatening.

Further evidence of differential effects of directly-communicated utility-value was found in students with low performance expectancies who were found to prefer self-generated utility-value. Hulleman & Harackiewicz (2009) asked high school science students to either self-generate utility-value by creating personal connections between science and their lives or asked them write a summary about a topic. Although students with high performance expectancies showed no increase in interest or performance in either condition, students with low success

expectancies showed increased interest and performance in the self-generated value condition. Further studies have successfully increased situational interest, initial interest, maintained situational interest (beyond the experiment), and utility-value in the laboratory and in the classroom and found further support that self-generated utility-value did not undermine interest for students with low expectancies or low performance (Hulleman et al., 2010) as previously did directly-communicated utility-value (Durik & Harackiewicz, 2007).

Self-determination theory may help to explain part of why students with low expectancies and low performance may feel threatened by directly-communicated value. Evidence suggests utility-value interventions that encourage autonomous behavior may encourage at-risk learners to generate value for a task resulting in improved academic outcomes as compared to interventions that do not convey a choice (Canning & Harackiewicz, 2015; Durik et al., 2015; Durik & Harackiewicz, 2007). Autonomy is one of the social-contextual factors that facilitates internalization of behaviors, or self-determination (Deci et al., 1994). When a behavior was initially performed for its extrinsic instrumental value such as for avoiding a sanction, but the behavior is now performed because a learner personally endorses it and values the outcome, that behavior is considered to have become more autonomous, has been internalized, and is now self-determined and invoking personal choice. Both reasons are considered extrinsic, but the former is more autonomous than the latter. Autonomy is the freedom and ability to regulate one's own actions according to one's own individual needs and the freedom from coercion, control, or seductive rewards. Autonomy is also freedom from social influence, freedom to self-govern, and freedom to initiate one's own actions (Ryan & Deci, 2006; Soenens & Vansteenkiste, 2005). Three key events facilitate the progression of internalization of behaviors from controlling to autonomous (Deci et al., 1994): (1) Providing a *meaningful rationale* for an activity facilitates

the understanding of why it is in someone's personal interest to complete the activity; (2) *Acknowledging the individual's perspective* of possible inconsistencies between the requested task or behavior and the individual's preferences communicates respect for those preferences; and (3) *Conveying choice* rather than an obligation to perform a task allows the individual to feel a freedom to choose whether to attempt the task or not. An autonomy-supportive environment meets these three conditions.

Utility-value and extrinsic motivation are closely linked constructs. Utility-value reflects the usefulness of the task related to an individual's present or future plans such as taking a class to fulfill a work requirement or a degree Extrinsic motivation is the incentive involved in performing that task to reach some desired state rather than for the sake of the task itself (Ryan & Deci, 2000a; Wigfield & Eccles, 2000). Self-determination theory would predict that utility-value is externally controlling and does not produce a feeling of personal autonomy and choice. However, through the process of self-determination, an extrinsically motivating task can internalize to become intrinsically motivating (Deci et al, 1994; Ryan & Deci, 2000a). Internalization occurs when the purpose for performing an activity that is originally performed purely for extrinsic rewards becomes slowly internalized for fulfilling intrinsic rewards. This process typically occurs when the task or activity supports an individual's autonomy, relatedness, and competence. The process of internalization is crucial for increasing task value, intrinsic interest, and effort placed into learning the task. Extrinsic motivation, however, has the potential to undermine intrinsic motivation because of its controlling aspect and perceived lack of autonomy (Deci et al., 1999). Because autonomy-supportive environments can positively influence students' motivation to perform a task and their performance in that task, it is important to explore how different features of utility-value interventions may embody different

levels of autonomy-support (Deci et al., 1999; Eccles & Wigfield, 2002; Vansteenkiste et al., 2004; Wolters, 1998). The combination of externally sourced utility-value and externally controlled direct-communication of value for a task may amount to an excessive lack of perceived control for one's choices and thus undermine expectancies for low-achieving learners. Because of the potential for directly-communicated utility-value to undermine outcomes for low expectancy and low interest students, this study prompted students to self-generate utility-value rather than provided them with directly-communicated utility-value.

Proximal vs. Distal Utility-Value

The distinction between important temporal differences in utility-value in the present study was uncovered by a pair of studies that investigated the intersection between a utility-value intervention and cultural differences (Western vs. East Asian) (Schecter et al., 2011). Prior research had shown that Westerners are more attentive to uncertainty avoidance, which is relieved with immediate gratification, whereas Easterners value perseverance, personal steadiness, and personal stability (Hoefstede & Bond, 1988). Thus, Schecter et al. (2011) predicted that utility-value generation would not be sufficient to motivate low-interest Western learners to improve their achievement, whereas it would be enough to for low-interest East Asian learners. Students were divided by culture (Western, Eastern) and interest level (high, low) and randomly assigned to a utility-value or a control condition. Results confirmed that East Asian learners with low initial interest worked harder when learning math techniques which they believed would be useful in their future careers while Western learners did not. Additionally, East Asian learners with higher initial interest in the task did not experience an increase in interest whereas Western learners with higher initial interest modestly benefitted.

Researchers suspected that differences in the temporal elements of utility-value may differentially affect learners from Eastern and Western cultures. In a second study, Schecter et al. (2011) used a randomized three-group (proximal, distal, control) experiment to differentiate between the effects of short-term (proximal) utility-value and long-term (distal) utility-value on effort, interest, and performance. They grouped learners by culture (Western, Eastern) and by interest level (high, low). Distal utility-value emphasized long-term uses for future courses, graduate school, and careers. Proximal utility-value emphasized the usefulness of the task in present time such as in managing finances, shopping, and cooking, and calculating discounts and tips. Western learners were expected to respond more favorably to proximal utility-value because of their tendency to prefer short-term, immediate outcomes. East Asian learners were expected to favor distal utility-value because of their ability to envision how it benefits their long-term goals (Hoefstede & Bond, 1988). Results confirmed that East Asian learners did experience more perceived utility-value, interest, self-reported effort, task involvement, and performance expectancies in the distal condition and Westerners experienced more perceived utility-value, interest, self-reported effort, task involvement, and performance expectancies in the proximal condition. Type of utility-value information did not affect performance but did produce main effects for gender (males solved more problems), initial interest (learners with high interest solved more problems), and culture (East Asian learners solved more problems).

Results from these cross-cultural studies are important for understanding how individual differences affect how students value educational tasks. If certain cultural differences lead students to value tasks with immediate utility over tasks with long-term utility, then identifying individual differences and incorporating them into any motivational intervention that aims to influence value for a task would be beneficial. The ethnic, cultural, age, and first-generation

diversity of community college students may amplify the importance of identifying how motivational interventions are differentially affected by these individual differences and whether it is possible to find interventions that are effective despite these differences. This study differentiated the temporal nature of utility-value by randomly assigning students to either a proximal, a distal, or a control group similar to study 2 of Schecter et al. (2011). Although students were not divided by culture, student's preference for short-term, immediate gratification or long-term planning was measured. It was important to determine whether temporal preferences identified inter-culturally were present intra-culturally as well.

Community College Students

Nationwide, more than one-third of students enrolled in higher education attend community colleges (Brock, 2010). Of the students who first enroll in a 2-year public institution, only one fourth complete an associate degree or certificate within 150% of normal time as compared to over half of first-enrolled students at 4-year public institutions with a comparable timeframe (U.S. Department of Education, National Center for Education Statistics, 2019a). Although it is important to consider community college students' initial academic intentions, the percentage of students who leave school without completing is higher for community college freshmen who intend to eventually complete a 4-year degree via transfer than for students who begin at a 4-year institution (Provasnik & Planty, 2008).

Community college students vary widely in age, ethnicity, ability, employment status, and first-generation status. These students are more diverse and have a wider spectrum of academic and family backgrounds as compared with students at 4-year schools. They are typically underprepared for subjects like math, frequently attend college only part-time, and tend to have lower expectancies for successful performance than their university counterparts

(Butcher & Visher, 2013; Wang, 2009). For instance, about 29% of first-year public community college students take remedial coursework in subjects such as math, writing, and reading as compared to 19% of those at public 4-year schools (Provasnik & Planty, 2008). Research has found that first-generation college students have difficulty connecting college preparatory curriculum with vocational attainment (Atherton, 2014). Yet as large as this student population is and as well-documented as its needs are, important research gaps still exist within the literature as it relates to improving these learners' academic achievement and motivation. One of those gaps exists in research on interventions that teach students to value academic subjects. Out of about over a dozen utility-value intervention studies conducted over the past ten years, all have utilized high school students, four-year university students, and high school parents, (e.g. Acee & Weinstein, 2010; Canning & Harackiewicz, 2015; Durik & Harackiewicz, 2007; Durik et al, 2015; Hulleman et al., 2010; Harackiewicz et al, 2012; Rozek et al., 2014; Schecter et al., 2011) Community colleges, however, have not received the same attention (Canning, 2016; Canning, et al., 2019).

The long-term economic gains of degree completion are substantial with increasing level of education. In 2018, the employment rate for high school graduates was 72%, for those with some college and no bachelor's degree it increased to 80%, and for those with a bachelor's or higher it surged to 86% (U.S. Department of Education, National Center for Education Statistics, 2019b). Considering the high stakes of academic success and completion, our American community colleges are an important avenue for economic success. How can educational research contribute effective instructional strategies that can promote academic achievement while taking into account the varied skill set, backgrounds, and goals of community college students?

Theoretical Framework

Expectancy-value theory defines task value as "students' perceptions of the value of academic tasks and students' personal values that shape their experiences in academic contexts" (Harackiewicz et al., 2014). Our understanding as to how these dimensions of expectancy-value theory contribute to student achievement outcomes has greatly increased. It is now clear that students pursue activities in which they expect successful performance and consider important, useful, and enjoyable and avoid activities which they do not. Because many academic subjects may be inherently uninteresting to students if they are perceived as unrelated to their interests or to their major, influencing students' perceptions of the task's usefulness as it relates to their life and future is preferable than changing course requirements or customizing the curriculum to suit individual interests (Harackiewicz et al., 2014). Over the past decade, there has been an upsurge in research efforts with high school and undergraduate college students to develop and test various types of interventions that promote interest, engagement, persistence, and performance in academic tasks by increasing students' perceptions of task value (Acee & Weinstein, 2010; Durik et al., 2015; Hulleman et al., 2008; Hulleman et al., 2010; Hulleman & Harackiewicz, 2009; Rozek, et al., 2014; & Schecter et al., 2011). Though all components of task value contribute to a student's decision to engage in a task (Anderman & Wolters, 2006; Wigfield & Eccles, 2000), utility-value has become the standard for use in value-intervention research because of its external nature (Acee & Weinstein, 2010; Harackiewicz et al., 2014; Hulleman et al., 2010). Utility-value is defined as the "perceived importance or usefulness of a task for accomplishing future goals…such as career goals, even if he or she is not interested in the task for its own sake" (Harackiewicz et al., 2014, p. 77; Wigfield & Eccles, 1992, p. 280). Utility-value, is extrinsic in nature and extends beyond the immediate task to other tasks, goals, or

activities (Harackiewicz et al., 2014; Wigfield & Eccles, 1992). The external nature of utility-value facilitates its manipulation in experimental interventions. Consequently, the most recent value intervention research studies have targeted students' perceived utility-value for tasks (e.g. Acee & Weinstein, 2010; Canning, 2016; Durik et al, 2015; Hulleman et al., 2008; 2010; Hulleman & Harackiewicz, 2009; Rozek et al., 2014; & Schecter et al., 2011). This study conducted an experimental utility-value generation intervention with diverse community college students in introductory psychology classrooms.

Using the temporal distinction of utility-value that was uncovered by Schecter et al. (2011), this study investigated whether proximal value generation would produce higher or lower situational interest, perceived utility-value, or performance than distal value generation within a diverse community college student population. Schecter et al. (2011) would expect that students would prefer to generate proximal over distal value, thus affecting achievement outcomes accordingly. In addition, using future time perspective theory as an intersecting dimension to this temporal distinction, this study examined whether a match between the type of prompt (proximal or distal) and the temporal preference of student (proximally or distally oriented) moderated the effects of the intervention on the outcomes (DeVolder & Lens, 1982; Lens et al., 2012; Husman & Shell, 2008; Zimbardo & Boyd, 1999).

To minimize the negative potential controlling effects of directly-communicated utility-value, students in this study self-generated value for the course content rather than received directly-communicated utility-value messages (Canning & Harackiewicz, 2015; Durik & Harackiewicz, 2007; Hulleman & Harackiewicz, 2009).

Finally, evidence that interest is major variable with reciprocal effects on task value provides reasons for its inclusion as an outcome variable in this study. Specifically, changes in

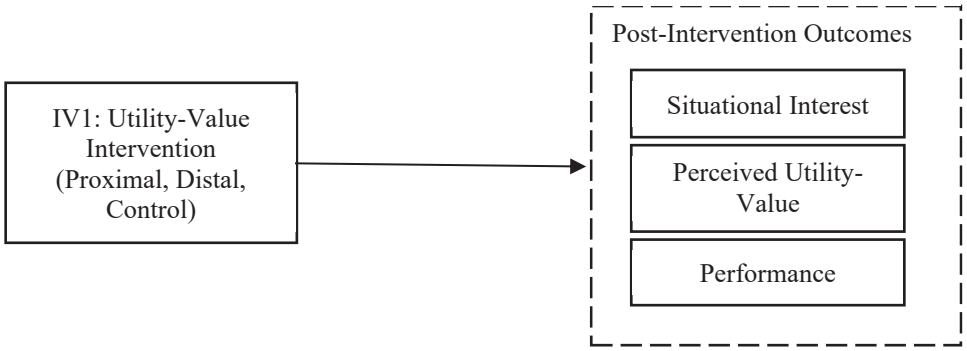
situational interest were measured to determine whether it was significantly influenced by the utility-value intervention and a student's future time perspective.

Research Questions

To address the problems identified in this literature review, the following four research questions were addressed in this study:

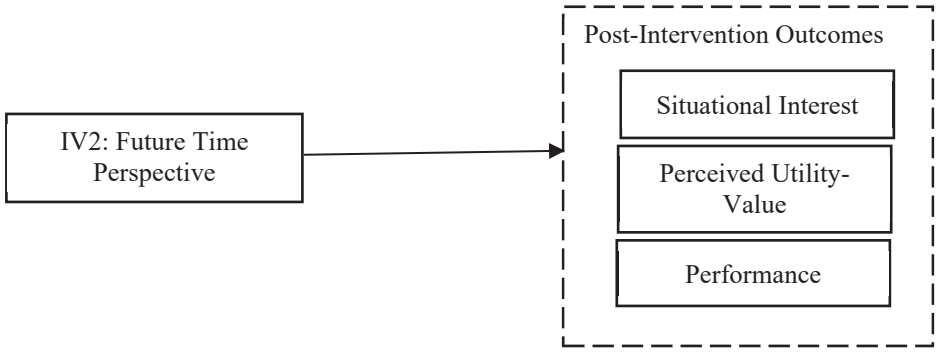
1) To what extent does the effect of prompting students to self-generate proximal utility-value differ as compared to prompting them to generate distal utility-value have on their subsequent situational interest, perceived utility-value, and performance? See Figure 3.

Figure 3. Model for Effect of the Utility-Value Intervention on Post-Intervention Situational Interest, Perceived Utility Value, and Performance.



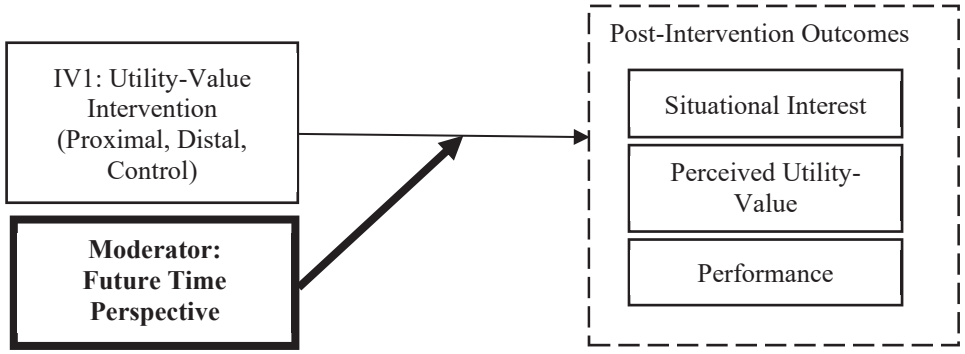
2) To what extent does future time perspective influence situational interest, perceived utility-value, and performance? See Figure 4.

Figure 4. Model for Effect of Future Time Perspective on Post-Intervention Situational Interest, Perceived Utility-Value, and Performance.



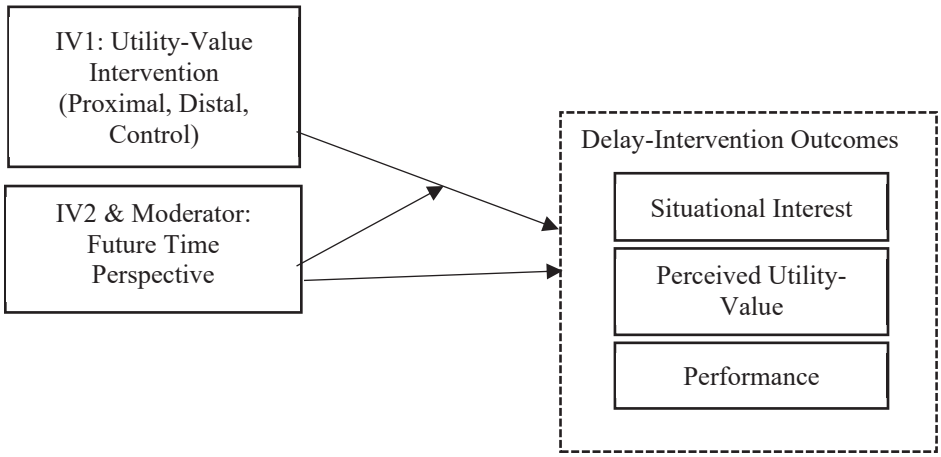
3) To what extent does future time perspective moderate the effect of the utility-value intervention on situational interest, perceived utility-value, and performance? See Figure 5.

Figure 5. Model for Moderation of Future Time Perspective on the Effects of the Utility-Value Intervention on Situational Interest, Perceived Utility-Value, and Performance.



4) To what extent do these effects persist 3 weeks post-intervention? See Figure 6.

Figure 6. Model for Effect of the Utility-Value Intervention and Effect and Moderation of Future Time Perspective on Delay-Intervention Situational Interest, Perceived Utility-Value, and Performance.



CHAPTER 3: METHOD

Design

A double-blind, randomized repeated measures design with a three-group between-subjects independent variable (proximal utility-value, distal utility-value, and control), a continuous moderator variable (future time perspective) was conducted. Dependent measures consisted of continuous measures of motivation (situational interest and perceived utility-value) and performance (N = 108) measured at baseline, post-intervention, and delay intervention.

Setting and Participants

The present addressed the growing need for utility-value intervention research with community college populations. This study took place in a diverse community college in the southwestern United States. This is a large, 2-year public institution with approximately 35,000 students and a large proportion of first-generation students who test into remedial math, writing, and reading. The ethnic distribution of this college is diverse, with 44% Caucasian, 25% Hispanic, 11% African American, 10% Asian, 2.5% Pacific Islander, and 1% Native American. Course completion rates average about 70% and the 3-year graduation rate is approximately 9%.

Of the one hundred eighty-four (184) consenting students, only one hundred ten (110) students who completed all performance and motivation measures at baseline and post-intervention and completed all three treatment interventions and were retained in the study. Two students were removed from the final sample because their performance and motivation scores were extreme outliers. The final participant count consisted of 34 (31%) male and 74 (68.5%) female students from three face-to-face sections (58) and two online sections (50) of introductory psychology in a large Southwestern community college. The study took place during the Fall 2017 (N = 54) and Fall 2018 (N = 54) semesters. Participants included 16 students under 18

years old, 59 students ranging from 18 to 23 years old, 49 students age 24 or older, and 2 of unknown age. Participants were 41.7% Caucasian, 20.4% Hispanic, 10.2% Asian American, 7.4% African American, 3.7% Hawaiian/Pacific Islander, 9.3% multi-ethnic, 1.9 Native American, and 5.6% other or unknown. First-generation college students whose parents had not completed a four-year degree comprised 54.6% of the sample. The majority of the participants were majoring in health care (33.3%) or a science/technology/engineering/math (STEM) field (23.1%), with the remaining students majoring in human services (13.0%), liberal arts/humanities (13.0%), business/management (4.0%), a two-year occupational field (2.8%), and 11.1% were undeclared or undecided.

Procedure

The study was conducted during regular class time, using out-of-class online assignments. Students were randomly assigned to one of three self-generated utility-value conditions: proximal, distal, and control. See Appendix A for a detailed account of the intervention timeline.

Pre-intervention

The research materials and activities used in this study were developed based on the course curriculum and student learning outcomes used to fulfill course requirements. All performance and motivation assessments included in the research study were already part of the course grade. Consent forms were distributed via the existing online course management system at the beginning of the semester and students gave their consent via the anonymous survey submission. To maintain anonymity, grades were based on completion of the survey and were set to automatically post once students had read, reviewed, and submitted the informed consent and demographic questionnaire activities. There was an additional consent/assent form for minor

students in the class in which they were further requested to submit their parent's consent in addition to their own. Because the course instructor was also the primary researcher, the informed consent responses were only accessible to the researcher until after final course grades were posted. Participant names were collected in the informed consent form only for the purposes of assigning students to either the intervention prompts or to the non-intervention prompts. Using Microsoft Excel's =RANDBETWEEN function, 3 random groups were generated. Students who consented to participate were randomly assigned to one of the three writing prompt groups (proximal, distal, or control). A student who consented to participate and was assigned to the proximal treatment group, completed three writing assignments, one per week, with all proximal utility-value prompts. Students who declined consent completed all three writing prompts (proximal, distal, and control), one each week for three weeks. The assignments were processed and programmed separately by a college staff member who was unfamiliar with the study and had no contact with the students in the study.

Students completed six demographic questions which included name, gender, ethnicity, age, major, and first-generation status (i.e., whether either parent had completed a bachelor's degree) for sample description purposes.

Baseline measures of situational interest, perceived utility-value, and future time perspective were administered online via the existing learning management system and programmed to automatically post a grade upon student submission. Baseline performance was measured with 30 multiple-choice items covering the first two chapters of the course. The assessment items were embedded within a 75-question exam. This exam consisted of thirty multiple-choice questions used for the study and an additional 45 questions from an additional question pool which were not part of the study.

Intervention

The intervention activities began after the administration of baseline motivation and performance measures. A series of written prompts for each condition (proximal UV, distal, UV, topic summary) were adopted from prior utility-value intervention studies (Acee & Weinstein, 2010; Canning & Harackiewicz, 2015; Hulleman et al., 2010; Wolters, 1998) and served as the intervention activities. Over a period of three weeks, students in each of the intervention groups answered one written prompt per week based on each student's random group assignment, for a total of three assignments. Each week, students were to select a course topic from an assigned chapter and answer their prompt. See Appendix B for the intervention writing prompts.

The proximal utility-value condition was intended to prompt students to generate connections with the course material with their short-term, immediate lives, whereas the distal utility-value aimed at generation connections with the course material to their long-term, future lives (more than 1 year away). Because in the future time perspective scale, Extension is the "amount of time contained within an individual's habitual time space, activities outside of a six-month time frame are perceived as far away" (Hilpert, Husman, Stum, Wonsik, Chung, & Duggan, 2012), the time period for this assignment was selected as more than a year, rather than more than six-months away.

In the first utility-value writing prompt students were to select a topic from an assigned chapter and to write a letter to a significant person explaining the relevance of the course to either their immediate (proximal) or future (distal) life. The second utility-value writing prompt encouraged students to select another course topic from an assigned chapter and generate rationales or reasons (either proximal or distal) for learning psychology and to stimulate their curiosity about their chosen topic. Acee and Weinstein (2010) previously utilized self-generated

written rationales for performing tasks with college students to successfully increase value for a task. Other research has also demonstrated that students have used help-seeking strategies to increase their motivation in a task (Wolters, 1998), so asking students to seek-help from their instructor regarding relevance for a task may stimulate their perceived value for the task. In the third utility-value writing prompt students selected one last course topic from an assigned chapter and to self-generate either proximal or distal utility-value by brainstorming the possible life or personal benefits and importance of learning the course material (Acee & Weinstein, 2010; Canning & Harackiewicz, 2015).

Topic summary condition (control). Students in the control group were prompted to select a course topic from an assigned chapter and to write a summary of the selected topic. There was no utility-value generation in this assignment. This assignment was intended as a control group to account for increases in knowledge and triggering effect of interest for the proximal and distal utility-value conditions (adapted from Hulleman & Harackiewicz, 2009; Hulleman et al., 2010).

Post-Intervention

To determine whether the distal and proximal value treatment groups performed better and experienced an increase in motivation as compared to the summary group, post-intervention motivation and performance measures were administered immediately upon completion of the last writing prompts. Motivation measures were administered via an online survey for regular course credit automatically posted upon submission. The second course exam covered the previous three chapters, served as the immediate post-intervention performance measure, and was also administered online. Thirty multiple-choice questions were used as the immediate post-

intervention performance measure and were added to another 45 questions from a question pool which were not included in the study to make a 75-question exam.

To determine whether students in the two utility-value intervention groups sustained predicted post-intervention gains in motivation and performance as compared to the control group, delay intervention measures were administered to all students about 3 weeks after the administration of the post-intervention measures. Motivation measures were administered via an online survey for regular course credit automatically posted upon submission. Delay intervention performance was measured by an online thirty-item multiple-choice course exam covering the previous three chapters and was added to another 45 questions from a question pool which were not included in the study to make a 75-question exam.

A counterbalancing procedure was administered to ensure that students in the control group were afforded the opportunity to benefit from the predicted treatment gains. Counterbalancing was administered immediately following the delay intervention measures. Students in the control group were instructed to apply the course content to their lives by answering a value-generation writing prompt prior to the last exam. In addition, all students in the course were offered the opportunity to re-take post-intervention and delay intervention performance assessments.

Students were informed through a debriefing assignment that the purpose of the study was to investigate the effect of distal and proximal utility-value on their motivation and performance in the class. This assignment also provided a brief review of research concepts previously covered in the research methods section of the course and it also reviewed the constructs of future time perspective, utility-value, and situational interest as they related to the class content and to the research study. Because the instructor did not know each student's group

assignment, students were informed how to determine their group assignment. Finally, all students were offered the opportunity to review for and re-take the post and delay assessment for a higher grade. This concluded the study.

Measures

Motivational measures included a five-item situational interest scale (α = .93) from Hulleman et al. (2010) and a five-item perceived utility-value scale (α = .88) from Canning & Harackiewicz (2015). Performance measures at baseline, post-intervention, and delay intervention were assessed 30-items included in each of three course exams. Future time perspective was measured using a revised 12-item scale adapted for this study (α = .719) developed by (Hilpert et al., 2012; Husman, et al., 2007; Husman & Shell, 2008). See Appendix C for measures.

Situational interest "is assumed to be transitory, environmentally activated, and context-specific. It is a kind of spontaneous interest that appears to fade as rapidly as it emerges, and is almost always place-specific" (Schraw & Lehman, 2001). A five-item scale was adopted from Hulleman et al. (2010) and administered at baseline (α = .835), post-intervention (α = .881), and delay intervention (α = .826) to measure situational interest (e.g., "I think what we are learning in this class is fascinating"). Students rated these items from 1 (*strongly disagree*) to 7 (*strongly agree*).

A five-item scale was adapted for this study from Canning and Harackiewicz (2015) which defined perceived utility-value as a measure of "students' perception of the usefulness or utility-value of the material," and used to measure baseline (α = .790), post-intervention (α = .840), and delay intervention (α = .776) perceived utility-value (e.g., "What I am learning in

psychology could be useful to me in daily life"). Students rated these items from 1 (*strongly disagree*) to 7 (*strongly agree*).

Baseline, post-intervention, and delay intervention performance was measured with three multiple choice 30-item course exams from introductory psychology course content. One exam was administered at each time period. Each exam covered different content based on the progression of the course through the material. Sample items included "A correlation between physical attractiveness and dating frequency of +0.60 would indicate that…" and "The capacity of a brain area to reorganize in response to damage is known as…"

Student's future time perspective was measured once at baseline using a modified version of the 14-item future time perspective subscale (FTPS) from the future time perspective scale (Hilpert et al., 2012) which contained the constructs of speed, extension, and connectedness.

Speed refers to the speed at which time seems to move. Activities seem to be closer but time is also manageable. If an individual is not future-oriented they will not be as able to organize their future activities and will perceive future as "rushing toward" them. Extension, also labeled "distance" (Hilpert et al., 2012), is the amount of time that is contained within an individual's habitual time space, activities outside of a six-month time frame are perceived as "far away." The more time that individuals feel they have, the lower their future time perspective. The less time that individuals feel they have, the higher their future time perspective. "Graduating from medical school within 7 years is perceived as much closer in time for student with long future time perspective than for student with a short future time perspective because psychological distance toward the same future goal is experienced differently" Simons et al. (2004). Extension of future time perspective and psychological distance toward self-set future are negatively correlated. The original scale from Husman and Shell (2008) required that 2

items were adjusted to fit the current time and context of scale administration. The scale was administered in September of the Fall 2017 and Fall 2018 semesters, therefore, items # 1 and #5 needed to be re-worded to reflect this time period. The item "August seems like a long way off" was reworded to "The beginning of next semester seems like a long way off." The item "May seems very near" was reworded to "the end of the semester seems very near." Connectedness is a cognitive aspect that represents plan fullness for the future, tendency to make connections between present activities and future goals and outcomes, and a general concern for future consequences.

Table 2. Zero-Order Correlations and Descriptive Statistics for Major Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	--											
2. First Generation	-.26	--										
3. Base Performance	-.07	-.21*	--									
4. Initial SI	.32**	-.10	.02	--								
5. Initial PUV	.39**	.10	-.14	.64**	--							
6. FTP	.11	.08	-.03	.09	.18	--						
7. Post Performance	-.04	-.14	.35**	.00	-.20*	.04	--					
8. Post SI	.33**	-.01	.16	.61**	.56**	.30**	-.01	--				
9. Post PUV	.19	.08	.02	.45**	.60**	.33**	.02	.67**	--			
10. Delay Performance	-.09	-.21*	.39**	.01	.07	.04	.61**	.01	.04	--		
11. Delay SI	.26**	-.10	.14	.59**	.52**	.22*	.06	.73**	.52**	-.05	--	
12. Delay PUV	.27**	.07	-.13	.46**	.56**	.22**	-.04	.51**	.59**	-.17	.66**	--
N	108	108	108	108	108	108	108	108	108	102	102	102
M	.69	.56	25.44	28.80	28.90	44.31	22.42	28.96	28.78	24.75	28.99	28.78
SD	.467	.499	3.430	4.767	4.083	5.477	4.795	4.708	4.320	4.013	4.036	4.147
Cronbach's α				.84	.80	.72		.89	.84		.83	.78

Note. Situational Interest (SI) and Perceived Utility-Value (PUV) scales had values ranging from 1 (low) to 7 (high), and performance from 1 to 30 problems, for gender 0 for males and 1 for females, and for first gen 0 continuing generation and 1 first generation. **. $p < 0.01$. *. $p < .05$.

Following an item analysis, reliability estimates, an exploratory factor analysis (EFA/CFA), and subscale intercorrelations on the data of 108 students, the 14-item sub-scale was reduced to 12 items. See Table 1 for zero-order correlations and descriptive statistics. Absence of multicollinearity among items as all item correlations (lower than .8), sampling adequacy using KMO above .5 (KMO = .619), and significant ($p < .001$) Bartlett's Test of Sphericity indicated that assumptions were met.

Principal axis factoring with oblim rotation was performed to identify factors underlying the future time perspective 14-item sub-scale. Initial eigenvalues indicated that a two-factor solution explained 35% of the variance and a three-factor solution explained 46% of the variance. The two-factor solution contained eight items related to a "procrastination" theme and the second factor contained five items related to a "setting future goals" theme. When comparing the two-factor solution to the three-factor solution, it was determined that the three-factor item grouping fit best with Husman and Shell's (2008) factor sub-scale structures of Extension/Distance (4 items), Connectedness (5 items), and Speed (3 items).

The suggested 2-factor 13-item solution produced a Cronbach's alpha of .641. The suggested 3-factor 12-item solution produced a Cronbach's alpha of .604. Both solutions omitted item 2 (The end of the semester is very near") and the 3-factor additionally omitted item 8 ("I don't like to plan for the future). Reliability analysis of the original 14-item future time perspective sub-scale produced an initial Cronbach's alpha of .618 which increased to Cronbach's alpha of .719 when items 1 ("In general, six months seems like a very short period of time") and 2 ("The end of the semester is very near") were removed. Further inspections on the extension subscale item content and factor loadings indicated that the modified 3-factor (extension/distance, connectedness, and speed), 12-item future time perspective scale would be

sound with items 1 and 2 excluded and would produce a Cronbach's alpha of .719 and explain 51% of the variance. See Appendix C for final future time perspective scale.

CHAPTER 4: RESULTS

One hundred eight (108) student participants were randomly assigned to one of three treatment conditions: proximal utility-value ($N = 36$), distal utility-value ($N = 36$), and control ($N = 36$). Zero-order correlations and descriptive statistics among measures are provided in Table 2.

Data Screening and Statistical Assumptions

Data were screened for missing data and outliers as well as for assumptions for multiple linear regression analyses.

One hundred eighty-four (184) students initially consented to participate in this study. Missing data analysis was conducted for all variables resulting in the removal of seventy-four (74) cases of which participants had not completed the baseline and post-intervention motivation and performance measures or the intervention written assignments. Of the 110 remaining students, six (6) were missing one or more delay assessment measures. These students were retained in the sample because their baseline and post-intervention measures and intervention written assignments were complete.

To test for univariate outliers, z-scores were created for each of the raw scores of the continuous independent and dependent variables to detect any values between $z = -.268$ and $z = +.268$. Several possible problematic data points were identified for most of the variables. Further, visual analysis of the boxplots based on the sample data confirmed that two participants (ID#'s 227 and 27) with recurring extreme data points across most variables were influencing the skewness of the sample. Two extreme multivariate outliers were detected using Mahalanobis distance at post-intervention in which critical values at post-intervention were 116.89, $p < .001$ and 12.56, $p < .01$ and at delay-intervention they were 20.93, $p < .001$ and 20.49, $p < .01$ (Tabachnick & Fidell, 2007, p. 74 & 99). These were the same cases detected in the initial

univariate outlier analysis. Upon further examination, these two students had a high initial situational interest and perceived utility-value and experienced a seemingly unreasonable and extreme drop in both variables after the intervention, which did not occur in the rest of the sample. To address extreme univariate and multivariate values, these two additional records were removed from the final sample. Finally, using Cook's Distance, no records were identified as having undue influence in the regression line as all values for all outcome variables were $D_i < 1$ (Tabachnick & Fidell, 2007, p. 75). The final sample for baseline assessments, intervention written assignments, and post-intervention assignments totaled 108 and for delay-intervention totaled 102.

Although the Shapiro-Wilk test for normality showed that the two motivation variables, the performance variable at all three time-measurements (baseline, post, and delay), and the future time perspective variable produced significant *p*-values (*p's* < = .001), all skewness and kurtosis scores were between -2 and +2, indicating that all the distributions met the normality assumption (George & Mallery, 2010).

Visual inspection of scatterplots of standardized residuals by the regression standardized predicted values of the predictor variables exhibited a random scatter around 0 with relatively even distribution, indicating that this assumption was met (Osborne & Waters, 2002). Standardized residuals for the three predictor variables with all outcome variables were all between +3 and -3.

Bivariate scatterplots were produced to test for the linearity. Visual inspection of bivariate scatterplots showed oval-shaped relationships indicating that the linearity assumption was met by all pairs of variables (Tabachnick & Fidell, 2007, p. 83).

Multicollinearity was tested using correlations between predictor variables. For all three predictor variables (FTP, Proximal UV, and Distal UV), tolerance was > .17 and VIF was < 6, thereby meeting the assumptions of absence of multicollinearity and independence (Fox, 1991; Keith, 2006, p. 201-202).

Manipulation Check

To assess whether the intervention was effective in prompting students in the two treatment conditions to generate utility-value, the number of proximal and distal personal connections to the course content were analyzed from the students' writing assignments. These connections represent the strength of the independent variable due to the success of the experimental condition or individual differences in utility-value self-generation. The writing assignments were divided into segments containing one idea or sentence and each segment was coded in the following ways: 1) for presence/absence of either proximal or distal utility-value in each of the conditions, 2) for number of connections to personal life in terms of first and/or second person pronouns, and 3) for presence or absence of novel examples generated by the respondent versus examples adopted by the respondent from some other source.

Operationalization of proximal and distal value conditions was adapted from Schechter et al. (2011, Study 2, p. 309). Proximal utility-value was defined as "the presence of a connection with short-term, immediate, present, for self or other." Presence of proximal value was coded with a 1 and absence was coded with a 0. Distal utility-value was defined as "the presence of a connection with long-term, future, more than 1 year away, for self or other." Presence of distal value was also coded with a 1 and absence was coded with a 0. Hulleman et al. (2010) utilized a rating method in which essays were coded from 1 to 3, the more points, the more application of utility-value (prior $\alpha = .72$ for Essay 1 and $\alpha = .82$ for Essay 2). However, in this study,

distinctions between proximal and distal utility-value were essential, so ratings were made separately for each type of utility-value. In addition, the extent to which participants connected material to their lives in particular was also assessed by counting the number of first-person pronouns (I, me, mine, us, our, ours) and second-person pronouns (you, your, yours) as performed in Hulleman et al. (2010) (α = .99 for Essay 1 and α = .95 for Essay 2).

Separating and Coding Segments

A total of 3432 segments were rated by an initial coder for proximal utility-value, distal utility-value, first-person, second-person, and example. Proximal utility-value was coded based whether there was a presence (1) or absence (0) of a connection with short-term, immediate, present for self or other. Distal utility-value was coded based on whether there was a presence (1) or absence (0) of a connection with long-term, future, (more than 1 year away) for self or other. The First-Person category was coded based on the number of connections to personal life via the use of pronouns such as I, me, mine, us, our, and ours. The second-person category was coded based on the number of second-person connections to persona life via the use of pronouns such as you, your, or yours. Finally, the example category was coded based on the presence (1) or absence (0) of a novel student-generated example rather than an example adopted from some other source such as the textbook, lecture, or other media.

Inter-Rater Reliability

To analyze inter-rater reliabilities, seven percent (7%) of segments (N = 252) were randomly selected for a second independent-rater coding. A second rater was selected and extensively trained in coding all categories prior to performing the independent coding. Rater reliabilities were analyzed using Cohens κ. Initial reliabilities for each of the coding categories indicated moderate agreement and as follows: Proximal UV, κ = .625, p = .000, Distal UV, κ =

.595, p = .000, First Person, κ = .680, p = .000), Second Person, κ = .496, p = .000, and Example, κ = .464, p = .000. Because all Kappa values resulted at less than κ = .70, the areas of disagreement from the initial coding were reviewed and separately re-coded after each rater reviewed operational definitions. Final Kappa values for second coding run increased agreement for all categories as follows: Proximal UV, κ = .850, p = .000, Distal UV, κ = 1.00, p = .000, First Person, κ = .951, p = .000, Second Person, κ = .959, p = 000, Example, κ = .924, p = .000.

Utility-Value Generation

To test whether students from the combined proximal and distal utility-value conditions generated significantly more utility-value overall in their writing assignments, the proximal value generation scale, distal value generation scale, and the example scale were standardized and averaged to create a composite score of the degree of utility-value that students wrote in their essays. Two extreme outliers with *z*-scores of 4.08 and 3.84 were removed from this analysis.

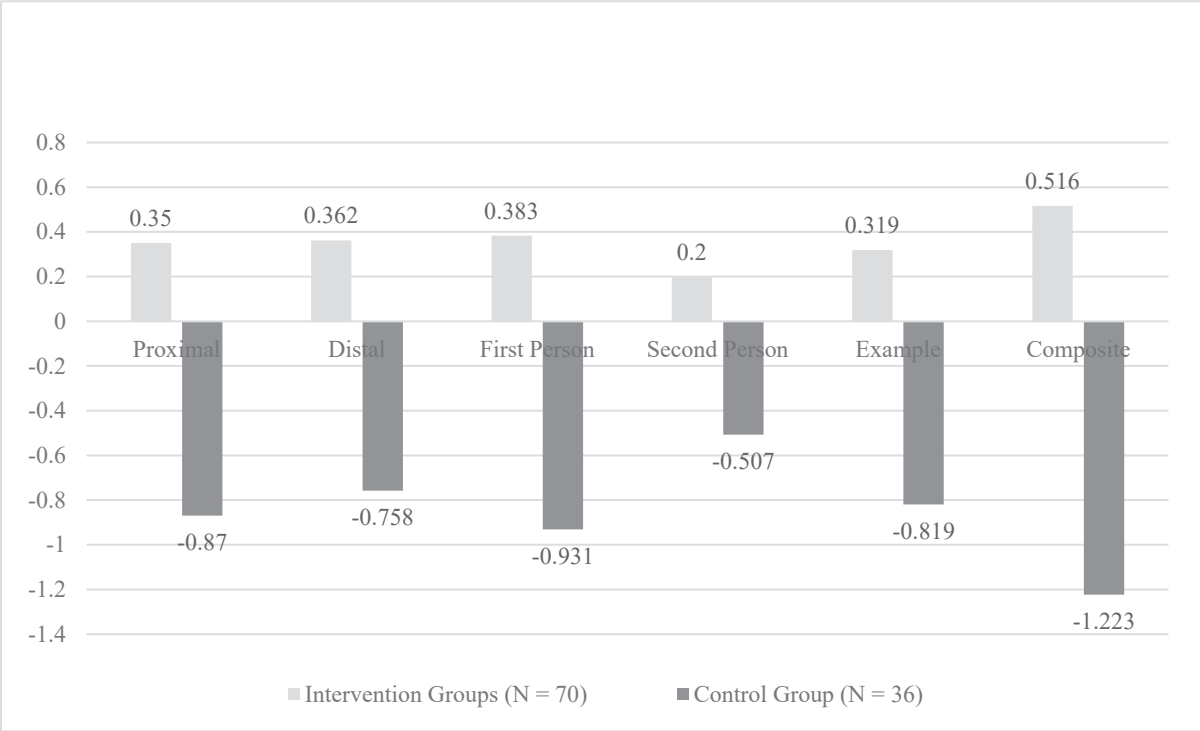
Proximal and distal composite scores were combined and compared with control composite scores. The intervention was successful in prompting students to generate more composite utility-value than students in the control group. To test this, an independent samples t-test was conducted with the combined proximal and distal intervention scores (N = 70) compared with scores in the control group (N = 36). The combined intervention groups (M = .516, SD = .800) generated significantly more composite utility-value as compared to students in the control group (M = -1.223, SD = .759), $t(104)$ = -10.782, $p < .001$. Results showed that students who received the intervention (proximal + distal) also generated more first person and second person connections as compared to the control group at the $p < .001$. See Table 3 and Figure 7 for *t*-Test results for all composite utility-value generated *z*-scores between treatment groups and control groups.

Table 3. *t*-Test for Composite Utility-Value Generated Between Treatment Groups and Control Group (*z*-scores)

	Intervention (N = 70)		Control (N = 36)		
Scale Generated	M	SD	M	SD	*t*-test
Proximal	.350	.668	-.870	.668	-8.980**
Distal	.362	1.021	-.758	.151	-6.529**
First Person	.383	.655	-.931	.567	-10.218**
Second Person	.200	.924	-.507	.785	-3.918**
Example	.319	.637	-.819	.795	-.799**
Composite	.516	.759	-1.223	.800	-10.782**

** $p < .001$

Figure 7: *t*-Test for Composite Utility-Value Generated Between Treatment Groups and Control Group (*z*-scores)



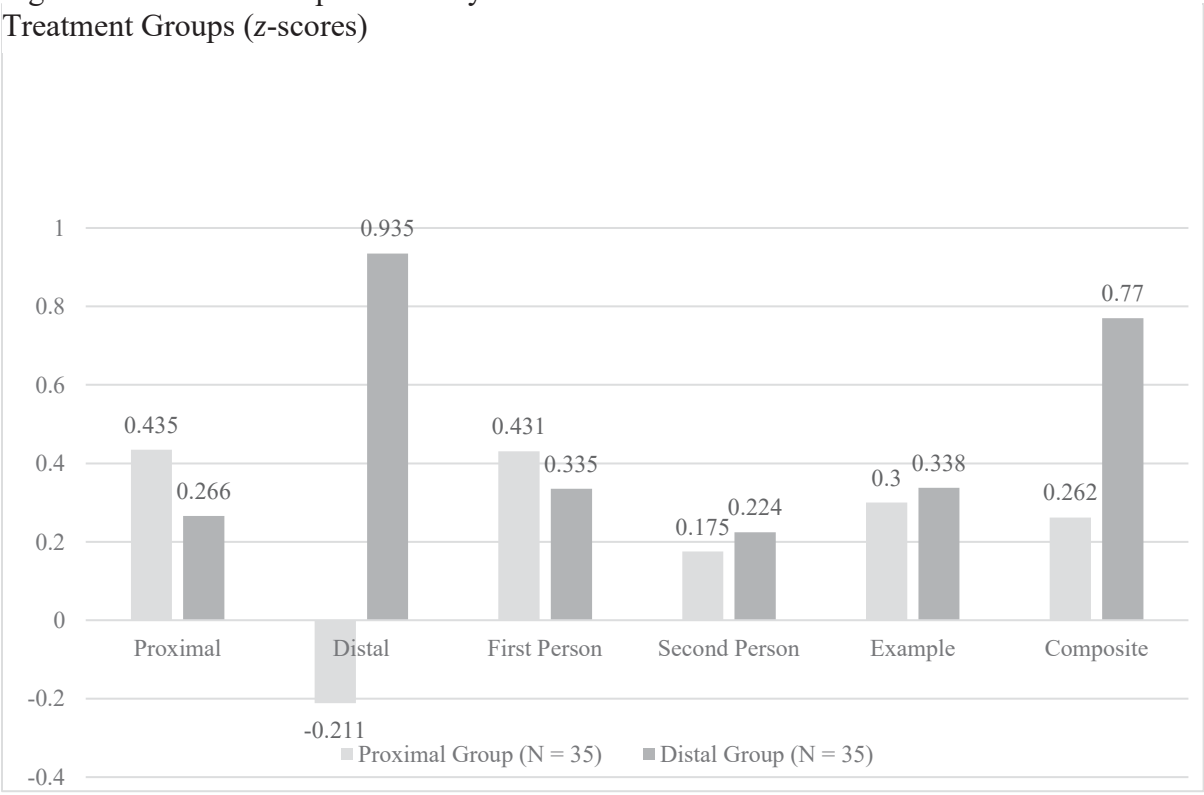
Proximal composite scores were compared with distal composite scores. To compare the effectiveness of the intervention between the two treatment groups, an independent samples *t*-test was performed between proximal (N=35) and distal (N = 35) intervention composite scores. Independent *t*-test scores for the composite utility-value generation showed that students in the distal utility-value condition (M = .770, SD = .860) generated significantly more composite utility-value than students in the proximal utility-value condition (M = .262, SD = .652), $t(68) = -2.782$, $p < .01$. See Table 4 and Figure 8 for *t*-Test results for all composite utility-value *z*-scores generated between proximal and distal treatment groups.

Table 4. *t-T*est for Composite Utility-Value Generated Between Proximal and Distal Treatment Groups (*z*-scores)

	Proximal ($N = 35$)		Distal ($N = 35$)		
Scale Generated	M	SD	M	SD	*t*-test
Proximal	.435	.583	.266	.742	1.058
Distal	-.211	.564	.935	1.059	-5.649**
First Person	.431	.548	.335	.751	.608
Second Person	.175	.917	.224	.944	-.217
Example	.300	.537	.338	.731	-.248
Composite	.262	.651	.770	.860	-2.782*

* $p < .01$, ** $p < .001$

Figure 8. *t*-Test for Composite Utility Value Generated Between Proximal and Distal Treatment Groups (*z*-scores)

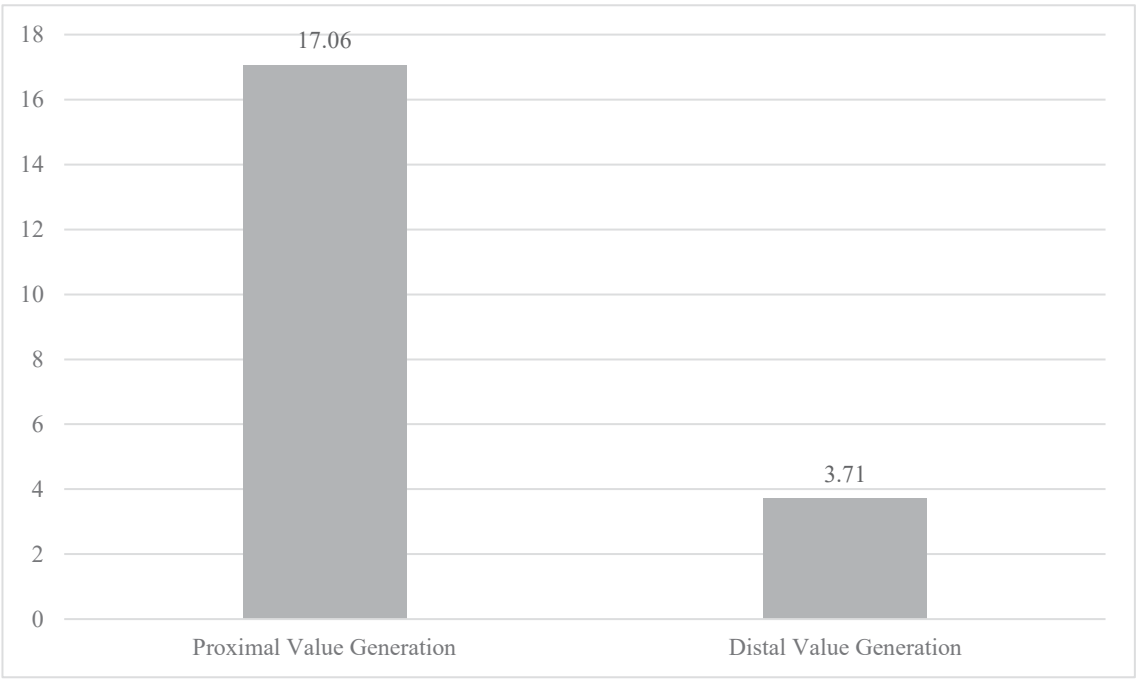


Distal raw scores were compared to proximal raw scores. One purpose of the intervention was to help students in each treatment condition (proximal, distal) generate more of the respective type of value of which they were prompted.

Results showed that proximal value students did not generate significantly more composite proximal value (M = .435, SD = .583) than composite distal value (M = .266, SD = .742), t (68) = 1.058, $p > .05$. However, students who received distal utility-value prompts did generate significantly more composite distal utility-value (M = .935, SD = 1.059) than composite proximal utility-value (M = .211, SD = .564).

No significant differences between the two treatment groups (proximal M = .431, SD = .548; distal M = .335, SD = .752) were found for first person generation, $t(68) = .608$, $p > .05$. There were also no significant differences found between the two treatment groups (proximal M = .175, SD = .918, distal M = .224, SD = .944)) for second person generation, $t(68) = -.217$, $p > .05$. See Figure 9 for overall raw average scores of proximal and distal value generation regardless of treatment condition.

Figure 9. Paired Sample *t*-Test for Overall Raw Average Scores of Proximal and Distal Value Generation Regardless of Treatment Condition ($N = 72$)

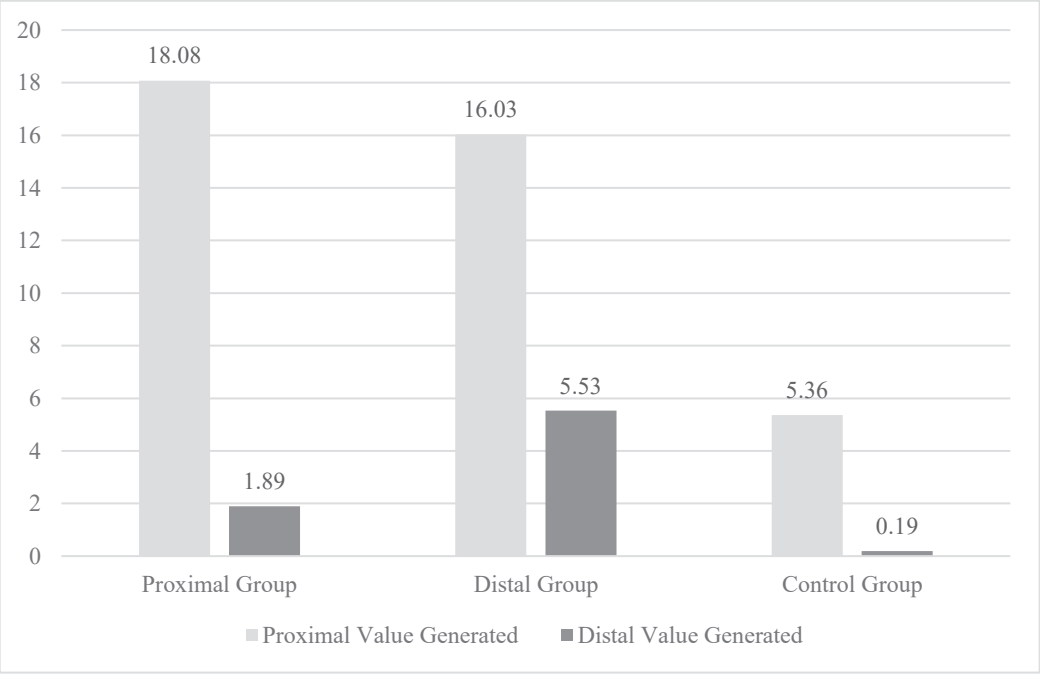


Distal, proximal, and control utility-value generation raw scores were compared to each other. This study demonstrated that community college students struggle to generate distal value, but not raw proximal value. The following paired samples *t*-test with raw scores of proximal utility-value generation and distal utility-value generation shows that students generated significantly less distal utility-value ($M = 3.71$, $SD = 3.192$) than proximal utility-value ($M = 17.06$, $SD = 7.7.632$) regardless of treatment condition $t(71) = 13.365$, $p > .001$. This is the sample of 72 students who were prompted to generate proximal or distal value and as a group generated an average of 17 instances of proximal value (immediate) but only an average of 3.7

instances of distal value. See Figure 9 for overall raw average scores of value generation regardless of treatment condition.

An ANOVA analysis shows that students who were prompted to generate proximal value were able to do so (M = 18.08, SD 8.030) but students who were asked to generate distal value struggled to do so (M = 5.53, SD = 3.282). Furthermore, students who were prompted to generate proximal value did not generate distal value (M = 1.89, SD 1.720) but students who were prompted to generate distal value still were able to generate almost as much proximal value (M = 16.03, SD = 7.177) even though they were not asked to do so. Another interesting observation was for the control group. Students in the control group were not asked to generate any utility-value, however, without being prompted, they naturally generated some proximal value (M = 5.36, SD = 5.837) but did not naturally generate distal value (M = .19, SD = .467). These results suggest that students naturally relate course material to their immediate life but not necessarily to their future life, even if asked to do so. See Figure 10 for analysis of variance of raw scores of intervention groups vs. type of value generated.

Figure 10. Analysis of Variance of Raw Scores of Treatment Group vs. Type of Value Generated



Preliminary Analyses

Preliminary analyses were conducted to determine whether there were any significant baseline difference prior to analyzing the main effects and interactions to identify potential covariates. *T*-tests and Analyses of Variance were conducted to test for pre-treatment differences in course delivery, gender, first generation status, and treatment condition.

Course Delivery

This research study assessed college students from both online and face-to-face courses over the course of two semesters in an effort to improve sample size and attain sufficient statistical power. To minimize potential outcome differences between online and face-to-face students, the content of both classes was similar, the textbook for both classes was the same, and the course assignments and exams were identical in content and administration (online).

Further attempts to control for extraneous variables were performed. First, inherent individual differences may have already existed between students who self-selected into an online or into a face-to-face course. To reduce these differences, all students were randomly assigned to one of the three utility-value conditions within each course section. Second, online students may have been generally more knowledgeable about online environments and may have also had more experience within online environments as compared to face-to-face students. Therefore, all activities and assignments for face-to-face students were also assigned online. This assisted face-to-face students to be able to successfully navigate the online environment. Lastly, students were randomly assigned to one of the three utility-value conditions within each course section, which increased the possibility of students having different treatment condition instructions within one course. There is naturally more inherent student interaction within face-to-face courses than within online courses. Because of this increased contact and physical

proximity, there was the potential for face-to-face students to inadvertently reveal the differences between intervention writing assignments to their classmates or by asking out-loud in class, thereby increasing the chances of guessing the purpose of the study. To reduce the likelihood that face-to-face students may discover differences between the three utility-value groups, the instructor refrained from discussing the details of the utility-value assignments in the face-to-face class and asked students to ask any questions about these assignments via email only.

Preliminary analyses were conducted for situational interest, perceived utility-value, and performance to identify potential baseline differences between the online and face-to-face groups. No significant baseline differences between face-to-face and online students were found for situational interest $t(106) = .194$, $p > .05$, perceived utility-value, $t(106) = -1.575$, $p > .05$, or performance, $t(106) = .124$, $p > .05$.

Gender

T-tests detected significant baseline gender differences for situational interest and perceived utility-value. Females scored significantly higher ($M = 29.824$, $SD = 3.787$) than males ($M = 26.559$, $SD = 5.868$) in situational interest, $t(106)$ -3.473 $p < .01$, and females also scored significantly higher ($M = 29.960$, $SD = 3.563$) than males ($M = 26.588$, $SD = 4.236$) in perceived utility-value, $t(106)$ -4.298, $p < .001$. No significant baseline differences in performance were found between females ($M = 25.28$, $SD = 3.548$) and males ($M = 25.79$, $SD = 3.179$).

First Generation Status

Continuing generation students ($M = 26.28$, $SD = 2.473$) scored significantly higher than first generation students ($M = 24.90$, $SD = 3.726$) for performance, $t(104) = 2.181$, $p < .05$, but there were no significant differences between continuing generation ($M = 29.340$, $SD = 4.405$)

and first generation (M = 28.356, SD = 5.095) students in situational interest or between continuing generation (M = 28.383, SD = 4.301) and first generation (M = 29.203, SD = 3.890) students in perceived utility-value.

Treatment Condition

No significant baseline differences for situational interest, perceived utility-value, or performance were present between treatment conditions (proximal utility-value, distal utility-value, control). See Table 5 for means and standard deviations for outcomes by time and treatment condition.

Table 5. Means and Standard Deviations for Situational Interest, Perceived Utility-Value, and Performance by Time and Treatment Condition

		Baseline		Post		Post	
Dependent Variables	Treatment	Mean	SD	Mean	SD	Mean	SD
Situational Interest							
	Proximal	29.03	(4.81)	29.53	(3.91)	29.68	(3.87)
	Distal	28.00	(5.08)	28.64	(5.49)	27.91	(4.52)
	Control	29.36	(4.42)	28.72	(4.68)	29.42	(3.51)
	Total	28.80	(4.77)	28.96	(4.71)	28.99	(4.04)
Perceived Utility-Value							
	Proximal	28.92	(3.95)	28.97	(3.87)	29.15	(4.16)
	Distal	29.03	(4.37)	28.56	(4.33)	27.97	(3.82)
	Control	28.75	(4.03)	28.81	(4.82)	29.27	(4.46)
	Total	28.90	(4.08)	28.78	(4.32)	28.78	(4.15)
Performance							
	Proximal	25.03	(3.78)	22.58	(4.51)	24.44	(4.11)
	Distal	25.42	(3.43)	22.64	(4.50)	24.09	(4.14)
	Control	25.89	(3.09)	22.03	(5.42)	25.79	(3.68)
	Total	25.44	(3.43)	22.42	(4.80)	24.75	(4.01)

Interaction Effects

Analyses of variance (ANOVA) analyses were conducted to test baseline interaction effects between *intervention group* × *gender*, *intervention group* × *first generation status*, and *intervention group* × *course delivery* and produced no significant interaction effects for any of the dependent variables. However, gender main effects persisted for situational interest,

$F(1,108) = 11.768$, $p > .01$, and perceived utility-value, $F(1, 108), = 17.853$, $p > .001$, and first-generation status main effects also persisted for performance $F(1, 106) = 42.482$, $p > .05$.

Conclusion

Because of the baseline performance differences, first generation status was entered as a covariate (Step 1 in hierarchical regression) for the performance analyses and gender was entered as a covariate (Step 1 in hierarchical regression) for both, situational interest and perceived utility-value.

Analytic Approach

The data were analyzed using hierarchical multiple regression for each of the dependent variables (situational interest, perceived utility-value, and performance).

Hypotheses

A main effect for the utility value intervention was predicted for situational interest (H1a), perceived utility-value (H1b), and performance (H1c). Students in the treatment groups (proximal utility-value and distal utility-value) were predicted to score higher in all three outcomes than students in the control group.

A main effect for future time perspective was predicted for situational interest (H2a), perceived utility-value (H2b), and performance (H2c). Students with longer future time perspective were predicted to score higher in all three outcomes than students with shorter future time perspective.

An interaction effect between the utility-value intervention and future time perspective was proposed for situational interest (H3a), perceived utility-value (H3b), and performance (H3c) at post-intervention. Future time perspective was expected to moderate the effects of the interaction. Specifically, students with long future time perspective were predicted to score

significantly higher in situational interest (H3a), perceived utility-value (H3b), and performance (H3c) if they were prompted with either proximal or distal utility-value. Students with short future time perspective were predicted to score significantly higher in situational interest (H3a), perceived utility-value (H3b), and performance if they were prompted with proximal utility-value, but were predicted to score significantly lower if they were prompted with distal utility-value.

At delay intervention a main effect (utility-value intervention) and an interaction (utility-value intervention x future time perspective) were predicted for situational interest (H4a), perceived utility-value (H4b), and performance (H4c). At three-weeks after the intervention, the intervention gains were predicted to decline for all intervention groups (proximal, distal, control) from post-intervention levels. The sharpest declines were predicted for students in the distal utility-value condition who had shorter future time perspective whereas students who generated distal utility-value but had longer future time perspective, were expected to better maintain their gains in interest.

Dummy Coding

Prior to conducting the regression analysis, dummy codes were created for the treatment variable and interaction terms were created. The utility-value treatment variable was assigned dummy codes to allow for the analyses of main effect of the treatment and of the interactions between the categorical predictors (treatment group) and the continuous predictor (future time perspective) and to determine whether these interactions affected the predicted variables (situational interest, perceived utility-value, and performance). With three groups of treatment (proximal, distal, control), two dummy variables (k-1) were created and assigned the codes 0 and 1. For the proximal dummy variable, participants in the proximal treatment condition were coded

"1" and all others were coded "0." In the distal dummy variable, participants in the distal treatment condition were coded "1" and all others were coded "0." The reference category for dummy coding selected was the control group. All inferences will be referring back to control group.

Interaction terms

Prior to creating the interaction terms, the continuous independent variable was standardized (centered) to avoid multicollinearity. Then, two interaction terms were created by multiplying the proximal dummy variable by the centered future time perspective and the distal dummy variable by the centered future time perspective variable.

Regression

A hierarchical multiple regression was conducted to test the effects of each of the predictor variables on situational interest, perceived utility-value, and performance at post-intervention. Although there were no significant baseline differences in situational interest, perceived utility-value, or performance, there were significant baseline differences in first generation status for performance and significant baseline gender differences for situational interest and perceived utility-value. So, first generation status was entered in the first step for performance and gender was entered in the first step for situational interest and perceived utility-value. The second step consisted of the centered future time perspective (FTP) variable, as well as the distal and proximal dummy terms. Step 3 contained the centered *future time perspective* × *distal* interaction and the centered *future time perspective* × *proximal interaction terms* to test whether the intervention functioned differently for individuals with low and high levels of future time perspective. Descriptive statistics for major variables are presented in Table 6.

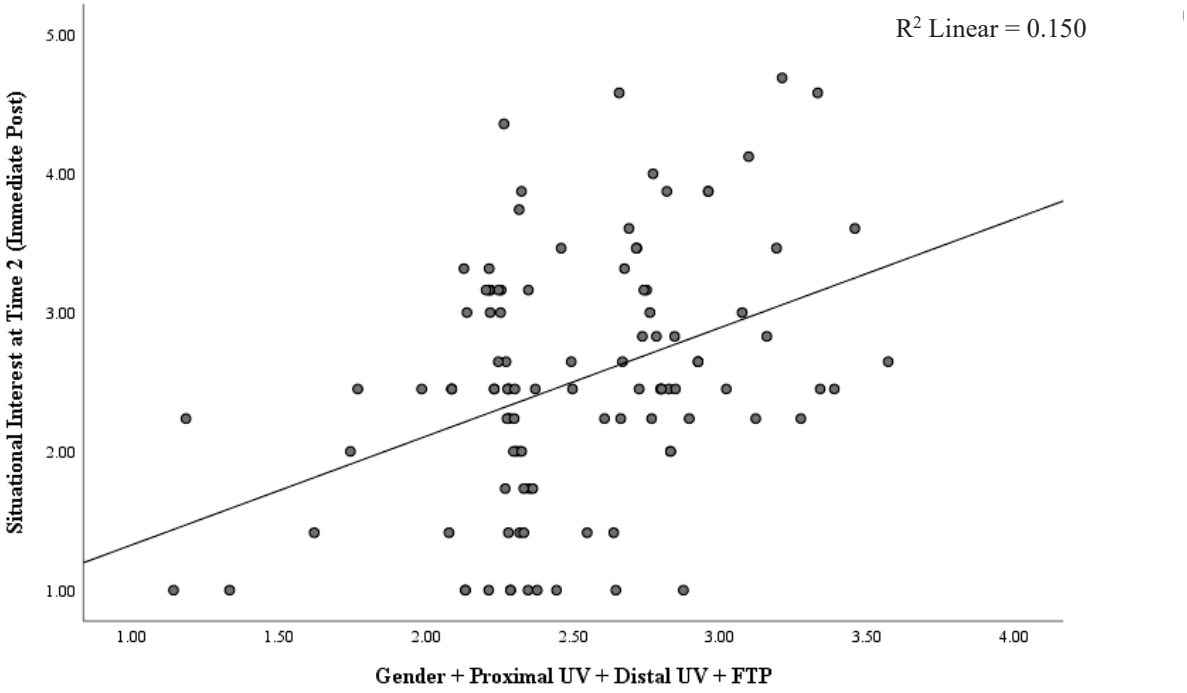
Table 6. Descriptive Statistics of Major Variables

	N	Min.	Max.	*M*	*SD*
Future Time Perspective	108	34	60	44.31	5.48
Baseline Performance	108	14	30	25.44	3.43
Post-Performance	108	6	29	22.42	4.80
Delay-Performance	102	14	30	24.75	4.01
Baseline SI	108	14	35	28.80	4.77
Post SI	108	14	35	28.97	4.71
Delay SI	102	15	35	29.00	4.04
Baseline PUV	108	17	35	28.90	4.09
Post PUV	108	14	35	28.78	4.32
Delay PUV	102	15	35	28.78	4.15

Note: SI: Situational Interest, PUV: Perceived Utility-value

The overall model accounted for a significant portion of the variance in post-intervention situational interest $F(6,101) = 4.982$, $p < .001$, $R^2 = .228$. A Post hoc power analysis was conducted using GPower 3.1.9.2 (Faul, Erdfelder, Buchner, & Lang, 2009) which indicated that there was adequate power to detect a moderate effect size ($f^2 = 0.30$) at the .05 level at .993 for the overall regression in the prediction of situational interest at post-intervention (Selya, Rose, Dierker, Hedeker, & Mermelstein, 2012) . See Figure 11 for overall model regression line.

Figure 11. Overall Model Regression Line for Post-Intervention Situational Interest



Gender was a significant predictor of post-intervention situational interest $F(1,106) = 13.018$, $p < .001$, $R^2 = .109$. Statistical power to detect a small effect size ($f^2 = 0.12$) at Step 1 with an alpha of .05 was .951. Female students had higher interest ($M = 30.014$, $SD = 3.758$) than male students ($M = 26.677$, $SD = 5.725$), $\beta = .331$, $t(106) = 3.608$, $p < .001$, $pr^2 = .110$. Gender accounted for 11.0% of the variance of situational interest immediately after the intervention.

Hypotheses 1a and 2a predicted a treatment and future time perspective main effects for situational interest. After controlling for gender, treatment and future time perspective together

accounted for an additional 8.5% of the variance of post-intervention situational interest, $\Delta F(3, 103) = 3.605$, $p < .05$, $\Delta R^2 = .085$. Statistical power to detect a small effect size ($f^2 = .093$) with an alpha of .05 was nearly acceptable at .744. The treatment did not significantly account for unique variance in situational interest. Neither proximal prompts, $\beta = .105$, $t(103) = 1.030$, $p > .05$, $pr^2 = .008$ nor distal prompts $\beta = -.009$, $t(103) = -.086$, $p > .05$, $pr^2 = .00006$ significantly accounted for unique variance in situational interest at post-intervention, failing to support Hypothesis 1a for situational interest.

After controlling for gender, future time perspective was a significant predictor for situational interest at post-intervention, $\beta = -.283$, $t(103) = -3.160$, $p < .01$, $pr^2 = .078$. Future time perspective accounted for 7.8% of the variance over and above gender. Students with shorter future time perspective were significantly more interested in the course immediately after the intervention than students with longer future time perspective. This result contradicted Hypothesis 2a which predicted that students with longer future time perspective would be more interested in the course after the intervention despite the treatment group because they would be better able to relate the course to their long-term future.

Hypothesis 3a predicted a significant *treatment x future time perspective* post-intervention interaction on situational interest. The *treatment* × *future time perspective* interaction on situational interest at post-intervention was not significant, $\Delta F(2, 101) = 2.249$, $p > .05$, $\Delta R^2 = .034$. Statistical power to detect a small effect size ($f^2 = 0.035$) at alpha of .05 was inadequate at .385, failing to support Hypothesis 3a. The utility-value intervention did not have significant differential effects in situational interest for students with longer future time perspective as compared to students with shorter future time perspective. See Table 7 for hierarchical regression results for situational interest at post intervention.

Table 7. Results of Hierarchical Regression Analyses for Situational Interest at Post-Intervention

Variables	β	*t*	*p*	*R*	R^2	Δ R^2	Δ *F*	Sig. *F*
Step 1- Covariate				.331	.109	.109	13.018	.000
Gender	.331	3.608	.000					
Step 2 – Independent Variables				.440	.194	.085	3.605	.016
Proximal	.105	1.030	.306					
Distal	-.009	-.086	.932					
FTP	-.283	-3.160	.002					
Step 3 – Interactions				.478	.228	.034	2.249	.111
Proximal × FTP	.089	1.741	.085					
Distal × FTP	-.014	-.128	.898					
Overall Model *					.228	.183	4.982	.001

*Overall model $F(6,101) = 4.982$, $p < .001$, $R^2 = .228$.

Hypothesis 4a predicted that at three weeks after the intervention, situational interest would decline for all intervention groups (proximal, distal, control) with the sharpest decline for the distal value intervention group with shorter future time perspective. The proximal utility-value group with short and long future time perspective and the distal value with longer future time perspective group were predicted to be better able to sustain post-intervention levels of situational interest. After accounting for gender, baseline situational interest, and post-intervention situational interest, Model 2 containing the intervention variables did not predict a significant amount of additional variance in delay situational interest, $\Delta F(3, 95) = 2.140$, $p > .05$,

ΔR^2 = .027. However, the coefficient for distal utility-value treatment was significant, β = -.157, $t(95)$ = -2.079, $p < .05$, pr^2 = .018. The distal utility-value intervention group scored significantly lower in situational interest (M = 27.91, SD = 4.52) than the control group (M = 29.42, SD = 3.51) and the proximal group (M = 29.68, SD = 3.87) at delay intervention suggesting that students who received delay utility-value prompts did not hold their situational interest scores as well as students who received proximal value prompts or students who summarized chapter content. However, statistical power to detect a small effect size (f^2 = .028) with an alpha of .05 was inadequate at .253. This result partially supported Hypothesis 4a in that students who generated distal value experienced a decrease in situational interest thus the other intervention groups did not experience a significant drop in situational interest. See Table 8 for hierarchical regression results for situational interest at delay intervention.

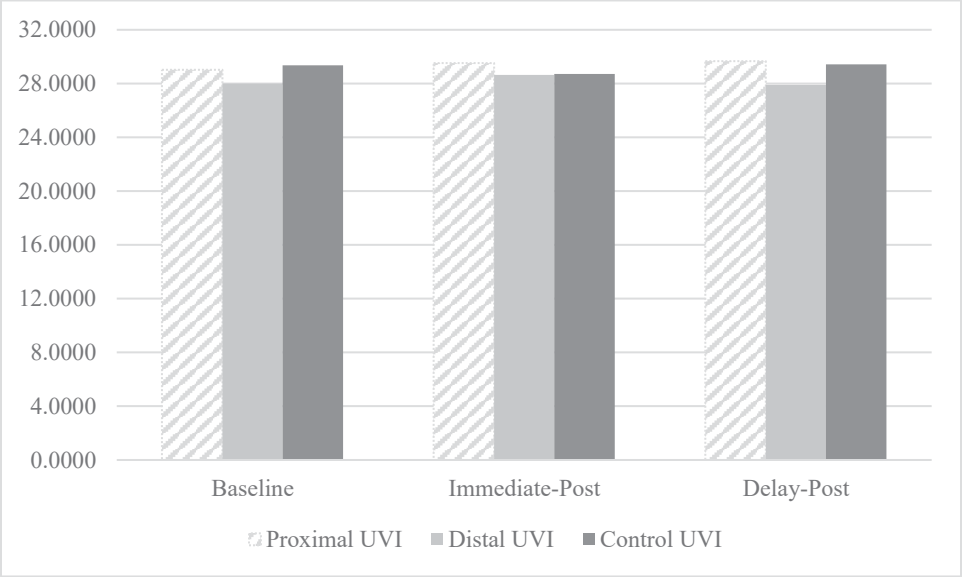
No significant *treatment x future time* perspective interaction was present at delay intervention for situational interest failing to support 4a. See Figure 12 for the means for situational interest by treatment condition.

Table 8. Results of Hierarchical Regression Analyses for Situational Interest at Delay Intervention

Variables	β	*t*	*p*	*R*	R^2	Δ R^2	Δ *F*	Sig. *F*
Step 1- Covariate				.762	.580	.580	45.167	.000
Gender	.027	.387	.700					
Situational Interest Time 1	.254	3.189	.002					
Situational Interest Time 2	.579	7.151	.000					
Step 2 – Independent Variables				.779	.607	.027	2.140	.100
Proximal	.003	.034	.973					
Distal	-.157	-2.079	.040					
FTP	-.061	-.902	.369					
Step 3 – Interactions				.784	.614	.007	.897	.411
Proximal × FTP	.022	.226	.821					
Distal × FTP	-.097	-1.018	.311					
Overall Model *					.614	.007	18.516	.00

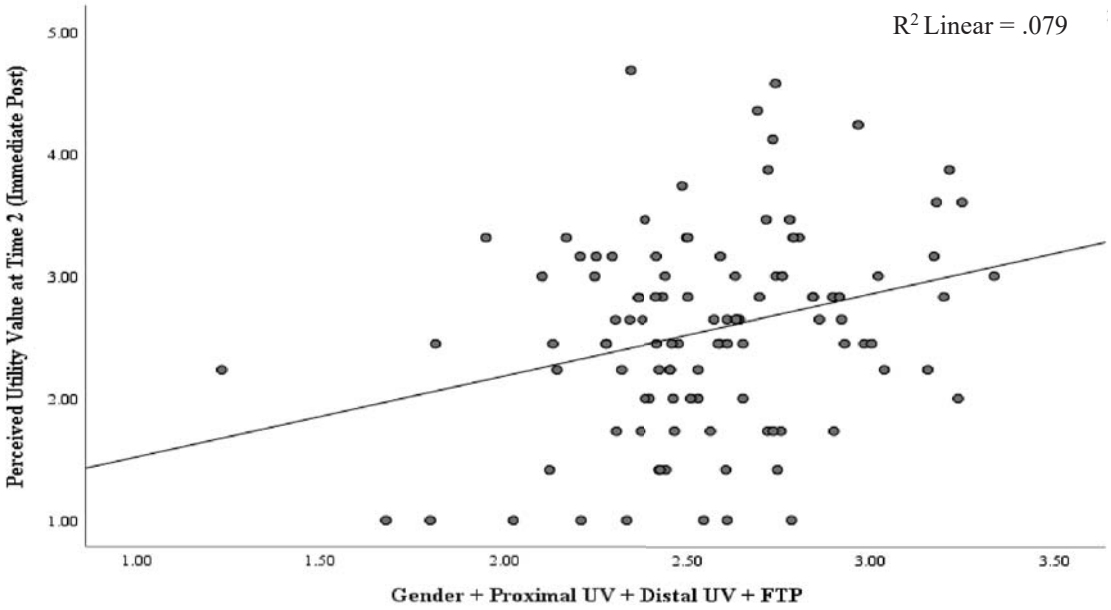
*Overall model $F(8, 93) = 18.516$, $p < .001$, $R^2 = .614$

Figure 12. Means for Situational Interest by Treatment Condition



The overall model accounted for a significant portion of the variance in post-intervention perceived utility-value $F(6,101) = 3.049$, $p < .01$, $R^2 = .153$. Statistical power to detect a moderate effect size ($f^2 = 0.182$) at alpha .05 was .918. See Figure 13 for overall model regression line.

Figure 13. Overall Model Regression Line for Post-Intervention Perceived Utility-Value



Gender was not a significant predictor of post-intervention perceived utility-value $F(1,106) = 3.863$, $p > .05$, $R^2 = .035$. Statistical power to detect a small effect size ($f^2 = .036$) at alpha of .05 was .498, showing inadequate power for this calculation.

Hypothesis 1b and 1c predicted a treatment and future time perspective main effect for perceived utility-value. After controlling for gender (not significant), treatment and future time perspective together accounted for an additional 10.0% of the variance of post-intervention perceived utility-value, $\Delta F(3, 103) = 3.940$, $p < .05$, $\Delta R^2 = .099$. Statistical power to detect a small effect size ($f^2 = 0.110$) at alpha .05 was .821. However, the treatment did not significantly account for unique variance in perceived utility-value. Neither the proximal prompt, $\beta = .046$, $t(103) = .430$, $p > .05$, $pr^2 = .0015$ nor the distal prompt $\beta = -.033$, $t(103) = -.312$, $p > .05$, $pr^2 =$

.0008 significantly accounted for unique variance in perceived utility-value at post-intervention, failing to support Hypothesis 1b for perceived utility-value.

After controlling for gender (not significant), future time perspective was a significant predictor for perceived utility-value at post-intervention, $\beta = -.317$, $t(103) = -3.417$, $p < .01$, $pr^2 = .098$. It accounted for 9.8% of the variance over and above gender. Students with shorter future time perspective perceived the course as more useful immediately after the intervention than students with longer future time perspective. This result contradicted Hypothesis 2b which predicted that students with longer future time perspective would perceive more utility-value in the course after the intervention despite the treatment group because they would be better able to relate the course to their long-term future.

Hypothesis 3b predicted a significant *treatment x future time perspective* interaction on perceived utility-value. The *treatment* × *future time perspective* interaction on perceived utility-value at post-intervention was not significant, $\Delta F(2, 101) = 1.125$, $p > .05$, $\Delta R^2 = .019$. Statistical power to detect small effect size ($f^2 = 0.019$) at alpha .05 was inadequate at .224, failing to support Hypothesis 3b. The utility-value intervention did not have significant differential effects in perceived utility-value for students with longer future time perspective as compared to students with shorter future time perspective. See Table 9 for hierarchical regression results for perceived utility-value at post intervention.

Table 9. Results of Hierarchical Regression Analyses for Perceived Utility-Value at Post-Intervention

Variables	β	*T*	*p*	*R*	R^2	Δ R^2	Δ *F*	Sig. *F*
Step 1- Covariate				.188	.035	.035	3.86	.052
Gender	.188	1.966	.052					
Step 2 – Independent Variables				.367	.135	.099	3.94	.010
Proximal	.046	.430	.668					
Distal	-.033	-.312	.756					
FTP	-.317	-3.417	.001					
Step 3 – Interactions				.392	.153	.019	1.125	.329
Proximal × FTP	.184	1.399	.165					
Distal × FTP	.036	.266	.790					

*Overall model $F(6,101) = 3.049$, $p = .009$, $R^2 = .153$.

Hypothesis 4b predicted that at 3 weeks after the intervention, perceived utility-value would decline for all intervention groups (proximal, distal, control) with the sharpest decline for the distal value intervention group with shorter future time perspective. The proximal utility-value group with short and long future time perspective and the distal value with longer future time perspective group were expected to be better able to sustain post-intervention levels of perceived utility-value. After accounting for gender (not significant), baseline perceived utility-value, and post-intervention perceived utility-value, Model 2 containing the intervention variables did not predict a significant amount of additional variance in delay perceived utility-value, $\Delta F(3, 95) = 1.098$, $p > .05$, $\Delta R^2 = .020$ failing to support Hypothesis 4b for perceived utility-value. Statistical power to detect a small effect size ($f^2 = .020$) with an alpha of .05 was

inadequate at .189. See Table 10 for hierarchical regression results for perceived utility-value at delay intervention.

Table 10. Results of Hierarchical Regression Analyses for Perceived Utility-Value at Delay Intervention

Variables	β	*T*	*p*	*R*	R^2	Δ R^2	Δ *F*	Sig. *F*
Step 1- Covariate				.646	.417	.417	23.393	.000
Gender	.104	1.272	.206					
Perceived UV Time 1	.282	2.756	.007					
Perceived UV Time 2	.393	4.005	.000					
Step 2 – Independent Variables				.661	.437	.020	1.098	.354
Proximal	-.030	-.337	.737					
Distal	-.147	-1.638	.105					
FTP	-.056	-.689	.493					
Step 3 – Interactions				.664	.441	.004	.358	.700
Proximal × FTP	.090	.802	.424					
Distal × FTP	.075	.645	.521					
Step 4 -								

*Overall model $F(8, 93) = 9.175$, $p < .001$, $R^2 = .441$.

Delay Intervention Interaction. No significant *treatment x future time* perspective interaction was present at delay intervention for perceived utility-value failing to support Hypothesis 4b. See Figure 15 for the means for perceived utility-value by treatment condition.

Figure 14. Overall Model Regression Line for Post-Intervention Performance

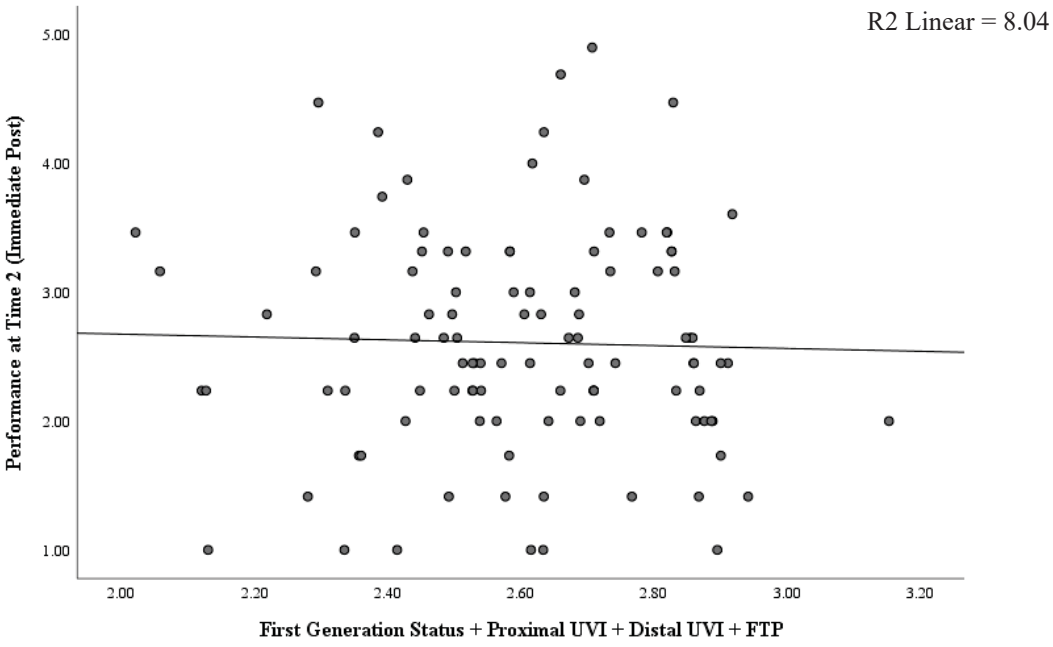
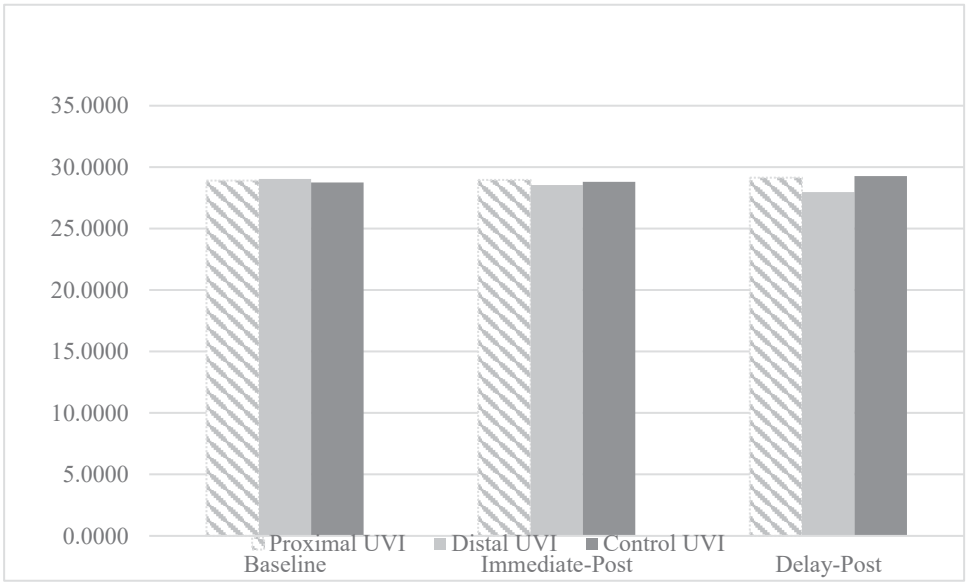


Figure 15. Means for Perceived Utility Value by Treatment Condition



The overall model was not a significant predictor of performance $F(6, 99) = .948$, $p > .05$, $R^2 = .054$. Statistical power needed to detect a small effect size ($f^2 = 0.056$) with an alpha of .05 was inadequate at .375. See Figure 14 for overall model regression line.

Post Intervention Main Effect. After controlling for first generation status, which was not significant, treatment and future time perspective were not significant predictors of post-intervention performance. Hypothesis 1c and 2c predicted a treatment and future time perspective main effect for performance which were not supported.

Post Intervention Interaction. No significant *treatment x future time* perspective interaction was present at delay intervention for performance failing to support Hypothesis 3c. See Table 11 for hierarchical regression results for performance at post intervention.

Table 11. Results of Hierarchical Regression Analyses for Performance at Post-Intervention

Variables	β	*T*	*p*	*R*	R^2	Δ R^2	Δ *F*	Sig. *F*
Step 1- Covariate				.142	.020	.020	2.149	.146
First Generation Status	-.142	-1.466	.146					
Step 2 – Independent Variables				.174	.030	.010	.352	.788
Proximal	.105	.917	.361					
Distal	.072	.642	.522					
FTP	-.045	-.454	.651					
Step 3 – Interactions				.233	.054	.024	1.254	.290
Proximal × FTP	.089	.643	.521					
Distal × FTP	-.131	-.914	.363					

Overall model $F(6,99) = .948$, $p > .05$, $R^2 = .054$

Hypothesis 4c predicted that at 3 weeks after the intervention, performance would decline for all intervention groups (proximal, distal, control) with the sharpest decline for the distal value intervention group with shorter future time perspective. The proximal utility-value group with short and long future time perspective and the distal value with longer future time perspective group were expected to be better able to sustain post-intervention levels of performance. After accounting for first-generation status (not significant), baseline performance, and post-intervention performance, Model 2 containing the intervention variables did not predict a significant amount of additional variance in delay performance, $\Delta F(3, 93) = 1.648$, $p > .05$, $\Delta R^2 = .031$. However, the coefficient for distal utility-value treatment was significant, $\beta = -.205$, $t(93) = -2.201$, $p < .05$, $pr^2 = .030$. The distal utility-value intervention group scored significantly lower in performance ($M = 27.97$, $SD = 3.82$) than the control group ($M = 29.27$, $SD = 4.46$) and the proximal group ($M = 29.15$, $SD = 3.87$) at delay intervention suggesting that students who received delay utility-value prompts did not hold their performance scores as well as students who received proximal value prompts or students who summarized chapter content. However, statistical power to detect a small effect size ($f^2 = .032$) with an alpha of .05 was inadequate at .285. This result partially supported Hypothesis 4c in that students who generated distal value experienced a decrease in performance but the other intervention groups did not experience a significant drop in performance. See Table 12 for hierarchical regression results for performance at delay intervention.

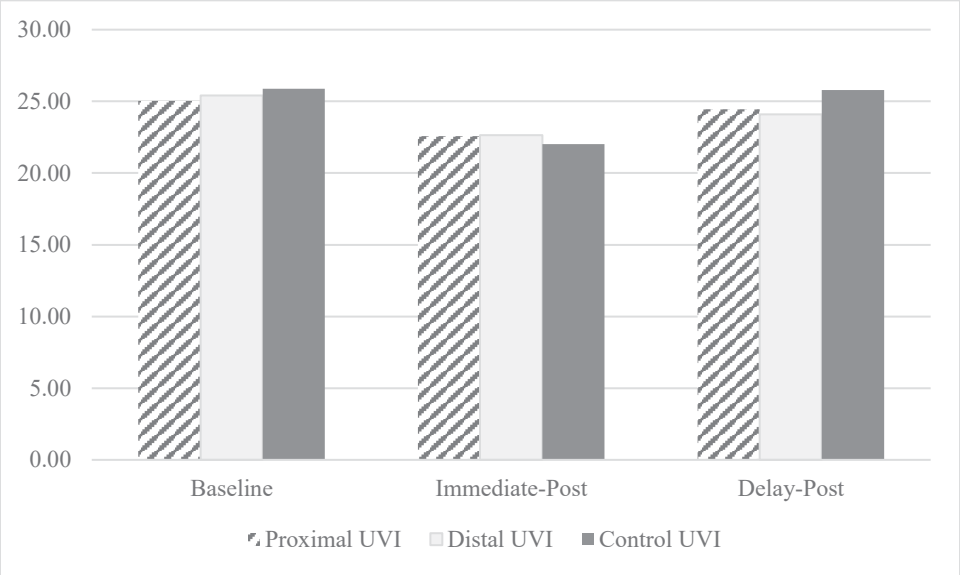
Table 12. Results of Hierarchical Regression Analyses for Performance at Delay Intervention

Variables	β	*T*	*p*	*R*	R^2	Δ R^2	Δ *F*	Sig. *F*
Step 1- Covariate				.615	.378	.378	19.488	.000
First Generation Status	-.104	-1.246	.216					
Performance Time 1	.135	1.525	.131					
Performance Time 2	.527	6.122	.000					
Step 2 – Independent Variables				.640	.410	.031	1.648	.184
Proximal	-.132	-1.397	.166					
Distal	-.205	-2.201	.030					
FTP	-.004	-.044	.965					
Step 3 – Interactions				.645	.416	.006	.501	.608
Proximal × FTP	-.102	-.889	.376					
Distal × FTP	-.007	-.058	.954					

*Overall model $F(8, 99) = 8.113$, $p < .001$, $R^2 = .416$.

No significant *treatment x future time* perspective interaction was present at delay intervention for performance failing to support Hypothesis 4c. See Figure 16 for the means for performance by treatment condition.

Figure 16. Means for Performance by Treatment Condition



Summary

Hierarchical regression analyses were conducted to test the effect of a utility-value intervention (proximal utility-value, distal utility-value, summary) and students' future time perspective on two motivational (situational interest and perceived utility-value) and one performance dependent variable immediately after a three-week intervention and then three weeks after the intervention. Significant baseline differences indicated the need for gender to be entered as a covariate for both motivational variables (situational interest and perceived utility-value) and for first-generation status to be entered as a covariate for performance. Post intervention results showed that gender significantly predicted 11% unique variance in situational interest. Females had higher interest than males immediately after the intervention confirming prior research on the effect gender on motivation. There was no significant

predictive effect of gender on perceived utility-value and no significant predictive effect of first-generation status on performance.

The results from this study showed that although the utility-value intervention was successful in prompting students to generate value for neuroscience content in an introductory psychology course, the intervention did not result in students increasing their situational interest or their perception of value either immediately after the intervention or three weeks after the intervention as compared to the control group. Statistical power was sufficient for the post-intervention analysis but not enough power for the delay analysis. Although the intervention did not successfully increase motivation, students' future time perspective did account for 8.5% unique variance in situational interest and 9.8% unique variance in perceived utility-value. Students with shorter future time perspective had both, higher situational interest and higher perceived utility-value than students with longer future time perspective regardless of utility-value intervention group. This result contradicted this study's prediction that although future time perspective would indeed have a main effect on motivation regardless of intervention group, students with longer future time perspective would show more motivation after the intervention rather than less motivation. There was no significant interaction between the intervention and future time perspective at post intervention or delay intervention.

No significant covariates, main effects, or interactions were found for performance at either post intervention or delay intervention. There was sufficient power to determine results at post intervention but insufficient power to determine results at delay intervention.

CHAPTER 5: DISCUSSION

This study set out to address whether an intervention in which community college learners self-generate utility-value for neuroscience content in a psychology course would positively influence their motivation and performance. It also aimed to examine the varying contributions future time perspective by itself and when combined with the temporal aspects of utility-value. Expectancy-value theory and future time perspective theory were used as theoretical frameworks for this study. This section will summarize the overall findings of this study, explain its theoretical and methodological contributions as well as the theoretical, educational, and practical implications of the intervention. Furthermore, several limitations will be identified and future studies with community college students will be suggested.

Findings

Findings revealed that a three-week utility-value intervention did not enhance this set of community college students' interest, perceived utility-value, or performance. Although students were able to successfully self-generate value for the material of the course and relate it to their lives, the value generated did not influence any of these three outcomes either immediately after the intervention or three weeks after the intervention. Previous research with 4-year university student had indicated that utility-value generation should have enhanced interest and value, especially for struggling students (Hulleman et al., 2010). Almost one-third of first-year community college students take remedial coursework as compared to approximately one-fifth at 4-year universities. Perhaps because many community college students struggle with under-preparedness (Butcher & Visher, 2013; Wang, 2009), they didn't expect to do well in the course, even if they were able to identify how it might align with their futures. Additionally, first-generation students struggle to connect course content to future vocational lives and this can

produce frustration, in particular when they are lacking confidence in their preparedness (Atherton, 2014). Over half of the students in this study were first-generation college students.

Expectancy-value theory proposes that students who have high performance expectancies are more likely to perform the task and perform it better than those who do not (Eccles et al, 1983; Eccles & Wigfield, 2002; Wigfield & Eccles, 1992; 2000). Expectancies were neither manipulated nor measured in this study. It is possible that students might have had low confidence in their ability to understand neuroscience content and therefore their motivation did not increase as expectancy-value theory would predict. Prior studies also suggest that projecting oneself into the future is a difficult task, especially for underprepared students (Canning & Harackiewicz, 2015; Schecter et al., 2011). This study's student population might have struggled to meaningfully connect the course content with their future lives and consequently resorted to creating arbitrary connections with the immediate goal of completing the assignment and earning their points.

Prior research has found that students in U.S. Western culture favor immediacy as reflected in their preference for relating course content to their present rather than to their future lives. Schecter et al. (2011) found that Westerners, as compared to East Asian students, responded with increased interest and perceived utility-value for a course after generating proximal value than after generating distal value. The Westerners in Schecter et al. (2011) did not benefit from generating distal value. In the present study, the final student sample consisted of 10% Asian learners, although, it is unknown as to whether these students were born and raised in East Asia or were Western-born. Ninety percent (90%) of the participants were non-Asian students of varying ethnic and cultural backgrounds.

The manipulation check revealed some unexpected patterns in students' ability to generate distal utility-value. To assess the extent to which students in the proximal and distal value-generation conditions actually generated their respective types of value, the intervention writing assignments were segmented and coded. The number of proximal and distal personal connections to the course content were analyzed. Students in the proximal value condition were asked to generate connections for "short-term, immediate, present for self or other," and students in the distal value condition were asked to generate connections for "long-term, future, more than 1 year away, for self or other." Past research has shown that future-oriented thought occurs naturally and without prompting (D'Argembeau, Renaud, & Van der Linden, 2011). Students who were asked to generate proximal value, they did so easily and many of the students who were prompted to only summarize content and to not generate any value, naturally generated proximal value, However, when students were prompted to generate distal value beyond a year away, students struggled to project their lives that far into the future and defaulted to generating proximal value. For example, two students assigned to the distal condition who were able to connect to their future stated "for instance, if one of my future students had a dopamine deficiency, they wouldn't be able to pay attention or learn like the rest of the class," and another one wrote "it is important to maintain a good body posture, to maintain a good spinal cord posture to prevent back disorders or spinal vertebrae issues in the future." In contrast, two students who were also assigned to the distal condition but struggled to connect to their future stated "when sleeping you become more alert, and understanding of the things around you," and another one wrote "the other day, one car tried to merge into my lane and I was not paying attention to it and I almost hit that car in the back." In D'Argembeau et al. (2011), far away future events are generated less often than future events that are nearer in time. Thoughts

generated by participants in their study consisted of 31% for that same day, 57% were for under a year and only 12% were for over a year away. This is significant because students attend college to improve their chances for a better future, yet they seem to struggle to form mental representations or to project themselves beyond a year into their future. Husman and Shell (2008) constructed and validated a future time perspective scale within the context of academic motivation. Their scale included a measure of extension (psychological distance) which tested six months as a possible future benchmark of the structure of students' academic future. Results from the present study which used a year as a distal value intervention suggests that six months may, in effect be the reasonable boundary by which students are able to forecast their lives while a year may be too challenging. Because community college students are less academically prepared than university students and struggle with college-level courses, it follows that community college students would also struggle with forecasting their life longer than six months away.

The results from the future time perspective analyses provide evidence as to why this study's value intervention may have failed to increase situational interest and perceived value. Future time perspective (individual differences in perspectives of the future) did predict students' situational interest in the course and also perceived value for the course immediately after the intervention. Specifically, students with short future time perspective, that is students who neither plan for the distant future nor have clarity about their future needs (Husman & Shell, 2008), showed more situational interest in the course and perceived more value for the course than students with long future time perspective, contrary to this study's predictions. Perhaps students with long future time perspective were more advanced in their career planning and already had committed to a major so the course content presented to them was not necessarily

aligned with their career goals. Students with longer future time perspective may have therefore considered the utility-value assignments as just a means to a grade rather than actually a way to internalize interest or value for the course material. In contrast, students with a shorter future time perspective may have been still undecided in their field of study or uncertain about their major selection and may have been open to actively processing self-persuasive messages about how neuroscience course content may possibly fit into their emergent career goals (Acee & Weinstein, 2010; Allen & Robbins, 2010; Glynn et al. 2007).

Although gender was not part of the predicted hypotheses, significant gender differences emerged for baseline situational interest and perceived utility-value requiring gender to be used as a covariate for these outcomes. These gender differences support prior findings revealing that girls report higher levels of academic motivation as compared to males (Bugler, McGeown, & St. Clair-Thompson, 2015). Bugler at al. (2015) found that females hold higher academic motivation in the areas of valuing, learning focus, task management, and persistence, as compared to males. However, girls also report some maladaptive motivation such as higher levels of performance apprehension and anxiety. Furthermore, Eccles, Wigfield, Harold, & Blumenfeld (1993) found that females hold higher academic value for English and reading than males do, whereas males value sports activities more than females. Female students in this study outnumbered male students by 2 to 1 and the male non-completion rate was greater, which may additionally explain the lower motivation in male students.

This study contributed significant methodological strengths to utility-value intervention and future time perspective research. The double-blind, randomized nature of this experiment offers confidence in the results. Furthermore, this study was extended longitudinally by testing outcomes immediately after the intervention and then three weeks post intervention whereas

many intervention studies only measured outcomes once at post-intervention (e.g., Harackiewicz et al, 2012; Rozek et al, 2014; Schecter et al, 2011). Up to this point, very few studies had conducted utility-value interventions within a community college population (Canning, 2016; Canning et al., 2019) which has been in great need of motivation research.

Theoretical Implications

Expectancy-Value Theory

These findings indicate that the effectiveness of utility-value interventions found in 4-year university settings may not generalize to the community college setting (Canning , 2016; Canning et al., 2019). Although gender differences in motivation do persist such that females are more motivated than males, studies with community college students have not yet resulted in gains in situational interest, perceived utility-value, or performance as a result of self-generating either proximal utility-value or distal utility-value. Perhaps learners in this study did not internalize the value needed to increase their interest and perceived value for the class. It is possible that their interest for the distal content needed to be more intrinsic and internalized rather than situational, and value needed to be more intrinsic and personally meaningful rather than utility. D'Argembeau et al., (2011) found that people rate thoughts for the far future as more personally important than thoughts for the near future. Additionally, the present study further supports previous findings that students from Western U.S. culture struggle to project themselves into the future (Schecter et al., 2011).

Upon further evaluating the intersection between utility-value and future time perspective, the distal value generation activities may have been unintendedly tapping endogenous instrumentality in addition to utility-value and future time perspective. In the distal value generation activity, students generated personal, educational, or professional value for the

content more than a year into the future. Endogenous instrumentality refers to the "perceived usefulness for developing knowledge and skills related to a course for the attainment of future goals" (Acee & Weinstein, 2010, p. 492), which is closely related to the distal utility-value condition in which learners were to identify "the importance of the task for some future goal that might itself be somewhat unrelated to the process nature of the task at hand" (Eccles et al., 1983, p. 89). For example, a high school student who wants to be an architect and travel all over the world designing buildings is required to take advanced math and physics classes, even though she has little interest in math or physics. Her negative attitudes towards math or physics need to be overcome by her goal of being an architect because math and physics are instrumental for her to achieve this goal. Consequently, the value for math and physics needs to increase (utility-value) so that she can reach her future goal of being an architect, which is unrelated to the task at hand (math and physics).

Hilpert et al. (2012) emphasized that whereas endogenous instrumentality is focused on learning and mastery in relation to future goals, exogenous instrumentality is focused on completing tasks outside of the goal itself to attain the goal. Perhaps this explains why a utility-value intervention alone was not effective in the current study. Students' extrinsic or exogenous instrumentality was possibly being tapped rather endogenous instrumentality. Because the majority of students in this study were not psychology or neuroscience majors, it may have been too immaterial for them to reach into their future to connect the coursework to their career. The course content may have seemed irrelevant to them because it was not properly aligned with their chosen career or field of study and they were just performing the value generation activity for the purposes of the course assignment and did not develop interesting in mastering the content. This suggests that for the intervention to have benefitted this sample of community

college students, the interest generated might have needed to be more intrinsic rather than situational and the value generated would also have needed to be more intrinsic rather than utility. This presents an intervention challenge because external motivators are much easier to manipulate than internal motivators (Acee & Weinstein, 2010; Glynn et al. 2007; Harackiewicz et al., 2014; Hulleman et al., 2010).

Future Time Perspective Theory

This study is the first study to use the future time perspective scale within the context of a utility-value intervention with a diverse community college sample. Prior future time perspective intervention research has focused on either middle-school students (Schuitema, Peetsma, & van der Veen, 2014) or upper- and lower-division university students (Hilpert et al., 2012; Husman & Shell, 2008; Park, Rie, Kim, & Park, 2018). Although future time perspective did not moderate the effect of the utility-value prompts on situational interest, perceived utility-value, or performance as predicted, it did significantly predict situational interest and perceived utility-value for these students. The most interesting finding was that students with a shorter future time perspective were more interested and perceived more utility-value for neuroscience content within a psychology course than students with a longer future time perspective.

In support of Canning et al. (2019), the current study showed that community college students struggle with connecting the present with their future lives, particularly if the intervention is in writing and the content is challenging. This study contributes to emerging evidence indicating that utility-value interventions have not yet benefitted community college students, specifically, lower performing students or under-prepared students. Prior evidence of under preparedness in these populations may result in written utility-value interventions being more problematic for community college students because of multiple challenging requirements

within the intervention. Students are asked to compose essays from difficult course material (neuroscience) and thus required to not only comprehend the difficult course material, but then extend it into their far futures. Lower-performing students may be threatened by these types of activities because they may lack enough confidence or ability to perform the writing activity or to comprehend the material (Canning et al., 2019). Britt, Pribesh, Hinton-Johnson, and Gupta (2018), implemented a mindful breathing intervention with 277 community college students to try to reduce writing apprehension and improve writing. Results showed that students' writing apprehension was successfully reduced in an introductory writing class. Researchers reasoned that writing apprehension may have been masking students' actual cognitive awareness of the writing assignment. Students may have had the cognitive awareness of what they wanted to express, but factors such as evaluation apprehension may have been hindering the writing process needed for idea development (Daly, 1978). S2tudents who have high writing apprehension write qualitatively different than students with low writing apprehension as displayed in measures of general verbal ability, reading comprehension, word usage, writing conventions, writing length, and writing performance (Daly, 1978; Faigley, Daly, & Witte, 1981).

Educational and Practical Implications

It is important for educators to be mindful that certain learning strategies can decrease, rather than increase motivation in struggling learners. In this sample of community college students, self-generating utility-value did not help them to increase their interest or value perceptions for important neuroscience content. Additionally, they struggled to generate connections between the challenging material and their future lives. Not only was the material difficult to comprehend, then they were assigned an additionally difficult task of creating

fictional future mental representations of themselves benefitting from the content. These two challenging tasks may have rendered null the potential benefits of the intervention. Although prior research has demonstrated that utility-value interventions can help to motivate lower performing students at a four-year university, the results were reversed with this community college sample.

In a recent study with community college students, Canning et al. (2019) found that a utility-value intervention undermined confidence in course preparedness, course performance, and competence valuation represented by decreasing both, interested and perceived utility-value at the end of the course. These effects point to the importance of performance expectancies, which is the other construct of expectancy-value theory (Eccles et al., 1983; Eccles & Wigfield, 2002; Wigfield & Eccles, 1992; 2000). The current study's content likely undermined the participants' sense of competence because it was too difficult. Azevedo (2006) found that a sense of flexibility and sense competence within a task facilitates self-generation of interest**.** In this case, the mastery or competence element may have been missing. Performance expectancies were not manipulated or measured in this study; however, educators may achieve better results if they slowly develop a sense of mastery within their students prior to attempting to enhance interest or perceived value through a value-generation intervention. Perhaps it is necessary to build students' confidence and preparedness first if we are to ask them to create connections to their lives, particularly future connections with difficult course content. Confidence can be built through drawing from the accumulation of mastery experiences (Bandura, 1977; Bandura & Schunk, 1981; Gorges & Göke, 2015). Bandura and Schunk (1981), for example, found that learners increased intrinsic interest and self-efficacy in mathematics through the accumulation of mastery experiences in mathematics. Additionally, Luzzo et al. (1999) found that learners

increased their self-efficacy in math and science courses as a result of the accumulation of performance accomplishments. Prior research has found that directly-communicated utility-value messages may undermine performance for low-performing students. Therefore, the current study attempted to promote perceived autonomy by prompting students to self-generate value rather than to receive directly-communicated utility-value messages. Perhaps placing the onus directly on students to figure out connections between difficult content and their future lives was an additional threat to their motivation and performance. Canning and Harackiewicz (2015, Study 2) found that students with low initial performance expectancies benefitted from directly-communicated utility-value if they had the opportunity to also self-generate utility-value. Students' utility-value, performance, and interest in a math task significantly increased because they had the opportunity to create their own examples of value after they had received initial guidance from directly-communicated utility-value information. This suggests that low expectancy students seem to benefit from instructor support to feel confident to self-generate value and that an intervention with scaffolded utility-value generation might have improved this study's results.

Limitations

Several limitations should be considered when interpreting the results from this study. First, because this study utilized students enrolled in a psychology course, the ecological validity was maximized while constraining the sample size. The intervention was conducted in ways to maximize its potential effects, such as increasing students' interest in the study, using quality instruments, and rendering findings applicable to a population which was not examined before, broadening the applicability of the intervention beyond published works. However, sample size compromised power requirements which were not fully met for this study. Although a total of

184 students participated in the study, only 110 remained in the sample because of mortality and incomplete assessments and prompt completions. Although power was sufficient to detect some significant effects at post-intervention, it was insufficient for detecting any effects at delay-intervention.

The removal of the 76 participants created additional problems. Participants who were removed for non-completion were those who missed class and thus likely had systematically lower motivation and performance, leaving a disproportional number of highly motivated students and higher performers in the sample. For example, students who were removed from the final sample (N = 76) scored significantly lower (M = 22.89, SD = 5.762) than students who remained (N = 110) in the final sample (M = 25.42, SD = 3.437) for Exam 1, $t(175) = -3.665$, $p = .001$. Furthermore, demographics for the initial sample included 58% first-generation college students (54.6% in final sample), 37% male (31% in final sample), 41.3% Caucasian (41.7% in final sample), 22.8% Hispanic (20.4 in final sample), 8.7% Asian American (10.2% in final sample), 10.9% African American (7.4% in final sample) showing that the trend from initial sample to final sample was to disproportionately lose first generation college students, males, Hispanics, and African Americans and retain Caucasian and Asian American students. Canning et al, (2019) administered a similar utility-value intervention in which students completed three essays during the course, one per week. During the intervention, students were similarly asked to select a previous topic covered in the course and were asked to either briefly summarize the main points or to generate utility-value connections with their life. To determine the extent of utility-value articulated by students in the experimental condition, Canning et al. (2019) retained all students who completed the first 2 out of the 3 writing assignments to avoid the removal of large

portions of the sample whereas this study retained only students who completed all 3 writing assignments.

Generalizability of these results should be applied with caution. Although this intervention was conducted with a diverse sample with respect to ethnicity, age, first-generation status, major, and ability, it was applied in an introductory psychology course taught by the same instructor in the same classroom. More research is needed at various community colleges throughout the country with different instructors and subjects.

Additionally, because this intervention was implemented in the researcher's classroom, the instructional environment may have contained unintended embedded utility-value elements. For example, the instructor's course assignments that were not part of the study might have inadvertently contained activities in which students were asked to connect a particular lesson to the course content or perhaps the instructor might be used to prompt students to make connections to their lives as part of the regular course lecture. As a result, the control group may have received utility-value generation practice within the other assignments which could have inflated the interest and value effect of the control group resulting in non-significant differences when compared to the treatment groups.

Lastly, performance was measured with three different assessments. Performance outcome results would have been more reliable and valid if the exams contained identical items in each of the three administrations (baseline, post-, delay). However, the practice effect would have been enhanced from being tested with the same content and would have posed a different set of validity problems such as improved scores due to practice rather than to the effects of the intervention.

Future Directions

Follow-up utility-value intervention studies with the community college student population should employ more intensive and interactive interventions in which students are guided through the process of making connections between their present and their future, assessing the speed at which the future is racing towards them with embedded strategies on how to manage it, and practicing imagining themselves as far into the future as possible. Incorporating scaffolding techniques with teachers and more advanced peers and providing examples in which students increasingly focus on projecting into their future could prove beneficial with community college students (Canning et al., 2019). Instructor-provided examples alone have shown to intimidate students with low ability and interest (Canning & Harackiewicz, 2015; Durik & Harackiewicz, 2007; Durik et al., 2015), however, a combination of instructor-provided examples and student-generated examples have shown to address that concern (Canning & Harackiewicz, 2015).

Taylor, Pham, Rivkin, & Armor (1998) showed that process simulation results in more effective outcomes than outcome simulation. They asked introductory psychology students to study for a future exam using either process simulation or outcome simulation. Students in the process simulation condition were asked to visualize they various ways they would use to study for the future exam to get an A. Outcome simulation students were asked to visualize themselves getting an A in the exam. Students who utilized process stimulation studied more, started earlier, and scored significantly higher than students in the control group. Students who utilized outcome simulation did not study significantly more or started significantly earlier than students in the control group and performed slightly better than the control group. In a second study, researchers found that process simulation improves performance over outcome simulation

because it engages the planning process in self-regulation in addition to regulation of emotional states such anxiety (Pham & Taylor, 1999). Future utility-value intervention research may benefit from engaging students into outlining the process (process simulation) by which they will attain a specific future self rather than only projecting themselves in a future time (outcome simulation), and also by engaging them into outlining the process (process simulation) by which they will attain this specific future self.

As several of these utility-value intervention studies have employed writing activities to increase value, a qualitative analysis of students' writing activities reveals additional reasons for the low effectiveness of utility-value interventions in community college students and for the struggles they encounter when connecting the content with their future.

Change in future time perspective was not assessed in this study, however, evaluating its state or trait nature in a pre-, post-, delay longitudinal study across a semester may provide clues as to whether students' ability to plan into the future can be successfully influenced. Furthermore, future time perspective scales need validation with 2-year college populations as most of the norming has been with upper-division university students.

Although manipulating performance expectancies may pose ethical challenges, it is recommended that research studies always include their measurement at each time period when performing utility-value interventions, even if only utility-value is manipulated. By measuring performance expectancies, we can determine whether performance apprehension or low performance confidence may have played a role in the interest and value effected by said interventions.

Utility-value interventions might also benefit from measuring the cost associated with increasing interest and value for the course content. Research on cost is emerging and may have

a unique effect in the community college student population. The effects of psychological cost, effort, and loss of valued alternatives which represent cost may be magnified within this population.

Future research investigating whether developmental and neurological differences influence students' ability to simulate their future lives should be explored. Neural evidence shows that areas in the prefrontal cortex are more strongly activated by episodic simulation involved in future planning than in episodic memory which is involved in remembering the autobiographical past (Benoit & Schacter, 2015). There is also neural evidence that time perception is a neurofunction that does not fully mature until late adolescence and into adulthood (Smith, Giampietro, Brammer, Halari, Simmons, & Rubia, 2011). Smith et al. (2011) further found that adults have enhanced connectivity between the areas of the brain responsible for time perception and time discrimination compared to adolescents. Nearly 70% of the current study's participants were either adolescents or emerging adults under 24 years old. Adolescents rely on less specialized, more generalized regions such as the midline limbic and posterior brain regions for time perception. Educators must be consistently mindful of developmental maturation stages of cognitive functions when implementing cognitive activities that involve later-maturing brain structures. Despite neural evidence pointing to developmental differences in the ability of adolescents and young adults to project into the future, we can't ignore that students bring into the study additional psychological and social-contextual infividual differences. Emerging adulthood while attending a community college as compared to attending a 4-year university may be vastly different. Community college students may have more mixed responsibitities of adulthood such as working more, caring for children or parents, in addition to going to school as

compared with university students who tend to be more traditional. Differences in ability to project into the future could have been more of a function of year in school rather than age.

A psychological factor that could have contributed to students inability to connect the content into their far future lives is performance anxiety. In this study, students were tasked to comprehend and synthesize difficult course material (Canning et al., 2019), activate semantic and episodic memories (Szpunar, 2010), overcome writing apprehension (Beilock & Carr, 2001), and elaborate and connect course material to create a future self. There is evidence that working memory is involved in future thought (Weiler, Suchan, Daum, 2010). Anxiety can interfere with working memory, especially in high-stakes learning situations (Beilock & Carr, 2001). The effects of performance anxiety for high-stakes learning are well documented and can help to explain this challenge faced by some learners (e.g. Beilock & Carr, 2001; Bembenutty, 2008b; DeCaro, et al., 2011; Jameson & Fusco, 2014, Peng, et al., 2014). Future-oriented tasks generate anxiety for low-performing students because of the higher personal importance of future consequences (D'Argembeau at al., 2011) and because generating episodic future thought requires higher attentional cognitive demands than generating present thoughts or episodic memories (Viard et al., 2011). Performance anxiety is a very real obstacle, especially for struggling students. Assignments that don't require a high level of writing can be substituted in utility-value interventions to determine whether anxiety plays a detrimental role in interest and value for a course.

Conclusion

Although community college students' motivation and performance did not benefit from this utility-value intervention, several important implications resulted from this study. Students at this level have different needs and abilities than university students. Community college

students may struggle more with forecasting their future and imagining themselves in a future time. Students who favor setting shorter-term goals show more interest and value for difficult science content while students who favor long-range planning were not so interested. To help struggling students make connections with their future, educators and researchers will likely need to develop carefully structured interventions that avoid elements that may inadvertently discourage learners academically by using guided methods of connecting content to future life.

APPENDIX A: UTILITY-VALUE INTERVENTION TIMELINE

Utility-Value Intervention Timeline

Week #	Proximal Utility-Value Condition	Distal Utility-Value Condition	Control Condition
Week #1	Informed Consent Demographic Questionnaire		
Week #3 Baseline	Administration of Future Time Perspective scale and baseline motivational and performance measures		
Week #4 Intervention	Write a proximal relevance letter to a significant person	Write a distal relevance letter to a significant person	Write a summary
Week #5 Intervention	Write a proximal reflective response	Write a distal reflective response	Write a summary
Week #6 Intervention	List proximal benefits	List distal benefits	Write a summary
Week #7 Immediate-post	Immediate post-intervention motivation and performance measures		
Weeks #8 - 10	No study-related activities		
Week #11 Delay-post	Delay post-intervention motivation and performance measure		
Week #12	Research in Psychology: Counterbalance & Debriefing Assignment End of Study		
Week #13	Retake Exam 2 and 3		

APPENDIX B: INTERVENTION WRITING PROMPTS

Proximal Value Assignment #1

"For this assignment, select a topic from Chapter 2 and write a 150- to 200-word letter to a significant person in your life about the topic. The main goal is to describe the relevance of topic you selected. Emphasize usefulness of the course material in present time in your own everyday life situations such as for your present courses, present job, or present life situation. You could discuss increasing memory, understanding yourself, controlling emotions, improving college performance or for another purpose that you deem relevant for your present life and useful so that your significant person really understands it" (adapted from Canning & Harackiewicz; Hulleman et al., 2010).

Proximal Value Assignment #2

"For this assignment, select a topic from this course that has already been covered in lecture and that you have not yet written about and write a reflective response to the following three questions in 50 to 75 words each: 1) What was the most important part of the lesson that you learned? 2) How useful is this concept to your own immediate life, whether it is in your personal, school, or professional (work) life? Give one specific example of how you can apply this concept to your own immediate life. 3) Write down a specific question for your instructor about how a particular concept from your selected topic may apply or be useful in your immediate life" (Acee & Weinstein, 2010; Wolters, 1998).

Proximal Value Assignment #3

"For this assignment, select a topic from Chapter 2 of the course that you have not yet written about and in 75 to 100 words each address each of the following: 1) Brainstorm different clever, useful, insightful reasons of why the course topic you selected could be personally meaningful and useful in your present, current, short-term, every day, immediate life, whether it's in your personal, school, or professional (work) life. 2) List some benefits related to the importance of spending enough time and effort successfully learning the course topic you selected as it relates to your present, current, short-term, every day, immediate life, whether it's your personal, school, or professional (work) life."

Distal Value Assignment #1

"For this assignment, select a topic from Chapter 2 of this course and write a 150- to 200-word letter to a significant person in your life about the topic. The main goal is to describe the relevance of the topic you selected. Emphasize the usefulness of the course material in long-term, future-time (more than a year away) such as for your future courses, future career, how it could be used in different occupations, or for admission into a four-year school or graduate school or for any other purpose that you deem relevant and useful in your future so that your significant person really understands it" (Adapted from Canning & Harackiewicz, 2015; Hulleman et al., 2010).

Distal Value Assignment #2

"For this assignment, select a topic from this course that has already been covered in lecture and that you have not yet written about and write a reflective response to the following three questions in 50 to 75 words each: 1) What was the most important part of the lesson that you learned? 2) How useful is this concept to your own future life (more than a year away), whether it is in your personal, school, or professional (work) life? Give one specific example of how you can apply this concept to your own future life. 3) Write down a specific question for your instructor about how a particular concept from your selected topic may apply to or be useful in your future life (more than a year away)" (Acee & Weinstein, 2010; Wolters, 1998).

Distal Value Assignment #3

"For this assignment, select a topic from this course that has already been covered in lecture and that you have not yet written about and in 75 to 100 words each address each of the following: 1) Brainstorm different clever, useful, insightful reasons of why the course topic you selected could be personally meaningful and useful in your own long-term future life (more than a year away), whether it's in your personal, school, or professional (work) life. 2) List some benefits related to the importance of spending enough time and effort in successfully learning the course topic you selected as it relates to your long-term future (more than a year away), whether it's in your personal, school, or professional (work) future."

Control Assignments #1, #2, #3

"For this assignment, select a topic from this course that has been already been covered and write a brief 150- to 200-word summary of your selected topic."

APPENDIX C: MEASURES

Situational Interest (baseline α = .835, post-intervention α = .881, delay post-intervention α = .826)

Participants responded to all self-report items in this study on a 7-point Likert-type scale from 1(*strongly disagree*) to 7 (strongly agree).

1. I think the field of psychology is very interesting.
2. I think what we're learning in this class is fascinating.
3. To be honest, I just don't find psychology interesting (R)
4. I think the material in this course is boring (R)
5. Psychology fascinates me.

Perceived Utility-Value (baseline α =.790, post-intervention α = .840, delay post-intervention α = .776)

Participants responded to all self-report items in this study on a 7-point Likert-type scale from 1(*strongly disagree*) to 7 (strongly agree).

1. What I am learning in this psychology class could be useful to me in my daily life.
2. What I am learning in this psychology class could be useful in my future career.
3. What I am learning in this psychology class could be useful to me in my future classes.
4. What I am learning in this psychology class isn't very useful to me. (R)
5. The content of this psychology class is valuable.

Future Time Perspective (α = .719)

Participants responded to all self-report items in this study on a 5-point Likert-type scale from 1(*strongly disagree*) to 5 (*strongly agree*).

1. One should be taking steps today to help realize future goals.
2. One shouldn't think too much about the future. (R)
3. Half a year seems like a long time to me. (R)
4. I find it hard to get things done without a deadline. (R)
5. It's important to have goals for where one wants to be in five or ten years.
6. I don't like to plan for the future. (R)
7. I always seem to be doing things at the last moment. (R)
8. Planning for the future is a waste of time. (R)
9. What will happen in the future is an important consideration in deciding what action to take now.
10. It often seems like the semester will never end. (R)
11. **The beginning of next semester seems like a long way off. (revised from "August") (R)
12. I need to feel rushed before I can really get going. (R)

Note: Situational Interest Scale based on Hulleman et al. (2010) (Study 2). Perceived Utility-Value Scale based on Canning & Harackiewicz, (2015). Future Time Perspective Scale revised from Husman & Shell (2008) and Husman et al. (2007).

REFERENCES

Acee, T.W., & Weinstein, C.E. (2010). Effects of a value-reappraisal intervention on statistics students' motivation and performance. *The Journal of Experimental Education, 78*, 487-512.

Allen, J., & Robbins, S. (2010) Effects of interest-major congruence, motivation, and academic performance on timely degree attainment. *Journal of Counseling Psychology, 57*(1), 23-35.

Anderman, E.M., Eccles, J.S., Yoon, K.S., Roeser, R., Wigfield, A., & Blumenfeld, P. (2001). Learning to value mathematics and reading: Relations to mastery and performance-oriented instructional practices. *Contemporary Educational Psychology, 26*, 76-95.

Anderman, E. M. & Wolters, C. A. (2006). Goals, values, and affect: Influences on student motivation. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of Educational Psychology,* Second Edition, Division 15 of the American Psychological Association. 245-263.

Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teacher behaviours predicting students' engagement in schoolwork. *British Journal of Educational Psychology, 72*, 261-278.

Atherton, M.C. (2014). Academic preparedness of first-generation college students: different perspectives. *Journal of College Student Development, 55*(8), 824-829.

Atkinson, J. W. (1957). Motivational determinants of risk-taking behavior. *Psychological Review, 64 (6*), 359-372.

Azevedo, F. S. (2006). Personal excursions: Investigating the dynamics of student engagement. *International Journal of Computers for Mathematical Learning*, 11, 57-98.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Bandura, A., & Schunk, D.H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology, 41*(3), 586-598.

Behrens, F.H. (1999). *Do relevance strategies affect a students' motivation to learn?* (Unpublished master's thesis). Miami University, Oxford, Ohio.

Beilock, S.L., & Carr, T.H. (2001). On the fragility of skilled performance: What governs choking under pressure? *Journal of Experimental Psychology: General, 130*(4), 701-725.

Bembenutty, H. (2008a). Academic delay of gratification and expectancy-value. *Personality and Individual Differences, 44*, 193-202.

Bembenutty, H. (2008b). Self-regulation of learning and test anxiety. *Psychology Journal, 5*(3), 122-139.

Bembenutty, H. (2009). Academic delay of gratification, self-regulation of learning, gender differences, and expectancy-value. *Personality and Individual Differences, 46*, 347-352.

Benoit, R.G., & Schacter, D.L. (2015). Specifying the core network supporting episodic simulation and episodic memory by activation likelihood estimation. *Neuropsychologia, 75*, 450-457.

Britt, M., Pribesh, S., Hinton-Johnson, KaaVonia, & Gupta, A. (2018). Effect of a mindful breathing intervention on community college students writing apprehension and writing performance. *Community College Journal of Research and Practice, 42*(10), 693-707.

Brock, T. (2010). 'Community college as a pathway to higher education and earnings', in *The White House Summit on Colleges* ed. Association of Community Colleges, American

Association of Community Colleges, Washington, 41-45. Retrieved from: http://www2.ed.gov/PDFDocs/college-completion/06-community-college-as-a-pathway.pdf.

Bugler, M., McGeown, S.P., St. Clair-Thompson, H. (2015). Gender differences in adolescents' academic motivation and classroom behavior. *Educational Psychology, 35*(5), 541-556.

Butcher, K.F. & Visher, M.G. (2013). The impact of a classroom-based guidance program on student performance in community college math classes. *Educational Evaluation and Policy Analysis, 35*(3), 298-323.

Campbell, N.K., & Hackett, G. (1986). The effects of mathematics task performance on math self-efficacy and task interest. *Journal of Vocational Behavior, 28*, 149-162.

Canning, E.A., & Harackiewicz, J.M. (2015). Teach it, don't preach it: The differential effects of directly-communicated and self-generated utility-value information. *Motivation Science, 1*(1), 47-71.

Canning, E. (2016). Testing a utility-value intervention in two-year colleges (Unpublished doctoral dissertation). University of Wisconsin-Madison, Madison, Wisconsin.

Canning, E. A., Priniski, S.J., Harackiewicz, J.M (2019). Unintended consequences of framing a utility-value intervention in two-year colleges. *Learning and Instruction, 62*, 37-48.

Chen, A., & Liu, X. (2009). Tasks values, cost, and choice decisions in college physical education. *Journal of Teaching in Physical Education, 28*, (192-213).

Chouinard, R. & Roy, N. (2010). Changes in high-school students' competence beliefs, utility-value, and achievement goals in mathematics. *British Journal of Educational Psychology, 78*, 31-50.

Conley, A.M. (2012). Patterns of motivation beliefs: Combining achievement goal and expectancy-value perspectives. *Journal of Educational Psychology, 104*(1), 32.47.

Cordero, E.D., Porter, T.I., & Brown, M.T. (2010). Math and science pursuits: A self-efficacy intervention comparison study. *Journal of Career Assessment, 18*(4), 362-375.

D'Argembeau, A., Renaud, O., & Van Der Linden, M. (2011). Frequency, characteristics, and functions of future-oriented thoughts in daily life. Applied Cognitive Psychology, 25, 96-103.

Daly, J. A. (1978). Writing apprehension and writing competency. *The Journal of Educational Research, 72*(1), 10-14.

DeCaro, M.S., Thomas, R.D., Albert, N.B., & Beilock, S.L. (2011). Choking under pressure: multiple routes to skill failure. *Journal of Experimental Psychology: General, 140*(2), 390-406.

De Volder, M.L. & Lens, W. (1982). Academic achievement and future time perspective as a cognitive-motivational concept. *Journal of Personality and Social Psychology, 42*(3), 566-571.

Deci, E.L., Eghrari, H., Patrick, B.C., & Leone, E.R. (1994). Facilitating internalization; the self-determination theory perspective. *Journal of Personality*, *62*, 119-142.

Deci, E.L., Ryan, R.M., & Koestner, R. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin, 125*(6), 627-668.

Durik, A.M., Shechter, O., Moh, M., Rozek, C.S., & Harackiewicz, J.M. (2015). What if I can't? Success expectancies moderate the effects of utility-value information on situational interest and performance. *Motivation and Emotion, 39*, 104-118.

Durik, A.M., & Harackiewicz, J.M. (2007). Different strokes for different folks: How individual interest moderates the effects of situational factors on task interest. *Journal of Educational Psychology, 99*, 597-610.

Eccles, J.S., Adler, T.F., Futerman, R.F., Goff, S.B., Kaczala, C.M., Meece, J.L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In Spence, J.T. (Ed.), *Academic Achievement and Motives: Psychological and Sociological Approaches*, San Francisco, California: W.H. Freeman and Company, (pp. 75-146).

Eccles, J.S. (1987). Gender roles and women's achievement decisions. *Psychology of Women Quarterly, 11*(2), 135-171.

Eccles, J.S., Vida, M.N, & Barber, B. (2004). Early adolescents' college plans and both academic ability and task value beliefs on subsequent college enrollment. *The Journal of Early Adolescence, 24*(1), 63-77.

Eccles, J.S., & Wigfield, A. (1995). In the mind of the actor: The structure of adolescents' achievement task values and expectancy-related beliefs. *Personality and Social Psychology Bulletin, 21*(3), 215-225.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology, 53*, 109-132.

Eccles, J., Wigfield, Al, Harold, R.D., & Blumenfeld, P. (1993). Age and gender differences in children's self- and task perceptions during elementary school. *Child Development, 64*(3), 830-847.

Faigley, L., Daly, J.A., & Witte, S.P. (1981). The role of writing apprehension in writing performance and competence. *The Journal of Educational Research, 75*(1), 16-21.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149-1160.

Feather, N. T. (1988). Values, valences, and course enrollment: Testing the role of personal values within an expectancy-valence framework. *Journal of Educational Psychology, 80* (3), 381-391.

Feather, N.T., & Newton, J.W. (1982). Values, expectations, and the prediction of social action: An expectancy-valence analysis. *Motivation and Emotion, 6*(3), 217-244.

Flake, J.K., Barron, K.E., Hulleman, C., McCoach, B.D., & Welsch, M.E. (2015). Measuring cost: The forgotten component of expectancy-value theory. *Contemporary Educational Psychology, 41*, 232-244.

Fox, J. (1991). *Regression Diagnostics*. Newbury Park, CA: Sage Publications.

Frymier, A.B., & Houser, M. (1998). Does making content relevant make a difference in learning? *Communication Research Reports, 15*(2), 121-129.

Frymier, A.B., & Shulman, G. M. (1995). "What's in it for me?": Increasing content relevance to enhance students' motivation. *Communication Education, 44*, (40-51).

George, D., & Mallery, M. (2010). *SPSS for Windows Step by Step: A Simple Guide and Reference*, 17.0 update (10a ed.) Boston: Pearson.

Glynn, S.M., Taasoobshirazi, G. & Brickman, P. (2007). Nonscience majors learning science: A theoretical model of motivation. *Journal of Research in Science Teaching, 44*(8), 1088-1107.

Gorges, J. & Göke, T. (2015). How do I know what I can do? Anticipating expectancy of success regarding novel academic tasks. *British Journal of Educational Psychology, 85*, 75-90.

Graham, S., & Williams, C. (2009). An attributional approach to motivation in school. In Wentzel, K.R., & Wigfield, A. (Eds.) *Handbook of motivation at school.* New York: Routledge. (pp. 11-33).

Hackett, G., Betz, N.E., O'Halloran, M.S., & Romac, D.S. (1990). Effects of verbal and mathematics task performance on task and career self-efficacy and interest. *Journal of Counseling Psychology, 37*, 169-177.

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*, 899-906.

Harackiewicz, J.M., Tibbetts, Y., Canning, E., & Hyde, J.S. (2014). Harnessing values to promote motivation in education. *Motivational Interventions, Advances in Motivation and Achievement, 18*, 71-105.

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

Hilpert, J.C. Husman, J., Stum, G.S., Wonsik, K., Chung, W., & Duggan, M.A. (2012). Examining students' future time perspective: Pathways to knowledge building. *Japanese Psychological Research, 54*(3), 229-240.

Hofstede, G. & Bond, M.H. (1988). The Confucius connection: From cultural roots to economic growth, *Organizational Dynamics, 16*(4), 4-18.

Hong, E., & Peng, Y. (2008). Do Chinese students' perceptions of test value affect test performance? Mediating role of motivational and metacognitive regulation in test preparation. *Learning and Instruction, 18*, 499-512.

Hulleman, C.S., Durik, A.M., Schweigert, S.A., Harackiewicz, J.M. (2008). Task values, achievement goals, and interest: An integrative analysis. *Journal of Educational Psychology, 100*(2), 398-416.

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), 880-895.

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

Hulleman, C.S., Kosovich, J.J., Barron, K.E., Daniel, D.B. (2016). Making connections: Replicating and extending the utility-value intervention in the classroom. *Journal of Educational Psychology, 109*(3), 387-404.

Husman, J., Derryberry, W. P., Crowson, H. M., & Lomax, R. (2004). Instrumentality, task value, and intrinsic motivation: Making sense of their independent interdependence. *Contemporary Educational Psychology, 29,* 63-76.

Husman, J. & Shell, D.F. (2008). Beliefs and perceptions about the future: A measurement of future time perspective, *Learning and Individual Differences, 18*, 166-175.

Husman, J., Hilpert, J., Lynch, C., Duggan, M.A., Kim, W., & Chung, W. (2007). *Connecting with the future: Measuring future time perspective in science and engineering students.* Paper presented at the 2007 Bi-Annual Meeting of the European Association for Research on Learning and Instruction, Budapest, Hungary.

Jameson, M.M., & Fusco, B.R. (2014). Math Anxiety, math self-concept, and math self-efficacy in adult learners compared to traditional undergraduate students. *Adult Education Quarterly, 64*(4), 306-322.

Kauffman, D. F. & Husman, J. (2004). Effects of time perspective on student motivation: Introduction to a Special Issue. *Educational Psychology Review*, 16(1), 1-7.

Keith, T. Z. (2006). *Multiple Regression and Beyond.* Boston, MA: Pearson Education

Keller, J.M. (1983). Motivational design of instruction. In C.M. Reogeluth (Ed.), *Instructional design theories: An overview of their current status* (pp. 383-434). Hillsdale, NJ: Lawrence Erlbaum.

Keller, J.M. (1987). The systematic process of motivational design. *Performance & Instruction, 26*(9-10), 1-8.

Keller, J.M. (2010). *Motivational design for learning and performance: The ARCS model approach* [electronic resource]. New York: Springer.

Kuhl, J. & Blankenship, V. (1979). Behavioral change in constant environment: Shift to more difficult tasks with constant probability of success. *Journal of Personality and Social Psychology, 37*, 549-561.

Lens, W., Paixao, M.P, Herrera, D., Grobler, A. (2012). Future time perspective as a motivational variable: Content and extension of future goals affect the quantity and the quality of motivation, *Japanese Psychological Research, 54*(3), 321-333.

Levesque, C., Stanek, L.R., Zuehlke, A.N., & Ryan, R.M. (2004). Autonomy and competence in German and American university students: A comparative study based on self-determination theory. *Journal of Educational Psychology*, 96, 68-84.

Linnenbrink-Garcia, L., Patall, E.A., & Messersmith, E.E. (2013). Antecedents and consequences of situational interest. *British Journal of Educational Psychology, 83*, 591-614.

Luttrell, V.R., Callen, B.W., Alen, C.S., Wood, M.D., Deeds, D., & Richard, D.C.S. (2010). The mathematics value inventory for general education students: Development and initial validation. *Educational and Psychological Measurement, 70*(1), 142-160.

Luzzo, D.A., Hasper, P., Albert, K.A., Bibby, M.A., Martinelli, E. (1999). Effects of self-efficacy-enhancing interventions on the math/science self-efficacy and career interests, goals, and actions of career undecided college students. *Journal of Counseling Psychology, 46*(2), 233-243.

Metallidou, P., & Vachou, A. (2010). Children's self-regulated learning profile in language and mathematics: The role of task value beliefs. *Psychology in Schools, 47*(8), 776-787.

Muddiman, A., & Frymier, A.B. (2009). What is relevant? Student perceptions of relevance strategies in college classrooms. *Communication Studies, 60*(2), 130-146.

Newby, T.J. (1991). Classroom motivation: Strategies of first year teachers. *Journal of Educational Psychology, 83*(2), 195-200.

Osborne, J. & Waters, E. (2002). Four assumptions of multiple regression that research should always test. *Practical Assessment, Research & Evaluation, 8*(2), 1-5.

Pajares, F., & Graham, L. (1999). Self-efficacy, motivation constructs, and mathematics performance of entering middle school students. *Contemporary Educational Psychology, 24*, 124-139.

Park, I., Rie, J., Kim, H.S., & Park, J. (2018). Effects of a future time perspective-based career intervention on career decisions. *Journal of Career Development*, 089484531878104. 10.1177/0894845318781043.

Peng, Y., Hong, E., & Mason, E. (2014). Motivational and cognitive test-taking strategies and their influence on test performance in mathematics. *Educational Research and Evaluation: An International Journal on Theory and Practice, 20*(5), 366-385.

Perez, T., Cromley, J.G., & Kaplan, A. (2013, August 19). The role of identity development, values, and costs in college STEM retention. *Journal of Educational Psychology. Advance online publication*. doi: 10.1037/a0034027

Pham, L.B., & Taylor, S.E. (1999). From thought to action: Effects of process- versus outcome-based mental simulations on performance. *Personality and Social Psychology Bulletin, 25*(2). 250-260.

Pintrich, P.R. (1999). The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research, 31*, 459-470.

Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning, Handbook of Self-regulation pp 451-502, San Diego California, Academic Press

Pintrich, P.R., & DeGroot, E.V. (1991). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33-40.

Provasnik, S., & Planty, M. (2008). *Community Colleges: Special Supplement to The Condition of Education 2008* (NCES 2008-033). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington D.C.

Renninger, K.A. & Hidi. S. (2011). Revisiting the conceptualization, measurement, and generation of interest. *Educational Psychologist, 46*(3), 168-184.

Rokeach, M. (1979). Some unresolved issues in theories of beliefs, attitudes and values. In H.E. Howe, Jr., & M.M. Page (Eds.), *Nebraska Symposium on Motivation* (Vol. 27). Lincoln: University of Nebraska Press.

Rozek, C.S., Hyde, J.S., Svoboda, R.C., Hulleman, C.S., & Harackiewicz, J.M. (2014, June 2). Gender differences in the effects of a utility-value intervention to help parents motivate adolescents in mathematics and science. *Journal of Educational Psychology*. Advance online publication. http://dx.doi.org/10.1037/a0036981

Ryan, R.M. & Connell, J.P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57, 749-761.

Ryan, R.M., & Deci, E.L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*, 54-67.

Ryan. R.M., & Deci, E.L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Ryan, R.M., & Deci, E.L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, *74*, 1557-1585.

Schecter, O.G., Durik, A.M., Miyamoto, Y., & Harackiewicz, J.M. (2011). The role of utility-value in achievement behavior: The importance of culture. *Personality and Social Psychology Bulletin, 37*(3), 303-317.

Schraw, G., & Lehman, S. (2001). Situational interest: A review of the literature and directions for future research, *Educational Psychology Review, 13*(1), 23-51.

Schuitema, J., Peetsma, T., & van der Veen, I. (2014). Enhancing student motivation, A longitudinal intervention study based on future time perspective theory. *The Journal of Educational Research, 107*(6), 467-481.

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

Schunk, D. H. & Zimmerman, B. J. (2006). *Competence and control beliefs: Distinguishing the means and ends*, Handbook of Educational Psychology Second Edition (Edited by Patricia A. Alexander and Philip H. Winne), Division 15 of the American Psychological Association. 245-263.

Sedaghat, M., Abedin, Al, Hejazi, E., & Hassanabadi, H. (2011). Motivation, cognitive engagement, and academic achievement. *Procedia Social and Behavioral Sciences, 15,* 2406-2410.

Selya, J. S. R, Dierker, L.C., Hedeker, D., & Mermelstein, R. J. (2012). Practical guide to calculating Cohen's f2, a measure of local effect size, from PROC MIXED. *Frontiers in Psychology. Quantitative Psychology and Measurement, 3*, 1-6.

Shell, D.F., & Husman, J. (2001). The multivariate dimensionality of personal control and future time perspective beliefs in achievement and self-regulation. *Contemporary Educational Psychology, 26*, 481-506.

Simons, J., Vansteenkiste, M., Lens, W., & Lacante, M. (2004). Placing motivation and future time perspective theory in a temporal perspective, *Educational Psychology Review, 16*(2), 121-139.

Simpkins, S.D., Davis-Kean, P.E., & Eccles, J.S. (2006). Math and science motivation: A longitudinal examination of the links between choices and beliefs. *Developmental Psychology, 42*(1), 70-83.

Smith, A.B., Giampietro, V., Brammer, M., Halari, R., Simmons, A., & Rubia, K. (2011). Functional development of fronto-striato-parietal networks associated with time perception. *Frontiers in Human Neuroscience, 5*(136), 1-11.

Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence*, *34*, 589-604.

Szpunar, K.K. (2010). Episodic future thought: An emerging concept. *Perspective on psychological science, 5*(2), 142-162.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Allyn and Bacon.

Taylor, S.E., Pham, L.B., Rivking, I.D., & Amor, D.A. (1998). Harnessing the imagination: Mental simulation, self-regulation, and coping. *American Psychologist, 53*, 429-429.

U.S. Department of Education, National Center for Education Statistics (2019a). *Undergraduate retention and graduation rates.* Retrieved from https://nces.ed.gov/programs/coe/indicator_cbc.asp

U.S. Department of Education, National Center for Education Statistics (2019b). *Employment and unemployment rates by educational attainment.* Retrieved from https://nces.ed.gov/programs/coe/pdf/coe_cbc.pdf

Vansteenkiste, M., Lens, W., & Deci, E.L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist*, 41, 19-31.

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K.M., & Deci, E.L. (2004). Motivating learning, performance, and persistence: the synergistic effects of intrinsic goal contents

and autonomy-supportive contexts. *Journal of Personality and Social Psychology, 87*(2). 246-260.

Veenman, M.V.J. (2010). Metacognition in science education: definitions, constituents, and their intricate relation with cognition. In Zohar, A., & Dori, Y.J. (Eds). *Metacognition in science education: trends in current research.* (pp. 21-36). Dodrecht; New York: Springer.

Wang, X. (2009). Baccalaureate attainment and college persistence of community college transfer students at four-year institutions. *Research in Higher Education, 50*, 570-588.

Weiler, J.A., Suchan, B., Daum, I. (2010). When the future becomes the past: Differences in brain activation patterns for episodic memory and episodic future thinking. *Behavioural Brain Research, 212*, 196-203.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion, *Psychological Review, 92*(4), 548-573.

Wigfield, A. (1994). Expectancy-value theory of achievement motivation: A developmental perspective. Educational Psychologist, 6(1), 49-78.

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

Wigfield, A., & Eccles, J.S. (1992). The development of achievement task values: A theoretical analysis. *Developmental Review, 12*, 265-310.

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

Wigfield, A., Tonks, S., & Klauda, S.L. (2009). Expectancy-value theory. In Wentzel, K.R., & Wigfield, A. (Eds.) *Handbook of motivation at school.* New York: Routledge. (pp. 55-75).

Winne, P. H. (2005). Key issues in modeling and applying research on self-regulated learning. *Applied Psychology: An International Review, 54* (2), 232-238.

Wolters, C. A. (1998). Self-regulated learning and college students' regulation of motivation. *Journal of Educational Psychology, 90*(2), 224-235.

Zimbardo, P.G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual difference metric. *Journal of Personality and Social Psychology, 77*(6), 1271-1288.

Zimbardo, P., & Boyd, J. (2008). *The time paradox. The new psychology of time that will change your life.* New York: Free Press.

CURRICULUM VITAE

Elsa M. Mason, M.A.

Office Address
College of Southern Nevada
700 College Drive, Sort Code HNB240
Henderson, Nevada, 89002
Phone: (702) 651-3782
Fax: (702) 651-3789
elsa.mason@csn.edu

EDUCATION:

Ph.D., Educational Psychology
Specialization: Foundations
Area of Research: Motivation, Learning, Self-Regulation, and Metacognition
University of Nevada, Las Vegas
Dissertation: Improving Community College Students' Interest, Utility-Value, and Performance: How Does Future Time Perspective Influence a Utility-Value Intervention?
Advisor: Lisa Bendixen, Ph.D.
December 2019

Master of Arts, Industrial and Organizational Psychology
California State University, Long Beach
Thesis: Effect of Organizational Image and Applicant Experience on Job Pursuit Intentions
Advisor: David Whitney, Ph.D.
August 1998

Bachelor of Arts, Psychology
California State University, Long Beach
Honors: Cum Laude, Golden Key National Honor Society
December 1995

Associate of Arts, Psychology
Santa Ana College, Santa Ana, CA
December 1994

ACADEMIC EMPLOYMENT:

COLLEGE OF SOUTHERN NEVADA

Psychology Professor, Tenured (2015-present)
Psychology Instructor, Tenure-Track (2011-2015)

Psychology Instructor, Part-Time (2006-2011)

SANTIAGO CANYON COLLEGE, Orange, California

Business Skills and Computer Applications Instructor, 2000-2005

COURSES TAUGHT:

COLLEGE OF SOUTHERN NEVADA

Psy 101 - Introduction to Psychology
Psy 240 - Research Methods
Psy 102 – Psychology of Personal and Social Adjustment
Psy 208 – Psychology of Human Relations
Psy 207 – Psychology and the Family
Psy 233 – Child Psychology
Psy 224 - Introduction to Latino Psychology
Psy 298 – Capstone in Psychology

Student Success Workshops/Presentations
Science Study Skills
Test Taking Skills
Math Success Strategies
New Student Orientation
Center for Academic and Professional Excellence
Winning Strategies for Administrative Assistants
Retention Strategies for Faculty

CITY OF HENDERSON, PARKS AND RECREATION, 2005-2006
Beginning Adult Conversational Spanish
Preschool Spanish
Introduction to Keyboarding and Windows
Beginning Microsoft Word

WORKPLACE ESL SOLUTIONS, 2005
East Las Vegas Community Development Corporation
Computer Literacy for Adults

CSN COMMUNITY SERVICES, 2005
Preschool Spanish

SANTIAGO CANYON COLLEGE – Adult Education, 2000-2005
- Keyboarding and Basic Windows
- Navigating the Internet
- Electronic Presentations
- FileMaker Pro
- Introduction to Windows
- Beginning Microsoft Word

ACADEMIC SERVICE:

COLLEGE OF SOUTHERN NEVADA
- Psychology Club Advisor, 2017-present
- Academic Standards, Member, 2007-2011, 2017-present
- Psychology Assessment Committee, 2014-present
- Capstone Co-Coordinator, 2013-present
- Intercollegiate Athletic Committee, 2011-2018
- Psychology Textbook Membership Guidelines Committee, 2012, 2017
- Salary and Benefits Committee, Member, 2011-2013
- Tutorial Services Advisory Committee, 2014
- Search Committees
  - Psychology Professor, 2017 - Member
  - Philosophy Professor. 2017 - Member
  - Director of Community Engagement Services, 2012 – Member
  - Director of College Library Services, 2013 – Chair
  - Coordinator- Disability Resource Services, 2013 – Chair
  - Athletic Director, 2013– Member
  - Director of Advising and Coaching Services, 2013 - Member
- Psychology Curriculum Review Committee, 2012-2014
- Latino Alliance Committee, Member, 2006-2014
  - Secretary, 2006-2008
  - Treasurer, 2010
  - Academic Faculty Liaison, 2011-2013
- UNLV – Office of Student Conduct – Hearing Board Member, 2011-2014

NATIONAL CONFERENCE PRESENTATIONS:

Mason, E., Hong, E., Bennett, L. (2016). Community College Students Metacognitive Strategy Use During Learning a Neuroscience Lesson, *Paper Presented at the American Psychological Association Conference, August 2016 in Denver, Colorado*.

Mason, E., & Hong, E. (2014). Effects of Metacognitive Intervention on State and Trait Metacognitive Strategy Use and Test Performance, *Paper presented at the American Education Research Association Conference, April 2014 in San Francisco, California.*

Hong, E., Mason, E., Peng, Y., & Lee, N. (2013). Effect of Homework Motivation on Homework Achievement in Two Subject Domains: Worry as a Mediating Variable. *Poster presented at the American Education Research Association Conference, April 2013, in Philadelphia, Pennsylvania.*

Peng, Y., Hong, E., & Mason, E. (2012). Motivational and cognitive test-taking strategies and their influence on test performance in mathematics. *Paper presented at the American Psychological Association Conference, August 2012 in Orlando, Florida.*

PROFESSIONAL AFILIATIONS:

Society for the Teaching of Psychology
American Psychological Science

COLLEGE OF SOUTHERN NEVADA PRESENTATIONS:

Mason, E., Hong, E., Bennett, L. (2016). Community College Students Metacognitive Strategy Use During Learning a Neuroscience Lesson, *Poster Presented at CSN Convocation, January 2019*.

Mason, E. (2014). What colors our lenses? Exploring Latino Ethnic Identity and Acculturation. *Presentation for CAPE and the Office of Community Relations, Diversity, and Multicultural Affairs for CSN Diversity Day, September 26, College of Southern Nevada*.

Mason, E. (2013). Latino Student Camp: Welcome to the School of Educational, Behavioral, and Social Sciences. *Presentation for the Office of Diversity Initiatives, Latino Student Camp, October 2013, College of Southern Nevada.*

Mason, E., Gannon, L., Chesser, P., Morse, M., Harris, G., Garritano, N., & Jimenes, Y. (2011). Helping student-athletes succeed in the classroom. *Presentation for CAPE Convocation, August 2011, College of Southern Nevada.*

Mason, E., Guzman, S., & Llamas, L., (2012). Efforts to promote a community and support network for Latino/Hispanic students, staff, and faculty at CSN. *Presentation by CSN Latino Alliance Board Members for CAPE Convocation, August 2012, College of Southern Nevada.*

PUBLICATIONS:

Hong, E., Mason, E., Peng, Y., & Lee, N. (2015). Effects of homework motivation and worry anxiety on homework achievement in mathematics and English. *Educational Research and Evaluation, 21*(7-8), 491-514.

Peng, Y., Hong, E., & Mason, E. (2014). Motivational and cognitive test-taking strategies and their influence on test performance in mathematics. *Educational Research and* Evaluation, 20(5), 366-385.

OTHER EMPLOYMENT:

COLLEGE OF SOUTHERN NEVADA

Retention and Orientation Coordinator, 2007-2011
Office of Recruitment, Retention, and Tutoring

Retention Specialist, 2006-2007
Office of Recruitment and Retention

CITY OF HENDERSON PARKS AND RECREATION
Contract Instructor, 2004-2006

CALOPTIMA, Orange, California
Staff Development Specialist, 1998-2000

PRINTRAK INTERNATIONAL, INC., Anaheim, California
Human Resources Administrator, 1997-1998

MAGNOLIA SCHOOL DISTRICT
Elementary School Office Manager, 1991-1997