EXAMINING THE ROLE OF ENJOYMENT, ANXIETY, AND EMOTIONAL
INTELLIGENCE IN ONLINE GRADUATE STUDENTS' SELF-REGULATED
LEARNING: A CONTROL -VALUE THEORY PERSPECTIVE

by

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DEDICATION

This dissertation is dedicated to the four most important people in my life: mama, baba, Amanda, and Adam.

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ABSTRACT

As online learning continues to grow, particularly amid the COVID pandemic, so too has interest among educational practitioners and researchers to understand the personal and contextual factors that shape students' emotions in these environments. The control-value theory of achievement emotions has emerged as a useful framework for examining the antecedents and consequences of different emotions that students experience in online learning. The purpose of the present study was to validate the assumptions of the control-value theory in an asynchronous online graduate program, and to examine the role of emotional intelligence in this social-cognitive process. Data were collected from 102 graduate students enrolled at a public university in the United States. Results showed that online self-efficacy was a significant predictor of achievement emotions (enjoyment and anxiety). However, student value appraisals of the online program only predicted anxiety. Hierarchical regression analyses also revealed that only anxiety was a significant predictor of self-regulated learning. Further moderation analyses were conducted and showed that emotional intelligence moderated the relationships between achievement emotions and self-regulated learning. The implications for research, theory, and practice are discussed.

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LIST OF ABBREVIATIONS

EDTECH	Educational Technology
EI	Emotional Intelligence
HTML	Hypertext Markup Language
SDT	Self-Determination Theory
SDL	Self-Directed Learning
SRL	Self-Regulated Learning
SPSS	Statistics Package for the Social Sciences

CHAPTER ONE: INTRODUCTION

Introduction

There is a broad consensus among educators and researchers that technology has transformed learning and teaching processes as it simultaneously introduced new opportunities to the educational system. Online learning, for instance, had emerged as an attractive option for adult learners who value more flexibility in their learning experiences, while still being able to fulfill their social and professional commitments. As a result, online learners are expected to take more responsibility for their learning compared to their counterparts in traditional academic environments. This shift from a teacher-centered approach to a student-centered approach has led researchers to focus on the different strategies and behaviors that may help online learners cope with the various challenges that arise in autonomous online learning contexts. Recently, self-regulated learning (SRL) rose to the forefront as one of the critical strategies that online learners should have (Tsai, 2011), especially when taking the social-cognitive and affective-motivational processes of learning into consideration (Gaitero, Román, & García, 2016).

The number of empirical studies on SRL in online settings has increased significantly in the last decade (for review, see Tsai, Shen, & Fan, 2013). SRL has been identified as a critical success factor, particularly in online environments due to the self-directed nature of these contexts (Tsai, Shen, & Fan, 2013). Yet, the social-emotional perspective of SRL continues to receive little attention in online academic research. SRL provides learners with the power and motivation to self-generate thinking, feelings, and

behaviors that can make learning goals more attainable (Gaitero et al., 2016). Therefore, understanding the role of achievement emotions in this process provides valuable insight into how emotions can facilitate SRL strategies among online adult learners.

Additionally, since online learning may require a radical redesign of its pedagogy in order to align with students' social practices and their engagement levels with technology (Burdick & Willis, 2011), understanding SRL from an emotional perspective provides practitioners with opportunities to engage online adult learners more effectively by creating personalized and rich learning experiences to improve learning and retention.

Accordingly, this study explored the interrelationships between student appraisals (i.e., control and value), achievement emotions (i.e., enjoyment and anxiety), and SRL through the lens of the control-value theory of achievement emotions. A secondary aim was to examine how emotional intelligence (EI) plays a role in this process, particularly with how it relates to achievement emotions.

Background of the Problem

In recent years, educational research has increasingly begun to acknowledge the powerful role emotions play in the adult learning process. Despite the wide variations in the meaning of emotions within the educational literature, most scholars agree that they are complex phenomena. One popular revision of the role of emotions in our lives is the concept of emotional intelligence (EI; Goleman, 1995), which conveys the idea of emotions as something that can be managed or controlled, continues to receive very little attention in online learning research. The astronomical growth of distance education and its relatively high attrition rate compared to the traditional mode of education have made it essential to look more closely into the characteristics and profiles of successful online

learners. Regardless of the learning context, emotions play a crucial part in the adult learning process because they can either promote or impede learning (Yorks & Kasl, 2002). Therefore, investigating the role of EI in regulating adult students' emotions and predicting self-regulation is crucial in gaining a valuable insight into the intrinsic and personal factors that define a successful online learner.

More recently, researchers have focused less on general positive and negative emotions and more on discrete achievement emotions. To this end, applications of the control-value theory of achievement emotions and their relations to both SRL and achievement have been common in empirical studies. However, most of these investigations have been conducted in face-to-face contexts (Artino & Jones, 2012). Despite the importance of SRL in traditional learning environments, online environments can provide a more meaningful context for the application of the control-value theory because learners are more autonomous and independent of external regulation (Tempelaar et al., 2012). On that account, this study is directed toward a twofold aim: 1) to test the assumptions of the control-value theory of achievement emotions in an asynchronous online learning environment; and 2) to examine the role of EI within the theoretical framework of the control-value theory.

Purpose of Study

The purpose of this quantitative study was to validate the assumptions of the control-value theory in an asynchronous online graduate program. More specifically, the present study explored students' control and value appraisals as predictors of achievement emotions (enjoyment and anxiety), and whether these emotions predicted the use of SRL strategies. Overall, results from previous quantitative investigations

showed inconsistent results. The present study makes an important contribution to the body of research that quantitatively tested Pekrun's assumptions in online learning. This study is also one of the first to test these assumptions in a fully asynchronous online program rather than single online courses or specific learning tasks. A secondary aim was to address a noticeable research gap regarding the effect of EI on achievement emotions in online learning. In particular, the present study examined the relationships between, EI, achievement emotions (enjoyment and anxiety), and SRL.

Research Questions and Hypotheses

The present study aimed to explore the relationships between appraisals (i.e., control, value), achievement emotions (i.e., enjoyment and anxiety), EI, and SRL in an online learning environment. In particular, this research sought to address the following research questions:

1. What are the linkages between students' appraisals (i.e., online self-efficacy and program value), achievement emotions (enjoyment and anxiety), and SRL in an online asynchronous graduate program?
2. How does a student's EI relate to achievement emotions (enjoyment and anxiety) and SRL in an online asynchronous graduate program?

Based on the research questions, the following hypotheses were generated:

H1(a): Students' online self-efficacy positively predicts enjoyment.

H1(b): Students' online self-efficacy negatively predicts anxiety.

H2(a): Students' perceived program value positively predicts enjoyment.

H2(b): Students' perceived program value negatively predicts anxiety.

H3: Students' enjoyment positively predicts SRL.

H4: Students' anxiety negatively predicts SRL.

H5(a): EI positively predicts enjoyment.

H5(b): EI negatively predicts anxiety.

H5(c): EI positively predicts SRL.

Significance of the Study

Pekrun, Goetz, Titz, and Perry (2002) contend that research on students' emotional experiences in learning should focus on both positive and negative experiences. This full range of emotional experiences can help with the design of educational environments that not only focus on preventing negative emotions but also foster learners' psychological well-being. Following this recommendation, this study investigated both the positive and negative affective experiences of online graduate students. Regarding the design of learning environments, Pekrun et al. (2002) also note a number of implications and guidelines that can be inferred from the empirical validation of the control-value theory. These guidelines include a) improving the quality of academic instruction; b) giving students autonomy in learning, but only to the extent that they can self-regulate; and c) conveying high values of academic mastery while matching social expectations to student capabilities. These implications will be revisited and discussed in detail in relation to this study's findings.

Furthermore, exploring the role of EI in an online learning environment can have valuable practical implications, particularly with regards to creating the profile of successful online students. For example, as Berenson, Boyles, and Weaver (2008) point out, assessing students' EI may help institutions predict whether students can be

successful in online environments, and thus make important decisions regarding their advisement, marketing, and retention efforts.

Rationale for Methodology

This study takes the form of a quantitative research and follows a predictive correlational design approach because its goal was “to examine the association or relation of one or more variables rather than testing the impact of activities or materials” (Creswell, 2002, p. 21). More specifically, the researcher sought to examine the relationships between students’ appraisals (i.e., online self-efficacy, program value), achievement emotions (i.e., program enjoyment and anxiety), EI, and SRL. These predictor variables were selected based on the theoretical assumptions of the control-value theory of achievement emotions (Pekrun, 2006). This design was also justifiable because other empirical studies that tested these theoretical assumptions have used the correlation design to ascertain the factors that predict SRL in online and face-to-face environments (Artino & Jones, 2012; Artino & McCoach, 2008; Pekrun, Elliot, & Maier, 2006; Pekrun, Elliot, & Maier, 2009; Tempelaar et al., 2012; You & Kang, 2014). Correlational studies are most suitable when certain factors (e.g., personality) are impossible to manipulate (Creswell, 2002).

The researcher used a convenience sampling approach. In a convenience sampling, participants are selected because they are available and willing to participate. It is important to note that when using a convenience sampling, the researcher cannot say with confidence that the participants are representative of the population; nonetheless, the sample still provides important information to answer research questions and hypotheses (Creswell, 2002).

Data were gathered through self-administered attitudinal measures, which participants filled out and submitted online. The surveys, featuring Likert-type questions, were distributed to students via their institutional email and EDTECH class forums. Collecting data through online questionnaires, such as psychological tests, ensured that participants' responses were not influenced by the presence of the researcher, thus eliminating unwanted effects (De Leeuw, 2008). Survey responses were analyzed using a statistical analysis program (SPSS).

Assumptions of the Study

This study assumed that study participants would answer the survey questions truthfully. To encourage transparency, all participants were made aware that their personal information and survey responses would remain confidential and secure at all times. All participants were volunteers who had the option to withdraw from this study at any time and without penalty. Lastly, survey responses and personally identifiable information were not shared with the department or university before, during, or after the completion of this study.

Chapter Summary

This first chapter describes the present study and offers insight into the research gap within the social-cognitive research. Additionally, this chapter provides an outline of the research approach, introduces the research questions and hypotheses, and provides a rationale for the methodology used. The remaining chapters of this dissertation provide a review of the literature regarding the role of emotions in learning, adults' experiences in online environments, a background on EI in learning, and key components of the control-value theory, which is the guiding framework of this proposed study.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The number of research on the role of emotions in the learning process in online learning environments has grown in recent years. One line of research that is situated within the social-cognitive perspective of SRL quantitatively considers emotions as a personal factor that impacts student learning and performance (e.g., Artino, 2010; Artino & Stephens, 2009; Artino & Jones, 2012; Marchand & Gutierrez, 2012; Tempelaar et al., 2012; You & Kang, 2014). This body of literature views achievement emotions as a crucial component of the learning process, which involves a complex interplay between personal and contextual factors (Pekrun, 2006). The current study complements this line of research by not only examining the assumptions of the control-value theory but also by exploring the role of EI in the social-cognitive learning process. Furthermore, despite the few attempts to empirically validate the control-value theory in online learning environments, the results have not been consistent. It is therefore essential to re-examine these assumptions in online learning environments to provide more insight into the core concepts that underlie the control-value theory.

The purpose of the literature review in this chapter is to summarize the existing evidence on the role of emotions in learning achievement contexts. First, this chapter begins with a conceptual framework that provides a theoretical support to the relationships presented in the research model. Next, a review of the literature on emotions and learning from the constructivist learning perspective is highlighted through a

summary of different theoretical models, including the control-value theory of achievement emotions. The remainder of this chapter is devoted to a discussion of online learning for adults and a summary of existing research on emotional intelligence. This chapter concludes with a review of SRL in the face-to-face and online environments through the lens of the control value-theory.

Conceptual Framework

The control-value theory posits that achievement emotions arise as a result of control and value appraisals in achievement situations such as academic settings, sports, and professional activities (Pekrun et al., 2011). In educational settings, control appraisals refer to learners' judgments about their perceived controllability to perform learning tasks with the desired outcome. Value appraisals, on the other hand, refer to how learners subjectively value achievement activities and outcomes. In light of the control-value theory, Pekrun et al. (2011) describe emotions as sets of interrelated psychological processes that combine affective, cognitive, motivational, and physiological components.

Goetz, Frenzel, Pekrun, and Hall (2006) define EI as “a person’s ability for the perception, reflection, and regulation of emotions” (p.238). These authors proposed a theoretical model for the promotion of EI in learning and achievement situations, which postulates that promoting EI must involve teaching students to perceive academic emotions as controllable and valuable. From this point of view, Goetz et al. (2006) describe EI as a self-regulatory process. From a behavioral point of view, EI represents the use of cognitive abilities to perceive and reflect on emotion-related information in learning and achievement contexts and to regulate such emotions in a goal-directed fashion.

EI as a Predictor of Enjoyment, Anxiety, and SRL

The theoretical model proposed in this study hypothesizes that EI predicts enjoyment, anxiety, and SRL. As noted by Goetz et al. (2006), emotionally intelligent students can identify their emotions and are knowledgeable, through a reflective process, about the positive and negative consequences of these emotions for learning and achievement. Within the educational context, García-Fernández et al. (2015) argue that since EI plays a key role in academic achievement and considering how learning strategies help facilitate learning, a relationship between these two dimensions is to be expected. Their study also supports the notion that EI skills help students clearly understand their feelings and repair negative moods, which will influence academic performance, and ultimately their achievement levels. In another study and using a sample of university students, Fernández, Salamonson, and Griffiths (2012) found links between EI and learning strategies, namely critical thinking, help seeking, and peer learning. EI also emerged as a significant predictor of academic achievement. It is therefore assumed that online students with higher EI will demonstrate certain self-regulatory behaviors (i.e., goal setting, time management, and help-seeking), which provides theoretical support to the positive relationship between EI and SRL.

Antecedents and Effects of Achievement Emotions

The control-value theory of achievement emotions posits that a combination of students' control and value appraisals predict their achievement emotions, which in turn predict their motivation, learning strategies, and cognitive resources (Pekrun et al., 2007). Achievement emotions refer to emotions related to learning and achievement (Pekrun, 2006), whereas learning-related emotions represent a subgroup of these emotions.

Achievement emotions can be categorized by their valence (negative and positive), their degree of activation (activating vs. deactivating), and object focus (activity outcome, prospective outcome, and retrospective outcome; Table 1). The present study examined enjoyment and anxiety as achievement emotions.

According to the three-dimensional taxonomy put forward by Pekrun and Stephens (2010), enjoyment is an *activating, activity outcome* emotion, whereas anxiety is an *activating, prospective outcome* emotion. These two emotions differ in valence. Enjoyment is a *positive* emotion, whereas anxiety is a *negative* emotion.

Table 1. The Control-Value Theory Three-Dimensional Taxonomy (Pekrun & Stephens, 2010).

	Valence			
	Positive		Negative	
Object Focus	Acti vating	Deact ivating	Activat ing	Deactiva ting
Activity Outcome	Enj oyment*	Relax ation	Frustra tion	Boredo m
Prospective Outcome	Hop e	Antic ipatory Relief	Anxiet y*	Hopeles sness
Retrospective Outcome	Prid e	Relief	Shame	Disappo intment

*Emotions examined in this study

According to Pekrun (2006), positive activating emotions (e.g., enjoyment) play a role in facilitating the use of flexible and in-depth processing strategies such as elaboration, organization, and metacognition. Whereas, negative activating emotions (e.g., anxiety) are believed to predict the use of more rigid and shallow processing strategies, such as simple rehearsal. Negative deactivating emotions (e.g., boredom) may

result in reduced attention and the use of more superficial, shallow processing strategies. It is noteworthy that the achievement emotions shown in Table 1 are only a sample and do not represent all the emotions experienced in achievement-related contexts.

Online learning research supports subjective control as a predictor of achievement emotions (Artino & Jones, 2012; Marchand & Gutierrez, 2012; Tempelaar et al., 2012). For example, Artino and Jones (2012) examined the relationships between students' self-efficacy and achievement emotions and found that online self-efficacy significantly correlated with boredom, frustration, and enjoyment. Additionally, Marchand and Gutierrez (2012) used self-efficacy to measure graduate students' subjective control and found that control was a consistent predictor of achievement emotions in both traditional and online learning settings. Specifically, control positively predicted hope and negatively predicted frustration and anxiety. Accordingly, it is assumed in the current study context that students' online self-efficacy will positively predict enjoyment and negatively predict anxiety.

Eccles (2005) identified four elements of task value (attainment, intrinsic, utility, and cost) that can vary depending on learning environments. Daniels and Stupnisky (2012) explain that utility value (i.e., task usefulness in relation to future plans) and attainment value (i.e., the importance of success on a task) are consistent across different learning contexts because students are likely to value high grades, and they can similarly apply course content regardless of delivery modes. However, intrinsic task value (i.e., enjoyment or interest) and cost (i.e., negatives of engaging in a task) depend on student's preference and therefore can vary across learning modes. Empirically, Artino and Jones (2012) suggested that task value significantly correlated with boredom, frustration, and

enjoyment among online learners. In another study, Noteborn et al. (2012) noted that task value was a strong predictor of both enjoyment and boredom among students within the virtual environment of Second Life. In light of these findings and based on the assumptions of the control-value theory, it is hypothesized that students' perceived value will positively predict enjoyment and negatively predict anxiety in online learning. In this study, the researcher assessed how students valued the tasks required by their program in general on the four key dimensions: intrinsic value, attainment value, utility value, and cost value.

Lastly, Artino and Jones's validation of the control-value theory in an online environment suggested that activating emotions (i.e., enjoyment) positively predicted learning strategies such as metacognition and elaboration. However, findings that support the negative relationship between anxiety and SRL in online learning research are mixed. For example, You and Kang (2014) found that anxiety was not significantly related to SRL while Marchand and Gutierrez (2012) found that anxiety was not a significant predictor of strategy use. Nonetheless, the present model reflects Pekrun's assumption and hypothesizes that anxiety will negatively predict SRL in an online environment.

Online Self-Efficacy as Control Appraisal

Within the control-value theory framework, an individual's cognitive appraisal of control refers to the perceived controllability of achievement activities and their outcomes (Pekrun, 2006). Control appraisals are often indicated by expectations and competence perceptions, such as self-efficacy and self-concepts of ability (Artino, Holmboe, & Durning, 2012). Bandura (1986) defines self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain

designated types of performances” (p. 391). In literature, self-efficacy is one of the most important factors in social cognitive theory and plays a critical role in learning and performance (Hodges, 2008). That is, students who feel efficacious toward a learning task are more likely to exert effort and persist longer in achieving a task.

Some researchers argue that self-efficacy is a key component of success in online learning due mainly to the self-directed nature of these environments (Hodges, 2008). Other researchers also assert that the high attrition rate in online learning environments is related in part to the lack of self-efficacy (Lee & Choi, 2011). According to online self-efficacy research, the concept of self-efficacy encompasses three dimensions: technology, learning, and social interaction. Most empirical studies, however, have examined the technological aspect of self-efficacy (Shen et al., 2013). For example, Artino (2009) found that students with high self-efficacy for computer-based learning are more likely to experience learning satisfaction. In another study, Shen et al. (2013) explored five dimensions of online self-efficacy and found that students' self-assessment about their learning self-efficacy was more important in explaining satisfaction with online learning compared to other self-efficacies, mainly social and technology self-efficacies.

An important aspect of self-efficacy is that it is domain-specific (Bandura, 1986). That is, individuals assess their capabilities depending on the particular domain of functioning (Bandura, 2006). For example, high self-efficacy in face-to-face learning environments does not necessarily indicate high self-efficacy in online learning. Therefore, to ensure reliability of empirical results, any measures of self-efficacy must be “tailored to domains of functioning and must represent gradations of task demands within those domains” (Bandura, 1997, p.42). Since the present study was conducted in an

online graduate program, assessing students' online self-efficacy to reflect self-judgments of the control component within the control-value framework not only addresses the requirement of domain specificity but also helps achieve predictive power (Artino & McCoach, 2008).

Enjoyment in Learning

In a quantitative study, Pekrun et al. (2002) identified enjoyment, in addition to boredom and anxiety, as the most frequently reported emotions among university students. In an online learning environment, You and Kang (2014) examined the role of academic achievements in the process of SRL and found that enjoyment had a significant mediating effect between control and SRL and a strong positive relationship with SRL, whereas boredom and anxiety played a moderating effect. In literature, there are multiple perspectives of the potential triggers of enjoyment. For example, flow theory posits that the pleasure experienced reflects a balance between challenge and capacity. Students may experience boredom when they deal with over-challenging or under-challenging tasks (Pekrun et al., 2002); hence, You and Kang (2014) suggest that instructors need to identify the level of learners' capabilities, and provide interesting and useful learning tasks to students to increase the perceived value of these tasks.

The positive relationship between enjoyment and learning is well-documented in different contexts and learning environments. For example, in a game-based learning environment, enjoyment was found to predict game achievement (Baek & Touati, 2017; Touati & Baek, 2018). The experience of enjoyment also moderated the positive consequences of self-regulation on achievement (Villavicencio & Bernardo, 2013). Similarly, Pekrun et al. (2002) reported on how enjoyment during learning tasks is

associated with more interest and effort in learning and less irrelevant thinking, which not only would indicate positive appraisals of the learning task but also would support self-regulation of learning.

Anxiety in Learning

Emotions have been found to affect a wide range of cognitive and motivational processes such as perception, attention, learning, decision-making and problem-solving (Schwarz, 2000). Clore and Huntsinger (2007) report that while positive emotions promote flexibility and creativity, negative emotions enhance more detail-oriented, analytical ways of thinking. From a control-value perspective, Pekrun et al. (2002) explain that a lack of control or negative task outcome can result in negative emotions such as anger, anxiety, hopelessness, shame, or boredom. Anxiety, in particular, is assumed to consume the necessary resources of a working memory, and it can potentially inhibit students' capabilities to do well in learning situations (Heimberg et al., 1992). Experiencing anxiety in learning and achievement situations involves affective, cognitive, motivational, and physiological responses (Pekrun et al., 2002). For example, in learning situations where anxiety is experienced, students can feel uneasy (affective response), worry about failing (cognitive response), and in some cases want to escape the situations (motivational response). According to the control-value theory, higher control and value appraisals may reduce anxiety; however, Pekrun (2006) cautions that increasing students' perceived value of achievement can also result in high-stakes situation appraisals that can induce anxiety as well.

Zembylas (2008) studied the role of emotions in an online program for adult learners. These authors described what they called an "emotional climate," which is the

product of various interactions with all the components of the program. More specifically, a positive emotional climate, created by positive relationships with instructors and other learners, can mitigate the negative aspects of online learning. The authors concluded that the negative feelings of anxiety were mainly tied to the actual medium and were attenuated with greater familiarity with learning online. Similarly, Butz et al. (2016) found that technology-related anxiety mediates the positive effect of control on perceived success in a hybrid graduate program. These authors concluded that technology use was the potential source of anxiety among graduate students.

Previous studies that used Pekrun's social cognitive framework to examine the role of achievement emotions in the process of SRL among online students reported mixed results. For example, You and Kang (2014) found that anxiety was not significantly related to SRL but played a moderating role in the link between perceived control and SRL. In another study, Tempelaar et al. (2012) investigated achievement emotions with students in a blended learning setting and found that control only predicted boredom but not anxiety. They also noted that male students scored significantly less than female students in anxiety. The study by Marchand and Gutierrez (2012) found that neither frustration nor anxiety predicted strategy use for online students. They also found no link between student anxiety and utility value. Nonetheless, one important finding in their study was that higher levels of anxiety predicted more meaningful strategy use. Marchand and Gutierrez argue that an optimal level of anxiety is needed for peak performance in learning situations. That is, too little or too much anxiety can have a negative effect on learning and performance outcomes. These authors also noted that the mixed results regarding the relationship between anxiety and performance or learning

strategies can be interpreted from the inverted U-effect associated with Yerkes Dodson law. In other words, as Marchand and Gutierrez (2012) pointed out, reports suggesting that high anxiety predict low performance reflect the declining side of the inverted U, whereas studies that report a positive relationship between anxiety and performance represent the facilitative side of the U.

The hypothesized model was constructed based on nine hypotheses. First, this study sought to explore cognitive appraisals (control and value) as predictors of achievement emotions (enjoyment and anxiety), which in turn were assumed to significantly predict SRL. Lastly, EI was introduced as a predictor of achievement emotions and SRL (Figure 1).

Figure 1. Theoretical Model

Affective State: Emotions and Learning

“There can be no knowledge without emotion. We may be aware of a truth, yet until we have felt its force, it is not ours. To the cognition of the brain must be added the experience of the soul”- Arnold Bennett, Novelist and Playwright, 1867- 1931.

The Constructivist Learning Framework and Affective State

Constructivist learning environments have been increasingly and widely accepted in areas of education (Tenenbaum, Naidu, Jegede, & Austin, 2001). In literature, Loyens, Rikers, and Schmidt (2008) define constructivism as a knowledge construction process that describes how learners create meaning through active engagement. The constructivist view of learning can point towards a number of different teaching practices; however, most scholars seem to agree on four core constructs, which includes knowledge construction, cooperative learning, self-regulated learning, and integration of authentic problems in learning environments. In other words, unlike in a traditional mode of learning where the students tend to be passive, a constructivist learning method encourages students to seek their own solutions and to build on prior experiences and knowledge. Therefore, constructivist learning can be sensitive to students’ context, attitudes, and beliefs (Neo, 2005).

Bates (2000) contends that “learning is as much a social as an individual activity” (p. 14). The social constructivist perspective (Vygotsky, 1978) highlights the role of culture and context as key factors in forming understanding and deep learning. From this perspective, learning is viewed as the development of psychological processes, which first take place on an interpersonal level through social interactions and ultimately occurring on an internal level (Bryceson, 2007). Socially related emotions can arise in

social contexts based on how learners are perceived and the feelings they elicit from other students in achievement contexts (Hareli & Weiner, 2002). Nonetheless, what is generally agreed upon is that emotion is a complex and multifaceted phenomenon, which explains the different point of views about the relationship between emotion and cognition. To this end, researchers have investigated the role of affective states in learning from a wide array of perspectives. One body of literature stresses the importance of appraisal and emotion arousal in the learning process. Wosnitza and Volet (2005), for example, explain how intense emotions (i.e., high levels of excitement or anxiety) can fluctuate in situations that are perceived both challenging and relevant to the learner. In this case, the learner subsequently determines whether to invest the mental energy for the sake of the challenge or to adopt coping strategies to survive the challenge depending on the type and strength of emotions they experience at that moment. However, in learning situations where the activity is perceived challenging but of no relevance to the learner, Wosnitza and Volet explain that a secondary appraisal may result in either ignoring the challenge or quitting the activity. Simply put, learners will invest little to no mental effort for the sake of the challenge in this case.

Kort, Reilly, and Picard (2001) proposed a model of emotions that describes the various emotional changes as the learner moves through quadrants and up the spiral. The horizontal axis represents the emotions that occur in learning with the right portion symbolizing the more pleasurable emotions (i.e., satisfaction and hopefulness) and the left side representing the more unpleasant emotions such as disappointment and confusion. The vertical axis, also called the learning axis, depicts the construction of the

knowledge process when moving upward and the un-learning or discarding of misconceptions when moving downward (Figure 2).

Figure 2. The Model of Emotions in Learning (Kort et al., 2001)

According to Kort et al. (2001), learners move through a range of emotions when they engage in a learning activity. Students typically begin the experience in either quadrant I when they are curious and excited about a new topic of interest, or quadrant II when they are puzzled yet motivated to reduce confusion. In both cases, students are placed in the top half of the model since their focus is constructing or testing knowledge. As learning proceeds, movement happens in a circular and helical fashion between quadrants. For example, while creating a webpage from scratch, a student builds an idea of how to write code in HTML (Hypertext Markup Language). However, when the student opens the page in a browser, they notice multiple errors. In this case, it is common that they experience negative emotions specified in the lower half of the diagram (quadrant III). As the student resolves the issue and figures out what works and

what does not, they are then able to move to quadrant IV as they become hopeful in making progress. Most importantly, getting fresh and new ideas moves the student back to quadrant I, thus experiencing positive emotions once more.

In some cases, students might be in more than one emotional quadrant at a time. That is, as Kort et al. point out, a student may be frustrated (quadrant II) and at the same time curious (quadrant I) about a solution in a learning activity. It is noteworthy that this model of emotions does not make the case that positive emotions are the good ones, and the negative emotions are the bad ones. In other words, this cyclical process occurs naturally in a real learning process and students' experiences of the negative emotions are only part of the cycle. As a result of their argument, Kort et al. (2001) suggest that educators should focus on teaching students how to lift themselves up after a setback rather than keeping students in quadrant I.

Another constructivist point of view proposes that affective states exert a systematic influence on how a person processes new material (Craig, Graesser, Sullins, & Gholson, 2004). This school of thought argues that a learner's intrinsic motivation is the catalyst of affective, cognitive, and behavioral reactions. For example, Craig et al. (2004) contend that intrinsically motivated learners can show more active involvement and persistence in tasks because they are affectively engaged. Greater task involvement and persistence can result in a deeper understanding of the materials (Jonassen, Peck, & Wilson, 1999). Intrinsically motivated learners engage in learning opportunities because they perceive them as interesting, enjoyable, and/or relevant to satisfying one's core psychological needs (Ryan & Deci, 2000). The self-determination theory (SDT) posits that the satisfaction of the three psychological needs (i.e., competence, autonomy, and

relatedness) promotes intrinsic motivation. The importance of intrinsic motivation has been well-documented in different aspects of learning. Intrinsic motivation leads to higher engagement, task performance, and preference for a challenge (Patall, Cooper, & Robinson, 2008). In the academic context, engagement triggers positive emotional experiences, including fun, enthusiasm, and commitment to hard work (Niemi et al., 2014). There is also empirical evidence to suggest a direct link between engagement and enjoyment (Lyons et al., 2014). Enjoyment, in particular, is an emotional experience that has been widely stressed in learning and education. More specifically, research on achievement goals has highlighted that goals that use self-referent, task-approach goals to assess competence can lead to task enjoyment in achievement settings (Pekrun, Elliot, & Maier, 2006).

Achievement Goals and Emotions

Achievement goals is an area that has been widely studied in both motivation and emotion literature. Pekrun, Elliot, and Maier (2009) define achievement goals as “competence-relevant aims that individuals strive for in achievement settings” (p. 115). Achievement goals are viewed as antecedents of emotions in academic contexts through the lens of the control-value theory. Achievement emotions are emotions that are directly related to achievement activities or achievement outcomes (Pekrun, 2006). From this perspective, Pekrun (2006) considers two types of achievement emotions: activity emotions describing the emotions that arise during the activity, and outcome emotions describing the emotions experienced as a result of the outcome of the activity. This author also provides examples of enjoyment that stems from learning and boredom that students experience during a lecture to illustrate activity emotions. The outcome

emotions, according to Pekrun, include both anticipatory emotions such as hope for success or anxiety of failure and retrospective emotions such as pride or shame that is typically experienced after feedback.

The control-value theory also suggests a link between appraisals and achievement emotions. According to Pekrun (2006), there are two types of appraisals that are relevant to achievement emotions: (a) subjective control over achievement activities and the outcomes related to this activity (e.g., persistence at studying can be done and can lead to successful results); and (b) subjective values of the activity and outcomes (e.g., perceived value of a successful outcome). Pekrun (2006) further explains subjective control from the perspective of action-control and action-outcome expectancies. One of the most commonly used terms in the literature to describe these expectancies is self-efficacy expectation (Bandura, 1977). However, Pekrun (2006) argues that this term is often misunderstood as “implying the overall agency of an individual, including his or her efficacy to produce outcomes, instead of simply denoting appraisals of being able to produce an action” (p. 318). The action-outcomes expectancies, on the other hand, refer to the idea that a person’s actions can either produce a positive outcome or prevent a negative outcome (i.e., control). The second constituent of the control-value theory (i.e., value) has been discussed by Pekrun (2006) concerning appraisals of both intrinsic and extrinsic subjective values of actions and outcomes. In the case of the perceived intrinsic value, a good example is how a student values the academic studying and the learning activity for its own sake, regardless of the grade they may receive. An illustration of the perceived extrinsic value is how a student demonstrates persistence in learning to receive praise from a parent or a teacher. In sum, there is strong evidence in the literature to

suggest that achievement goals can predict emotions in both face-to-face and online learning contexts (Artino & Jones, 2012; Daniels et al., 2009; Elliot & Pekrun, 2007; Pekrun, Elliot, & Maier, 2006, 2009).

Figure 3 provides an overview of the different elements of the control-value theory. Within this framework, it is assumed that control appraisals and value appraisals are the proximal determinants of achievement emotions. The theory also highlights the effects of achievement emotions on certain processes including academic engagement and performance. More, specifically, emotions influence cognitive resources, motivation to learn, use of strategies, and self-regulation. According to Pekrun et al. (2007), these processes mediate the effects of achievement emotions on achievement outcomes.

Figure 3. Control-Value Theory of Achievement Emotions (Pekrun et al., 2007)

Online Learning for Adults

Challenges and Opportunities in Online Learning

Higher education institutions are under increasing pressure to adopt technology and innovation as alternatives to existing systems of education. As a result, universities across the globe have exploited the innovative potential of learning technologies by providing flexible learning modes that are independent of place and time. For the last two decades, online learning has been an attractive learning option for adult learners who cannot afford to take time away from their jobs or family responsibilities to attend a brick and mortar classroom. Larreamendy-Joerns and Leinhardt (2006) define online learning as “instruction through a connection to a computer system at a venue distant from the learner’s personal computer” (p. 568). Online learning was first introduced as an asynchronous activity and had since adopted more advanced technologies such as web 2.0 tools, synchronous communication, and other commonly used technologies (Kruger-Ross & Waters, 2013). The web, in general, provides a rich platform for adult learners to actively search, solve problems, and construct their knowledge, thereby becoming an essential tool for constructivist online learning (Huang, 2002). According to Jonassen (2000), these technologies allow learners to engage in learning by allowing them to: “a) articulate what they know; b) reflect on that they have learned; c) support the internal negotiation of meaning-making; d) construct personal presentations of meaning; and e) support intentional, mindful thinking” (p. 24). Importantly, adult learners, in both online and face-to-face environments, are more motivated to learn when the topic of instruction is relevant to their problems in life; thus, any new information should be presented to them in real-life contexts (Huang, 2002).

Although online learning is proving effective (Merriam & Bierema, 2014), there are still challenges that can potentially hinder learning among adults who participate in online learning. Online learners are expected to self-direct their learning; however, many adults find it challenging to manage their work, school assignments, and family obligations. These challenges become evident when considering the social, economic, and gender roles of adults. Gender, in particular, is an area worthy of additional examination, particularly when considering the increasing number of online female students (Yukselturk & Bulut, 2009). Despite this positive trend, Zembylas (2008) notes that studying at home still presents a conflict between the values of gender equality and old values of mothering and family responsibilities, which can lead to heavy emotional demands among adult women. Moss (2004) also highlights contradictions and discontinuities in adult women's identity once they become students as this identity must fit with the pre-existing social roles. As a result, adult women experience a much more significant challenge to find a balance between their perceived social roles and their roles as online students as opposed to men. In other words, engaging in an online learning experience does not relieve women from their family responsibilities and other obligations. Despite these challenges, female participants tend to find the convenience and flexibility of online learning invaluable considering the alternative, which is to attend a traditional college that requires commuting and scheduling classes around inflexible personal schedules, especially for working women who are committed to their old family obligations. Regardless, female students may still show more online participation in online learning than their male counterparts (Chyang, 2007) despite their perceived role in society and the responsibilities that come with such a role.

A common challenge that may negatively impact the learning experience for adult learners is their familiarity and comfort level using technology. For example, Bates and Khasawneh (2004) note that fear of computer technologies can lead to confusion, anxiety, loss of control, frustration, and withdrawal. The way adults perceive and interact with technology in online learning settings can, in many ways, shape the learning outcome. For instance, using asynchronous communication tools in an online class can be an overwhelming experience for many adults considering that they socialized differently from students of this generation who have grown accustomed to communicating via text and emails. Technology is not just a tool in the hands of its users, it has instead “infused every aspect of society to essentially change the thought process in learning” (Parker, 2013, p. 55). Taken in sum, surely one of the biggest challenges for adults who participate in online learning is to adapt to this new, unfamiliar culture where technology has redefined how learners acquire knowledge, socialize and collaborate in an educational setting. Despite these challenges, adult learners are not only becoming the majority age group in online learning (Ke & Xie, 2009), they are also more successful than younger students when taking online courses (Ransdell, 2013). Therefore, well-designed online courses for adults should consider structuredness of the content and different levels of support that promote interaction and knowledge construction (Ke & Xie, 2009).

Adults’ Emotions and Motivations in Online Learning

In the past few years, a growing number of empirical studies have explored discrete emotions in online environments (e.g., Artino Jr & Jones, 2012; Marchand & Gutierrez, 2012; Tempelaar et al., 2012; You & Kang, 2014; Zembylas, 2008). For adult

learners, emotions play a crucial role in increasing or decreasing their motivation to learn (Wlodkowski, 1999). One of the assumptions of the control-value theory is that control and value appraisals are determined by the characteristics of the learning environment (Pekrun, 2006). For example, in learning contexts where students experience greater autonomy and value induction (e.g., telling students why the task is important to them), higher levels of control and value appraisals may occur, which in turn affect learning-related emotions (Stark et al., 2018). However, online environments that provide restricted social interactions between students present more challenges when compared to traditional contexts, particularly in relation to the recognition and regulation of emotions (Sansone, Smith, Thoman, & MacNamara, 2012). That is to say, unless online students explicitly and verbally disclose their emotions during learning activities, instructors can be unaware of students' nonverbal reactions, such as confused expressions, when they respond to specific points (Wosnitza & Volet, 2005).

Research in the area of emotions and online learning highlights strategies for promoting students' sense of connectedness through minimizing certain negative emotions such as loneliness, isolation, and anxiety (Regan et al., 2012). For example, Reupert et al. (2009) found that adult online learners prefer instructors who are actively and "visibly present," notably in forums, to assist with direction and organization of coursework and related tasks. Chen and Jang (2010) concluded that online instructors should spend more time understanding students' intentions for enrollment as a way to reduce uncertainty and anxiety and to increase learning enjoyment in online environments. In addition, some researchers have noted that adult learners perceive timely support and self-regulation as the most valued attributes in an online learning

experience (e.g., Northrup, 2009). SRL, in particular, was shown to be significantly related to perceived academic control and enjoyment in online learning environments (You & Kang, 2014). In literature, Schunk and Zimmerman (1998) define SRL as the process whereby learners systematically direct their thoughts, feelings, and actions toward the attainment of their goals. However, although the purpose of online learning is to promote learner's independence and self-regulation, much more responsibility is placed on students when compared to face-to-face learning settings (Yukselturk & Bulut, 2007). Given this increased responsibility for their learning, online students achieve differently in terms of how they allocate time to complete tasks, prepare for tests, or maintain initial motivation throughout the learning process (You & Kang, 2014; Yukselturk & Bulut, 2007). In other words, self-regulated learners who positively appraise learning activities show more motivation to engage in learning tasks (Boekaerts, 2007).

Chen and Jang (2010) argue that online students should not be categorized into “motivated” and “unmotivated” groups; instead, instructors should consider students' reasons for participation in class. Specifically, as Chen and Jang point out, students may share similar levels of motivation, but it is the internal reasons (e.g., interest, joy, or pursuit of self-fulfillment) and external reasons (e.g., fear of being outdated or search of better salary) that can determine the success of the online learning experience. Moreover, the literature regarding the profile of successful online learners highlights several emotional characteristics that can predict students' success including EI (Berenson, Boyles, & Weaver, 2008), intrinsic interest (Leong, 2011), and adaptive motivation-emotion profiles (Artino & Stephens, 2009). For example, Artino and Stephens (2009)

investigated the importance of motivation in combination with certain negative emotions in online learning. These authors concluded that students who reported more positive motivational beliefs and experienced less boredom and frustration possessed more adaptive motivation-emotion profiles and were more successful than their less adaptive counterparts. The results of their study also support the significant impact of achievement emotions on academic success in online learning environments.

Emotional Intelligence (EI)

Importance of EI in Learning

Amid the COVID-19 pandemic and the need for social distancing, colleges and universities around the world have adopted emergency eLearning protocols thereby accelerating the development of online learning in higher education. The rapidly evolving COVID-19 pandemic has challenged educational institutions to rethink a new paradigm of teaching and learning not only during the pandemic but also in post-pandemic time. Consequently, many students and faculty in higher education have found themselves in uncharted territory. As Zhu and Liu (2020) mention, students are now required to be self-disciplined and self-directed active learners. However, the added anxiety and fear that students are experiencing during the COVID-19 outbreak has made it more difficult for students to adapt to a new norm. The connection between emotions and the use of explicit adapting strategies has been well- documented (Fredrickson, 2001; Frijda, 1994). For example, dread causes an individual to sidestep and shield themselves from occurrences, while joy, for instance, prompts the desire to engage (Frijda, 1994). As students face challenging situations, they must do so with emotional intelligence (EI), which provides a

foundation to experience emotions in a more balanced way to be able to handle stressful situations, not only during the COVID outbreak but also in the post-pandemic times.

Emotional intelligence, or EI, is a term that has received increasing attention in the past two decades, particularly in how it affects academic achievement. In the context of learning and achievement situations, Goetz, Frenzel, Pekrun, and Hall (2005) define EI as a person's ability to perceive, reflect, and regulate his or her emotions. Salovey and Mayer (1990), who were among the first to introduce this concept, describe EI as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them to use this information to guide one's thinking and action" (p. 186). According to Salovey and Mayer, EI is a subset of social intelligence, which explains why an emotionally intelligent person is aware of others' emotions as well. Consequently, the social dimension of EI is critical in social learning contexts, such as collaborative learning, where learners need to be capable of dealing with not only their emotions but also others'.

Mayer and Salovey (1997) highlight four components of EI: perception of emotions (i.e., appraisal and expression of emotions); facilitation and assessment of emotions (i.e., the use of emotions to improve reasoning); understanding of emotions (i.e., cognitive processing of emotions); and regulation of emotions (i.e., the ability to manage emotions). Emotionally intelligent people are better at perceiving others' emotional states and are less likely to lose control of their emotions in stressful and emotionally challenging situations. In a working environment, for instance, a person with lower EI may constantly find herself frustrated by little things (such as a colleague's actions or behaviors) and could find it very difficult to focus on essential task issues. In

contrast, individuals with better EI show better productivity and creativity because they feel better about the work they do (Gunderman, 2011). The impact of EI is also evident in learning and social contexts for both children and adults. Children with higher EI are more sociable, while adults who score higher on EI dimensions report higher self-perception of social competence (Gunderman, 2011). Within the context of education, empirical research suggests that EI can play a moderating role in the relationship between academic self-efficacy and academic achievement (e.g., Adeyemo, 2007).

Emotionally intelligent students perceive themselves as competent to deal with the negative emotions that may arise in the learning environment. The term emotional self-efficacy (Dacre-Pool & Qualter, 2012a) was coined to describe an individual's belief, not only in their ability but to use it accordingly. When dealing with emotional experiences, self-efficacy refers to one's ability to utilize their capacity to deal with negative emotions and to manage the intensity, frequency, and duration of such experiences (Saarni, 1990). Dacre Pool and Qualter (2012b) suggest that EI skills can be taught and developed, and their eleven-week study investigated whether it was possible to increase university students' EI and emotional self-efficacy (ESE) scores. Students in this intervention enrolled in a course that introduced EI through a process of theory, practice, and reflective learning. The course was also designed around the four-component EI model proposed by Mayer and Salovey (i.e., perception of emotion; using emotion; understanding emotion; and managing emotion). Results from students' reflective activities such as journal entries and group discussions that were frequently applied throughout the intervention suggest a significant improvement in both EI and emotional self-efficacy scores at the end of this course.

In literature, EI has been conceptualized as an emotion-related cognitive ability, also known as ability EI (Mayer, Salovey, & Caruso, 2004) as well as a combination of self-perceptions at the lower ends of personality hierarchies, a concept that was termed trait EI (Petrides, Pita, & Kokkinaki, 2007). Both ability and trait EI are two distinct constructs (Qualter et al., 2012). More specifically, EI researchers found a weak correlation between ability and trait EI measures with the latter showing significant overlap with Big Five personality traits (Daus & Ashkanasy, 2005; Joseph & Newman, 2010). However, Brackett and Mayer (2003) assert that certain traits such as motivation, optimism, and self-esteem that are typically measured by trait EI tests are inaccurate facets to assess in one's EI. Similarly, Law, Wong, and Song (2004) argue that based on the definitions and domain of the EI constructs put forward by psychology researchers, EI "should be conceptually distinct from traditional personality dimensions" (p. 494). They also concluded that EI scales should assess a person's emotion-related abilities that are independent of any personality traits.

The difference between trait and ability EI is also evident in how they empirically relate to success in academic settings. For example, while several studies have found a significant relationship between ability EI and academic success (e.g., Márquez, Martín, & Brackett, 2006; Lyons & Schneider, 2005; Mestre et al., 2006; Mayer, Salovey, & Caruso, 2008), others found no association between trait EI and success in academic settings (Barchard, 2003; Bastian, Burns, & Nettelbeck, 2005; Newsome, Day, & Catano, 2000; Van der Zee, Thijs, & Schakel, 2002). An exception to this comes from a five-year longitudinal study by Qualter et al. (2012), who suggest that trait EI may predict academic performance but only for boys. These authors further argue that since self-

efficacy plays a central role in trait EI, boys often tend to express overconfidence in their skills compared to girls who show more modesty in their responses.

EI in Self-Directed Online Learning Environments

With the rapid growth in the online formal and informal learning opportunity, there has been a growing focus on online self-directed learning (SDL). Knowles (1983) considers learning optimal when the learner is self-directed, autonomous, and mindful of their own experience as a learning resource. In literature, SDL has been used interchangeably with independent teaching, self-teaching, independent learning, autonomous learning, self-study, and learning projects (Merriam & Bierema, 2014). Nonetheless, these often-used terminologies explicitly highlight the importance of adult learners' autonomy while taking control and responsibility for their learning. In online learning, SDL can have a positive impact on students' success (Garrison, 2003; Wang et al., 2008). That is, when online learners are empowered to take charge of their learning, they are more likely to overcome the adverse effects from transactional distance such as feelings of isolation which result from the physical and social distance from instructor and peers (Kim, Olfman, Ryan, & Eryilmaz, 2014; Song & Hill, 2007). In this context, Croft, Dalton, and Grant (2010) suggest that distant learners, regardless of their cultural background, need academic guidance, feedback, and assurance that they are on the right track to effectively cope with isolation when enrolled in online courses.

Self-directed learners are expected to collaborate with peers and see them as learning resources (Cheng, Kuo, Lin, & Lee-Hsieh, 2010) while moving away from the idea that the teacher is the expert (Smith, 2008). However, working under such conditions elicits considerable emotional tensions created by several factors ranging from the lack of traditional mode of instruction to the fear of losing one's voice within the group (Smith, 2008). More importantly, as Smith (2008) points out, the nature of online communication

creates more frustration for learners when dealing with conflict with peers as they are often not sure how to challenge each other through text. As mentioned previously, students with higher EI are not only capable of dealing with their own emotions and others', they also manage to control any feelings of frustration to remain focused on important work issues. In this sense, Zhoc, Chung, and King (2018) provide empirical evidence that students who are more emotionally intelligent are more self-directed. Their results suggest that the three emotional abilities— emotional regulation of the self (ERS), appraisal of emotions in the self (AES), and emotional regulation of others (ERO)—were positively related to SDL. Thus, it is within reason to assume that self-directed learners are more likely to succeed in online environments because they intelligently cope with the negative emotional tensions that arise in this particular context, and because they perceive themselves as socially competent to deal with their fear of being alienated or disconnected from their peers.

The lack of inquiry on the role of EI in learning is more noticeable in online learning contexts. Recent studies have focused on whether EI can predict success in online learning (Berenson, Boyles, & Weaver, 2008), and how EI is related to online students' social bond and interactions (Han & Johnson, 2012). For example, Berenson, Boyles, and Weaver (2008) found that a combination of EI and personality traits can be a strong predictor of online student academic success. In other studies, EI contributed to a greater degree of social bond and asynchronous interactions (Han & Johnson, 2012) and even predicted students' e-learning readiness when they had no prior experience with online learning (Buzdar, Ali, & Tarek, 2016). To this date, however, the impact of EI on achievement-related emotions and SRL is an area that remains empirically unexamined in

online learning. A previous study by Pekrun et al. (2002) suggests that achievement emotions may facilitate or diminish the use of adaptive self-regulated behaviors in learning contexts. By implication, since students with higher EI can control and regulate their emotions, this can lead to a better use of self-regulatory strategies in learning situations. The strong link between SRL and EI was also implied by Salonen, Vauras, and Efklides (2005) who noted that self-regulated learners can read others' motivation, emotional feelings, and intentions.

Self-regulated Learning (SRL)

Zimmerman (2000) describes self-regulation as students' ability to dynamically monitor and control their cognition, motivation, behavior, context, and emotion throughout the learning process. SRL comprises motivational, behavioral, and cognitive dimensions of learning (Pintrich, 2004). That is, self-regulated learners know when and how to use cognitive and metacognitive learning strategies and are willing to invest more considerable efforts when interacting with others (Cho & Jonassen, 2009). As a self-regulated learner, a person becomes aware not only of task requirements but also of his own needs to achieve optimal learning experience (McCann & Garcia, 1999). More importantly, self-regulated learners perceive learning as a controllable process. That is, they actively avoid behaviors detrimental to academic success and effectively unitize cognitive strategies to increase performance (Byrnes, Miller, & Reynolds, 1999). Metacognitively, self-regulated learners can monitor their own thinking, evaluate the methods used in learning, and identify potential errors (Mega, Ronconi, & De Beni, 2014). In online learning environments, self-regulation strategies are fundamental to success in that learners must utilize these abilities to stay motivated and guide their

feelings and actions (Dabbagh & Kitsantas, 2004; Whipp & Chiarelli, 2004).

Furthermore, because completing online learning tasks requires a great deal of autonomy, lack of self-regulatory skills can have a significant negative impact on students' success. For instance, Lee, Shen, and Tsai (2010) contend that online learners' internet addiction and online habits (e.g., browsing, social media, and chatting) can have detrimental effects on learning performance if learners lack self-regulatory skills, particularly time management strategies. Time management, along with other SRL strategies such as metacognition, effort, regulation, and critical thinking, were shown to be related to online academic success (Broadbent & Poon, 2015).

SRL, as an ability in learning, can be enhanced and improved with appropriate tools and instructional methods. Instructional scaffolding has been discussed in research as one of these strategies to enhance students' SRL skills (Delen, Liew, & Willson, 2014). Instructional scaffolding is defined as a process that enables students to achieve their goals or objectives, which would otherwise be unattainable without assistance from their guides (Wood, Bruner, & Ross, 1976). Instructional scaffolding is particularly important in computer-based online learning environments due to the lack of physical presence in the virtual classroom. Azevedo and Hadwin (2005) explain that students often fail to regulate their learning in computer-based learning environments because of the lack of instructional scaffolds to help them understand complex topics. To this end, the implementation of computer tools in online learning may provide learners with instructional scaffolds to successfully interact with not only instructors and peers but also the content. For example, Delen, Liew, and Willson (2014) explored the use of enhanced video features that include video viewer, interactive notes, supplemental resources, and

practice questions. They concluded that the implementation of micro-level interactive functions in online environments might increase student engagement in the learning process, thus improving students' SRL abilities.

The close association between self-regulated behaviors and achievement-related emotions has been documented in both traditional and online learning environments (Artino & Jones, 2012; Pekrun, Elliot, & Maier, 2009). In the online context, Artino and Jones (2012) explored the relationship between achievement emotions (i.e., boredom, frustration, and enjoyment) and SRL behaviors. These authors found that boredom and frustration were negatively correlated with elaboration and metacognition. Enjoyment (a positive emotion), in particular, was the strongest predictor of elaboration and metacognition. Such investigations of both positive and negative emotions provide support to the theoretical explanations of the interplay between affective state and SRL. Ahmed, Van der Werf, Kuyper, and Minnaert (2013) clarify that negative emotions may diminish cognitive resources that are necessary for students to elaborate, organize, comprehend, and make appropriate decisions in learning. Conversely, positive emotions may provide a catalyst for elaborative and cognitive strategies (Isen, 2004). Taken in sum, the different models and frameworks of SRL seem to emphasize key components of self-regulatory behaviors, such as organization, elaboration, self-evaluation, and metacognition. Yet, the affective strategies (i.e., creating and maintaining one's emotional status in learning) may be considered as the most effective category of learning strategies for knowledge acquisition (Weinstein & Mayer, 1986; Chen, & Pedersen, 2012).

Chapter Summary

This chapter provides a review of the existing literature pertaining to emotions and learning. First, it provides a theoretical support of the relationships shown in the research model, particularly how EI can predict both achievement emotions and SRL. Evidence from research suggests that there is a positive relationship between EI and learning strategies, especially help seeking, critical thinking, and peer learning. However, previous attempts to establish a predictive relationship between EI and SRL have not considered the role of control and value appraisals in this social-cognitive learning process. Therefore, situating EI within the control-value framework may provide a more integrative framework to explain the complex emotional dynamics of social learning in online environments. Next, this chapter explains the different frameworks of the constructivist learning theory and defines achievement goals and emotions through the lens of the control-value theory of achievement emotions. Based on the Pekrun's assumptions, learner's appraisals, such as control and value, predict achievement emotions, which in turn predict SRL. One body of research has quantitatively explored these assumptions in online learning environments and provided mixed results. The present study quantitatively tests some of these assumptions to provide a fresh perspective on why some of Pekrun's assumptions were not validated in some of these previous quantitative studies. This chapter also provides a discussion of online learning for adults and concludes with a review of existing research on EI and SRL. Both EI and SRL have been defined as abilities and can be improved with appropriate tools and methods. SRL comprises different components that includes key self-regulatory behaviors such as elaboration, self-evaluation, and metacognition. However, as some

researchers argue, the affective strategies, such as creating and maintaining one's emotional status in learning, may be the most important component in the learning process, particularly for adults. As such, an empirical association between EI to self-regulated learning may provide an important insight into the affective strategies dimension of SRL.

CHAPTER THREE: METHODOLOGY

Introduction

Research on the application of the control-value theory in online learning has been slow to emerge. Previous attempts (e.g., Artino & Jones; Marchand & Gutierrez 2012; Tempelaar et al., 2012) have provided partial empirical support to the assumptions of the control-value theory of achievement emotions and yielded some inconsistencies in their results. The purpose of the present study was to address the lack of empirical investigations of the control-value theory in online learning research by examining the predictors of program enjoyment and anxiety, and whether these achievement emotions predict SRL behaviors among adult students enrolled in an online asynchronous graduate program. Moreover, this study complements previous research by providing more insight into how achievement emotions (i.e., program enjoyment and anxiety) are linked to their antecedents and SRL, which also addresses some of the mixed results reported in similar studies. Unlike previous investigations, however, this study goes a step further and explores the role of EI in the appraisals-emotions process. At the time of writing, which also coincides with the COVID-19 outbreak, it was determined that there are no published efforts that investigate the link between EI, achievement emotions, and SRL using control-value theory as a theoretical framework. More importantly, results of this study make a valuable contribution to the social-emotional research that seeks to provide strategies and recommendations to help online students cope with the emotional challenges of online learning during a pandemic and in a post-pandemic time.

Chapter three explains the methodology that is used in this study. Since the purpose of this study was to validate the assumptions of the control-value theory regarding the relationships between appraisals, achievement emotions, and SRL, a predictive design and hierarchical regression analysis was used. This study also follows a similar design employed in the previous studies that quantitatively tested Pekrun's assumptions across different learning environments and cultural contexts.

Research Questions and Hypotheses

The purpose of the present study was to provide empirical validation of the assumptions of the control-value theory by exploring how students' appraisals (i.e., online self-efficacy and program value) predicted achievement emotions (i.e., enjoyment and anxiety), and how these emotions predicted SRL. A secondary aim of this study was to investigate the role of EI in predicting achievement emotions and SRL. This study was conducted with graduate students enrolled in an asynchronous online program. The researcher sought to address the following research questions:

RQ1: What are the linkages between students' appraisals (i.e., online self-efficacy and program value), achievement emotions (program enjoyment and anxiety), and SRL in an online asynchronous graduate program?

RQ2: How does a student's EI relate to achievement emotions (enjoyment and anxiety) and SRL in an online asynchronous graduate program?

Based on the two research questions, the following hypotheses were generated:

H1(a): Students' online self-efficacy positively predicts enjoyment.

H1(b): Students' online self-efficacy negatively predicts anxiety.

H2(a): Students' perceived program value positively predicts enjoyment.

H2(b): Students' perceived program value negatively predicts anxiety.

H3: Students' enjoyment positively predicts SRL.

H4: Students' anxiety negatively predicts SRL.

H5(a): EI positively predicts enjoyment.

H5(b): EI negatively predicts anxiety.

H5(c): EI positively predicts SRL.

Participants and Educational Context

Participants were online graduate students enrolled in the Master of Educational Technology (MET) program at a public university in the northwestern United States. The MET program is offered fully online and requires 15 credit hours in core educational technology courses, 15 credits of electives, and three credits for the portfolio as a culminating activity for a total of 33 credit hours. Most full-time students complete these requirements in two years. The MET program is offered in an asynchronous format using the Blackboard Learning Management System (LMS).

The MET students were mostly working educational professionals and educators who sought to advance their knowledge about the current and emerging technologies in the field of education. The courses offered in the MET program did not meet at specified times or days. Therefore, students had the flexibility to work on assignments at any time of the day; however, all assignments had due dates. In most courses, students were required to participate in weekly asynchronous discussions via online forums. These discussions were typically reflective in nature and were facilitated by the course instructor. Discussion forums were also made available to students to ask for help or

answer questions. Course instructors were available to answer students' questions via email, phone, or video chat.

To successfully complete a course, students must complete all assignments and a final project. The MET is a non-thesis program; the portfolio component consisted of compiling various artifacts and reflections in a portfolio (a learning log). These artifacts included writing samples, professional projects, and annotated bibliographies. Students presented their portfolio to a committee of faculty members for evaluation as a final step before graduation.

Procedures

Upon the Institutional Review Board (IRB) approval, the researcher proceeded with data collection. Participants were 102 online graduate students who were enrolled in the Master of Educational Technology (MET) program at a public university in the northwestern United States. During the last two weeks of three academic semesters (summer 2019, fall 2019, and spring 2020), students were recruited via forum announcements and email. Each method contained a link to the online survey and a consent form. Participation was voluntary, and participants were allowed to opt out of the study at any time. Once recruited, the participants were asked to complete a demographic survey, the self-efficacy in online learning scale, the perceived value scale, the Wong and Law Emotional Intelligence Scale (WLEIS), the program enjoyment and anxiety scale, and the Online Self-Regulated Learning Questionnaire (OSRLQ). These measures were hosted in Google Forms, and students' responses and information were stored in a secured institutional Drive with password protection.

Operationalizing the Study Constructs

Cognitive Appraisals

The control-value theory describes how the environment shapes cognitive appraisals, which in turn determine achievement emotions (Pekrun, 2006). Control appraisals are defined as the beliefs about how competent the self can be in achieving the desired and preventing undesired outcomes. In online learning environments, certain characteristics, such as flexibility to participate in class activities, can provide students with more control but can also shift more responsibility from the teacher to the student (Daniels & Stupnisky, 2012). In previous online learning studies, researchers used online self-efficacy measures to assess students' perceptions of control in online learning environments (Artino & Jones, 2012; Marchand & Gutierrez, 2012). Self-efficacy refers to personal belief in one's ability to successfully execute the behaviors required to attain designated types of performances (Bandura, 1997). More importantly, self-efficacy is different from self-confidence in that "self-efficacy is context-specific rather than a stable personality trait, and it is therefore thought to have a direct effect on performance in specific contexts" (Plant et al., 2011, p.580). As such, the cognitive appraisals of control within the control-value theory framework in the present study were measured using an online self-efficacy self-report to assess online students' cognitive appraisals of the control dimension, which is also suitable to the context of the study (i.e., online learning and achievement context).

Value appraisals are defined as how an individual perceives the task to be important. Both intrinsic and extrinsic values contribute to an individual cognitively appraising the situation as valuable (Pekrun, Elliot, & Maier, 2006). Eccles and

colleagues have identified several types of task values that are important in predicting motivation and achievement, such as intrinsic value, attainment value, and utility value. While both intrinsic and utility values have been linked to motivation, utility value may be uniquely associated with achievement (Hulleman et al., 2008). Given that the present study focused on assessing how students' students perceived the tasks that were required by their program (in general) to be valuable, the researcher followed a similar approach used in a previous study (Butz et al., 2014). Specifically, value appraisals were measured to reflect four dimensions of task values: intrinsic value, attainment value, utility value, and cost. It is important to note that cost, as Butz et al. pointed out, is sometimes seen as a separate dimension but can be a useful indicator of online students' perceptions of what they must have given up in order to succeed at a given task.

Emotional Intelligence (EI)

There is an emerging consensus about three main categories of EI measures in research (Miao, Humphrey, & Qian, 2017): 1) performance-based EI ability tests, which assess an individual's EI through the performance of different tasks and emotional problem-solving items using predetermined consensus criteria (e.g., the Mayer-Salovey-Caruso Emotional Intelligence Test or MSCEIT v.2.0, 2) mixed EI self-reports, which present individuals with descriptive statements that combine individual self-perceptions, social skills, traits, and dispositional behaviors related to emotions to which participants indicate the extent to which they agree or disagree with these statements (e.g., the Emotional Quotient Inventory or EQi:S); and 3) self-report EI ability tests in which individuals indicate the extent to which they agree or disagree with the items (e.g., Wong and Law Emotional Intelligence Scale or WLEIS). Students' EI were assessed in the

present study using a self-report EI ability test (WLEIS), which is based on the theoretical framework of Mayer and Salovey (1997).

Achievement Emotions

Achievement emotions serve a variety of functions in the academic environment, including enhancing and diminishing behavioral and cognitive engagement, self-regulation, and achievement (Linnenbrink-Garcia & Pekrun, 2011). Yet, perhaps the most important implication of achievement emotions that emerged from literature is that they are malleable and can emerge from person-environment transactions (Pekrun et al., 2011). Anxiety, as one of these achievement emotions, was the earliest and perhaps the most commonly researched achievement emotion due to its damaging effect on achievement and wellbeing (Zeider, 1998). However, recent research has generally focused on examining more pleasant emotions as well, such as hope and enjoyment.

The present study focused on enjoyment and anxiety as two important achievement emotions in the context of online learning and were assessed using the Achievement Emotions Questionnaire (AEQ; Pekrun et al., 2011). This scale conceptualizes anxiety and enjoyment as consisting of both valence and activation and is considered an appropriate tool to assess achievement emotions in online environments (Daniels & Stupnisky, 2012).

Self-regulated Learning (SRL)

The social cognitive perspective of SRL postulates that SRL behaviors stem from the interaction between personal, behavioral, and environmental factors, which also makes them highly context-dependent (Zimmerman & Schunk, 2001). According to Schunk (2001), SRL behaviors initially develop from the influence of environmental

factors rather than personal or behavioral factors. Over time, as the skills or behavior becomes more internalized by the individual, SRL will shift to more personal factors, which explains the developmental and cyclical nature of SRL. In online learning, Barnard, Paton, Lan, (2009) likens SRL to learner autonomy in that learners determine the goals, the learning experiences, as well as the evaluation decisions. In other words, SRL in online learning is fundamentally different than SRL in face-to-face environments as online students must be more autonomous and proactive in their learning given the decreased interactions with peers and instructors (Ally, 2004). In line with the social cognitive view of SRL, Barnard, Paton, and Lan (2010) argue that in the case of online students, SRL behaviors would initially develop as a result of the influence of the online environment, and as such, these behaviors must be examined exclusively as these behaviors will vary across different learning situations. In the present study, the researcher assessed students' SRL behaviors using a scale that was specifically designed for online learning environments.

Instruments

The purpose of this quantitative study was to examine the relationships between students' control/value appraisals (i.e., online self-efficacy and program value), EI, achievement emotions (i.e., program enjoyment and anxiety), and SRL in an online graduate program. Data was collected through self-administered, online questionnaires that were shown to be reliable and valid in previous published studies.

Online Self-Efficacy

Students' perception of self-efficacy in online environments was measured using the scale developed by Shen, Cho, Tsai, and Marra (2013), which assesses students'

online learning self-efficacy based on five dimensions: a) self-efficacy to complete an online course, b) self-efficacy to interact socially with classmates, c) self-efficacy to interact with instructors, d) self-efficacy to handle a course management system, and e) self-efficacy to interact with classmates for academic purposes. Shen et al. (2013) reported robust reliability and reliability properties (Cronbach's alpha for each dimension was .93, .92, .93, .94, and .93, respectively). For the current study, three subscales were used to measure graduate students' online learning self-efficacy: self-efficacy to complete an online course, self-efficacy to interact socially with classmates, and self-efficacy to interact with classmates for academic purposes. Prior et al. (2016) also reported valid and reliable Cronbach alpha values in all three subscales- self-efficacy to complete an online course (Cronbach's alpha = .96), self-efficacy to interact socially with students (Cronbach's alpha = .86), and self-efficacy to interact with classmates for academic purposes (Cronbach's alpha = .94). Participants responded on a scale of 0 to 10, where 0 indicates "cannot do at all," 5 indicates "moderately confident can do," and 10 indicates "highly confident can do." High scores indicate higher levels of online learning self-efficacy.

Perceived Value

Students' perceived program value were assessed using a six-item scale (Butz et al., 2016), which was adapted from the work of Wigfield and Eccles (1992). Butz et al. used this scale to assess the degree to which MBA students valued tasks required by their hybrid program in general. For this study, this scale was modified (MET replaced the initialism MBA) to fit the context of the current study. According to Burtz et al., the scale items reflect the four dimensions of task value (i.e., intrinsic value, attainment value,

utility value, and cost value). These items were measured on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Burtz et al. (2016) reported a Cronbach's alpha value of .88.

Emotional Intelligence (EI)

The Wong and Law Emotional Intelligence Scale (WLEIS) is a four-dimensional construct that assesses the ability to understand their own and others' emotions, and to regulate and use one's emotions. Law, Wong, and song (2004) reported valid and reliable Cronbach values in all four dimensions- self emotions appraisal (Cronbach alpha= .69), others-emotions appraisal (Cronbach alpha= .84), regulation of emotion (Cronbach alpha= .78), and use of emotions (Cronbach alpha= .72). Carvalho et al. (2016) demonstrated that the WLEIS is also valid to use with students from other cultural contexts (i.e., Spanish and Portuguese). These researchers reported Cronbach's alpha values higher than 0.81 in all four dimensions of the WLEIS. The 16 items on the WLEIS instrument were measured on a 7-point scale from 1 (strongly disagree) to 7 (strongly agree).

Program Enjoyment and Anxiety Scale

Participants' self-reported enjoyment and anxiety in relation to program achievement were assessed using four-item scales by Burtz et al. (2016), which were adapted from Pekrun, Goetz, and Perry's (2005) Achievement Emotions Questionnaire (AEQ). The scale items reflect the affective, cognitive, motivational, and physiological components that undergird students' emotional states (Pekrun, 2006). Burtz et al. (2016) reported Cronbach alpha values of .88 and .76 for the enjoyment and anxiety scales,

respectively. The two scales will be measured on a 7-point scale from 1 (strongly disagree) to 7 (strongly agree).

Self-regulated Learning Strategies

Students' SRL strategies were assessed using the Online Self-regulated Learning Questionnaire (OSLQ; Barnard, Paton, & Lan, 2009). The OSLQ is a 24-item scale with a 5-point Likert response format with values ranging from (1) strongly disagree to (5) strongly agree. Higher scores on this scale indicate better self-regulation by students in an online learning environment. The OSLQ comprises six subscale constructs: environment structuring; goal setting; time management; help-seeking; task strategies; and self-evaluation. Barnard et al. (2009) conducted two studies to examine the validity and reliability of the OSLQ. They reported a Cronbach's alpha value of .92 (values from .87 to .96 on subscale level). For the purpose of this study, only the goal setting, time management, and help seeking subscales were used (11 items).

Data Analysis

Data analysis was performed using Statistics Package for the Social Sciences (SPSS). The statistical analysis, hierarchical regression, was used to analyze the research questions and hypotheses. This method determines if the predictor variables, which are entered in a specific order, will predict the incremental change in the variance (in the dependent variable) by evaluating variances in adjusted R^2 after the addition of each predictor set (Brace, Kemp, & Snelgar, 2012). When using hierarchical regression, the researcher follows a two-step process. First, the researcher controls the order of the entry of predictor variables as long as there was a theoretical justification for the decision (Warner, 2013). In the context of the current study, the predictor variables were entered

in a way that is consistent with the assumptions of the control-value theory regarding the antecedent and effects of achievement emotions. In the final model, online self-efficacy, program value, program enjoyment and anxiety, and SRL were entered based on a logical sequence of the relationship among the variables. This is also consistent with the order of entry in the study by Artino and Jones (2012) who used a similar design. Table 2 shows the order of entry in the final model. EI was entered in the last block in each model for two reasons: 1) to test the assumptions of the control-value theory first without the effect of EI, so that research question one is answered accordingly, and 2) to explore how EI predicts achievement emotions and SRL within the context of the control-value theory by controlling for other variables.

Table 2. Data Source Blocks

Blocks	Variables
Model 1 (dependent variable, enjoyment; controlled variables: SRL, anxiety)	
Block 1	Age; Gender; Number of Courses Completed
Block 2	Online self-efficacy; Program Value
Block 3	EI
Model 2 (dependent Variable, anxiety; controlled variables: SRL, enjoyment)	
Block 1	Age; Gender; Number of Courses Completed
Block 2	Online self-efficacy; Program Value
Block 3	EI
Model 3 (dependent variable, SRL)	
Block 1	Age; Gender; Number of Courses Completed
Block 2	Online self-efficacy; Program Value
Block 3	Anxiety
Block 4	Enjoyment
Block 5	EI

A follow up moderation analysis was conducted using PROCESS macro for SPSS, which is a logistic regression path analysis modeling tool. A moderation analysis is used to investigate whether the magnitude of a variable's effect on an outcome variable depends on another variable or a set of variables (Hayes, 2012).

Testing the Assumptions

Preliminary data screenings of residuals were conducted prior to the hierarchical regression analysis to check for the assumptions of normality, outliers, linearity, multicollinearity, and homoscedasticity of variance. To assess multivariate normality, kurtosis and skewness tests were conducted (Tabachnik & Fidell, 2013). Normality is considered untenable when the ratio of kurtosis < -2 or $> +2$ (Rovai, Baker, & Ponton, 2013). Normality was assessed by calculating the z-score of skewness and dividing the skewness statistic by the standard error of skewness. If the z-score is greater than ± 1.96 , a significant amount of skewness is present. Similarly, the z-score of kurtosis was obtained by dividing the kurtosis statistic by the standard error of kurtosis. A significant amount of kurtosis is present if the z-score is greater than ± 1.96 . Results of this preliminary analysis indicated that no significant amounts of kurtosis or skewness were detected in the variables examined.

Homoscedasticity and linearity were evaluated using a scatterplot to detect any mild or extreme univariate or multivariate outliers, that there was a linear relationship between the criterion and predictor variable, and that the residuals were nearly rectangularly distributed (Tabachnick & Fidell, 2013). Figure 4 shows a linear relationship between the predictors and the outcome variable in each model, and the scatterplots showed a nearly rectangularly distributed residuals. To screen for the

influence of multivariate outliers, Mahalanobis distance (D^2) was used to calculate the probability associated with D^2 . A case is considered a multivariate outlier when the probability is 0.001 or less (Rovai, Baker, & Ponton, 2013). The preliminary analysis revealed that no such cases existed in the data collected.

Figure 4. Normal P-P Plots of regression

Other important assumptions of regression analysis include the absence of multicollinearity and singularity. Preliminary analysis of correlation coefficients (Pearson r) showed that some of the predictors were highly correlated ($r > .8$). Any variables that are highly correlated ($r = .9$) or perfectly correlated ($r = 1.00$) have to be removed from the analysis as they can inflate the standard errors (Tabachnick & Fidell, 2013). Nonetheless, a multicollinearity diagnostic test was performed in SPSS to ensure that the variance

inflation indicators (VIF) and the tolerance (the reciprocal of VIF) were within an acceptable range. That is, a value less than 10 for VIF and .10 for the minimum level of tolerance are considered acceptable (Rovai, Baker, & Ponton, 2013). Results of the multicollinearity analysis (Table 3) show that VIF and tolerance were acceptable (< 5), thus satisfying the assumption of no multicollinearity among the predictors. The other assumption, singularity, occurs when the predictors are perfectly correlated and one predictor is a combination of one or more of other predictors (Tabachnick & Fidell, 2013). Preliminary results revealed that the assumption of singularity was met.

Table 3. Collinearity Statistics

	Tolerance	VIF
Online self-efficacy	.268	3.736
Program enjoyment	.248	4.039
Program value	.422	2.368
Program anxiety	.211	4.730
EI	.529	1.889

Chapter Summary

Chapter three outlines the methodology used and provides justification for the use of the predictive design to test the assumptions of the control-value theory and to explore the role of EI in the process. This chapter also provides a detailed description of the scales used in data collection and the preliminary analysis, which was performed to ensure the assumptions of regression analysis were met. As indicated, data collected from 102 graduate students, who were enrolled in a fully asynchronous online program, were analyzed using hierarchical regression to test the relationships outlined in the hypothesized model. Findings from this study are highlighted in chapter four.

CHAPTER FOUR: RESULTS

Introduction

The purpose of this study was to not only contribute to the existing body of quantitative research that tested Pekrun's theory in online environments but also to investigate the role of EI in the complex interplay between appraisals, achievement emotions, and SRL. A hierarchical regression analysis was performed to explore the relationships depicted in the hypothesized model. A further moderation effect analyses were also conducted to provide a better understanding and more solid interpretations of the study results.

Descriptive Statistics

Table 4 displays the frequency counts for selected variables. There were considerably more female students (64%) than male students (36%). The age of participants ranged from "25-34 (26.5%)" to "55-64 (8.8%)" with the majority ranging from "35-44 (51%)" years old. The number of courses taken by participants in the EDTECH program ranged from "1-3 (39.2%)" to "6 or more (31.4%)" courses.

Table 4. Frequency Counts for Age Range, Gender, and Courses Completed (N=102)

		Frequency	Percent
Age range	25 to 34 years	27	26.5
	35 to 44 years	52	51.0
	45 to 54 years	14	13.7
	55 to 64 years	9	8.8
Gender	Male	37	36.3
	Female	65	63.7
EDTECH Courses Completed	1 to 3 courses	40	39.2
	4 to 6 courses	30	29.4
	More than 6	32	31.4

Table 5 displays the psychometric characteristics for the six summated scale scores. The Cronbach's alpha reliability coefficients ranged from $\alpha = .82$ to $\alpha = .87$. This suggested that all scales had acceptable levels of internal reliability (Warner, 2013). The mean and standard deviation of the sample (N=102) for the summated scores for (a) online self-efficacy is $M = 8.40$, $SD = .79$ on a 10-point scale, (b) program value is $M = 5.93$, $SD = .62$ on a 7-point scale, (c) EI is $M = 5.71$, $SD = .47$ on a 7-point scale, (d) program enjoyment is $M = 5.432$, $SD = .689$ on a 7-point scale, (e) program anxiety is M

= 2.82, SD = 1.154 on a 7-point scale, and (f) SRL is M =5.12, SD = .97 on a 7-point scale.

Table 5. Psychometric Characteristics for the Summated Scale Scores (N=102)

Scale	Number of items	M	SD	Low	High	α
Online Self-Efficacy	19	8.40	.79	6.63	10	.87
Program Value	6	5.93	.62	4.5	7	.83
EI	16	5.71	.47	4.69	6.75	.85
Enjoyment	4	5.432	.689	4	7	.82
Anxiety	4	2.82	1.154	1	6	.84
SRL	11	5.12	.97	2.91	6.91	.85

Correlation Matrix

A Pearson Correlation analysis was conducted to investigate the relationships between the variables in the hypothesized model (Table 6). Results showed that SRL was significantly correlated with online self-efficacy ($r = .794, p < 0.01$), program value ($r = .681, p < 0.01$), program enjoyment ($r = .781, p < 0.01$), program anxiety ($r = -.802, p < 0.01$), and EI ($r = .646, p < 0.01$). Program enjoyment significantly correlated with online self-efficacy ($r = .795, p < 0.01$) and program value ($r = .696, p < 0.01$). It was also found that program anxiety was significantly correlated with online self-efficacy ($r = -.808, p < 0.01$) and program value ($r = -.726, p < 0.01$).

Table 6. Correlation Matrix

	1	2	3	4	5	6
SRL	-	-.802**	.681**	.794**	.646**	.781**
Anxiety	-.802**	-	-.726**	-.808**	-.647**	-.828**
Program Value	.681**	-.726**	-	.666**	.456	.696
Self-Efficacy Total	.794**	-.808**	.666**	-	.635**	.795**
EI	.646**	-.647**	.456**	.635**	-	.540**
Enjoyment	.781**	-.828**	.696**	.795**	** .540	-

Note: **p < 0.01, two tailed, N=102

Hierarchical Regression Analysis

To test the relationships hypothesized in the model, a series of hierarchical multiple regressions was conducted for each dependent variable in the model (i.e., enjoyment, anxiety, and SRL). The influence of gender, age, and number of courses completed was examined in the preliminary analysis, but none of the variables showed a significant correlation with the dependent variables. As a result, gender, age, and number of courses completed were excluded from the final regression model.

The regression analysis was performed in three stages. In stage 1, the purpose of the analysis was to test whether online self-efficacy and program value predicted enjoyment, while controlling for the effects of anxiety and SRL in the model. The blocks were entered accordingly: block one consisted of anxiety and SRL (controlling

variables); block two included the predictor variables (online self-efficacy and program value); and block three included EI. Table 7 summarizes the results of the first hierarchical regression analysis.

The results show that the final model explained 74.1 % of the variance. The model was also significant ($R^2 = .755$, $F(5, 96) = 53.703$, $p < 0.01$). The addition of EI explained an additional 1% of variance, which was not statistically significant ($p > .05$). EI was not a significant predictor of enjoyment ($\beta = -.091$, $p = .22$). As such, H5(a), which assumes that EI significantly predicts enjoyment, is not supported. As hypothesized in the model, online self-efficacy ($\beta = .255$, $p < 0.05$) was a significant predictor of enjoyment, thus supporting H1(a). However, H2(a), which hypothesized that program value ($\beta = .119$, $p = .142$) predicted enjoyment, was not supported.

Table 7. Hierarchical Regression Summary Statistics for Enjoyment

	B	SE B	Beta	t
Step 1				
Online self-efficacy	.047	.018	.255*	2.553
Program Value	.087	.059	.119	1.482
R ²		.751		
F		66.362		
Step 2				
Online self-efficacy	.050	.018	.276**	1.331
Program value	.078	.059	.107	3.720
EI	-.033	.027	-.091	-1.231
R ²		.755		
F		53.703		
Dependent variable: Enjoyment; controlled variables: Anxiety; SRL				
**p < 0.01. N=102; *p < 0.05				

The second part of the analysis process consisted of investigating whether online self-efficacy and program value were significant predictors of anxiety. Following the same steps in stage 1, anxiety replaced enjoyment as a dependent variable, and enjoyment

was entered as a controlling variable in the model. Table 8 provides a summary of the results. The final model explained 78.6 % of the variance in anxiety and the model was significant ($R^2 = .798$, $F(5, 96) = 68.562$, $p < 0.01$). In step 2, the addition of EI as a predictor explained an additional 1.1 % of variance in program anxiety, which was significant ($p < 0.05$). Before adding EI to the model, Program value ($\beta = -.176$, $p < 0.05$) and online self-efficacy ($\beta = -.247$, $p < 0.01$) significantly predicted anxiety. The addition of EI contributed an additional 1.1 % of variance ($p < 0.05$), and EI ($\beta = -.154$, $p < .05$) significantly predicted anxiety. Both online self-efficacy and program value remained significant predictors of anxiety in the final model. Based on these results, H1(b), H2(b), and H5(b) are supported.

Table 8. Hierarchical Regression Summary Statistics for Anxiety

	B	SE B	Beta	t
Step 1				
Online self-efficacy	-.076	.028	-.247**	-2.668
Program Value	-.215	.089	-.176*	-2.412
R ²		.785		
F		80.183		
Step 2				
Online self-efficacy	-.058	.029	-.189*	-2.024
Program value	-.223	.087	-.182*	-2.554
EI	-.094	.040	-.154*	-2.353
R ²		.798		
F		68.562		

Dependent variable: Anxiety; controlled variables: Enjoyment; SRL

**p < 0.01. N=102; *p < 0.05

**p<0.01; *p<0.05; ns= non-significant

Figure 5. Beta Values of Appraisals as Predictors of Emotions

To investigate the predictors of SRL in the hypothesized model, a series of hierarchical regression was performed by grouping the independent variables into four construct sets. The four construct sets were entered as follows: step 1 (online self-efficacy and program value), step 2 (program enjoyment), step 3 (program anxiety), and step 4 (EI).

Tables 9, 10, and 11 summarize the regression analysis steps and results. When controlling for the effects of online-self-efficacy and program value, adding anxiety to the model contributed an additional 4.2% of the variance, while the addition of enjoyment explained another 1.1% of the variance in the overall model. Results revealed that the model (in step 3) was significant ($R^2 = .725$, $F(4, 97) = 58.064$, $p < 0.01$). As hypothesized in the model, anxiety was a significant predictor of SRL ($\beta = -.290$, $p <$

0.05); however, enjoyment ($\beta = .209$, $p = 0.06$) did not significantly predict SRL. These results support the assumptions of H4 but not H3.

To test the final hypothesis (H5c), EI was added to the model in step 4. Results showed that this addition explained an additional 1.6% of the variance in SRL, which was also significant ($p = .024$). As hypothesized, EI was a positive and significant predictor of SRL ($\beta = .171$, $p < 0.05$), which supports H5c. Interestingly, enjoyment replaced anxiety as a significant predictor of SRL in this model (Table 9).

Table 9. Hierarchical Regression Summary Statistics for SRL (Step 1)

	B	SE B	Beta	t
Step 1				
Online self-efficacy	.436	.058	.611**	7.458
Program value	.778	.230	.274**	3.385
R ²	.672			
F	92.104			

Dependent variable: SRL. * $p < 0.05$, ** $p < 0.01$. N=102

Table 10. Hierarchical Regression Summary Statistics for SRL (Step 2)

	B	SE B	Beta	t
Step 2				
Online self-efficacy	.275	.070	.387**	3.938
Program value	.407	.238	.143	1.706
Anxiety	-.897	.248	-.386**	-3.618
R ²		.714		
F		74.014		
Dependent variable: SRL.*p < 0.05, **p < 0.01. N=102				

Table 11. Hierarchical Regression Summary Statistics for SRL (Step 3)

	B	SE B	Beta	t
Online self-efficacy	.227	.074	.318**	3.080
Program value	.321	.240	.113	1.337
Anxiety	-.674	.271	-.290*	-2.492
Enjoyment	.814	.427	.209	1.907
R ²		.725		
F		58.064		
Dependent variable: SRL.*p < 0.05, **p < 0.01. N=102				

Table 12. Hierarchical Regression Summary Statistics for SRL (Step 4)

	B	SE B	Beta	t
Online self-efficacy	.180	.075	.252*	2.410
Program value	.354	.235	.125	1.508
Anxiety	-.482	.277	-.207	-1.739
Enjoyment	.893	.418	.229*	2.134
EI	.241	.105	.171*	2.293
R ²	.741			
F	49.749			

Dependent variable: SRL. *p < 0.05, **p < 0.01. N=102

Figure 6. Beta Values of Achievement Emotions as Predictors of SRL (without EI)

Figure 7. Beta Values of Achievement Emotions and EI as a Predictors of SRL

Moderation Analysis

EI as a Moderator Between Achievement Emotions and SRL

To provide further analysis of the interactions between EI and achievement emotions, a moderation effect test was performed using PROCESS macro for SPSS. In the final step of the hierarchical regression, the model with the interaction between achievement emotions and EI score accounted for significantly more variance, R^2 change = .016, $p = .024$, indicating that there is potentially a significant moderation between achievement emotions and EI on students' SRL behaviors (Hays, 2013). To avoid any problematic high multicollinearity with the interaction term, the variables were centered, which is done automatically in PROCESS, and interaction terms between anxiety and students' EI as well as between enjoyment and EI, were created (Aiken & West, 1991). Next, the interaction term between anxiety and SRL was added to the regression model, which accounted for a significant proportion of the variance in SRL behaviors. Examination of the interaction plot showed students with low anxiety levels and higher EI had the highest SRL scores. Students with high anxiety and low EI reported the lowest SRL scores.

Figure 8. Moderation Effect Interaction Plot: Anxiety, EI, and SRL

To investigate whether EI moderated the relationship between enjoyment and SRL, the interaction term between enjoyment and EI was added to the regression model, which also accounted for a significant proportion of the variance in SRL. Examination of the interaction plot showed an enhancing effect that as enjoyment increased and EI increased, SRL scores also increased. In other words, students who reported higher enjoyment in the program and higher EI also reported higher SRL scores. Students who reported the lowest enjoyment scores and lower EI also reported the lowest SRL scores. Based on these results, it was concluded that EI moderated the relationship between achievement emotions and SRL, while accounting for the effects of online self-efficacy and program value.

Figure 9. Moderation Effect Interaction Plot: Enjoyment, EI, and SRL

Chapter Summary

In summary, data from 102 students enrolled in an asynchronous online graduate program were used to test the hypothesized model. The results are summarized in Table 13.

Table 13. Summary of Regression Results

Hypothesis	Statement	Beta	Sig.	Result
H1(a)	Students' online self-efficacy positively predicts enjoyment	.255	$p < .05$	Reject the null hypothesis
H1(b)	Students' online self-efficacy negatively predicts anxiety	-.247	$p < .01$	Reject the null hypothesis
H2(a)	Students' perceived program value positively predicts enjoyment	.119	$p > .05$	Fail to reject the null hypothesis
H2(b)	Students' perceived program value negatively predicts anxiety	-.176	$p < 0.05$	Reject the null hypothesis
H3	Students' enjoyment positively predicts SRL	.209	$p > 0.05$	Fail to reject the null hypothesis
H4	Students' anxiety negatively predicts SRL	-.290	$p < 0.05$	Reject the null hypothesis
H5(a)	EI positively predicts enjoyment	-.091	$p > 0.05$	Fail to reject the null hypothesis
H5(b)	EI negatively predicts anxiety	-.154	$p < 0.05$	Reject the null hypothesis
H5(c)	EI positively predicts SRL	.171	$p < 0.05$	Reject the null hypothesis

Lastly, further moderation analyses revealed that EI moderates the relationships between achievement emotions (enjoyment and anxiety) and SRL. In the final chapter, these findings are discussed, and practical implications are drawn.

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Introduction

Given the paucity of empirical studies that validate the assumptions of the control-value theory and the effect of EI on achievement emotions in online learning environments, more research is clearly needed. Importantly, the previous efforts that quantitatively investigated the relationships between students' appraisals, achievement emotions, and SRL in online learning environments have generally not yielded consistent results. To address this gap in emotions literature, the purpose of this study was to test a theoretical model in which it was hypothesized that appraisals (i.e., online self-efficacy, program value) and EI would predict achievement emotions (i.e., program enjoyment and anxiety), and that these emotions would predict SRL behaviors. While some consistencies were apparent and support the theoretical framework of the control-value theory, this study also reveals some findings that are particularly important.

Chapter five presents a summary of the findings, theoretical and practical implications, and recommendations for future research. First, the hierarchical regression results are presented to answer the two research questions. Next, results of the moderation analyses are discussed to provide an important insight into the mediating role of anxiety and the moderating effect of EI in the theoretical model. This chapter concludes with some important implications and recommendations based on the findings of the current study.

Discussion

This study investigated the assumptions of the control-value theory in the context of an asynchronous online graduate program. A hypothesized model considered the interrelationships between appraisals (online self-efficacy, program value), achievement emotions (program enjoyment and anxiety), and SRL. The first research question sought whether these relationships were consistent with Pekrun's assumptions. A series of hierarchical regression analyses tested online self-efficacy and program value as predictors of achievement emotions (i.e., enjoyment and anxiety), which in turn were tested as predictors of SRL. First, the relationship between online self-efficacy and program enjoyment was evident. In fact, results showed that students with high online self-efficacy experienced more enjoyment in the online program. This finding corroborates Pekrun's assumption and the results from previous empirical work in both face-to face and online environments (Pekrun et al., 2011; You & Kang, 2014). Another noticeable finding was the high self-efficacy levels reported by online students in this study. That is, previous investigations that examined self-efficacy (e.g., Artino & Jones, 2012; Marchand & Gutierrez, 2012) reported that students in online learning environments had self-efficacy levels well above the scale midpoint (5-point scale, $M = 4.03$, $SD = 0.61$; 7-point scale, $M = 5.42$, $SD = 0.92$, respectively), which is also the case in the context of the present study (10-point scale, $M = 8.4$, $SD = .79$). In a sense, participants were enrolled in asynchronous online courses, which provided them with greater autonomy and flexibility regarding when they can complete their lessons and activities. These opportunities for control may explain the link between self-efficacy and experiencing more pleasant emotions, including enjoyment in an online environment

(Daniels & Stupnisky, 2012). Nonetheless, future research should clearly pay more attention to specific factors that affect online students' self-efficacy, and which also create an enjoyable experience in online learning environments.

The relationship between value and enjoyment was less clear to interpret in the context of the present study. Online students' program value appraisals were not correlated with their enjoyment of the online program under examination. One possible reason for this finding may reside in the scale used to measure students' value appraisals in the online learning environment. The author assessed students' value appraisals using a scale that includes the cost dimension, which is considered as part of the value construct in Eccles' theory but not the control value theory (Simonton & Garn, 2020). According to Daniels and Stupnisky (2012), cost, along with intrinsic value, can vary across delivery methods because they depend more on student preferences, unlike attainment value (perceived importance of being successful in a specific task) and utility value (perceived usefulness of specific tasks in relation to accomplishing goals or rewards), which seem to be more consistent across different course delivery modes. In the study by Butz et al. (2014), which also used a similar scale to measure value appraisals (i.e., Eccles' method), a strong correlation was found between program value and enjoyment among students enrolled in synchronous hybrid graduate programs. Thus, when considering the course delivery method used in both studies, it is within reason to suggest that students go through different emotional experiences in synchronous and asynchronous learning environments as a result of their value appraisals of both methods. For example, Bower et al. (2014) state that asynchronous students do not experience the benefits of synchronous collaborative learning, which include rapid instructor feedback, real-time peer

discussions, and an enhanced sense of connectedness. Artino (2010) examined the relationship between some personal factors and students' choice of instructional format. His findings suggest that students with higher task value appraisals seem to prefer learning in a face-to-face format. However, examining students' preferences of instructional methods in online learning is beyond the scope of the current study. Future investigations should take students' preferences of course delivery methods into consideration when exploring how value appraisals, most notably cost and intrinsic value, affect students' enjoyment in online learning environments.

The findings that online self-efficacy and value are negatively correlated with anxiety in the online program under examination concur with prior theory and research related to the control-value theory (Butz, et al, 2014; Pekrun, 2006; Pekrun et al., 2011). However, the finding that value negatively predicted anxiety is not consistent with previous work in online learning (Marchand & Gutierrez, 2012) and with medical students (Artino, LaRochelle, & Durning, 2010). It is of note that these two studies assessed students' appraisals of task value only, whereas the current study assessed students' value appraisals of the four dimensions of value. Nonetheless, current study findings indicate that online students who were confident they could complete the online courses and interact with other students were also less likely to experience program-related anxiety in an asynchronous online program. Similarly, results revealed that students who valued the program more were less likely to experience higher program-related anxiety. These results also suggest that students enrolled in asynchronous online programs may experience low anxiety when value and self-efficacy perceptions are

properly addressed. Specific instructional recommendations are discussed in the educational implications section.

Regression analysis confirmed the negative and significant relationship between anxiety and SRL, which is consistent with Pekrun's assumption (Pekrun, 2006). That is, students who experience low anxiety in an asynchronous online learning are more likely to use SRL strategies, which include setting goals, managing their time efficiently, and seeking help from their peers and instructors. It is important to note that the average level of anxiety in this study's sample was moderately low ($M = 2.82$, $SD = 1.154$), which is below the scale midpoint (3.5). The literature on the complex relationship between cognition, affect, and arousal suggests that too little or too much anxiety is likely to debilitate action (Tyson, Linnenbrink-Garcia, & Hill., 2009). In other words, an optimal level of arousal (e.g., anxiety), is needed for peak performance. Using this line of reasoning, when considering other factors such as appropriate task difficulty and clarity (Pekrun, 2014), moderate anxiety levels may stimulate cognitive curiosity and ultimately the use of SRL strategies (Marchand & Gutierrez, 2012). This relationship between perceived difficulty of online courses, student anxiety, and the use of SRL strategies surely warrants further empirical investigations to identify possible alternative explanations.

Results from the present study do not support the theoretical position that enjoyment, as a positive activating emotion, is directly related to the use of SRL strategies. However, supplementary analysis revealed some interesting dynamics related to the interaction between positive and negative emotions within the control-value theory model. When anxiety was not considered as part of the overall model, enjoyment was a

significant and a positive predictor of SRL. In other words, the relationship between enjoyment and SRL, while only accounting for self-efficacy and value, was evident until anxiety was introduced to the model. This finding is consistent with previous research (Artino, 2009; Artino & Jones, 2012), which also found that one or more of the other variables in the control-value theory model functioned as suppressor variables. Therefore, when accounting for the levels of anxiety students experienced while enrolled in the online program, enjoyment had no effect on their use of SRL strategies. More importantly, this result confirms the complex relationships between achievement emotions and the use of SRL strategies (Artino, 2009; Artino & Jones, 2012).

The second research question sought to explore whether EI predicted achievement emotions and SRL. A series of hierarchical regression and moderation analyses tested EI the hypothesized relationship. Overall, the results suggest that EI is indeed important in asynchronous online learning, and that the control-value theory is a viable model to explain it. To this end, the regression analysis indicated that EI negatively predicted anxiety, and positively predicted SRL. The latter result is in line with previous research (Fernandez, Salamonson & Griffiths, 2012), which found links between EI and the use of learning strategies, including help seeking and peer learning. In the context of the present study, these results suggest that online students who reported higher EI were more likely to use SRL strategies, namely goal setting, time management, and help seeking. That is, online students with higher EI may possess the cognitive ability to regulate their course-related anxiety to an optimal level, which in turn enhances their cognitive curiosity and use of SRL strategies. This result and explanation also support the notion put forward by Goetz et al. (2006), which describes EI as a self-regulatory process.

Contrary to what was predicted, the present study results do not support the direct link between EI and enjoyment in an asynchronous online learning environment. However, supplementary analysis pointed out some interesting findings. More specifically, EI moderated the relationship between enjoyment and SRL. In an asynchronous online learning environment, students who experience more enjoyment and have higher EI are more likely to use SRL strategies. Results of the regression analysis have also revealed some interesting dynamics. Specifically, enjoyment was not a significant predictor of SRL; however, after accounting for the effect of EI, enjoyment was a statistically significant predictor of SRL, while anxiety was no longer significant. This interesting finding confirms previous work, which suggests that positive activating emotions (e.g., enjoyment) facilitate the use of flexible, deep processing strategies such as organization and metacognition (Pekrun, 2006). More specifically, in the current research context, online students who experienced more enjoyment were more likely to use deep processing strategies, namely goal setting and time management, because of their ability to monitor their own feelings and manage their anxiety levels. Taken in sum, the most notable finding regarding the role of EI within the control-value theory model is that EI fully moderates the relationship between activating emotions (both negative and positive) and the use of SRL strategies. Importantly, this finding contributes to the under-researched area of EI and SRL in online learning. In a previous research, Adeyemo (2007) reported that EI moderates the relationship between self-efficacy and achievement, which are key components within the control-value theory model. This current study provides more insight into the dynamic yet complex nature of emotions by suggesting a moderating role of EI between activating achievement emotions and SRL.

Practical implications

The COVID-19 outbreak has forced colleges and universities worldwide to shutter their physical campuses as they moved their courses to online format. The uncertainty and low predictability of the outbreak have not only impacted students' physical health but also their mental health as well. As a result of the pandemic, people are experiencing more negative emotions (anxiety and depression) and less positive emotions (Li et al., 2020). Overall, research on the role of emotions in the social-cognitive process of online learning has been slow to emerge. The present investigation addresses this under-researched area of emotions literature by exploring achievement emotions, EI, and SRL in an online asynchronous graduate program. Results and implications aim to provide researchers and educational practitioners with an insight into the interesting and complex dynamics of students' emotions and how they influence their academic success.

First, the results of the present study offer important theoretical and empirical extensions of the control-value theory by validating its assumptions in an asynchronous online learning environment. The findings also indicate important avenues for future research, particularly regarding the role of EI in moderating the relationship between achievement emotions and SRL. This study is one of the first to investigate the role of EI in predicting achievement emotions and SRL within the context of control-value theory. It is also one of the very few investigations that validated the assumptions of the control-value theory in an asynchronous online graduate program.

The results revealed that students who reported higher online self-efficacy were likely to experience more enjoyment and less anxiety in an online synchronous graduate

program. Online self-efficacy is multidimensional and includes students' abilities to interact with instructors and to contribute to the online community (Cho & Jonassen, 2009). However, instructors should not assume that students' online self-efficacy is solely determined by their prior online experience as evidence from literature shows otherwise (Cho & Kim, 2013). Instead, instructional designers and instructors should focus on course quality and number of interactions as a way to enhance students' online self-efficacy (Cho & Kim, 2013). That is, the occasional integration of innovative tools such as virtual worlds or video sharing in online asynchronous courses can enhance the course quality and provide a welcome escape from the trite tools, notably the discussion boards. Another practical suggestion for practitioners is to provide learners with frequent and detailed feedback as a way to sustain learner' feelings of course enjoyment and to reduce anxiety. However, as previously emphasized, one should proceed with caution when attempting to reduce students' course-related anxiety in online asynchronous environments. Appropriate clarity and task difficulty should be implemented in learning activities to stimulate students' cognitive curiosity, which can increase enjoyment (Pekrun, 2014) and maintain anxiety at an optimal level. These concerted efforts to provide an enjoyable learning experience for students in online learning environments will improve students' satisfaction with online learning, which is significantly related to online self-efficacy as previous studies have reported (Lin, Lin, & Laffey, 2008; Shen, Cho, Tsai, & Marra, 2013; Womble, 2008).

Although results of this study do not support a direct link between value appraisals and enjoyment in an asynchronous online environment, which could be the result of the nature of the instructional format in the online program under examination, it

is still important to give practical recommendations in accordance with the tenets of the control-value theory. As such, it is recommended that practitioners should strive to create affectively supportive learning environments that enhance student's feelings of control and value appraisals. One recommendation is to integrate occasional synchronous collaborative learning activities whether it is with a partner or with a group to engender students' sense of connectedness. Practitioners should also consider assessing students' preferences of instructional format as that could provide important information about their value appraisals and attitudes towards online courses. As noted earlier, students who have a high preference for face-to-face instructional methods may perceive asynchronous methods to be less valuable, and as a result, are less likely to experience enjoyment. Therefore, the author suggests that instructors should introduce synchronous collaborative learning methods in asynchronous online courses as this may engender students' positive value appraisals of the course in general. It is important to note, however, that any efforts to support value should focus on learning rather than on the consequences of failure. As Pekrun (2006) points out, increasing students' value appraisals of achievement may lead to high-stake situation appraisals, which in turn can induce anxiety. In this regard, it is recommended to allow students some autonomy in setting their learning objectives to boost their confidence and minimize the risk of performance expectations (Butz et al., 2014).

Lastly, this study makes a unique contribution to the existing literature in that it examines the effects of EI on achievement emotions and the use of SRL strategies in the context of an asynchronous online program. The findings suggest that emotionally intelligent students have the ability to control their negative emotions, such as anxiety,

experience more enjoyment, and use SRL strategies to be successful in asynchronous learning environments. As such and following the recommendations by Brenson, Boyles, and Weaver (2008), administrators should consider assessing students' EI abilities as a way to predict students' success in asynchronous online learning. Previous research has also highlighted emotionally intelligent students' ability to create and maintain social bonds and interactions in asynchronous online learning (Han & Johnson, 2012). A practical suggestion for practitioners is then to identify students who are low in EI and improve their EI abilities, especially their emotional self-efficacy. As mentioned earlier, EI abilities can be improved with the appropriate tools and methods. For example, providing regular workshops and courses on EI to graduate students can increase not only their EI abilities but also enhance the quality of their online interactions with peers, their use of SRL strategies, and eventually their academic success. It is also important to teach students to perceive academic emotions as valuable and controllable (Goetz et al., 2006), which should also be at the center of these EI enhancement efforts. Taken in sum, the author believes that practitioners should pay more attention to enhancing adult students' EI abilities in online environments, particularly during the COVID-19 pandemic during which more people are experiencing high levels of negative emotions, such as fear, anxiety, and anger (Huang et al., 2020). Helping students develop EI abilities can ensure that students experience more positive emotions in online learning by mitigating the detrimental effect of negative emotions on learning.

Limitations and Future Directions

In light of this research findings, a number of limitations should be considered. First the small sample size may have contributed to some inconsistencies observed in the

analyses. The nature of the sample also puts some limitations on the generalizability and significance of these findings. More specifically, participants in this research were enrolled in an online asynchronous graduate program. Future investigations and replications with various samples and contexts should carefully consider specific aspects of the learning environments, including instructional format and collaboration methods, which can impact students' value appraisals as well as their emotional experiences. Furthermore, the effect of value on enjoyment was not significant in this study and should be interpreted with caution. This may be due to the potential overlap between enjoyment as a discrete emotion and intrinsic value as a key antecedent of enjoyment. Future investigations should focus on using scales that are grounded in the control-value theory. Lastly, an important limitation is that emotions, behaviors, and outcomes should not be treated as constant antecedent, thus measurements of these variables should be conducted over time.

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APPENDIX A

Demographic and Program History Survey

What is your gender? *

- ☐ Male
- ☐ Female
- ☐ Prefer not to say

What is your age? *

- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65-74

How many courses have you completed so far in the EDTECH program? *

- ☐ 1-3
- ☐ 4-6
- ☐ More than 6

APPENDIX B

Self-Efficacy in Online Learning Scale

Instructions: Indicate the extent to which each item applies to you using the following scale:

0 = cannot do at all

5= moderately confident can do

10= highly confident can do

How confident are you that you could do the following tasks in the online course'

Description (optional)

1. Complete an online course with a good grade *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

2. Understand complex concepts *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

3. Willing to face challenges *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

4. Successfully complete all of the required online activities *

[illegible]

5. Keep up with course schedule *

[illegible]

6. Create a plan to complete the given assignments *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

(Note: The scale is represented by 10 circles corresponding to numbers 1 through 10.)

7. Willingly adapt my learning styles to meet course expectations *

cannot do at all ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ highly confident can do

8. Evaluate assignments according to the criteria provided by the instructor *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

(Note: The scale is represented by 10 circles corresponding to numbers 1 through 10.)

How confident are you that you could do the following social interaction tasks with your CLASSMATES in the ONLINE course?

Description (optional)

1. Initiate social interaction with classmates *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

2. Socially interact with other students with respect *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

3. Develop friendship with my classmates *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

4. Apply different social interaction skills depending on situations *

[illegible]

5. Pay attention to other students' social actions *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

How confident are you that you could do the following tasks while interacting with your CLASSMATES in the ONLINE course?

Description (optional)

1. Actively participate in online discussions *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

2. Effectively communicate with my classmates *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

3. Express my opinions to other students respectfully *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

4. Respond to other students in a timely manner *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

5. Provide help to other students when assistance is needed *

cannot do at all 1 2 3 4 5 6 7 8 9 10 highly confident can do

(Note: The scale is represented by 10 circles corresponding to numbers 1 through 10.)

6. Request help from others when needed *

Confidence

cannot do at all ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ highly confident can do

APPENDIX C

Perceived Value Scale

Instructions: Indicate the extent to which each item applies to you using the following scale:

- 1 = strongly disagree
2 = disagree
3 = disagree somewhat
4 = neither disagree nor agree
5 = agree somewhat
6 = agree
7 = strongly agree

☐ ☐ ☐
☐ ☐ ☐

1. In general, I find the tasks required by the MET program very interesting. *

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. It is important to me that I do well in the MET program. *

[illegible]

3. Completing the MET program is very useful for what I want to do in the future.

[illegible]

4. The time and effort required to do very well in the MET program are worth the cost.

1 2 3 4 5 6 7

strongly disagree ○ ○ ○ ○ ○ ○ ○ strongly agree

APPENDIX D

Wong and Law Emotional Intelligence Scale (WLEIS)

5. I always know my friends' emotions from their behavior. *

	1	2	3	4	5	6	7	
strongly disagree	☐	☐	☐	☐	☐	☐	☐	strongly agree

6. I am a good observer of others' emotions. *

	1	2	3	4	5	6	7	
strongly disagree	☐	☐	☐	☐	☐	☐	☐	strongly agree

7. I am sensitive to the feelings and emotions of others. *

	1	2	3	4	5	6	7	
strongly disagree	☐	☐	☐	☐	☐	☐	☐	strongly agree

8. I have good understanding of the emotions of people around me. *

9. I always set goals for myself and then try my best to achieve them. *

1 2 3 4 5 6 7

strongly disagree ○ ○ ○ ○ ○ ○ ○ strongly agree

10. I always tell myself I am a competent person. *

strongly disagree 1 2 3 4 5 6 7 strongly agree

11. I am a self-motivating person. *

1 2 3 4 5 6 7

strongly disagree ○ ○ ○ ○ ○ ○ ○ strongly agree

12. I would always encourage myself to try my best. *

[illegible]

APPENDIX E

Program Enjoyment Scale

Instructions: Indicate the extent to which each item applies to you using the following scale:

- 1 = strongly disagree
2 = disagree
3 = disagree somewhat
4 = neither disagree nor agree
5 = agree somewhat
6 = agree
7 = strongly agree

1. I enjoy being in the MET program.

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

2. I am looking forward to learning a lot in in the MET program. *

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

3. My enjoyment in the MET program makes me want to participate.

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

4. I enjoy participating in the MET program so much that I get energized.*

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

APPENDIX F

Program Anxiety

5. Thinking about the MET program makes me feel uneasy.

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

6. I worry that the demands of the MET program might be too great. *

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

7. I get scared that I might say something wrong in class, so I'd rather not say anything. *

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

8. I get tense in the MET ★

1 = strongly disagree 1 2 3 4 5 6 7 7 = strongly agree

APPENDIX G

Online Self-Regulated Learning Questionnaire (OSLQ)

6. I allocate extra studying time for my online courses because I know it is time-demanding.

strongly disagree 1 2 3 4 5 6 7 strongly agree

☐ ☐ ☐ ☐ ☐ ☐ ☐

● ● ●
● ● ●

7. I try to schedule the same time everyday or every week to study for my online courses, and I observe the schedule. *

1 2 3 4 5 6 7

strongly disagree ○ ○ ○ ○ ○ ○ ○ strongly agree

8. Although we don't have to attend daily classes, I still try to distribute my studying time evenly across days.

1 2 3 4 5 6 7

strongly disagree ○ ○ ○ ○ ○ ○ ○ strongly agree

APPENDIX H

Consent Form

Consent

You are invited to participate in a study titled USING THE CONTROL-VALUE THEORY TO IMPROVE UNDERSTANDING OF THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND SELF- REGULATED LEARNING IN AN ONLINE GRADUATE PROGRAM. This research project is being conducted by Ash Touati, a doctoral candidate in the department of educational technology at Boise State University. The survey should take no more than 10 minutes to complete.

PARTICIPATION

Your participation in this survey is completely voluntary. You may refuse to take part in the research or exit the survey at any time.

BENEFITS

Your responses will help us learn more about the relationship between emotions and self-regulated learning behaviors in online learning. This is also a great chance to self-reflect on your emotional and social experiences in the EDTECH program.

CONFIDENTIALITY

Your survey answers will be sent to a link at Google Drive where data will be stored in a password protected electronic format. Email addresses will only be collected for the purpose of sending out an Amazon Gift Card. Your information and responses will remain confidential at all times.

RISKS

There is the risk that some questions may cause emotional discomfort. If you experience any distress when answering these questions please contact the Campus Health and Wellness at (208) 426-1459.

CONTACT

If you have questions at any time about the study or the procedures, you can email me at achraftouati@u.boisestate.edu.

If you feel you have not been treated according to the descriptions in this form, or that your rights as a participant in research have not been honored during the course of this project, or you have any questions, concerns, or complaints that you wish to address to someone other than the investigator, you may contact the Institutional Review Board, which is concerned with the protection of volunteers in research projects. You may reach the board office between 8:00 AM and 5:00 PM, Monday through Friday, by calling (208) 426- 5401 or by writing: Institutional Review Board, Office of Research Compliance, Boise State University, 1910 University Dr., Boise, ID 83725-1138.

ELECTRONIC CONSENT: If you wish to participate, please select " I Agree" before proceeding. You may print a copy of this consent form for your records. Clicking on the "Agree" button indicates that

- You have read the above information
- You voluntarily agree to participate
- You are 18 years of age or older

Question

★

☐ I agree

APPENDIX I

IRB Application Approval

This study was approved by the Institutional Review Board (IRB) at Boise State University, protocol number 101-SB19-011.