CRITICAL THINKING IN THE UNDERGRADUATE CLASSROOM: ATTITUDES AND PREFERENCES FROM EMERGING AND ADULT LEARNERS

A Dissertation

by

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ABSTRACT

One of the primary goals of higher education is to improve student critical thinking. Critical thought is a key factor in career readiness, a tool for survival that can enable one to escape oppression, and is ultimately a component of civic engagement. Even with this import, significant gains in critical thinking prove challenging to accomplish in the undergraduate setting. There is a growing body of research detailing which instructional interventions are most promising. While these studies have expanded our understanding of critical thinking instruction in the undergraduate classroom, there is scant data on undergraduate perceptions and preferences toward it. What is more, existing studies predominantly focus on traditionally aged, emerging adult learners. The number of adult undergraduate learners, however, is growing.

Undergraduate students are not empty vessels. They arrive in classrooms with life experiences, individual and group identities, and pre-conceptions about the world. Students process classroom instruction in light of these factors. Individual and group identity factors can aid or inhibit a learner's ability to engage with and assimilate course information. Emerging adulthood is markedly a time for identity exploration and instability. Adulthood, on the other hand, is not. Ultimately, these differences could factor into differential attitudes, preferences, and needs for critical thinking instruction for the two life stages.

The purpose of this study was to explore the attitudes and preferences of undergraduate learners, both emerging and adult, toward critical thinking instruction in the college classroom. Critical thinking instruction is typically less common, less explicit, or ill-defined in the undergraduate classroom. This investigation provides context and additional perspective with emerging and adult student voices and experiences in mind.

Findings suggest that undergraduate learners had few classroom experiences with critical thinking instruction. These experiences, both positive and negative, informed the undergraduate learners' attitudes and preferences for critical thinking instruction. Accordingly, learners' sense of identity played an important role in their perspectives on critical thinking. Some identity components inhibited learners' abilities to engage in critical thinking. Participants defined and self-identified life stages aligned with the theory of emergent adulthood, with some notable exceptions. Additional differences in life stage and religiosity appeared to coincide with the perceived acceptability of course topics. Undergraduate attitudes and preferences for critical thinking instruction aligned with research prescribed instructional interventions. These perceptions, however, added to the missing context and nuance in the literature.

The implications from this study indicate that critical thinking instruction is just as nuanced as the students themselves. Due to this nuance and complexity, critical thinking instruction requires training and practice. Additionally, just as learning is both an individual and social endeavor, critical thinking also appears to have both individual and social elements. Greater research into this interplay could deepen our understanding of this phenomenon. Undergraduate adult learners in this study reported significant exploration in some areas of their identity. Additional inquiry into this phenomenon is needed, as returning adult undergraduate learners could be different in this way from adults engaging in other forms of adult learning. Identity exploration could impact the learning process. The interplay between identity, politics, and religiosity appeared to greatly influence some participants' ability to engage in critical thought. This reticence is unaccounted for in the undergraduate critical thinking literature and deserves greater scrutiny as well.

DEDICATION

I dedicate this work to my family. Thank you for supporting me throughout this educational journey. Drew and Izzy Jo, you are my inspiration and reason for persisting. Thank you for all your love, sacrifice, and encouragement along the way.

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CHAPTER I

INTRODUCTION

One of the primary goals of higher education is to improve student critical thinking (Bok, 2006; Hart, 2013; Kahneman, 2011; Facione, Sánchez, Facione, & Gainen, 1995; Van Gelder, 2005). According to the National Association of Colleges and Employers (2019), critical thought is one of the main competencies associated with career readiness. In addition, educators and philosophers in the field argue that critical thought is imperative to survival (Brookfield, 2012), can be used as a tool to analyze and escape oppression (Freire, 2017), and ultimately a practice of democratic consciousness and freedom (hooks, 2010, 2017). Critical thought, for instance, can aid in the evaluation of significant life events and decisions tied to diet, education, healthcare, finance, and civic engagement.

Even with this import, significant gains in student critical thinking prove challenging to accomplish in the undergraduate setting (Van Gelder, 2005). While minor improvements can be seen throughout a four-year degree (Arum, 2014; Harris, Stein, Haynes, Lisic, & Leming, 2014; Hubern & Kuncel, 2016), undergraduate programs are not generally successful at affecting significant gains in a single course or semester (e.g., Arum & Roska, 2010; Arum, Roska, & Cho, 2011; Hubern & Kuncel, 2016; Pascarella, Blaich, Martin, & Hanson, 2011). Nevertheless, a small but growing body of literature has detailed course and programmatic successes (Abrami et al., 2008; Gellin, 2003; Rowe, Gillespie, Harris, Koether, Shannon, & Rose, 2015). According to Abrami et al. (2015), some of the most effective instructional interventions involve dialogue, whole class and group, exposure to authentic, situated problems and examples, and mentorship. These investigations, however, predominantly focus on the skill development of traditionally aged college students and not the full breadth of student ages.

Meanwhile, there has been a significant increase in adult undergraduate college students, with continued projected growth (NCES, 2013; Hussar and Bailey, 2018). This group, not to be confused with the broader definition of non-traditional learners, are typically 25 years of age and older. Adult learners are not a monolithic group; they are a diverse and poorly understood student population (Pusser et al., 2007; Sissel, Hansman, & Kasworm, 2001). The learning needs of this demographic have largely been ignored, both by higher education institutions and educational researchers (Kasworm, 1993; Kasworm, Sandmann, & Sissel, 2000; Schlossberg, Lynch, & Chickering, 1989; Sissel, Hansman, & Kasworm, 2001). This difference positions traditionally aged students, 18 to 24 years of age, with more power and privilege within higher education than their adult counterparts (Sheared, 1994; Sheared & Sissel, 2001; Sissel, Hansman, & Kasworm, 2001).

While traditionally aged students are no longer adolescents, according to human development and lifestage experts, they appear to have some distinct differences from other stages of adulthood. Traditionally, students within industrialized nations typically do not identify as adolescents or adults (Arnett, 2000, 2004b). Individuals in this lifestage, referred to as emerging adulthood, experience greater identity exploration and instability on average than their older, adult, counterparts (Arnett, 2000, 2004b). However, on average, adults experience more stability with significantly less identity exploration. How might such a distinction relate to critical thinking? These differences in power, privilege, identity formation, and life experience could affect attitudes and preferences for instruction geared toward critical thought.

When surveyed, undergraduate educators reported that they promoted, or aspired to promote, critical thought (Astin, 1993; Gardiner, 1995; Gellin, 2003; HERI, 2009; McMillan, 1987; Paul, Elder, & Bartell, 1997; Thomas, 1999). Undergraduate instructors, however,

struggled to define or quantify the ways in which they promote these skills (Paul, Elder, & Bartell, 1997; Stedman & Adams, 2012; Whittington & Newcomb, 1993). Duron, Limback, and Waugh (2006) argued that many instructors use passive, or ineffective, instructional methods that do not encourage critical thought. Additionally, instructors and researchers may distinguish between critical thinking skills and dispositions (Facione, Facione & Giancarlo, 2001; Halpern, 1998; Nieto & Saiz, 2011; Paul & Elder, 2001). Gains or improvement in one area do not necessarily translate to gains in the other. When taught, critical thinking in the undergraduate classroom may vary with emphasis depending on the level of instruction, course, and field of study (Brookfield, 2012). With this in mind, a given set of truths and respective epistemologies are relayed and relied upon as course content. This content may align with, or contradict, student preconceptions, worldviews, or aspects of their identity. As such, students may assimilate, be noncommittal toward, or reject this course content, inhibiting their ability to think critically (Sherif & Hovland, 1961). The elements that are socially and contextually influenced and assimilated can then be integrated, as detailed by Jarvis (2006), as part of the learner's biography.

Undergraduate instructors relay course information, ideas, and ways of thinking; they are, in essence, making a case for their course content. Sherif and Hovland (1961) proposed social judgment theory, a theory of persuasion, to explain attitudinal change toward a given message, information, or set of ideas. According to Sherif and Hovland (1961), how a person deals with presented messages depends on their original position, or anchor, toward those messages and the level of ego involvement associated with the individual's position. If the message is within a range of acceptance or noncommittal, they are more likely to assimilate the message. If it is outside of that range, it will be rejected. If a person has a high level of ego involvement, they

may feel more strongly about consistent and discrepant messaging.

Ego involvement is how strongly an individual feels toward their attitude toward a given stimulus or message (Sherif & Hovland, 1961). This involvement is typically more significant when the attitude is tied to a person's identity or group affiliation. Should the course content counter or align with a student's identity or group affiliation, it could influence student attitudes toward, and preferences for, that content. It may affect their ability to think critically, and process said content. With adult learners being less likely to engage in identity exploration than their emerging adult counterparts (Arnett 2000, 2004b), attitudes and preferences toward critical thinking instruction may differ with age or life stage.

Problem

There is a significant body of research on effective instruction in higher education (Pascarella & Terenzini, 1991, 2005; Perry & Smart, 2007). Moreover, there is growing research within this body of work detailing which instructional interventions are most promising for improving critical thinking skills and dispositions (Abrami et al., 2008; Abrami et al., 2015; Niu, Behar- Horenstein & Garvan, 2013). However, while these studies have improved our understanding of critical thinking instruction in the undergraduate classroom, there is scant data on undergraduate student perceptions and preferences toward it (Loes, Salisbury, & Pascarella, 2014; Pascarella, Edison, Nora, Hagedorn, & Braxton, 1996; Shim & Walczak, 2012). What is more, studies that do exist predominantly focus on traditionally aged students. Investigating undergraduate attitudes and preferences toward critical thinking instruction, with regard to social interactions and identity, could help researchers and instructors better conceptualize effective practices for positively affecting student critical thinking skills and dispositions. It is for this reason that this study makes use of social judgment theory as a theoretical framework.

Theoretical Framework

When taught, critical thinking in the undergraduate classroom is typically relayed or practiced in the context of field-specific information and ideas. Students may assimilate, be non-committal toward, or reject course content depending on their original position on said content. For instance, a biology instructor may have students critically analyze a piece of literature on the evolution of the eye. While students are being asked to employ critical thinking skills for this task, they are doing so considering the context of evolution, the epistemologies of the field, and the respective course content and terminology aligned with said context and epistemologies.

Students are not empty vessels when they enter a classroom. In light of the work by Piaget, Vygotsky, and Freire, students will typically have prior conceptions, worldviews, and socially constructed realities that shape how they make sense of course content (Gordon, 2008). These preconceptions can be built upon or cause dissonance (e.g., Mitchell & Paras, 2016). In our example on eye evolution, a student may engage in this line of inquiry by assimilating the information, passively using the information, or refusing to accept the information. These latitudes of acceptance and rejection depend on the student's original position and ego involvement tied to the information. This, in turn, could significantly influence the meaning-making process.

Social judgment theory, proposed by Sherif and Hovland (1961), explains undergraduate attitudes and preferences toward contextualized critical thinking instruction. How students process given messages from critical thinking instruction can provide educational researchers and undergraduate instructors with insight into how course content is processed and possibly integrated. If individuals are less likely to engage in identity exploration in later life stages, it could result in greater ego involvement and possibly hinder critical thought in the classroom.

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Identity development may play a role in how students process content. If ego involvement is high, a student may not be able to fully engage in critical thought and only remain at lower levels of cognitive processing. According to lifestage theory, older adults are less likely to engage in identity exploration (Arnett, 2000, 2004). With purposive sampling to include adult learners in this study, the theory of emerging adulthood could help explain variance in attitudes toward critical thinking instruction. Within the context of social judgment theory, the variation in identity development for emerging and adult learners provides context for variation in attitudes and preferences toward critical thinking instruction.

Purpose

The purpose of this study is to explore the attitudes and preferences of undergraduate learners, both emerging and adult, toward critical thinking instruction. As critical thinking instruction is typically less common, less explicit, or ill-defined in the undergraduate classroom, this study can also serve as a preliminary exploration for insight into barriers and catalysts for such instruction. This investigation will provide context and additional perspective for critical thinking instruction with student voice and experience in mind. The additional emphasis on adult learners provides: (a) intentionality in providing a voice for an underserved and under-researched demographic and (b) preliminary insight for possible interplay between lifestage and identity influences on attitudes and preferences for critical thinking instruction. These elements guided the construction of the following research questions and this study.

Research Questions

The research questions are as follows:

1. What are the expressed attitudes of emerging and adult learners toward critical thinking instruction in the undergraduate classroom?

2. What are the expressed preferences of emerging and adult learners for learning

experiences to improve critical thinking in the undergraduate classroom?

3. To what extent do emerging and adult learners feel their identity and group affiliations affect their attitudes/preferences toward critical thinking instruction in the undergraduate classroom?

Significance

The study of critical thinking in the undergraduate setting has centered mainly on pedagogies and practices led by instructors and not on student preferences, attitudes, or motivations. As a result, only a handful of researchers have explored student perceptions of critical thinking instruction (Loes, Salisbury, & Pascarella, 2014; Pascarella, Edison, Nora, Hagedorn, & Braxton, 1996; Shim & Walczak, 2012). These studies were conducted via survey and largely explored instructor organization and preparation. While surveys are helpful, interviews elicit more deep and rich personal experiences from participants. Such experiences can provide valuable context to the field and greater insight into student perceptions for future research and practice.

Undergraduate instruction is primarily centered and built upon experiences and research from traditionally aged students. It was noted that the increase in adult learners on college and university campuses and the growth of this population continues to this day (Cross, 1981; NCES, 2013; Hussar & Bailey, 2018). In addition, Cross (1981) called for better research and understanding of dispositional, situational, and institutional barriers to adult learning within the higher education setting. With little advancement and nearly twenty years later, Sissel, Hansman, and Kasworm (2001) called for the same. Twenty years after this second call to action, little has been accomplished. Therefore, this study may help university instructors, administrators, and educational researchers better understand adult undergraduate experiences.

Ultimately, this study seeks to uncover student attitudes and preferences for engaging in

critical thought in the undergraduate setting. The ramification, of course, is messaging that

inhibits the practice and use of critical thinking could have larger implications for individual

students and society. For example, suppose ego involvement dramatically impacts a student's

ability to use course information for critical thought. It could also impact a student's ability to

survive, analyze or escape oppression, and fully engage in democratic consciousness after

leaving the classroom.

Definition of Terms

In this study, I will make use of terms that can potentially have multiple meanings. These

terms are included, with definitions, for clarity.

Adult Learner

For this study, an adult learner is any undergraduate that is not an emerging adult and

identifies as an adult. While this is typically an individual greater than 25 years of age, in line

with work by (Arnett, 2000, 2004), some individuals may be younger.

Attitude

According to Sherif, Sherif, and Nebergall (1965), attitudes are "the stands the individual

upholds and cherishes about objects, issues, persons, groups, or institutions" (p. 4). Attitudes are

the end products of socialization, and therefore influenced by interactions and group affiliations;

they have motivational and emotional properties; they are not transitory, rather, they are a

component of self (Sherif, Sherif, & Nebergall, 1965, p. 5)

Critical Thinking

The American Philosophical Association Delphi Consensus (Facione, 1990) defined

critical thinking as "the process of purposeful, self-regulatory judgment. This process gives

reasoned consideration to evidence, context, conceptualizations, methods, and criteria" (p. 5).

Critical thinking skills

The ability for students to critically think; to use purposeful, self-regulatory judgment. According to Stein, Haynes, and Redding (2006), this process requires that students evaluate information, use creative thinking, are able to learn and apply new information using problem solving, and are able to communicate ideas effectively.

Critical thinking dispositions

According to Giancarlo and Facione (2001) a person's critical thinking disposition is their "inclination to use critical thinking when faced with problems to solve, ideas to evaluate, or decisions to make. Attitudes, values, and inclinations are dimensions of personality that influence human behavior. The disposition toward critical thinking, as a dimension of personality, refers to the likelihood that one will approach problem framing or problem solving by using reasoning. Thus, the disposition toward critical thinking is the consistent internal motivation to engage problems and make decisions by using thinking" (p. 3).

Ego Involvement

According to Sherif and Hovland (1961), ego involvement is the importance or centrality of an issue to a person's life and identity. This could be demonstrated by the persons membership in a group, such as a religious, political, or familial affiliation. Sherif and Hovland (1961) state that this can be identified by whether an issue "arouses an intense attitude or, rather, whether the individual can regard the issue with some detachment as primarily a 'factual' matter" (p. 191).

Emerging adulthood

Emerging adulthood is a developmental lifestage that is theoretically and empirically neither adolescence nor young adulthood from the late teens into the mid-twenties (Arnett, 2000,

2004). Individuals in this lifestage have left adolescence but have not taken on the normative responsibilities of adulthood. Emerging adults (ELs) engage in identity exploration, tend to have residential instability, and do not identify as adolescents or as adults.

Identity

According to the American Psychological Association (n.d.), identity is "an individual's sense of self defined by (a) a set of physical, psychological, and interpersonal characteristics that is not wholly shared with any other person and (b) a range of affiliations and social roles." This could be a person's gender, sexuality, race, color, religion, political affiliation, and more. From a lifestage perspective, Erickson (1980) further elaborates that an identity is a socially and individually constructed awareness of self over time; comprised of a person's committed goals, values, and beliefs.

Instructor

For the purposes of this study, instructor refers to the individual(s) hired to lead the instruction in the higher education classroom. The use of the term 'instructor' in this study is intentional. While the term 'faculty' may historically encompass the majority of instructional leaders in this setting, it no longer encompasses the full embodiment of professionals in the higher education classroom or literature. Examples of non-faculty can include adjunct instructors, instructional staff, and non-tenure track instructors. Depending on the institution, the term 'faculty' may not be ascribed to these appointments. Studies also indicate greater diversity in this new, un-tenured, ever increasing, designation on higher education campuses (Finkelstein, Conley, & Schuster, 2016).

Non-traditional student

According to the National Center for Educational Statistics (2013) a student in higher

education is considered non-traditional when they satisfy one or more of the following criteria: enrolled part-time, delayed enrollment after high school, financially independent (not dependent upon parental support), individuals with dependents (other than a spouse), and/or students that do not have a high school diploma.

Preference

An expressed liking for one alternative over others.

Returning Adult learner

For the purposes of this study, an adult learner is an individual that identifies as an adult, left formal education for a period, and then enrolled in formal undergraduate coursework. The age of adult learners, as opposed to traditionally aged emerging adult college students, is greater than 25 years of age.

Summary

The purpose of this study was to explore student attitudes and preferences of emerging and adult undergraduate learners for critical thinking instruction. The additional lenses of emerging adulthood and social judgment theory provide framework for interpreting the findings. This chapter included an introductory background, a statement of the problem, purpose, research questions, significance of the study, operational definitions, and theoretical framework for the study. Chapter II includes a literature review of prior research and findings.

CHAPTER II

LITERATURE REVIEW

Introduction

This chapter details the foundations and justification for investigating undergraduate attitudes and preferences for critical thinking instruction, emphasizing adult learners. Most educational studies on critical thinking focus on instructor interventions to improve traditionally aged student skills and dispositions. However, with some exceptions, measurable improvements appear challenging to obtain in a single course or semester (Arum & Roska, 2010; Arum, Roska, & Cho, 2011; Pascarella, Blaich, Martin, & Hanson, 2011).

This study sought to build on this body of research by exploring student attitudes and preferences with the combined lenses of emerging adulthood and social judgment theory. The added emphasis on attitude change, identity, and lifestage may prove useful for adding context and insight for future research and instructional interventions.

The following review details the literature germane to this study. Chapter II is organized into four sections: (a) critical thinking, (b) emerging adulthood, (c) adult learners, and (d) social judgment theory.

Critical Thinking

Contemporary philosophers, educators, business leaders, politicians, civic leaders, researchers, and more advocate for the improvement of critical thought as a necessary component of life, democracy, and society. The term has become ubiquitous in higher education in mission statements, departmental evaluations, and course objectives (Arum & Roska, 2011). Critical thinking, however, is not a new concept: reference to the foundations of critical thought are often traced to, and rooted in, works by Socrates (Paul, Elder, & Bartell, 1997); emphasis on

the philosophy of teaching critical thought first appears in Dewey's "liberal learning" model of education (1916, 1933, 1938) in the early part of the twentieth century; and, in the mid-1950's educational researchers began measuring critical thought, setting the stage for research tied to instructional interventions and practices (Beyer, 1985). This portion of the review will detail the definitions, assessment, and current findings for critical thinking instruction in higher education.

Critical Thinking Defined

A report by Whittington and Newcomb (1993) found that a significant number of higher education instructors aspire to teach critical thinking. Paul, Elder, and Bartell (1997) reported, however, that while the majority include critical thinking as a major course objective, only 19 percent of higher education instructors could clearly define it. In a small survey, Stedman and Adams (2012) obtained consistent findings showing a significant number of instructors had misconceptions about critical thought. In fact, many publications on undergraduate higher education, that refer to critical thinking, fail to define it or make substantive connections, leaving room for assumption and confusion (Cosgrove, 2012). When undergraduate instructors and researchers do articulate a definition, it can be conceptualized in a multitude of ways.

When reference to a definition is made, some of the most frequent derive from Furdey and Furdey (1985), Valenzuela, Nieto, and Saiz (2011), Brookfield (2012), Dwyer (2017), Dwyer, Hogan, and Stewart (2014), and Facione (1990, 2015). Furdey and Furdey (1985), for example, defined critical thinking as a student's ability to identify issues and assumptions, recognize important relationships, make correct inferences, evaluate evidence, and deduce conclusions. Valenzuela, Nieto, and Saiz (2011) articulated critical thinking as the deliberate, higher order thinking that requires self-control and which encompasses such things as problem solving and the evaluation of hypotheses, arguments, conclusions, and beliefs. Dwyer (2017) and

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Dwyer, Hogan, and Stewart (2014) defined critical thinking as a metacognitive process applied to purposeful, self-regulatory, and reflective judgment; an act that improves a person's chance of producing a logical solution to problems. From an adult education perspective, Brookfield (2012) detailed critical thinking as a process that "entails (1) identifying the assumptions that frame our thinking and determine our actions, (2) checking out the degree to which these assumptions are accurate and valid, (3) looking at our ideas and decisions (intellectual, organizational, and personal) from several different perspectives, and (4) on the basis of all this, taking informed action" (p. 1). The most often cited and encompassing definition, however, derives from Facione (1990, 2015).

In the late 1980's, a consortium of experts in the field of critical thinking sought to find a consensus definition, or Delphi report (Facione, 1990, 2015). The resultant definition by Facione (1990), relayed that "critical thinking is the process of purposeful, self-regulatory judgment. This process gives reasoned consideration to evidence, context, conceptualizations, methods, and criteria" (p. 3). This report and definition were later refined and referenced by educators from a wide array of disciplines, from the social, natural, historical, and experimental sciences (Facione, 2015). Among the many useful definitions, the conceptualization by Facione (1990, 2015) is:

1. one of the most frequently referenced by practitioners and scholars within higher education,

2. inclusive of both skills and dispositions,

3. most prevalently used as a basis for nationally standardized assessment, and

4. the definition used by the model course with which participants will have had experience in this study.

While there are many shared components for the various definitions and conceptualizations, there are some major differences. The skill component that tends to vary from scholar to scholar is the inclusion, or absence, of numeracy skills (Tsui, 2002). There are strong arguments for the inclusion of these elements when operationalizing and measuring student critical thinking skills, yet these skills are not common across intellectual disciplines or fields (Ennis, 1989; McPeck, 1981; Siegel, 1988; Stein, Haynes, Redding, Ennis, and Cecil, 2007). An additional variance in these definitions is the inclusion or absence of dispositions toward critical thought. Giancarlo and Facione (2001) argue that any conceptualization of critical thinking that excludes disposition is incomplete. As such, an educational researcher or instructor's selected conceptualization of critical thinking can have a direct influence on their methodological decisions and practices.

Critical Thinking Assessment

Assessing students' critical thinking can be difficult to accomplish. A researcher may be interested in students' skills or dispositions (Dwyer, 2018; Tsui, 2002). From a theoretical perspective, each provide valuable insight into the phenomenon. For instance, just because someone has critical thinking skills does not mean they are disposed to use them (Dwyer, 2017; Valenzuela, Nieto, & Saiz, 2011). Conversely, just because someone is disposed to think critically does not mean they have critical thinking skills.

Critical thinking skills are predominantly measured using standardized multiple-choice assessments, as with the California Critical Thinking Skills Test (Facione, 1990b), the Cornell Critical Thinking Test (Ennis, Millman, & Tomko, 1985), and the Watson-Glaser Critical Thinking Assessment (Watson & Glaser, 1980). These assessments are designed to measure a participant's ability to think critically. Multiple-choice assessments have come under some

scrutiny in recent years, as they leave room for correct thinking by way of guessing (Dwyer, 2018). There are assessments that use open-ended, or essay, prompts as well, including the Critical-thinking Assessment Test (Stein & Haynes, 2011), the International Critical Thinking Reading and Writing Test (Paul & Elder, 2003), and the Ennis-Weir Critical Thinking Essay Test (Ennis & Weir, 1985). These assessments have grown in popularity, as they provide participants with the opportunity to articulate more nuanced responses and are more akin to real world scenarios. The drawback of using assessments that contain open ended questions, is that they are more difficult to process. These assessments, however, solely focus on critical thinking skills, and not the full conceptualization seen in more comprehensive definitions. Should instructors and educational researchers use a definition, like that of Facione (2015), they may also wish to evaluate student dispositions toward critical thinking.

Until the creation of California Critical Thinking Disposition Inventory, no other assessment had been created for the sole evaluation of student dispositions for critical thought (Giancarlo & Facione, 2001). Before this, only the Watson-Glaser Critical Thinking Appraisal incorporated some student behavior attributes, with a greater emphasis on skills. The Watson-Glaser Critical Thinking Appraisal, however, slowly lost favor following Saucier's (1995) critique, asking for greater conceptual clarity in design and definition (Cohen, 2010). The California Critical Thinking Disposition Inventory was designed to measure a participant's willingness to think critically (Facione, Facione, & Giancarlo, 2001). Facione, Facione, and Giancarlo (2001) ground the conceptualization of critical thinking disposition, and ultimately the inventory, in the findings from the American Philosophical Association's sponsored Delphi Report on critical thinking (1990) and Lewin's (1935) motivational theory. As such, they postulated that a student's disposition to value and utilize critical thinking impels them to

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achieve mastery over critical thinking skills. The disposition inventory utilizes a series of questions with Likert scale responses to discern students' willingness to engage in critical thought. Much like critical thinking skill assessments, the California Critical Thinking Disposition Inventory has been used to measure the success of instructional techniques, programs, and interventions. Far fewer researchers and educators evaluate dispositional changes, compared to skill assessments. Short of a four-year longitudinal study conducted by Giancarlo and Facione (2001), no large-scale analyses or meta-analyses exist for critical thinking disposition assessments. The primary reason for Giancarlo and Facione's (2001) longitudinal study was to show that such an assessment was possible; no overarching generalizations or conclusions were relayed. Improvement in disposition, thus far, appears to be difficult, variable, and largely elusive (e.g. Walsh & Seldomridge, 2006). Beyond skills and dispositions, very little research has been conducted on student experience, attitudes, and preferences toward critical thinking instruction.

While there is a significant body of research on effective instruction in higher education (e.g. Pascarella & Terenzini, 1991, 2005; Perry & Smart, 2007), only a handful of studies have explored student attitudes and preferences on critical thinking instruction (Loes, Salisbury, & Pascarella, 2014; Pascarella, Edison, Nora, Hagedorn, & Braxton, 1996; Shim & Walczak, 2012). These studies were conducted via survey, with quantitative analysis, and largely explored instructor organization and preparation. This focus, or gap, in the literature fails to account for students' prior learning and experiences. An exception in the literature is Trosset's (1998) mixed methods analysis of student obstacles to critical thinking using open discussion and discourse. The various individual assessments and meta-analyses on skills, dispositions, and attitudes or

preferences for critical thinking and critical thinking instruction paint a nuanced picture. The road to affecting positive changes appears difficult, but not impossible.

Critical Thinking Current Findings

Humans do not appear to naturally engage in critical thought without significant systematic practice and effort (Hastie & Dawes, 2010; Kahneman, 2011). According to Stein and Haynes (2011) higher education instructors play a significant role in helping learners develop critical thinking skills. Studies show that instructors in higher education overwhelmingly support the inclusion of critical thinking instruction (Astin, 1993; Gardiner, 1995; Gellin, 2003; HERI, 2009; McMillan, 1987; Paul, Elder, & Bartell, 1997; Thomas, 1999). Single undergraduate courses and short-term programs, however, are not typically successful at effecting positive gains (Arum & Roska, 2010; Arum, Roska, & Cho, 2011; Pascarella, Blaich, Martin, & Hanson, 2011). While there is a preponderance of literature theorizing effective pedagogical practices for the improvement of critical thinking, few are empirically based (Tsui, 2002; Tsui, 1998). Programmatic frustration can be found across the literature, with disparate definitions, a mixture of assessments, and less than promising results (e.g. Walsh & Seldomridge, 2006). There is a growing, yet small, body of literature detailing specific classroom successes at improving student critical thinking in higher education (e.g. Abrami, Bernard, & Borokhovski, 2008; Gellin, 2003; Rowe, Gillespie, Harris, Koether, Shannon, & Rose, 2015). Unfortunately, meta-analyses indicate that overall effect sizes of programs measuring critical thinking skills and dispositions, using quasi- and true experimental methods, remain low with highly variable outcomes (Abrami et al., 2008; Abrami et al., 2015; Niu, Behar-Horenstein & Garvan, 2013). According to Abrami et al. (2015) some of the most effective instructional interventions involve: (a) dialogue, (b) exposure to authentic, situated, problems and examples, and (c) mentorship. An earlier

exhaustive analysis, however, found that the most successful interventions included advanced instructional training and preparation (Abrami et al., 2008). Alternatively, impacts of critical thinking interventions were smallest in publications that failed to mention instructor professional development or course design and implementation (Abrami et al., 2008). These studies are invaluable, however, largely focus on instruction, intentions, and cause-effect relationships with classroom interventions. These finding may underscore the need for greater understanding of student needs and preferences for greatest effect. Research with introductory courses suggests student motivation to learn can be influenced by student perception of instructor caring, including both instructor attitudes and instructional practice (Miller & Mills, 2019). Studies in this arena, however, typically focus on general course engagement and not in association with critical thinking. Student attitudes and preferences toward critical thinking instruction could prove useful for adding context.

The few survey studies exploring student perceptions of, and preferences for, critical thinking instruction largely found that students preferred instruction with prepared and organized instructors (Loes, Salisbury, & Pascarella, 2014; Pascarella, Edison, Nora, Hagedorn, & Braxton, 1996; Shim & Walczak, 2012). A mixed methods study by Trosset (1998) focused on undergraduate perceptions of critical thinking instruction using open discussion. The overwhelming majority of Trosset's (1998) participants relayed that:

1. balanced discussion and thought on sensitive diversity-related issues was impossible,

2. they feared reprisal for potentially having a disparate viewpoint from the majority,

3. some topics were perceived to be "too difficult" and would result in conflict, and

4. they may be judged for not holding a strong enough opinion. (pp.46-49)

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It is important to note, a small percentage wished to engage in discussion to explore the topic or uncover other views (Trosset, 1998). When participants were asked why instructors would have them discuss differences, students often relayed that the purpose was to find consensus, that they were more likely to listen and find consensus with those they agreed with, and that one's own personal experience was the only source of legitimate knowledge (Trosset, 1998). Clearly, this does not suggest a natural disposition toward critical thinking. What is more concerning, is the fact that most of the participants misinterpreted the larger learning goals for discussion activities. Furthermore, some expressed that they held the right for their views not to be challenged (Trosset, 1998). Ultimately, Trosset (1998) expressed concern for radical relativism, where personal knowledge is confirmed rather than being critically analyzed, opinions go unquestioned, and expert analysis is equivalent to "opinion". This last assessment is of great import to this study, as it relays student perceptions of instructional practices geared toward critical thinking. These insights provide a glimpse at how students may perceive critical thinking instruction differently than their instructors, or with hesitation and even fear.

Most of the research on critical thinking instruction focuses squarely on the actions and interventions of instructors. When the research focus is on students, it is largely centered on student critical thinking abilities and dispositions, without regard for their attitudes and preferences for the instruction itself. These preferences will likely influence students' willingness to engage in rigorous, higher order thinking and learning. In addition, the meta-analyses and individual publications place a substantial focus on traditionally aged, emerging adult, college students.

Emerging Adulthood

Arnett's (2000b, 2004) theory of emerging adulthood builds upon the lifestage works of Erickson (1968), Levinson (1978), and Keniston (1971). In his theory, Arnett (2000, 2004b) proposed an additional lifestage between roughly 18 and 25 years of age. The notion of a developmental stage between adolescence and young adulthood is not new, though earlier attempts were only briefly noted, not named, ill named, and/or had not been investigated and backed with supporting evidence before Arnett's (2000) publication. This portion of the review will detail the definition of emerging adulthood with emphasis on the limitations of generalization.

Emerging Adulthood Defined

Arnett's (2000) original conceptualization of emerging adulthood derived from qualitative interviews, with later empirical validation using a quantitative inventory by Reifman, Arnett, and Colwell (2007). Arnett (2000, 2004a, 2004b) characterized emerging adult learners as having five distinct features:

1. the age of identity exploration,

2. the age of instability,

3. the self-focused age,

4. the age of feeling in-between, and

5. the age of possibilities. (p.9)

According to Arnett (2000, 2004b), emerging adults generally pursue education beyond secondary education; experience more job, relational, and career instability; and engage in greater identity exploration. Emerging adults also experience more residential instability. Most notably, the age of marriage and first childbirth have shifted since the noted authors originally

conceptualized developmental lifestages. Arnett (2000, 2004b) postulated that emerging adults,

by postponing these transitions until later in life, leave greater room for identity exploration.

What is also of importance is that individuals in this stage of development do not identify

as adolescents nor as adults (Arnett, 2000, 2004b). While a preponderance of developmental

lifestage literature references education, career selection, romantic involvement, and childbearing

as key transitions or milestones, recent literature strongly indicates that emerging adults do not

prioritize these concepts when conceptualizing adulthood (Arnett1997, 1998, 2000, 2004a,

2004b; Greene, Wheatley & Aldava, 1992; Scheer, Unger & Brown, 1994). According to Arnett

(2000, 2004b), emerging adults find individualistic qualities of character of greater importance

for such a distinction. In particular, emerging adults conceptualize adulthood as a time when one

accepts responsibility for oneself, makes independent decisions, and becomes financially

independent. In this vein, a prolonged dependence on family, with greater amounts of schooling,

has become more prevalent in industrialized nations over the last century (Arnett, 2000, 2004b).

Emerging Adulthood Generalization

The theory of emerging adulthood, as a lifestage in industrialized nations, is not without

controversy. Hendry and Kloep (2007) contended that it is an unnecessary addition to lifestage

development, that it simply renames an extended adolescence by the privileged few. Hendry and

Kloep (2007) also argued that employing such a label and generalization, derived from American

and Western European experiences, ignores non-industrialized nations, and potentially discounts

the experiences of minoritized groups in industrialized nations. Arnett (2007) rebutted these

assertions, contending that simply conceptualizing this lifestage as an extension of adolescence

discounts the life changes, exploration, and identity changes that occur during this stage of life.

He also notes that the population it describes is very large, that the theory is not intended for

non-industrialized nations, and that the lifestage is greater in length than some of the original lifestages; simply extending a lifestage to be more inclusive discounts a new and distinct stage of life.

Hendry and Kloep (2007) also argued that it is time for scholars to let go of the broad generalizations and discreet lifestage theory, in lieu of more nuanced explanations of human growth and development. Arnett (2007) wrote a rejoinder to this noting agreement for such a sentiment, acknowledging the vast and varied nuance individuals experience, with the caveat of pragmatism Arnett (2007) made note of the large body of literature that continues to reference lifestages and the need for generalizations in more pragmatic fields. Discussing a term or group of people is nearly impossible without such distinctions. While it is a necessity to make such distinctions, it is also important to remind practitioners and scholars that a useful generalization is not always fully encompassing.

Reference to higher education in emerging adult literature is quite ubiquitous, if not integral. This reference is not unidirectional in nature. Institutes of higher education, their educational practices, and the research thereof are directly influenced by the student demographics they serve. This demographic is changing. Assumptions about the typical college student must change as national demographics change; the traditional college student is becoming the exception (Choy, 2002; Ross-Gordon, 2011).

Adult Learners

Cross (1981) noted a steady increase in adult undergraduate learners at the end of the 20th century. This increase appeared to continue at the turn of the century (Sissel, Hansman, & Kasworm, 2001). According to the National Center for Education Statistics (NCES, 2013; Hussar and Bailey, 2018), there has been a 35 percent increase in undergraduate college students

aged 25 to 34 between 2001 and 2015. The NCES (2013) also projected an additional increase of 11 percent by 2026. There is confusion in how to designate this demographic, are they simply adults, non-traditional, or both? With continued growth in adult undergraduate learners, it is imperative to discern the learning needs and experiences of this demographic in undergraduate education. This portion of the review will detail the difference between non-traditional and adult undergraduates, adult learning trends, and the disparities adult learners face, compared to traditionally aged students, in undergraduate higher education.

Non-traditional Adult Learners

Cross (1981) coined the term "non-traditional" in her work on adult learners nearly 40 years ago. A National Center for Education Statistics report by Choy (2002) laid the groundwork for the definition frequently used for this designation. According to Choy (2002), undergraduates with any of the following seven criteria could be considered non-traditional:

1. delayed entry to college by at least one year following high school,

2. having dependents,

3. being a single parent,

4. being employed full time,

5. attending part time, and

6. not having a high school diploma. (pp. 2-3)

Choy (2002) noted that, nationally, as many as 73% of undergraduate students fit within this designation at the turn of the century. This designation was a wake-up call for institutes of higher education; the perceived traditional full-time student was no longer the norm. The non-traditional designation is now quite common and appears in peer reviewed literature (e.g. Crone, 2020), book chapters (e.g. Marine, 2020), state coordinating board strategic plans (e.g. Paredes,

2016), university association publications (e.g. Pelletier, 2010), and in university reports. While age is not a characteristic listed in Choy's (2002) work, the non-traditional designation is often used interchangeably with the concept of adult learners, as seen in Paredes (2016), Pelletier (2010), Ross-Gordon (2011), and Zach (2020). Ultimately, this mix of designations can lead to confusion, be imprecise, and result in broad generalizations about populations that may otherwise have very little in common. An issue arises when mapping psychosocial theories of human development onto this problem, as the age ranges in traditional theories are broad and potentially miss pragmatic differences in enrollment and modern developmental milestones. For example, Erickson's (1968) theory of psychosocial development categorized adults in the following way: with young adults between 19 and 40 years old, middle adults between the ages of 40 and 65 years old, and older adults being 65 years of age and older. If a researcher were to reference Erickson's (1968) theory of psychosocial development, they would lose the granularity sought when trying to differentiate between "traditional" and "non-traditional" undergraduate ages. There is a solution in Arnett's (2000, 2004b) lifestage theory of emerging adulthood. Arnett's (200, 2004b) theory enables researchers and policy makers to better distinguish traditionally aged students from those that are returning at older ages.

Adult Learners and Adult Learning

Adult undergraduate learners are not a monolithic group; they are a diverse and poorly understood student population (Chen, 2017; Pusser et al., 2007; Sissel, Hansman, & Kasworm, 2001). With diversity in mind, some researchers sought to find if this demographic shared some experiences. For example, Wirt et al. (2002) found that adult learners primarily identify as employees, not as students. This is in stark contrast with the primary identity of traditionally aged undergraduates as students (Wirt et al., 2002). Negative past experiences and fear of failure

can also present unique challenges for adult learners (Chao, 2009). When combined with other conflicting roles and past experiences, adult learners often struggle with identity crisis when returning to formal education (Wirt et al., 2002). In line with conflicting roles and potential identity crisis, adult learners found they encountered several societal barriers in returning to formal undergraduate schooling as well (Erisman & Steele, 2012). These barriers include childcare, transportation, housing, work-life balance, health issues, and finances (Erisman & Steele, 2012).

The learning needs of adult undergraduate learners, aged 25 years and older, have largely been ignored (Choy, 2002; Kasworm, 1993; Kasworm, Sandmann, & Sissel, 2000; Schlossberg, Lynch, & Chickering, 1989; Sissel, Hansman, & Kasworm, 2001). When adult learning is addressed, Knowles's conceptualization of andragogy is often referenced as a framework (e.g. Capozzoli, 2020), for insight (e.g. Chen, 2017), and to inform educational initiatives (e.g. Ross-Gordon, 2011). Knowles (1984) made five assumptions about adult learners; that as a person matures: (a) they become more self-directed, (b) they accumulate experiences they can reference for learning, (c) they become more ready to learn things that help them accomplish relevant tasks, (d) they experience a shift in learning orientation, from subject centered to problem centered, (e) their motivation to learn become internal. For many, andragogy is synonymous with adult education, considered revolutionary, and touted as the best-known theory of adult learning (Knowles, 1998; McClusky, Illeris & Jarvis, 2007; Merriam, 1987; Pratt, 1988; Swanson Wilson, 2005).

The concept, however, is not without controversy. The main criticisms of Knowles' (1980, 1984) work derive from varied ways in which andragogy is conceptualized, the way in which he distinguished child from adult learning, the lack of evidence supporting his theory, and

having a central focus on individual learners and needs (Alfred, 2000; Lee, 2003; Merriam, Caffarella & Baumgartner, 2007; Roessger, Roumell, & Weese, 2020; Sandlin, 2005; Taylor & Kroth, 2009). Knowles eventually adapted and re-conceptualized andragogy in light of early criticism (Elias & Merriam, 2005). One example of such adjustment is demonstrated in the way in which he referred to andragogy over the years, from a theory, to a model of assumptions, and finally as a system of concepts (Knowles, 1980, 1984). Ultimately, even as a system of concepts, andragogy appears to predominantly reflect the white, male, middle-class population upon which it was based (Lee, 2003; Roessger, Roumell, & Weese, 2020). Modern research into adult learning is evolving and must reflect the varied, social, culturally nuanced, and global demographics it seeks to understand (Roessger, Roumell, & Weese, 2020). Roessger, Roumell, and Weese (2020) argue that greater emphasis should be placed on understanding the context and sociocultural realities of adult learners.

Social Judgment Theory

Sherif and Hovland (1961) presented a theoretical framework for understanding attitudes within a social construct. According to Granberg (1982) the theory derived from its era and built upon the work by the New Look movement with emphasis on internal factors, Thurstone's (1928) work on quantifying attitudes, and the Gestalt tradition on the relative assessment of stimuli (Granberg & Aboud, 1969). It is important to note that Carolyn Sherif, whose name is missing from the original manuscript due to sexist conventions at the time, was key in the conceptualization and further development of social judgment theory (Granberg, 1982; Shields & Signorella, 2014). Many historians, practitioners, and social psychologists now use the pluralization of Sherif when referencing social judgment theory to honor her work. The Sherifs' work was also influenced by their involvement in the feminist movement and view that

psychological science must concern itself with real people and contexts, rather than on methodological purity alone (Shields & Signorella, 2014). The Sherifs' emphasis on the social aspects of attitudinal change was original for its time, as the field of psychology remained largely focused on the individual, separated from social influence (Granberg, 1982). Social judgment theory is not without its critiques. Outside the field of social psychology, social judgment theory has largely been applied in the business, marketing, communication, and political science fields. This portion of the review will relay the definition and critiques of social judgment theory, with a brief overview of current research.

Social Judgement Theory Defined

Social judgment theory is a framework for understanding human judgment and attitudinal change. The chief aim in developing this theory was:

> …to predict the degree of discrepancy between a communication and the person's attitude that will arouse psychological discomfiture, to predict his reaction to the communication, and to predict how it will or will not affect his attitude. (Sherif & Sherif, 1967, p. 107-108)

According to Sherif, Sherif, and Hovland (1961, 1968), an individual's attitude, or stand on an issue, is learned, enduring, affective, and identified through behaviors. Attitudes are unique to the individual and can change, serving to strengthen, weaken, or form new stances on a position (Sherif & Hovland, 1961; Sherif & Sherif, 1968). Attitudes are learned from a person's environment and based on their experiences and interactions (Sherif, 1965).

According to Sherif, Sherif, and Hovland (1961, 1968) each person has a scale, or range, of attitudes on a subject with an anchor point on that scale. The scale is divided into three latitudes: acceptance, non-commitment, and rejection. Should a message be congruent with the

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recipient's anchor point, the attitude is maintained. If the message falls within the latitude of acceptance or non-commitment, though not completely congruent with the anchor, the recipient may assimilate the new information. In this circumstance, the recipient may change their attitude and shift their anchor accordingly. The Sherif's (1961) and Sherif and Hovland (1968) argued that the most persuasive message is one that is discrepant with the recipient's position, but still falls within their latitudes of acceptance or non-commitment. If the message falls within the latitude of non-commitment, the recipient will either feel neutral or indifferent about the message and therefore more receptive to the new information. In this vein, Griffin, Ledbetter, and Sparks (2015), suggested that large scale changes in a recipient, or listener's, attitude were more likely to occur in small increments over time. If the message falls within the latitude of rejection, the recipient will find the message objectionable and reject it.

According to the Sherif's (1961) and Sherif and Hovland (1968), messages that fall within the latitude or range of acceptance tend to be seen as more consistent with one's position than they actually are; this is called the assimilation effect. They also report that messages falling within the latitude of rejection tend to be seen as farther from one's position than they actually are; the is called the contrast effect. Assimilation and contrast effects can also be influenced by ego involvement (Sherif, Sherif, & Nebergall, 1965).

Ego involvement is the level of importance, or centrality of an issue, to a person's life (Sherif & Sherif, 1976; Sherif, Sherif, & Nebergall, 1965). This importance can derive from aspects of a person's identity and group affiliation. Examples of issues or messaging with high ego involvement are typically tied to politics, family, and religion. Ego involvement widens a person's latitude of rejection, narrows the latitude of non-commitment, and typically leaves the latitude of acceptance unchanged. Ego involvement and assimilation are inversely related,

meaning the more important a message or issue is to a person, the less likely they are to assimilate contradictory information (Sherif & Sherif, 1956, 1967). Low ego involvement, however, results in relatively equal latitudes of acceptance, non-commitment, and rejection, increasing a person's ability to assimilate information (Granberg, 1982). Additional phenomenon or corollaries, related to social judgment theory, have been postulated over the years. Granberg (1982) relayed them as being ambiguity, credibility and discrepancy of the source. It is important to note, each of these phenomena are now fields unto themselves, but have direct connection and history with social judgment theory.

The Sherif's (1967) noted that the presence of ambiguity in messaging makes the recipient more susceptible to assimilation effects. Ambiguous, or enthymematic, messaging occurs when the message lacks structure, detail, or even a central argument. When the recipient tries to make sense of the message, they fill in the gaps with their own assumptions and knowledge making the message appear closer to the individual's anchor (Granberg, 1982). Researchers in this field have since identified recipients as being ambiguity avers or neutral, with the latter being more confident in interpreting vague news and messaging (Vinogradov & Makhlouf, 2020). The Sherif's (1967), Granberg (1982), and modern researchers have noted that the recipient perceptions of source credibility and membership affiliation factor into this phenomenon as well.

From the beginning, the Sherif's and colleagues noted that source credibility impacts how a message is perceived by the recipient (Granberg, 1982). Work in this area began during World War II, in an effort to study propaganda and attitude change (Metzger, Flanagin, Eyal, Lemus, & McCann, 2003). Hovland spearheaded this research at Yale University and collaborate with the Sherif's in the creation of social judgment theory (Lowery & DeFleur, 1995; Metzger et al.,

2003). Subsequent theory development and research derived from this work. Initially, Sherif and Hovland (1961) proposed that message recipients were more likely to agree with, and assimilate, messages from sources viewed as credible. Conversely, they proposed recipients would experience a contrast effect when sources were deemed uncredible. While these results can occur, the concept is much more nuanced than originally conceived. In reference to this nuance, McCroskey (1975) developed five dimensions of source credibility: competence, character, sociability, composure, and extroversion. McCroskey's (1975) work is heavily referenced to this day. A mediating factor for source credibility, not mentioned in these five dimensions, is the discrepancy between the speaker and recipient's perceived positions on the message or idea (Granberg, 1982). With these advances in social judgment theory, scholars have since found additional nuance and complexity. As such, the earliest pronouncements by the Sherif's (1961) and Sherif and Hovland (1968) seem simplistic and ripe for criticism.

Social Judgement Theory Critique

Granberg (1982) evaluated social judgment theory on several measures and found it to be disconfirmable, distinctive from other theories, parsimonious and without "excess baggage", to have veracity, and with heuristic value for stimulating further research. Granberg (1982) did, however, call for continued and periodic stocktaking in which scholars accumulate evidence, review the theory against that evidence and expand, revise, or lay to rest the theory. It is important to note that the observation of adolescent white males inspired the development of social judgment theory Granberg (1982). A brief analysis of the creation and development of social judgment theory, through a feminist lens, highlighted Carolyn Sherif's significant contributions to both social judgment theory and the field of cognitive psychology (Shields & Signorella, 2014). While some of the main authors of the theory have been identified as feminist

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psychologists (Shields & Signorella, 2014), no assessment has been conducted analyzing the theory from a feminist lens. It is also important to note the creation and development of social judgment theory occurred during the civil rights era in the United States. The theory has been utilized in various nations and with a wide array of participants, appearing to maintain some explanatory power, yet has not been subjected to socially critical analysis (i.e. critical race theory).

Since Granberg's (1982) evaluation, some new critiques and contradictory evidence has arisen. Namely, with respect to source credibility and extreme contrast, or backfire, effects. The influence of source credibility on attitude change is an intriguing aspect of social judgment theory. Hundreds of empirical studies have been conducted since Hovland's conceptualization and advancement of the field (Lowery & DeFleur, 1995; Metzger et al., 2003). Ultimately, these studies found that speakers had higher source credibility when they were perceived to be more qualified, reliable, animated, poised, and good natured (Metzger et al., 2003). Once these factors were identified, focus shifted to the correlational assessments for each variable on attitude change. With inconsistent results and critiques of the instruments used to discern credibility, the focus has since shifted to the context for which the message is being given. While source credibility is still considered a factor of recipient attitudinal shift, they are no longer perceived as simplistic as once opined by Sherif and Hovland (1961). In addition to the nuance added by source credibility, large scale attitudinal shift appeared to be just as complex.

Sherif and Sherif (1956) posited that high ego involvement could lead an individual to ignore information contradictory to the recipient's attitude, ultimately experiencing strong contrast effects that shift the recipient's attitude in the opposing direction. They argued that ego involvement and assimilation were inversely related, meaning the more important a message or

issue was to a person, the less likely they would be to assimilate contradictory information (Sherif & Sherif, 1956, 1967). A modern interpretation of this phenomenon is called the backfire effect. While initially promising (Nyhan & Reifler, 2010), it seems large scale contrast, or backfire, effects are less common than once proposed and initially observed (Sippitt, 2019). This is of particular import to factcheckers, educators, and political scientists alike. The effect seems to be the exception to the rule, not the norm and predominantly observed with college educated individuals (Nyhan & Reifler, 2010; Sippitt, 2019). Message recipients do seem to adjust, or assimilate, information when it is well argued, and the message provider is seen as having high source credibility (Sippitt, 2019). The question is, how durable this assimilation and change in attitude really is? (Flynn, Nyhan, & Reifler, 2017). Unfortunately, the change in attitude does not appear to relay to a change in behavior (Aird, Ecker, Swire, Berinsky, & Lewandowsky, 2018). This research draws upon an important point: while our understanding grows, we know very little about how, when, and why humans process and assimilate information. This research is typically found within the business, marketing, and political science sphere as messaging and attitude change is integral to them. Little research appears to have been conducted with messaging and attitude change in context of undergraduate education.

Social Judgement Theory Examples

Social judgment theory research is found in a diverse set of fields, from marketing, leisure, political science, and the medical field. Examples employing a social judgment lens include: a longitudinal study of ego involvement and group identity with LGBT-focused community sports (Mock, Misener, & Havitz, 2019), the effects of prior attitudes on public perceptions toward organizations after watching negative videos (Sung & Lee, 2015), and the

search for non-commitment in an attempt to reduce student binge-drinking (Smith, Atkin, Martell, Allen, & Hembroff, 2006).

Mock, Misener, and Havitz (2019) conducted a longitudinal study, investigating ego involvement and group identity in LGBT-focused community sports. The findings suggest that when identity needs were met for gay men, participants were more likely to attend social events. More specifically, gay men expressed the ability to let down their guard and portray their authentic selves in a public, social, setting (Mock, Misener, & Havitz, 2019). The greatest effect reported in this study, was for individuals with the greatest internalized homophobia. Identity needs were not correlated with social attendance events with LGBT women, however. The authors ascribe this difference to the effects of internalized homophobia and greater documented anti-LGBT attitudes in sports toward gay and bisexual men than women of any sexual orientation (Mock, Misener, & Havitz, 2019). In addition, greater social bonding[1], regardless of gender, predicted greater social event attendance (other than practice). Ultimately, Mick, Misener, and Havitz (2019) concluded that identity expression predicted more frequent practice attendance, as LGBT-focused sport participation helped meet important psychological needs.

Sung and Lee (2015) investigated the effect negative video messaging had on the public's attitude toward an organization and whether prior attitudes toward those organizations mediated resultant attitudes. The researchers found negative messaging had the greatest effect on

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[1] The concept of social bonding, for this study, derived from the modified involvement scale used for recreationist research by Kyle, Absher, Norman, and Jodice (2007). Social bonding was defined as the extent to which an individual's enduring involvement is driven by social ties.

individuals with neutral prior attitudes, no effect with negative prior attitudes, and only small effect with positive prior attitudes. These findings were consistent with the predication of social judgment theory. Sung and Lee (2015) concluded that ego involvement, in this case prior affiliation and preference for the organization, played a significant role in whether the messages were contrasted or assimilate.

Smith, Atkin, Martell, Allen, and Hembroff (2006) sought to find participants' collective latitude of non-commitment to formulate a social norms campaign with messaging to reduce binge drinking. With the understanding that social norm campaigns are more effective with messaging that lands within the recipients' latitude of non-commitment, yet discrepant enough from the anchor to shift attitudes. The impetus for this study was the fact that there are variable responses to social norms campaigns, designed to curb binge drinking. The authors recorded greater numbers of students reporting to drink less after non-commitment referenced social norming, though the study was not experimental in nature limiting the inference space of their findings.

While none of the examples were in a formal educational setting (i.e. classroom), they show the broad utility and interdisciplinary nature of social judgment theory. It appears social judgment theory can serve as a lens for interpreting message and messenger perceptions, ego involvement, assimilation and contrast effects, and resultant attitudinal changes in various settings.

Summary

Many undergraduate instructors aspire to educate and inspire students to make use of their course content both in and outside the classroom. Educators make an argument, promoting their course content and field of study with every lecture and assignment. Greater still, many

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even aspire to improve student critical thinking skills and dispositions in context of said course content (Whittington & Newcomb, 1993). Critical thinking research in the undergraduate context is typically focused on interventions and student outcomes, be they skills or dispositions. Results, on both accounts, are highly variable thus far (Abrami et al., 2008; Abrami et al., 2015; Niu, Behar-Horenstein & Garvan, 2013). The literature is also sparce on students' attitudes and preferences for instruction geared toward improving critical thinking. Taking the time to uncover the student experience could add needed context and perspective to this field. In addition to the nuance and lack of student perspectives, the literature lacks the full breadth of student ages (Abrami et al., 2008; Abrami et al., 2015).

With a significant increase in adult learners (Hussar and Bailey, 2018), generalizations on best practices for critical thought may be biased toward traditionally aged students. From a research perspective, defining adulthood is difficult. For the purposes of this study, the use of the human developmental theory of emerging adulthood will guide initial recruitment criteria, analysis, and findings. Arnett's (2000, 2004b) theory of emerging adulthood not only aligns with pragmatic assumptions in higher education, but also provides an explanation for lifestage distinctions between, self-identified, emerging and adult learners. One of these distinctions is that emerging adults engage in greater identity exploration than their older lifestage counterparts (Arnett, 2000, 2004b). This difference could influence student perceptions of classroom instruction. With undergraduate adult learner enrollment on the rise, it is imperative that researchers and practitioners learn more about their perceptions and preferences for context, research, support, and programming (Choy, 2002; Hussar & Bailey, 2018; Kasworm, 1993; Kasworm, Sandmann, & Sissel, 2000; Schlossberg, Lynch, & Chickering, 1989; Sissel, Hansman, & Kasworm, 2001).

An important stumbling block for supporting adult learners, is explicitly defining who is in this demographic. The nontraditional designation, for anyone that does not fit the privileged and outdated definition of 'traditional' college student, is exceedingly imprecise. The original intent of this designation was to call attention to the othering of, what is now, the majority on many college and university campuses (Choy, 2002). The term, however, is now a ubiquitous generalizing term in higher education (e.g. Crone, 2020; Marine, 2020; Paredes, 2016; Pelletier, 2010). Adult learners are a subset of this large and varied demographic. As the adult population grows, institutions of higher education may seek to attract, support, create programming, and improve learning for adult learners. Using precise language can help in this endeavor.

Andragogy is a prominent reference, framework, or set of assumptions, used to inform practice and research. It can be found as a guiding principle on many higher education websites and planning documents (e.g. Childers, 2021). This framework, however, has become inadequate for explaining the experiences and needs of an ever-diversifying demographic (Alfred, 2000; Lee, 2003; Merriam, Caffarella & Baumgartner, 2007; Roessger, Roumell, & Weese, 2020; Sandlin, 2005; Taylor & Kroth, 2009). Scholars in the field argue it is time to engage in investigations with greater emphasis on the learning context and sociocultural realities of adult learners (Roessger, Roumell, and Weese, 2020). Social judgment theory may be able to help in uncovering these realities.

Social judgment theory is not a theoretical framework often cited in undergraduate education literature. The theory, however, garners more attention in other fields with ties to persuasive messaging and affecting attitudinal change. Given that undergraduate instructors advocate for critical thinking and content application via messaging (i.e. lectures, assignments, projects, discussions), social judgment theory may provide insight into student attitudes and

preferences for this messaging. The added complexity of purposefully sourcing both traditionally aged and adults, could provide greater insight into ego involvement as it relates to identity and group affiliation as well.

This chapter detailed the foundations and justification for investigating undergraduate attitudes and preferences for critical thinking instruction, with added emphasis on lifestage. Chapter II was organized into four sections: (a) critical thinking, (b) emerging adulthood, (c) adult learners, and (d) social judgment theory. The following chapter details the research methods and methodology for achieving the research goals for obtaining a thick and rich description of undergraduate experiences.

CHAPTER III

METHODS

The primary goal of this study was to uncover a thick and rich description of undergraduate student attitudes and preferences for critical thinking instruction as detailed by the research questions presented in Chapter 1. The research methodology for this study aligns with and ascribes to interpretive interactionist inquiry. The methods employed to collect and analyze participant responses to the research questions are presented in this chapter. The chapter is organized in 15 sections: (a) positionality, (b) framing, (c) study design, (d) delimitations, (e) assumptions, (f) selection of participants, (g) demographic characteristics, (h) informed consent, (i) confidentiality, (j) trustworthiness, (k) data collection, (l) face validity, (m) limitations, (n) data analysis, and (o) summary.

Positionality

In this section, I map out the pivotal moments and experiences that have shaped my educational journey, perspectives on learning, and sources of potential biases as they relate to this project. This section will entail brief accounts with pertinent demographic relevance, followed by reflections on those accounts. These accounts and reflections may provide consumers of this research with greater insight into my motivation for conducting this research and subsequent interpretations.

I am a cis-gender, white, able bodied, gay male from Texas. I was raised in a devoutly protestant, predominantly German American family with varying points of immigration to the United States. My parents worked extended hours and relied on extended family for childcare and support. These factors led to a close-knit family, with Sunday dinners, regular church attendance and participation, large family reunions, and extended family and friends feeling more like immediate family. Some of my greatest influences, and immediate care givers, were

differently abled. My family members were a mixture of left and right ideologically leaning individuals, though most being religiously conservative. I grew up with an older sister and as a latchkey kid in a predominantly Latine[2], rural, lower socioeconomic and middle-class area. We were within an hour drive to upper middle class, suburban, resources and activities (i.e. mall, zoo, museums). Many of my early educational experiences and jobs were tied to agricultural systems (e.g. feed store, bailing hay, rearing livestock). I grew up and participated in extracurricular activities with lower socioeconomic, cis-gender, rural, white, and Latine friends and neighbors. Soccer was the predominant past time. We rode the bus to school, shared a Walkman with split headphones, alternating between Tejano, country, and various forms of Spanish and English pop-music. I began working 15 or more hours a week at the age of 14 and engaged in livestock competitions to earn and save money for college. These formative factors and experiences contributed to my identity formation. Though I did not understand it at the time, many of the social and cultural norms in my family were consistent with those of my educational setting. I was fortunate to have bilingual, Hispanic, and differently abled relatives and friends. While my peripheral perspectives do not equate with lived experience, I was able to recognize some of the disparities in treatment during my youth.

While I can only identify one family member that completed a full baccalaureate degree in the generation before my own, education was highly valued and college expected. The

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[2] The term "Latine" is used as a gender-neutral term and derives from the Spanish speaking community it represents. While Latinx is more prevalent in academia, it does not align with the Spanish language and is rarely used within the community it intends to describe (Noe-Bustamante, Mora, Lopez, 2021).

teachers at my schools were almost exclusively white, cis-gender, heterosexual, able-bodied, and female. While I struggled to engage in school, outside of the hands-on extracurricular courses, I met the criteria to participate in honors coursework. These courses were populated with predominantly white, cis-gender, able-bodied, female, and mostly upper socioeconomic students. Most of my friends and neighbors were not in these courses. I only saw them on our bus rides and at lunch, not in class. I ended my secondary education taking advanced placement and dual credit courses at a nearby community college, all new programs at the time. The demographics in these courses was largely white, cis-gender, able-bodied, female, and upper socioeconomic as well. I had only experienced teachers, counselors, and administrators in the most positive light, as they seemed to either advocate for, or be neutral toward, my education. Due to a poor decision to imbibe alcohol on a school sponsored trip, I completed the latter half my senior year in juvenile detention. I split my days between the juvenile detention center, community college courses off campus, and jobs at a local tac shop and feed store. While this was a relatively short span of time in my educational career, it was pivotal. This shift in schooling ended my ability to participate in advanced placement courses, to participate in advanced placement testing, accept academic scholarships, and participate in livestock show opportunities. The demographics in the juvenile detention center were largely African American, Latine, lower socioeconomic, able-bodied, and male. Interestingly, the center was largely populated with my friends and neighbors of my youth. The disparity in demographics and educational experiences was not lost on me. I was confronted with, and able to reflect on, the many privileges from which I had blindly benefitted prior. The experience was transformative. I had lost the army of advocates, teachers, counselors, and administration, my colleagues never had. Some of these educators actively sought to affect my future beyond high school by contacting the universities for which I had applied to discourage my acceptance. With persistent advocacy from one of my dual credit

community college professors, my acceptance into a nearby university was not revoked. At this point, I was awakened to the power of educators, educational differences for people of color, and viewed authority, tradition, and norms with greater skepticism.

Much of my undergraduate education was in field biology at a large research university in Texas. The faculty, staff, and student body at my alma mater, they were largely white, cis-gender, able-bodied, well resourced, and heterosexual. While I had many positive experiences, I perceived much of campus culture, at this time, to be homophobic, racist, and misogynistic as well. I was unable to be openly gay at school, work, or at home. Thankfully, newly accessible internet afforded anonymity and enabled me to meet my husband. I volunteered with community outreach groups, led many student organizations, and worked a minimum of two jobs throughout my undergraduate career. During this time, I aided faculty and graduate students with their research and eventually conducted my own. I loved researching nature and being out of the classroom. I met individuals from various villages, towns, and cities along the Texas border and throughout Mexico. The ability to engage with people from the various cultures and communities I had grown up with was comforting and freeing. I ultimately transitioned into a master's program at an East Texas institution that emphasized organismal and ecosystem field research in Southern Texas, Southern Florida, and throughout Mexico. The school was much more diverse and largely comprised of first-generation undergraduate students, though my program was comprised of largely white, cis-gender, able-bodied, male, and heterosexual individuals. In addition to research and course work, my graduate duties involved instructing laboratories. I was ultimately hired to teach introductory courses, both at my graduate university and at a nearby community college. The experience inspired me to obtain secondary science teacher certification.

Exposure and experience with cultures, other than those mentioned previously, was

nonexistent until I entered public secondary education. I obtained a position as a science teacher at a suburban high school with a predominantly African American, black, and diverse immigrant population of teachers and students. After three hurricanes, our student and faculty populations became more diverse, many moving from larger coastal cities (i.e. Galveston, New Orleans, Houston). This experience, these insights, and the relationships that I formed during this time, were life changing. I excelled in working with both advanced and struggling learners. I became a subject coordinator within my first year and a department chair in my second. The culture in the school and district for which I worked was exceedingly homophobic and misogynistic. Despite this, my journey as a gay man developed. I was open to my family at this point but unable to share this part of my life with colleagues and co-workers for fear of termination. I eventually followed my principal and transitioned to a school and district closer to home. The community associated with this new school and district were predominantly tied to the oil and gas industry, ideologically right leaning, high school educated, extremely wealthy, cis-gender, and white. Interestingly, I experienced the greatest culture shock of my life moving to this higher socioeconomic school district. I perceived much of the community and school, at this time, to be homophobic, racist, and misogynistic as well. I sought to advocate for minoritized individuals and groups, all while hiding my own sexuality. Once again, I was recognized for excelling with advanced and struggling student learners. I ultimately became a district administrator just prior to the 2008 recession. I watched my colleagues lose their jobs. My work hours and stress grew with the ever-increasing workload. I also could not be gay without fear of losing my job. Workplace bullying was rampant and colleagues regularly brandished negative political propaganda. I ended my career in public schooling to live a more authentic life without fear of reprisal for being gay, for being ideologically and politically left leaning, and to start a family.

After working in public schools, I spent more than a decade teaching and managing

programs tied to introductory sciences, scientific literacy, and critical thinking application at a diverse state university in East Texas. In that time, I also led and participated in academic and student service initiatives to promote and improve my campus community in: civic engagement; diversity, equity, and inclusion; undergraduate retention and completion; scientific literacy; and critical thinking initiatives. I take every opportunity to engage in faculty, and future faculty, development at both Texas A&M and my institution of employment (i.e. Association of College and University Educators' Certificate in Effective College Instruction; the Center for the Integration of Research, Teaching and Learning future faculty training; National Center for Cast Study Teaching in Science workshops; Tennessee Tech Center for Assessment & Improvement of Learning faculty development). This involvement has helped me improve my own practice, bring fresh ideas to campus initiatives, and critically analyze promoted research-based practices. These experiences have also led to increased involvement and leadership opportunities with the American Association of State Colleges and Universities' American Democracy Project (e.g. voting initiatives, deliberative dialogues).

My background in the natural sciences and continued work in education within that same field have given me greater insight and understanding for the philosophies that undergird the natural sciences (i.e. empiricism, falsifiability, hypothetico-deductive reasoning). My educational interests (i.e. diversity, equity, inclusion), graduate studies, and continued educational training provide me with greater insight and understanding for the philosophies from the social sciences with greater emphasis on critical theory and lived experience. The philosophies that underlay research and epistemologies in these various fields and interests are not always consistent, and are sometimes at odds, but inform my ontological assumptions and practice. While I believe there are some larger, more objective truths, I also think we each have our own lived experiences, ideas, passions, and inner understandings for how the world operates. I believe our

construction of reality is greatly influenced by social contexts and interactions as well (Breuer, 2003). It is with these inner, subjective, and socially constructed realities that we make decisions and engage with the world around us. I am particularly interested in investigating undergraduate students' lived experiences within the context of the natural sciences. Why might, for instance, a student understand the nature and use of vaccines, yet choose to abstain from vaccinations? Are there factors that keep a student from engaging with, learning, and critically analyzing claims about climate change? Given recent historical events and political occurrences, I am particularly interested in how educational messaging is perceived. I have colleagues that argue simple fact checking and knowledge acquisition is enough to engage students in critical thought and aligned action; my experience tells me otherwise, that there is more to the story. Very little attention has been devoted to researching the interactions between and progression from skills, to dispositions, and ultimate action. For me, education is about praxis and enabling students to self-advocate.

In working with students, conducting numerous deliberative dialogues, and from preliminary research, I suspect one's identity and group affiliation factor into one's ability to fully engage in critical thought and informed action. My work with diversity, equity, and inclusion also drives me to advocate for populations under-supported in higher education settings. My education and experiences in this area have led me to understand that the racist, ageist, misogynistic, homophobic, and hegemonic systems and sentiments we see in larger society exist within higher education as well; that identity and group affiliations affect our educational systems and instructional practices.

One demographic I have seen grow in my own setting is that of the adult learner. I hope to better understand, both traditionally aged and adult student experiences with undergraduate coursework designed to improve their critical thinking. I currently identify as a returning adult learner in a graduate program. I identify as an adult because, after completing a master's degree

in science, I entered the workforce, engaged in two different and fulfilling careers, became more financially secure, resolved several insecurities relating to education and life goals, fully realized components of my identity, formed a lasting relationship, and began a family. These items do not encompass the entirety of my life, nor does any one component make me an adult. I also believe I identified as an adult much earlier than 25 years of age due to various life experiences and would not have necessarily fit Arnett's (2000, 2004b) emerging adult categorization. I also imagine other adult learners may engage in identity exploration at higher rates than peers outside of formal education, though there is little research in this vein and based more on my own experience than empirical research. That is why I will use the emerging adult theory to guide initial participant selection but will ultimately ask participants to self-identify their adult status and identity factors.

I fully acknowledge that each participant may have a different, and unique, conceptualization of what it means to be an adult. I also acknowledge that my educational experiences, and subsequent return as a returning adult graduate student will differ from that of my research participants. My experience involves re-acculturating to academia, electing to engage in relationships with heightened power differentials, age and culture differences with peers, and re-engaging in the process of formal learning in an era of technology. Adult undergraduate learners may share some of the same, additional, or contradictory experiences. The age difference amongst peers, for example, could be more disparate than I have experienced in my graduate studies. Ultimately, I do not know their experience and cannot let my own experiences and expectations cloud my analysis. It is also important to note that participants will have different identities from my own and that while I will interpret participant responses, it is best to let their words speak for themselves. It is my hope that by explaining my positionality here, maintaining a reflexive journal, using member checks, and calibrating and debriefing with

research advisors will enable me to see where my experience provides insight and where it hinders analysis. With that in mind, I hope to solicit the perceptions and preferences of emerging and adult learners. It is my hope that these experiences can add context, to inform future discussions, initiatives, and practices. My drive is to understand and explain these socially constructed phenomena through and with the meaning(s) students assign them.

Framing

A framework of inquiry that emphasizes a constructivist epistemology and goes beyond causal connections to uncover participants lived, and socially constructed, experiences and realities best suits the problem and purpose of this study. Interpretive inquiry aligns well with this need and, as described by Breuer (2003), provides a method of understanding that acknowledges participant senses and schemata within a system (i.e. classroom) that interacts with other systems (i.e. identities, families, groups, cultures). Interpretive interactionism is a form of inquiry, originally conceptualized by Denzin (1989), as a method for discerning social phenomena with public or policy implications. The phenomena I attempted to explore in this study are undergraduate attitudes and preferences for critical thinking instruction. The implications for which can better inform research and practice in that vein. As the implications, to inform future practice and research, are the catalyst for this study, it can be considered action oriented or "applied". Denzin (2001) distinguished interpretive studies as either "pure", when the sole purpose is the gain meaningful interpretation of social phenomena, or "applied", with added implication for pragmatic ends.

The basic tenets for interpretive interactionist inquiry include participant perspective, symbols, phenomenology, hermeneutics, and epiphanies. According to Crotty (1998), interpretive interactionism draws upon the principles of symbolic interactionism; where the researcher tries to situate themselves in the place of others to understand the interactions of

systems and uncover participant experiences. For this study, the systems include the undergraduate classroom and those outside this formal environment as they relate to attitudes and preferences for critical thinking instruction. This form of inquiry builds upon the concept of symbols, where people attach abstract meaning to objects, people, and behavior based on and modified through social interactions (Crotty, 1998; Denzin, 2001; Howard & Hollander, 1997). Symbols for this inquiry may include the course messaging and content, one's ability to engage in critical thought, and interpretations of identity as they relate to said messaging and thought. In addition to the concept of symbols and meaning making, interpretive interactionism draws upon phenomenology, whereby researchers interpret participant experiences to explore specific phenomena (Wallace & Wolf, 1999). This interpretation involves the sharing of meaning between people and communities, otherwise known as hermeneutics (Crotty, 1998). For this study, such a process is ideal in the exploration of ego involvement from multiple perspectives, as it relates to messaging from undergraduate instructors engaged in critical thinking instruction. This approach involves historical, physical, and cultural factors that give context to participant experiences (Hall, 1994; Mohr, 1997; Tower, Rowe, & Wallis, 2012). As participant experiences are dynamic, temporal, and never completely comprehensible, findings may aid in redefining the problem for future inquiry but necessitate an iterative cycle of continued investigation (Crotty, 1998). It is through this process that I hope to uncover the various events and troubles, called epiphanies by Denzin (2001), experienced by participants in context of critical thinking instruction. As stated earlier, such an investigation with emphasis on social constructions and meaning-making could add context and provide greater nuance to critical thinking instruction and research.

Study Design

Participants were purposively selected based on lifestage and experience with

coursework containing explicit critical thinking instruction. I used semi-structured open-ended interviews to obtain a thick, information-rich, and meaningful description of the phenomena outlined in Chapter 1. Interviews entailed a series of predetermined questions, followed by probing, open-ended, questions to obtain additional information (Gall, Gall & Borg, 2007). I sought to interview up to 10 emerging and 10 adult learners, to achieve saturation and obtain participant numbers commensurate with those recommended by Creswell (2007). Saturation was reached before this at 8 individuals in each demographic.

The structured interview questions derive from the theoretical frameworks, preliminary interviews, and researcher experience in teaching critical thinking skills. At the end of the interview, participants were invited to contribute additional experiences and insights.

Delimitations

The delimitations for this study derive from a desire to gain thick and rich participant perspectives toward critical thinking instruction. Delimitations for this study are influenced by preliminary interviews with undergraduates on this topic (Koether, 2016). For this reason, only undergraduates that have participated in a course with both (a) explicit critical thinking instruction, (b) continued critical thinking practice, and (c) measured, significant, average gains in critical thinking were interviewed.

Assumptions

This study includes the following assumptions:

1. Participants will honestly and accurately provide their attitudes and preferences toward critical thinking instruction.

2. The participants will understand the vocabulary used during the semi-structured open-ended interview, associated with critical thinking, age, and identity.

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3. The analysis and conclusion of data will accurately reflect the attitudes and preferences of participants toward critical thinking instruction.

Selection of Participants

While undergraduate instructors find critical thinking to be an important component of higher education, it is not always present in course objectives or explicitly taught and practiced with course assignments (Duron, Limback, & Waugh, 2006; Paul, Elder, & Bartell, 1997; Stedman & Adams, 2012; Whittington & Newcomb, 1993). It is rare to find a course with measured significant (pre-post) gains in critical thinking skills or dispositions (Arum & Roska, 2010; Arum, Roska, & Cho, 2011; Pascarella, Blaich, Martin, & Hanson, 2011). Thus, finding undergraduate students with the shared experience and exposure of completing an undergraduate course emphasizing critical thinking is difficult as well. An undergraduate, common core, course at a nearby university fits this need and serves hundreds of undergraduates each semester.

According to Denzin (2001), interpretive interactionist inquiry necessitates situated and purposeful sampling. As such, student participants were purposively selected to better ensure they had experiences with the concept of and practice with critical thinking. Sampling had the added intentionality and emphasis on lifestage as well, with purposive participant recruitment of both emerging and adult learners.

Participant diversity was purposively sought within each of these two lifestages, based on available indicators provided by the nearby university (e.g. race, gender, major). The model course serves 800 to 1,000 students each year. Typical course, and campus, demographics are as follows: 82-84% female, 16-18% male, 18% African American, 25% Hispanic, 6% other, 51% White, 45% first generation, and 10+% over 25 years of age. The course also fits the criteria for state common core requirements, meaning a wide variety of majors complete the course each year. A limitation in using this course as a shared experience for selecting participants is that few

math and science majors take the course and a greater number of female students take the course.

The model course, with which participants had experience, is located at an East Texas state university. The model course was developed as part of the university's reaccreditation process. Several faculty committees, from various academic fields, identified the needs and objectives for course development. Academically diverse faculty committees used this knowledge to then create a non-science majors, common core, and introductory natural science course. The model course was designed to improve student critical thinking and scientific literacy skills. The critical thinking definition ascribed to in the course, and widely used by experts and educators alike, fits that outlined by Facione (1990, 2015).

The model course is heavily reliant upon the use of group and whole class analysis of case studies, to relay information, provide students with the opportunity to use their newfound knowledge in context, and give students the opportunity to learn in a social setting. Instructors of the model course place critical thinking as the primary course objective and learning outcome. They also employ the explicit instruction of critical thinking skills and engage students in the practice of these skills throughout the course, within the context of varying science content. Using Ennis's (1989) typology for critical thinking courses, the model course is both an infusion and a mixed course; meaning instructors both explicitly relay what critical thinking is in a standalone unit at the beginning of the semester with continued reference and practice throughout the remainder of the semester within the context of course content. Emphasis is added to the philosophical underpinnings of the natural sciences, highlighting their strength and limitations using exemplars, case studies, and historical reference. Pseudoscientific foils are used to engage students in the critical analysis of claims, the application of content, and for the discernment of science from non-science or pseudoscience (i.e. Loch Ness monster and trophic levels).

The model course was, and is continually, assessed for improvements on several measures. For the first 5 years of implementation, students were assessed in a pre-post design on their critical thinking skills using the Critical-thinking Assessment Test (CAT), developed by Stein, Haynes, Redding, Ennis, and Cecil (2007) at Tennessee Tech University. The CAT was chosen by the faculty committee for assessment, as it aligns with the definition of critical thinking used in the course and makes use of open-ended assessment questions, a rarity in the field of critical thinking assessment. Students made average significant gains (typical pre-post results with p values <0.001 and Cohen's d >0.70 each semester) in their critical thinking skills after taking the course (Rowe, Gillespie, Harris, Koether, Shannon & Rose, 2015).

Demographic Characteristics

Participant diversity was purposively recruited within each of the two lifestages based on available indicators provided by the nearby university. During the interview, participants were pointedly asked which identities they felt were most pertinent to their critical thinking and classroom instruction. A definition of identity, with examples, was provided when requested. While participants typically shared a few identity components with this prompt, most progressively revealed additional identities as they shared their experiences with critical thinking instruction. Self-disclosed demographic information is displayed in Table 1. Participants are listed in the order in which they were interviewed. The words presented in the table are those used by the participants. Academic majors are not listed in the table as this addition could enable some readers to discern participant identity.

Table 1

Participant Self-Disclosed Demographics

Participant	Lifestage	Age	Gender	Race/Ethnicity	Military	Sexuality	Religion	Political	Immigration
Vernon	Adult	34	Male	white			Catholic	Mod/Center	
Gina	Emerging	21	Female	Black					
Maggie	Adult	53	Female	white					
Kimberly	Adult*	22	Female	Hispanic/Latina			Raised Catholic		Immigrant
Denise	Emerging	20	Female	Black			Christian		
Lena	Emerging	22	Female	white		Lesbian			
Millie	Adult	26	Female	Black		LGBTQ	Believe in God		
Bradford	Adult	59	Male	Hispanic	Veteran		Not Religious	Cons/Mod	Immigrant
Clair	Adult	30	Female	Hispanic					
Stevie	Adult	26	Female	white				Very Lib	
Dwayne	Emerging	19	Male	Hispanic/Latin			Christian		
Carla	Emerging	19	Female	Black		Advocate	Christian	Lib	
Walter	Emerging	20	Male	Hispanic	Active	Bisexual			
Ron	Adult*	19	Male	white/Hispanic	Joined		Newly Religious	Cons/Mod	Immigrant
Jaleesa	Emerging	19	Female	Black		heterosexual	No Longer Christian		
Freddie	Emerging	22	Female	Black					

Note. Words presented are those of the participants. Blank cells only indicate that the participant did not mention this aspect of their identity.

*Identified as an adult, younger than 25

A total of 16 participants were interviewed. Eight identified as emerging adults and eight identified as adults. Six participants identified as Black, six as Hispanic, two as both Hispanic and Latine, four as white, and one individual as both white and Hispanic. One participant described himself as an active-duty service member, one as a veteran, and another participant stated he recently joined the military. Five individuals identified their sexuality, with one being lesbian, one bisexual, one heterosexual, and one stated they were part of the LGBTQ community. One participant found her LGBTQ advocacy to be an integral part of her identity, though did not disclose her own sexuality. Nine participants referred to their religious affiliations, religiosity, or lack thereof, as being an important component of their identity. Of these nine, three participants stated that they were Christian, one identified as Catholic, one emphasized that she was raised Catholic, one described himself as newly religious, one stated she believed in God, one as not religious, and one as no longer Christian. Of the 16 participants, two identified as politically conservative, though later clarified that they were more moderate. One individual identified as liberal and one as "not political". Three of the participants identified as immigrants.

Informed Consent and Recruitment

I secured permission from both the Texas A&M University Institutional Review Board and the Institutional Review Board from the model course site. I also sought approval for, and obtained email addresses from, an open records request at the model course site. The institutional research office curated two randomized lists of emails, emerging and adult, for students fitting the recruitment criteria. Participants that might experience a power differential (i.e. employees, current students, advisees) with the lead researcher were intentionally omitted from the list.

The advertisement was emailed to potential participants, posted across campus, posted on digital signage, and shared with high traffic student service offices. Initial email recruitment derived from randomized selection, following the purposeful, criterion based, sampling

described above. Subsequent participants were recruited using the snowball sampling (Creswell and Poth, 2018; Denzin & Lincoln, 2018). Early participants were be asked, if comfortable, to refer additional participants that might have different identities and perceptions than themselves (Merriam and Tisdell, 2016, p. 98).

I contacted participants through email and invited them to participate in a zoom interview at a convenient time. I provided a description of the study and an informed consent document to all participants. The one-on-one interviews took place using Zoom video conferencing software. I began each interview with the informed consent process to make sure participants understand that by continuing with the interview, their consent was implied. They also acknowledged that their participation was entirely voluntary. Participants verbally agreed that they understood what they were being asked to do, and that they agreed to participate. Participants were asked to provide verbal permission to record the interview. The interview consisted of non-threatening, open-ended questions. Participants were informed and had the right to not answer questions and discontinue the interview at any point. Interviews took approximately 60 minutes.

Confidentiality

I used pseudonyms for all participants throughout the study. All information was reported using the pseudonyms, in aggregate form, and in some cases without pseudonym with sensitive information, to maintain confidentiality. All transcripts were labeled with the pseudonyms. Participants' names and any identifying information was not connected to nor stored with the interview transcripts. Only the primary researcher had access to the participants' names, original recordings, and files, which will be password protected, encrypted, and saved on secure servers that require duo authenticated login. Sensitive and identifiable information was redacted if it could lead to the discovery of a participants' identity. Only the primary researcher had access to

the participants' names, original recordings, and files, which were all password protected, encrypted, and saved on secure servers that required duo authenticated login. All data will be expunged and destroyed 5 years after the completion of the study.

Trustworthiness

I used provisions by Lincoln and Guba (1985) to address Guba's (1981) four constructs of a trustworthy study. The four constructs for naturalistic inquiry are credibility, transferability, dependability, and confirmability.

In an attempt to address credibility for this study, I: adopted an appropriate, well recognized research method; developed familiarity with the research site and participants; used tactics to ensure honesty from informants; used iterative questioning during interviews; made use of a reflective journal; provided my positionality; elaborated on the background and history of the research; provided a thick and rich description of the phenomenon; used debriefing sessions with advisory committee members; and provided participants with member check opportunities.

I adopted interpretive interactionist methods as described by Denzin (1989, 2001) for this inquiry, as it is a recognized method for discerning social phenomena with public or policy implications (Crotty, 1998). The shared experience for which participants reflected centered on a model course at a nearby East Texas state university that they had completed. Large numbers of students take the model course each semester. Other state institutions across the nation have shown interest in adopting, or replicating, the model course. With few examples of single course improvements in critical thinking, instructional methods and policies tied to this course may be duplicated in other courses and at other institutions. The way in which the course is taught has implications at both the local and national level.

Tactics for ensuring honesty from participants included the ability to opt in or out of the

study at any point. Participants were encouraged to be frank from the outset of the interview session as well. Power differentials (i.e. employees, current students, majors that report to the researcher) were intentionally avoided. Only participants who completed the model course, who were not gainfully employed by the researcher, and do not report to the researcher for advising, advice, or approval of any kind were included in the study. For iterative questioning, I included the use of elicit probes to bring forth greater detail. Some prompts were re-iterated or re-evaluated with elicit probes when contradictions arose as well.

A reflective journal was maintained throughout to obtain reflective commentary. Maintaining the journal helped identify initial impressions of each session and formulate emerging patterns in the data. For a description of my, the researcher's, positionality please refer to the section with this title at the beginning of the methods chapter. For a thick and rich description of the phenomenon in question, please refer to the literature review chapter of this proposal. I scheduled regular appointments to meet with members of my advisory committee to discuss alternative approaches, draw attention to flaws, and develop ideas for the project. During these sessions, advisory members helped uncover researcher biases, hidden themes, and novel findings. Finally, member checks were completed by asking participants if quotes and resultant interpretations resonated with their experiences and statements. These attempts to address credibility can enable readers, or consumers, of the resultant research to better understand the phenomena.

While the goal of qualitative research is for deeper understanding and insight into lived experiences, rather than generalizability, consumers of the resultant findings may engage in naturalistic generalization (Denscombe, 1998; Melrose, 2009; Stake, 1994). To address transferability for this study, I provided background data and context of the study and detailed

description of the phenomenon under scrutiny. A description of the shared experience, completion of a model course emphasizing critical thinking, can be found under the selection of participants section above. As with any study, readers may wish to know more about the shared experience and model course site and context that was provided. Should this be the case, a lengthier description of this context (i.e. model course and institution) can be found in the appendix of Rowe et al. (2015). Transferability is heavily reliant upon the dependability and confirmability of the study.

To address dependability and confirmability in this study, I provided the research design and implementation measures in Chapter 3. Respective components of the design have been delineated to provide clarity. Within each section, detailed description of each process and the logic for the underpinning decisions and processes were provided when possible (i.e. reasoning for the selection of interpretive interactionism). Chapter 1 serves as an audit trail detailing the theoretical connections, from conception to implementation. I have also included my positionality to provide consumers with insight into my connection, predisposition, and possible biases related to the study. Weaknesses have been addressed and will be further detailed upon the completion of the presentation of the findings and analysis.

Data Collection

For the purposes of interpretive interactionist inquiry, Denzin (2001) suggested the use of multiple experiences and sources of data. For this study, and in line with interpretive interactionist discovery, data were collected through semi-structured open-ended interviews, field notes, and reflexive journaling. The participants were invited to participate in a remote video interview.

Interview duration took, on average, 60 minutes. Interviews were recorded, with

participant permission, using Zoom video communication software. Field notes were recorded, with participant permission.

I maintained a reflexive journal. In the journal, I reflected on the research process and myself as a research instrument. I noted, to the best of my ability, any assumptions while collecting and analyzing data. The use of multiple sources, interviews, field notes, and reflexive journal entries, provided better saturation and triangulation of data. All data were stored on a secure, password protected, Texas A&M University drive. Temporary files were deleted immediately once they were transferred to the secure drive. Once participants are recruited, pseudonyms will be used for documentation and reporting purposes.

Face Validity

For the purposes of face validity of this qualitative study, it is important that the interview questions align with the pre-identified constructs of interest, participants understand my questions, and that the questions provide space for emergent constructs and unexpected information. The interview protocol (see Appendix A) was derived from the underlying assumptions and theoretical framework for this study. This primarily entails the specific conceptualizations of critical thinking and emerging adulthood outlined in the literature review, as viewed through the lens of social judgment theory. While participants were recruited from of various lifestages, they shared the experience of taking and completing the model undergraduate course that both emphasizes and has documented success at improving critical thought. The interview was semi-structured to both provide common questions and guidance for the exploration of this shared experience with the ability to organically explore the individual nuance and original experiences from each participant.

I familiarized participants with the purpose of the study and asked for consent prior to beginning each interview. After consent was provided, I asked participants to identify their

lifestage conceptualization (i.e. adolescents, emerging adulthood, adulthood) and elaborate on this aspect of their identity. Participants were then asked to provide attitudes and preferences for undergraduate learning toward critical thinking instruction. Reference to the model course served as a shared experience to catalyze discussions about participants' larger, respective, undergraduate experience. Participants were asked to elaborate on the barriers and catalysts for engaging in critical thinking instruction. Participants were asked if and how aspects of their identity and group affiliations influence their ability to engage in critical thinking instruction. Participants were asked to elaborate on the interplay, or lack thereof, between lifestage and identity on their attitudes and preferences for critical thinking instruction. A more detailed outline of the interview protocol, with specific questions and prompts, can be found in Appendix A.

Interview questions derived from prior studies and interactions with undergraduates that had participated in the model course. Two preliminary studies, with twelve participants each, helped narrow the focus of this study and refine the interview protocol questions. In addition, the attached protocol (Appendix A) was piloted with 6 additional individuals to better ensure participant understanding. The data from the preliminary studies and pilot were not analyzed for this study. The interview protocol was semi-structured and allowed for flexibility in questioning. I left room for the unexpected and encouraged participants to share their lived experiences, preferences, and related stories.

Limitations

Given that the findings will be interpreted by individuals from a range of fields and respective epistemologies, the list of limitations will include those that may be obvious for researchers familiar with naturalistic paradigms. This section and terminology referencing limitations simply denote the bounds of this study and the resultant findings. The term,

limitations, is not intended to negatively connote a decreased value for naturalistic inquiry. All types of inquiry have limitations. The study has the following limitations:

1. The data produced from this study are qualitative and a product of naturalistic inquiry. These data and findings are not intended for deductive generalization.

2. The insights gathered will derive from non-science majors at diverse doctoral research state university in East Texas. Therefore, it is important to note these contextual factors should readers wish to engage in naturalistic generalization.

3. Participants derive from purposeful randomized email solicitations, snowball sampling, and flyer announcements. However, this form of sampling may not have elicited responses from students less prone to check their email or engage in such activities.

4. All participants were active students. However, email lists did not include students that may have graduated or dropped out of schooling.

Data Analysis

Interview sessions were recorded using Zoom conferencing software. Audio and visual files were recorded on password protected, encrypted, and secure servers that require duo authenticated login. Files were transcribed within the conferencing software. I listened to the recordings and compared them to the transcriptions and edited to ensure accuracy. I coded, unitized, and managed participant and researcher data on password protected, encrypted, and secure servers that require duo authenticated login.

Analysis, otherwise referred to as bracketing by Denzin (2001), involved reducing the phenomenon to its essential elements. It was an iterative process, involving unitizing and comparison of responses. This process involved locating key phrases and statements that spoke directly to the phenomena of this study. The key phrases were inspected for tentative statements

about the phenomena. Bracketing was followed by the reconstruction and contextualization of the phenomenon within social contexts (Denzin, 2001).

Summary

This chapter described the research design, as approved by both Texas A&M University (Appendix B) and the research site's (Appendix C) institutional review boards. It also included the researcher's positionality, framing for the study, as well as delimitations, assumptions, and reasoning behind the selection of participants. A summary of participants is presented as well. Finally, the strategies used to ensure confidentiality, trustworthiness, face validity, limitations, and procedures for data analysis were presented. The subsequent chapter relays the study findings.

CHAPTER IV

FINDINGS

This chapter presents the major findings of this study. Findings are organized into six

sections: (a) lifestage, (b) three research questions, (c) an additional emergent theme on life

experience, and (d) a resultant summary. An overview of findings can be found in Table 2.

Table 2

Findings Overview

Findings	Themes
Lifestage	Emerging Adulthood Adulthood
Research Question 1: Attitudes	Critical Thinking Few Opportunities Positive Experiences Negative Experiences
Research Question 2: Preferences	Group Analysis Case Studies Challenge Safe Space Politics
Research Question 3: Identities	Self-Perception Religion and Family Personal Connections Instructor Identity
Additional Findings	Life Experience

Identity factors appeared to be integral to participant attitudes and preferences, as they were mentioned often and interwoven throughout the findings. To honor these connections, and in line with interpretive interactionist research, representative data are presented verbatim and in larger segments to provide situated contexts, insight into social interactions, and the nuance of epiphanies.

Lifestage

Interviews began with a prompt on lifestage identity. Participants were asked which lifestage they felt they identified with most strongly: adolescence, emerging adulthood, adulthood, late-stage adulthood, or any other, more personal, designations. Immediately following this selection, participants were asked to articulate their conceptualization of their identified lifestage. Most of the participants that identified as emerging adults described their lifestage by contrasting their position with adolescence and adulthood, choosing to define factors they had yet to obtain or achieve in becoming adults. In articulating what it meant to be an emerging adult, participants typically mentioned identifying as a student, working toward stability in housing, figuring out who they were, feeling in-between financially, and preparing for a career. Denise, for example, stated:

> I think I identify as an emerging adult, like, I'm in that in-between period of, like, not
> fully, but not, you know, adolescence still. Um. I feel, like, because partially, I think I
> still, you know, rely on my parents in the sense of, like, sometimes in financial ways and,
> like, certain things, like, I don't do my own taxes. Like, there's still some things that it's
> like I'm in that child category, but then again I do my own things, like, I have my own
> place, I have my own money, so there's certain aspects that are of both. So, I can't say
> I'm fully one or the other, since I'm still, like, dabbling in both categories… I would say,
> moving into more independence, on your own, especially in the areas, of course, you

know, bills, apartments… I guess job wise, you're moving on to something that's not, like, you know, in high school. We work… like, fast food jobs… and moving to adulthood, you know, it's more of a daytime job. Maybe it's not nine to five, but a career. Moving into that area… going through college or going through a bit of schooling for a specific career and setting up your life for more, like, long term stability in the sense, that it's not as, you know, sporadic… I also think, like, becoming more solid in who you are, as a person. I know, back in high school and, you know, in my, I guess childish stages, there was a lot of fluctuating in the sense of it was more, emotionally [thinking], I was just, it was a rollercoaster… But, I feel like as I'm emerging into adulthood, it's realizing who I am, as a person. How do I feel about myself. Not allowing, you know, outside influences to affect me emotionally, physically, mentally, all of the above, and just starting to get more stabilized in who I am as a person.

Participants who identified as adults typically emphasized being responsible for one's own actions, working toward or obtaining a career, having a stronger sense of self, and having children, a family, or a relationship. Education was mentioned by most adult participants as a factor of their identity, though more as an avenue for realizing career goals. Maggie exemplified these in her conceptualization of adulthood, stating:

Parent [laughed], does that count? So fully fledged adult I guess. Hmm. Living on my own, supporting myself, holding a job, supporting my family, I think that's it. I could go on in detail. I mean, you are an active member of society… Umm, I guess as an adult, I guess, to me, you know the rights and wrongs of societal norms and what's expected of you… As a parent to a young child and a teenager, as an adult, I think there's different levels there. I mean obviously from empty nesters to newborn, you're going to have different roles and far as career-wise, I've reinvented, or I wouldn't say reinvented, I haven't got stuck with the same thing because I'm always interested in something else, so

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it's different than, like, our parents, how they grew up. My dad worked for the same place for 30 years. I don't see an adult necessarily as having to be at the same place for that length of time, career wise… [being an adult] It would be maintaining your responsibilities, financial, role of being a parent or spouse…

Stevie, identified as mostly adult or transitioning into being fully-fledged. She felt independence was a key indicator for adulthood.

Based on where I am, on paper, I would probably be a fully-fledged [adult]… I have a full-time job, I've been paying for all my bills since I was 20, and I have to pay for school out of pocket. I have no debt and, but, I don't feel that I'm, you know, working in the job that I would like, even though I have a really good income and for the most part, I guess, and doing okay. I'm still in school and I don't feel that I'm able to really devote all of my time to the things I would like to… I would say, it only, it's moving out of insecurity… I guess how independent you are. I think that's the big thing that is that draws the difference between the two stages and adolescence, a lot of people are probably still relying on their parents in some form, or haven't figured out how to take care of themselves, maybe even the school is taking care of them, or the government through aid… in my opinion, you're having to take care of your own bills, you're having to take care of your health. I'm on my own insurance. I have been for several years, so I know how all that works in terms of cost. Last year, no two years ago, I had to drop classes because it was either, you know, have food and be able to pay rent or, you know, not have any of that and possibly have to get some loans, which were very gracefully offered to me.

Only one participant, Ron, identified with a lifestage outside the age range predicted by emerging adulthood. Ron, a 19-year-old, identified as an adult. When asked to define his conceptualization of adulthood, Ron stated:

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Um, I think anybody over the age of 18 for sure. An adolescent is somebody who still

relies on their parents and maybe in the younger years, just before adulthood.

[Adolescents] rely on their parents monetarily and emotionally for sure. I feel like you

become an adult when you get to a point in your life, where you can potentially be well

off living by yourself. Like, you are no longer depending on anybody to, you know, do

anything for you.

These conceptualizations were visited again throughout the interviews, particularly

during prompts relating to identity. The segue from defining adulthood into the definition and

articulation of critical thinking served to outline the purpose of the study with participants.

Participants were asked to reflect on their experiences and resultant attitudes with critical

thinking instruction.

**Research Question 1: What are the expressed attitudes of emerging and adult learners
toward critical thinking instruction in the undergraduate classroom?**

Students shared their attitudes, or stances, on critical thinking instruction in the

undergraduate classroom. These stances were inclusive of many components, including course

content, assignments, instructors, colleagues, group interactions, and other pertinent dynamics.

The dominant themes encompassing participant attitudes with these components include (a)

critical thinking, (b) few opportunities, (c) positive experiences, and (d) negative experiences.

Critical Thinking

Participants were familiarized with the Delphi report definition (Facione, 1990) of critical

thinking, both ascribed in this study and as part of the shared model course experience. Each

participant was provided with the opportunity to rebut, accept, amend, and/or share their own

interpretation of critical thinking. Most participants simply agreed with the provided definition.

Those that made an addendum, typically mentioned the formulation of opinions and making

decisions. For instance, Ron shared that:

> um… I think it's a good definition, but I'd say if you were to ask me what critical thinking was, it would be, you know, formulating your own opinion, regardless of something being or [not] taking something at face value, you know?

A small portion of participants added to the definition by adding emphasis from course and field specific epistemologies. For example, Walter, an emerging adult in his senior year, emphasized falsifiability and empirical evidence:

> Yes, for the most part. I will say in [courses] I've taken, historically speaking, you know as part of [my major], [arguments] have to be able to be proven false in order for it to have a like genuine attribute of that and, that being said, you know, solid groundwork and [motions to insinuate touch and measurement] evidence to back it up. That has always been something at least in my field and career.

Additionally, a portion of participants wished to include the disposition to evaluate ideas or beliefs, even the most deeply held. It is important to note, participants who added this additional insight also had significant transitions in identity. Stevie, for example, shared a journey of increasing autonomy after critically evaluating her parents' religious teachings and more restrictive boundaries. Stevie chose to amend the definition by adding:

> So, yes, critical thinking seems pretty straight forward, you have to think critically. You can't be very closed minded. You have to want to critically analyze, you know, look into things and that may be too simple… you are being critical of every aspect of your thoughts. That means sometimes facing beliefs you think are correct or not, and you have to force yourself to think about the other things and it's okay to be open minded in that regard. But, you know you can't just be open to any form of thought, you have to really critically analyze different thoughts that aren't in your ballpark.

It is important to note that only six participants chose to add to the definition; the

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majority simply agreed with provided definition. Once an understanding was achieved many participants struggled, at least initially, to recall instances of critical thinking instruction from their undergraduate experience.

Few Opportunities

Aside from the model course, an introductory science course emphasizing critical thinking for which all participants completed, most participants could initially only recall a few undergraduate courses, activities, or assignments that explicitly encouraged critical thinking. Younger undergraduates at entry level classifications (i.e. freshmen and sophomores) had the greatest difficulty in recalling such experiences. Initial remarks were typically, "oh gosh", audible thinking sounds, like "hmm", or "I don't think so". Some made initial attempts. Jaleesa, for example, was a teenage sophomore that remarked:

> From my undergrad, it was mostly just my science courses that were like "let's actually use our thinking skills", rather than, you know, just matching definitions to scenarios.

> Students with pragmatic or career focused majors (i.e. broadcasting, marketing, accounting) also appeared to initially struggle to engage in conversations about critical thinking. Many remarked that they had not thought about their own thinking before. Vernon, a fully online student, pointedly stated:

> I honestly haven't done a deep dive into my learning… especially because I've been so terrible with online courses and I'm mostly doing more online now, because, I don't know [mentions place of full time employment] and COVID.

> If participants were able to recall experiences with critical thinking instruction, they largely derived from courses toward the end of their undergraduate career. Younger participants, earlier in their undergraduate career, typically only referenced the model course regarding positive or engaging experiences tied to critical thinking. Beyond this shared experience, recollections for learners with entry level classifications (i.e. freshmen and sophomores)

appeared to lack significant reflection or connection. Carla, for example, really struggled to think of assignments that emphasized critical thought. She tried to think of a course example but could not express why it was an example of such a lesson.

> I took a class, [names class], where they shared a bunch of theories. They asked why certain characters in a movie may be this way or might start off a certain way. And, then they would kind of debunk stereotypes and possible reasons to be like that, like "no that's not exactly it" or "it is". We got better definitions from the class.

When asked for greater detail about the assignment and how the information was relayed, Carla responded that:

> There was a kind of stalker character dude. They [the instructor] looked at his motives and what was his weaknesses and what can be the cause of why he was the way he is. I took it online, so it was kind of a lecture and I thought through it myself.

For participants, like Carla, that struggled to think of examples, I reiterated the definition of critical thinking and shared clarifying statements, synonyms for words in the definition, and engaged with them in identifying potential examples. Many referred to critical thinking as a "deeper dive" or as assignments where instructors wanted students to "dig deep". For the participants who could share rich experiences tied to their stances on critical thinking instruction, there tended to be greater sentiment, stronger stances, and more thought placed in resultant preferences.

Positive Experiences

Participants were asked if they could remember any undergraduate classroom assignments or activities that encouraged, engaged them with, or catalyzed them to think more critically. Maggie recalled a group assignment, from the model course, dispelling the myths of the scientific process and linearity of the scientific method.

> The mystery tube kept me up all night! We had to make a working model of it. I just

remember going "Boy! Like, what if we did this?" and "What about this?" and "What about that?" That was probably one of the most interactive and creative assignments I've ever had in all of my schooling. Because it wasn't easy. That's for sure, but [the instructor] kept telling us there's an answer and I'm, like, "okay, so this has to be possible, how do you do it", you know? And I think that really engages all the different aspects of your brain and definitely with other people around that you're looking at it from this angle, and from the top and from left hand side and you're just trying to figure out how to make it work and pick it apart, essentially. Like, I wanted to be able to know this thing inside and out and figure out how to make it. But, I love that! It wasn't just, like, a one way to do it thing. You know? Everyone had different ideas and versions, which I liked the best, that there was all these different ways to do it, but they're not necessarily same or simple solutions.

While each participant could recall only a few examples, many relayed them with enthusiasm and fondness. Jaleesa's excitement and positive recollection toward this critical thinking experience was exemplary of this phenomenon. Examples of positive experiences typically involved challenging, authentic, situated problems, and "real world" examples. Dwayne, for instance, shared an example from a class where he felt highly engaged to think more critically using "real world" case studies.

So, she would first teach us the content. She would give us the mechanics of these concepts like social conformity and peer pressure, all these things. And, she would instruct this via situations that, for example, like videos or case studies, where we would have to decipher what tools and what concepts they used to get to the resolution. We actually looked at a case…where [the school] got a D [Texas Education Agency school rating]. We were talking about how people are resistant to change and we were given the assignment, the case study. We had to be able to apply, and we were kind of left very,

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with very vague instructions, but that was done on purpose to kind of engage critical

thinking. And, she would, [instructor] would provide a lot of real world case studies…

for us to be able to apply that after being instructed in class.

These positive experiences served to engage students in conversations about their

preferences later in the interview. Not every recollection, however, with undergraduate courses

and assignments was a positive one.

Negative Experiences

Participants were asked if they could recall any courses, coursework, assignments, or

experiences that disengaged or hindered their ability to engage in critical thinking. Unlike

positive experiences, all learners were able to recall experiences that negatively impacted their

ability to engage in critical thinking or grow this skill.

As with the positive examples, the participants that could recall specific, detailed,

examples had stronger stances and emotions with these negative experiences. The most common

response entailed instruction that was overly structured or boring. Jaleesa, for example, likened

thoroughly structured assignments to "math problems".

They're the worst! I've had some assignments like from my critical thinking class that I

felt, like, where they were designed to make us dig deep and do all these things, but were

kind of the like math problems. You're supposed to go through steps one through 15, but

if you already know how to skip those steps and go straight from one to 15, you're not

going to go through them, you just know. And, you just skip them and, like, I know what

the answer is, so why am I going to waste the time going through it? It was in like a

critical thinking [course] and a couple other side courses, where it was like oh really dig

deep in here, but if it's just 'A', I'm going to write 'A'.

Most participants referred to instruction that involved a lack of emotion as disengaging

and inhibited critical thought. Vernon, for example, recalled a situation where the instructor

analyzed case studies for the students, rather than with them.

I'm sure there's, while a very nice group of people but a very small portion who, they can just listen and take notes and not really be engaged but still learn, but for me that's not the case, I had a [subject] professor and [his] style of teaching was just you know, slides and just speaking straight through it [case study] with no emphasis. No, he didn't really go out of the way to make us see in a different light. We didn't talk at all, he did all the thinking.

Many participants mentioned the need for relevancy to engage students in deeper thought. Dwayne elaborated on this by stating:

For some of the cases, it's not the case, at least not all the time. At least not for me. This one class. You could tell that he was he was well informed, but wasn't, I guess, it wasn't handled lively. So, for example, some of the cases or scenarios that were depicted in the slides were from 2009. I mean they have, you know, they've been teaching here for a while, they have tenure, they have been teaching for a while not really changing the slides. They're really not really pertinent to today's scenarios that you might see, especially with the economy, at least what was depicted in the class, and if the scenarios aren't pertinent to society and what's going on in current issues today. So, his issue that his way of teaching hasn't evolved or hasn't grown it's just been staggered, I mean stagnant from a few years ago... Why even, why even call it teaching if you're not willing to change and observe what students have performed in the past and how you could probably improve because, to me, it seems like he has his [uses air quotes] "template" down very well.

Vernon had a similar experience within a course, with a subject he loves, where he perceived the instructor as not being engaging and perhaps not enjoying the content.

My [upper level course] professor had spoken with a monotone to begin with. Um, so I guess from the onset of the course I just kind of lost interest because he wasn't, for me, he

wasn't engaging. It [an assignment] was supposed to make us think, but he would just come in, talk about it [the assignment] for 50 minutes, and then send us on our way. There was no, like, then he didn't bring examples into it, he wasn't engaging with it, it was like, you know? It just felt like he didn't. He had been there for a while, and he seemed like a really cool guy, but it's just so monotone and he's just coming in... just "Hi I'm Dr such-and-such, let's get started" and for 50 minutes it was [upper level course] and then go away, "I'll see you on Wednesday."

Many students noted that they found topics associated with politics to be disengaging.

Kimberly shared an example of feeling disengaged from critical thought after hearing, on multiple occasions and courses, a specific instructor verbalize negative attitudes toward undocumented immigrants.

I can *definitely* [participant emphasis] think of something. It's kind of ironic, but like I'm Hispanic and so I'm [in a class on language learning]. But, whenever it came to, like, class and my specific professor, [they're] Hispanic also, but [they] portrayed [themself] in a way where [they] don't support Hispanics. Like, [they have] made comments before, like, about the Hispanic community and like undocumented individuals, so after like hearing *that* [participant emphasis], I'd just kind of taken a step back and I haven't really engaged fully in [their] class.

Denise shared that she was stifled from engaging in critical thought when it was evident an instructor was seeking a specific answer or viewpoint on assignments.

They give you something that's open ended, but like you can tell, by the way that they present it and the instructions that they give you, it should be open ended but they're looking for a certain thing and so it's very, like, it's hard because there's certain things that I wanted to talk about or get into, but it was like you could tell they were looking for a certain thing… Like he was saying how like you would get more points, if it was towards

this specific view and, if it was against that view, then you may or may not get all the credit points because it was against his view. But, it should have been an open essay, and so I remember it was like there's so many different things, especially in that area that you can speak about and talk about, and it was just like kind of like limiting.

Lena expressed her frustrations with critical thinking exercises involving larger class engagement practices and instruction, with expressed or perceived bias:

I really bit my tongue in my [specific content] course, because I know how [the instructor's] mindset was. I felt very differently, so it's like, I'm not going to. He was really bad about calling people out…He was extremely sexist and homophobic, so he would very openly mentioned stuff, you know yeah we're learning about this sort of philosophy topic, and this is how moral should be and he would somehow manage to encompass that into heterosexuality or word stuff so it seemed like men were above women in a way. And, you know, the women in that class got to the point where we stopped raise your hands, because he would very rarely call on us. It was the rare exception when he did. And, if we spoke out against him, like hey, there's other stuff to look at. Why would you put men over women and there's science to back up women are equal to men or at least we balance each other out. He would be like, no, that's not how it is… I think by the end of the semester he may have called on like five girls.

Participant attitudes toward instruction, with the intent of improving critical thinking, was internally tied to experience. Greater detail and emotion was relayed when participants had greater experience. Individuals with few experiences in critical thinking coursework, assignments, and activities had relatively simplistic examples and less emotion or passion tied to their stances toward it. Findings associated with negative critical thinking learning experiences entailed: overly structured or boring instruction, instruction that lacked emotion, irrelevant or outdated examples, the perception that the instructor is not engaged or enjoying the content,

seeking a specific answer or viewpoint on presumably open-ended assignments, and biased engagement practices.

Research Question 2: What are the expressed preferences of emerging and adult learners for learning experiences intended to improve critical thinking in the undergraduate classroom?

Students shared their preferences for critical thinking instruction in the undergraduate classroom. There was a natural progression from attitudes on, and experiences with, critical thinking instruction, to preferences for it. For many participants, their preferences appeared to be integrally tied to their attitudes and experiences. The dominant themes encompassing participant preferences include (a) group analysis, (b) case studies, (c) challenging, (d) safe space, and (e) politics.

Group Analysis

Almost all participants showed a preference for group analysis as part of the critical thinking instruction. Both entire class and small groups were mentioned by participants. Participants noted that the most significant reason for group analysis was to gain alternate perspectives and counter bias. Maggie, for example, expressed how group work helped her evaluate her thinking and counter bias.

> Well, it [group analysis] reminded me to look at both sides of everything and try to get
> rid of my bias, I mean, because we all have bias… I'm trying to think of some of the other
> things we did, because this was one of my favorite classes that I've ever done. Plus, It's
> the first group stuff [since coming back to college]. That was my only groupwork I've
> ever done since I've been in school here. It helped me because I had two people that were
> really interested in the class and they were complete opposites of myself, we are all at
> different lifestages as well. We were all just different majors, I mean *completely*

[emphasis added] different from one another, and we were cohesive enough to actually talk things through. I'm sure there are others [the instructor] had as a group that did not do that, but we were lucky enough that it was great. Yeah, I think it was a benefit to it [critical thinking].

In addition to different perspectives and countering bias, many participants mentioned they thought group analysis helped them "think out loud", "trial run thoughts", and "bounce ideas off" other people. Carla, for instance, stated:

yeah, I like groups, they can help you bounce ideas off folks, and if you're stuck in your self-thinking, or confused, you can bounce stuff off of them to get going… it isn't important if they do or don't agree with you. If they look at it differently, then you can be, like, "oh, I don't think that" and explain why.

Walter expressed that he feels more engaged to critically think when instructors use a modified jigsaw technique (Aronson, 1978), where students became experts in groups on a given topic before joining a different randomized group with the intention of disseminating the information to tackle a larger problem. Walter detailed this experience by stating:

Part of it was it was a group project. We kind of came together with our own experiences, but also the fact that we each had our own document or doctrine that we had to learn. That was kind of, like, in its own way different perspectives… so those kind of things helped put it together for me. It helped me understand it more and made it approachable to tackle.

When asked how this helped with critical thinking, Walter shared that it also helped create awareness of other identities, experiences, and behaviors. Walter expressed that:

It's *definitely* [participant emphasis] helpful. Just because each person has their own culture, their own background, ethnicity, race, all of those things to me play a factor to understand what one person may interpret a subject or topic. And, not to say they

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misconstrued it, or to downplay it, but rather because of how they're raised, they may have a different ideology of said topic.

In contrast, a few participants stated they enjoyed group analysis in her upper level courses, but were hesitant of groups analysis in introductory courses. Gina expressed that colleagues in her upper level courses shared more in common, were less likely to judge, and were more likely to engage with the assignment.

I feel more comfortable if I'm with, like, people who, like, understand or… I don't feel, like, are going to, like, judge me… [Colleagues in upper level courses are more] open and honest and willing to, like, listen. I mean, I really like groups and, like, believe in groups, like, but it's very hit or miss. Like, there are some people who, you know, like, they're just in the group and they're just trying to, like, just get the right answers, instead of, like, critically think about the stuff, and so I feel, like, the people who, like, want to, like, push ahead and, like, just get it done. I feel like that's just, like, it makes me want to just, like, [air quotes] "okay, just follow the leader" and really say, like, "whatever" [threw hands in air] and "so, I don't know"… Now, in my classes now [senior courses] I really like group work for critical thinking. I think it's because, like, we all kind of we're all alike. Like, in the same field, like, we're in it for the same thing we're, like, coming kind of from, like, similar, not even similar places, but, like, we all have one, like, the same end goal kind of. And so I think, and I feel, like, [people in her major] are a lot more, like, understanding and a lot more willing to listen, just because we're all very diverse like race, gender, all the good stuff, and so, I think when people are just around groups of people like that, for a long time it's just, like, you're willing to listen and you're willing to be open. And you're willing to change as well, and some people aren't willing to change, but like [people in her major] are very willing to. So, yeah, very safe space, very cozy.

This hesitancy with group analysis was shared by a few other participants. Ron's

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response on group analysis stood out. He initially stated that he liked group analysis, but talked through the nuance of working in groups. Ron detailed this nuance by stating:

I think working as a group has its pros and cons. Although I think critical thinking would be best done primarily as an individual and then in a group, mainly because you… undoubtedly everyone's opinions or everyone's answer is swayed by you know what other people say, and so you know you want to kind of get your own opinion straight first. And then, after that, you kind of, like, hold it and you hear other people out and then be like Oh, you know that makes sense, but [motions a conversation]. If you kind of get the question asked as a group, you don't even have a chance to formulate your own opinion before people start you know cluttering your mind with their opinions… You know, sometimes you get people in your group who are very loud and they are not very smart and you know, maybe they're very popular or very, you know? … so you kind of want to, you know, go with their opinion... But then again like that also raises the question if you're like with people who think the same way you do, are you really, you know, are people really contributing more things, or are they just reinforcing each other, um, so I guess you would have to find just a great group of people who are kind of… like the same level as you, but with differing opinions, um, but that I think that would be very hard to do. So, I definitely think making your own decision or your own opinion first [before engaging in group analysis], it's the best way to go.

All, but one, participant mentioned group analysis as a preference, in some way. Half of these individuals were able to articulate reasons for their preference and clearly valued engaging with their colleagues to expand their ability for critical thought. Their reasons for doing so ranged from understanding nuance and bouncing ideas off one another, to a way of discovering new perspectives and as a counter for bias. Four participants expanded on their preference with caveats. Aligned and equivalent effort from colleagues, shared motivations, the feeling of

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judgment, time to think, and persuasiveness of others were mentioned as variables for this preference. While group analysis was one of the most prevalent preferences, it was typically not mentioned without context. The second most mentioned preference participants mentioned was the use of case studies.

Case Studies

All but three of the participants mentioned case studies, in some form, as a preferred means for engaging learners in critical thought. The predominant explanation for this preference involved situated or "real world" scenarios that align with interests, major career goals, and past experiences. Lena, for example, shared that she preferred critical thinking exercises that aligned with her major and involved real scenarios.

My [directing] class, [the instructor] would show videos, like case studies, where [they] had recorded the director talking and saying what's going on… so it was critical thinking and analyzing about what they did versus what they could have done, or probably should have done… to support their crew or make the show run smoother.

Bradford recalled "processing examples" in discussion boards and in whole class conversations as a way to gain perspective and make connections with prior experiences.

There was a class where we had lots of real-world examples, we processed them together… one of them, you know, one of the things is you know how people view terrorism? You know, what is church to you. You know, in this class, this example, was [air quotes] "what is a terrorist?" The Palestinians for some are the terrorists or are the heroes to some people due to terrorism, I mean conflict, in the Middle East. You know, like [some] see a freedom fighter or others see a terrorist. So [processing examples] gave me perspective, because I've kind of seen both of it really, you know as a service member and as somebody that's grown up with terrorism. I could identify with both really… like here's an example, like the cartels in many countries also do mission work. The drug

cartels to a lot of people, [thinking] to a lot of people are heroes, because they help with supplies, you know, like food and money. So they don't see them as cartel members, as violent cartel members, they see them as providers, as something that the government failed to do. Some see the army in Mexico, and other countries, as protectors. But, others see the army as aggressors, as killers and no better than the cartels.

Participants showed a preference for content and assignments they could relate to in some way, even if it was through another member in their group. Maggie, for example, recalled being more engaged to critically think in class when she and a fellow group member could relate to both the characters and the topic in a case study.

Right, I think the greatest discussion happened when, as a group member, you could relate to the person that was in the case study. Like, if you could relate to the topic and who they are we tend to, you know, like I could see myself saying "no, that weight vest is not going to cause weight loss", you know? Because I've been there, done that. There's not a magic pill for anything. But, also, if there's someone else in the group that could relate to the fact that yeah, [air quotes] "I take the supplement and I've lost weight". That helps too.

In addition to sharing experiences, Dwayne detailed his preference for situated examples, as a way for understanding people, their perspectives, and their choices. In relaying his preferences, he recalled an example from a management course he particularly enjoyed.

When you do the critical thinking, and you start seeing the outcomes of the actions or what's going on in the situation you get to see the human nature. That's what the class is all about. I mean getting us to engage in critical thinking there's only so much you can do with definitions and classroom traditional instruction [he referenced lecture earlier]. You won't see that [traditional instruction] in upper level classes in my degree… I think that management has to understand, at least to some degree, how people function and If it

weren't for that, critical thinking, you know, employees aren't going to be going by definitions… Being able to actually apply concepts and maybe not always named them by their very definition or by the official term but being able to understand those general concepts is definitely helpful and especially seeing those case studies that are based off real situations where management did have an issue to resolve. I personally do think it was very beneficial.

As Dwayne reflect on his preference for case studies, he recalled an example where he not only experienced greater engagement with critical thinking, but differential success compared to earlier courses.

I'm taking a [specific] course right now and in past courses I haven't done that great, but so far, we just took our first exam, you know, *I made an 'A' on the exam* [participant emphasis]. I told the professor this the other day. I told her to please keep it up because her style of teaching [with case studies] is very engaging.

Clair had a similar experience. She recalled an interrupted case involving the search for habitable planets and the difficulties of space travel. She relayed, with some excitement, that the contextualized story and problem gave her the ability to move past simply understanding a concept, one she previously struggled with, to explaining it to peers.

I remember, we did an activity in the lab… it was about G force and all that and so, like, I'm not really good at science, that's always been my weakness. But, [the instructor] was talking about G force and explaining it to our group and, like, I felt I was confused, but I was getting it and putting it together, when he was like, asking questions. Like, I would answer and tell my group, I was, like, wait, "is it this?" and he'd be like, you're right and like someone else asked a question and I answered it. And, I was like, "wouldn't it be like this" and like I told one of my group members [air quotes] "I never get this stuff, I just don't get it" and he was like, "you're answering like everything to help us solve this thing

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correctly." I told my husband, like, I was amazed. Because, *I got it* [participant emphasis]! But, I guess, it was just so much for my brain to like handle or for me to grasp and then I was like, "but I'm explaining it and solving problems"… so like, every group, like, gave their input and [the instructor] would like tie it back to other things in real life.

The second most mentioned preference was the use of case studies. Group analysis was mentioned frequently in the same examples as case studies, but this was not the main focus for all respondents. According to participants, case studies provided situated examples and "real-world" scenarios that align with their interests, career goals, and past experiences. They also provided engagement and differential success. For some, there was a preference, not just for an example or storied context, but for a challenge.

Challenge

Participants frequently acknowledged that critical thought was not easy. It takes time, energy, concentration, and sometimes, sustained frustration. Six participants referred to the challenging nature of critical thinking instruction as a necessary component. The participants typically linked their examples and preferences for challenge with controversial topics, ambiguity, and autonomy. Freddie, for example, stated that "faculty shouldn't shy away from [controversial] topics. Why are we here [college], if not to be challenged? If not in an academic setting, then it won't happen. I think they [faculty] should have projects that are challenging and make us think. *Challenge our thinking* [participant emphasis]!"

Similarly, Dwayne shared that he thought case studies were more engaging when learners were given the opportunity to have autonomy, answer questions on their own, and solve problems without every variable provided.

> I told her [instructor] to please keep it up because her style of teaching [with case studies] is very engaging, to the point where she's not giving us the answers but she's keeping us engaged and leaving room for me to be able to answer certain questions and that's exactly

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what these case studies were doing. Is they weren't giving me the answer, they were

engaging me in cognitive activity, but at the same time they were [pause and thinking], it

was allowing me to answer questions. Throughout… not giving me enough, and not

providing things for me, but it wasn't impossible. I had to go out and think about it on my

own first.

Kimberly, a teacher in training, shared the preference for autonomy. She expressed that it

was a key factor in catalyzing critical thought; that it enabled learners to ask their own questions:

I like the professors who were just kind of like "let's give 'em a challenge"… not

necessarily like "I'm not going to help you", but more like "you figure it out on your own

and if there's any questions, like, come back to me." Like, we [students] were the ones in

charge of our learning when it came to class. And, like, we were the ones, like, asking our

own questions and like coming up with these things on like how to better our lessons and

make sure that we were applying all those things we learned in the modules into our

teaching. Using a lot of project-based learning, which is like hands-on.

While participants noted a preference for challenge, many also reported being hesitant to

publicly report their thinking. Several participants noted that they felt more comfortable doing so

when there were specific assurances and behaviors that signal a safe space for learning.

Safe Space

Many participants made a distinction between private, small group, and public displays of

learning. Only a few felt completely comfortable "thinking out loud" in any class setting. Most

reported feeling hesitant in larger settings, for fear of being judged. Others stated that they were

fearful that their verbal and open practice could harm their grades. Participants that reported this

distinction were further prompted to elaborate on their preferences and experiences for "out-loud

thinking".

Vernon shared his preference for the way in which students were asked to report out or

verbally share their thinking in a larger class setting:

I think the way [the instructor] engaged us made me want to critically think out loud in class. [The instructor] didn't kind of pick on one student who [the instructor] thought was doing really well. Like, [the instructor] asked us to think individually, then we talked as a group. [The instructor] just kind of looked at the group, and then [the instructor] let the group pick on each other, because [the instructor] gave us, you know, [the instructor] gave us the chance to think and pick a person, then [the instructor] went with that student. Because it spread, it kind of spread answering the questions around. I know some professors, have always, like, found that one student that they just either really love or really can't stand, and they just keep calling on them, because they know they know the answer, or they know they don't and they want to make them look really smart or really stupid. I think you can tell from the first few lectures, whether a professor loves their work and they love their, um, their topic that they're teaching and I think those two things right there to me are the most important. If I'm in a classroom and the professor really loves what they're teaching and loves what they're doing, I tend to feed off that energy and feel better about reporting out.

When I asked what that excitement or love of teaching looks like, Vernon's included speech patterns and responsiveness to class needs. He further elaborated that the instructor showed his class that they, the instructor, continually tried to improve:

It's just the fact that it's the exciting way they teach, you know, [the instructor] comes in and they bring in positive energy. When they come in the classroom and there's no monotone voice and they come up with different activities to engage students. You see, teachers that really care, teachers that really love their work and care about their students, if they if they know that something doesn't work, because I remember [the instructor] telling us, there are different things that [they] try, but it didn't work, so [they] went to

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other things. And then, when [they] found that those things that work, [they] kind of built off of those. I find *that* [participant emphasis] in teachers that really do care, that make it comfortable to think out loud. They do that, they find things that will help the students and they'll stick with that they'll keep moving forward with things like that, and I know like we said COVID. The last year and a half, it's been difficult for keeping those things and finding new ways of doing things, but that's the best answer I can give. When you know a professor keeps it fresh and really cares.

Denise mirrored some of these sentiments, but added the caveat that safe spaces include the ability to explore course interests without the fear of it affecting course grades:

In those instances, when teachers or professors allow us to be able to go outside of the box and just move beyond what is just given versus restricting and trying to confine us, I feel like it allows more critical thinking to happen and more of us to be able to, like, just broaden our span of just thinking in general, because we're not confined. And we, you know, we *care* [participant emphasis] about our grades, but when we know that our grade won't be affected by getting into and exploring controversial things and getting into these other, you know, broader subjects that may or may not be offensive to one person or another, I think it really helps to establish, like, the groundwork for it [critical thinking].

In recalling some difficult discussions on race and cultural competency, Jaleesa felt it was important for instructors to have "parameters" for a safe space and to remind students about them:

I think that with conversations like that, um, it's been really helpful [to set parameters]. And, I've had professors at the beginning do that, of the semester, at the beginning of each discussion, you know, reminding like "hey, this is a safe space to ask the things you need. Like, if you don't feel comfortable from the class, just come to me", but also, I mean college is the place to learn. And… avoiding those topics isn't the answer, but also

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just having a free for all isn't the answer either, because then you just get debates and hurt feelings and just negativity that could come out… [it's good] to have middle ground, parameters set up, and bring these things up and educate.

Not all participants were as eager to discuss controversial topics. Some felt very strongly that politics should stay out of the classroom.

Politics

Approximately half of the participants used the term "politics". The common sentiment appeared be a colloquial reference to controversy, rather than about governance or the academic study of government. It is important to note, the participants that shared this sentiment identified either as adults, as religious in some way, or both. There was one exception, highlighted below. The term, politics, was almost exclusively mentioned during conversations pertaining to topics that hindered critical thought or as something instructors should avoid.

Maggie, a returning adult learner, reported that she was tired of divisiveness, that bias and politics did not belong in the classroom. In sharing this preference, Maggie shared an example from a history course:

> They [topics that disengage students from critical thinking] get you frustrated. I took this class, [specific government class]. Basically, I mean obviously there was a lot of politics involved, and, I thought the way the book was written, it was on a bias. And, no matter what side I fall on as far the political line, I thought it really leaned far left. I prefer it be in the middle of the road. Like, I just wanted to learn about [specific government class]. Like how the legislature works, you know, a basic government class. And, to me, it took on a lot of social issues, which I understand there are social issues, but it was written in a way that it was presented as opinion, not fact. Which to me, I think everyone needs to learn about it, and I think we all need to be aware of social issues, but I don't want to read a text on government that's critical. When neither party is innocent, you know? I mean

it's like *come on* [emphasis added]. You know? Unlike, obviously, as someone who

really hated Trump, which most of us do, but I need to learn about [specific government

topic]. I don't need to know about, you know, and I mean I don't know, it just really

bothered me because it was so biased. What if it was [thinking], just because I agree with

some of the views doesn't mean it's right to teach that way. I guess I should say I'm tired

of divisiveness.

In a discussion about how identities factor into critical thinking, a returning adult learner

identified themselves as not being particularly religious and as politically moderate with some

conservative leanings. In response to the mention of politics, I asked the participant if there were

any political topics that would hinder their critical thinking or should not be discussed in the

undergraduate classroom. They responded:

There's probably two things, well, really, or [thinking] well, I will discuss everything.

I'm open, but… I guess my view on two things, I guess abortion and child abuse. Those

two things, I will not cross the line. To me abortion is tied to my religious views. I

strongly believe in the right to life. And, child abuse, I'm a victim of child abuse. And so,

there is no such thing as… it was or wasn't right, or hard times, I don't buy none of that.

It is a very touchy subject… I would discuss them, but I would not change my views. I

would not sympathize or become more of an understanding person… as well as the death

penalty.

When asked if there were any topics that shut her down, that made her unable to think

critically, Stevie stated that instructors should "just present the material in a factual way and

remove politics". It is important to note, Stevie is the one emerging adult that did not mention a

religious identity to mention politics. She shared an experience from a memorable business class:

Oh yeah… last year, I had a professor who introduced a lot of conservative ideas in his

teaching, because [air quotes] "oh, it's a business class", "this is how businesses run",

you know, "this is how Wall Street is". And, you know, I have stocks, and I've got quite a good investment in stocks… I have a good idea of how Wall Street works and how the business behind it works. And, this guy was just clearly pushing his own views on us, and I mean, it was borderline incorrect in terms of what he was teaching. Just based on my knowledge… A lot of it was presented in a way to make the industry be more positive, but you know, their practices were not clearly explained to us in a way that they should be. So, absolutely, yeah. I enjoyed a lot of the information from that class, but that really just distracted me. It took up a *lot* [participant emphasis] of my focus. Just like, why are they teaching this? Is everything else they're teaching going to be biased?

Some participants chose to simply list topics they considered political. The items included: abortion, age of the Universe, Big Bang, positive representations of business management, child abuse, LGBTQ topics, social issues, and vaccines. When participants elaborated on these topics, they often associated identity factors (i.e. religion) as the explanation for the topics being considered controversial, uncomfortable, or off limits.

Research Question 3: To what extent do emerging and adult learners feel their identity and group affiliations affect their attitudes/preferences toward critical thinking instruction in the undergraduate classroom?

Students were explicitly asked how their various identities and group affiliations factored into their attitudes and preferences toward critical thinking instruction. This prompt led to rich and meaningful discussions, but elements of identity were presented and discussed throughout the interviews. Identity appeared to be inseparable from responses and is interwoven throughout each theme. As such, please refer to Table 1 for participant demographic characteristics should they be helpful. The dominant themes encompassing identity include (a) self-perception, (b) religion and family, (c) personal connections, and (d) instructor identity.

Self-Perception

Approximately half of the participants reported, largely without prompting, that they felt they had relatively good, if not better than average, critical thinking skills and dispositions. It was quite unexpected, given that participants were not asked to disclose this information, though many found it to be part of their sense of self or identity.

Gina's assessment, below, serves as an example of a typical statement regarding participants' self-perception of critical thinking skills and dispositions:

I think I'm a very critical, a critical thinking person, like I don't really take, like, just one person's, like, word for it, like, I'm the person who, like, here's something and I'm, like, I'm going to go research that, so. I would say. I don't know, I think I always want to, like, I always want to know what I'm talking about and I always want to, like, learn more information. And, like, I'm not someone who's gonna, like, see something on Facebook and run with it, like, I am like my mom. My mom is a lot like this too. So it could be, like, very much my upbringing, and I just, like, I want to learn, and I want to like know why people feel a certain way and I want to put myself in other people's shoes. So it's, like, I want to be fully educated before I can like make a decision, and, like, pick a side, and so I feel, like, if there are topics where you just, like, shut down and you don't learn then it's, like, you're not learning and you're not and then it's just being ignorant and so I'm, like, and I get there are lots of touchy subjects, but I think that's the point of touchy subjects is to try to catch them.

This sentiment was prevalent, though very little nuance was evident between participants. While many participants stated that they were able to critically evaluate most subjects, several reported that they could not do so in front of, or with, their primary family members.

Religion and Family

With some exceptions, most participants stated that they were able to think through concepts that challenged their beliefs and understandings in a classroom environment. Several, however, stated they were not comfortable critically analyzing religion, or beliefs associated with religion, around family members.

Kimberly's response exemplifies the responses for the few learners that reported feeling uncomfortable contemplating topics that challenged their religious and familial beliefs in the classroom. She reported that some science content fit this description (i.e. Big Bang, evolution, deep time) and that she would not contemplate information to the point she would doubt her own religion or faith:

> If I ever thought about it, like critically, I think it was, like, me doubting my religion, and I kind of didn't want to go down that hole, because, like, also my family's very religious. So I feel like, if I start thinking about it that way, it would have been, that I would change my beliefs, and I feel like it would be betraying something that I've been growing up with. It's, not that I don't want to, but I think it's like asking myself, like, "Why am I doubting what I believe in, what I know that I believe in?" But, I'm just, like, kind of, like, on the fence about it at certain points. And, I haven't, like, I haven't really thought about it lately. Because then, like, I joined an organization, a Catholic group at [the university] and then I was, like, oh it's fine. But, like, now I feel like if I was able to, if I did think critically about it, it will go back to, like, I'm doubting, like, my beliefs in my religion, and I don't think that's something that I would like to do, because I feel like it would upset, like, the people around me.

A returning adult learner felt similarly and was unable to critically analyze religiously associated topics in class or with family members. This participant, however, held a different familial role as an elder in their family. The participant remarked that LGBT topics were off

limits, both in and outside of the classroom:

> Um, I'll tell you, I have a niece who's gay and we don't talk about it. It's attributed to my identity. She respects it, and she knows it. I guess it's religious in a way, yeah, religion. No, also my upbringing… I don't know that I could, I mean, how much is too much really?

Jaleesa remarked that she was able to contemplate topics associated with religion in the classroom, but that she struggled with holding two identities in her head. In a journey from one lifestage into another, she stated that she had begun to question her religious identity, though was unable to do so in the presence of her family.

> Um, I think religion is a difficult one [topic]. Especially the creation of things at the very beginning and everything I know growing up. It was really difficult for me to even have, or sit through that lesson in school, and now that I am older, I know I have to separate those two things. Now, "could I bring them home?" Probably never, no… My grandparents would not stand for it… Now, as an adult, I am more comfortable talking about those things in class. Growing up, that was very difficult… Sometimes it's easier to, you know, learn it to pass the test and push it away. Or, you accept it in the class, and you accept it in your daily life, but at home you're a different person, so there's a bit of a difficult overlap there… It's uncomfortable because of how I grew up, and now who I am now. It was the disconnect between my first 18 years and now this new information and learning things for yourself. That's the uncomfortableness, when you learn information that discredits what you knew before… You kind of have to fit it [new information] in or get rid of one [giggle] ya know?... It's been a long time since I've gone to church, and I haven't formed my adult ideas on them just yet. The hardest part is acknowledging I no longer believe those things… So, can you really call yourself a Christian if you no longer believe those things? That's what goes through your mind. I haven't probably identified

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as a Christian in a while, I just haven't had that conversation with myself out loud.

Ron, on the other hand, was one of the few participants that felt he could discuss any topic internally, openly in the classroom, and with family. He felt that he joined a university and field of interest that did not challenge his identity or political affiliation. He did, however, change his mind about religion and enlisting in the army.

> I understand that [my university] is a very conservative school, because we're in [state] in a small part of the state. Or, city, I guess. And I came in as a conservative. So, they got more of the same and so I can't think of too many instances where my beliefs for how I was raised have been challenged, except for maybe, um, I think I consider myself religious now. I talked to a chaplain in the army, who kind of laid, you know, Christianity out and kind of, you know, I had so many questions… he kind of addressed all of them. And, I'm like "okay, I can live with that." So, I'd say it helped me change my thoughts on religion and going into the military.

Participants expressed a range of abilities regarding critical thinking associated with topics that contradicted their religious teachings. All, but one, participant noted a distinction between the analysis of these topics in the classroom and with family. The two components, religion and family, were intertwined and rarely discussed separately.

Personal connections

Several participants stated that they preferred chances to critically evaluate topics when they could do so using their own life experiences and identities. Walter, for example, stated "it's how they apply the curriculum. You know? Versus, giving everyone an opportunity to voice their own life experiences and kind of make it [curriculum] their own. Kind of like a closed one-way system versus a two-way channel receiving but also reciprocating, making it a more productive learning environment versus it being one ended."

Denise recalled asking an instructor if she could write a paper differently from the way it

was assigned. She wanted to explore the course topic as it pertained to her identity as a black female, to bring awareness to racial disparities in medical diagnoses:

> But on the positive side, I remember, it was this semester actually, it was in my [specific course] and we were supposed to talk about a specific disability, and I chose ADHD and so [the instructor] basically was just saying you know just here's you know what to put in there [the paper] and then you know, three Famous people. And I was like well… I want to talk about ADHD but specifically about African Americans and women and how it affects them and how it's different. I told [the instructor] when we had like a cross check up at the end of the Semester, I was like, "I hope you think it's okay"… I was like I'm going to base it mostly on, you know, race and gender, like the inequalities of the medical community, especially in ADHD… and you know racial, like, biases and stuff like that and sexual biases. And [the instructor] was, like, yeah, I'd love to see it, like, go as broad as you want, and she was, like, it doesn't matter if you think it's going to be offensive to someone or not. She was, like, it's the facts, and you have the facts to back it up as long as it's not opinionated, she was, like, go for it. And you know, even though the criteria said famous people… she allowed me to, you know, broaden my presentation to be able to talk about some subjects that I wanted to get out of there, especially, coming as a female, and you know, a black female. And she opened it up, even though this was the criteria, she said, I could go outside of that box and so that really helped me.

In this same vein, Kimberly, a student teacher, passionately shared that she felt more inclined to think critically in class when she was interested in and had a personal connection with the course topic:

> I like it when it [critical thinking assignment] ties in with, like I would say English language learners, and also like immigration. So, because a lot of our students, like, their parents, like, even though my students are bilingual students and they're, like, learning,

some of them are learning English still, especially with, like, the whole COVID situation. They were kind of held back from that learning. And, their parents, like, a lot of their parents, they don't speak English and, like, my parents, they don't speak English either. Like, I mean my dad does now, but my mom doesn't. And so, like, a lot of their parents are undocumented and so I feel like I'm more inclined to talk about those topics, or, like, involve myself into those topics because I can also make a personal connection to those topics. And, so that ties in with education, because I'm teaching my students and I'm getting to learn about them. Like, I feel like that is something that I would involve myself in because then that creates like a safe environment for them, and also for the parents. And, like, the parents ultimately, like, are the ones that are, like, taken care of for the kids and so, if I'm, like… if we're able to create a safe environment for both parties, like, it would be easier to, um, like, have the kids do better in school and, like, motivate the kid whenever we involve the parents and we've had, like, meetings where we talked to the parents about immigration. And, we welcome them in and like I translate for the parents so I'm able to make that connection also and, like, they do that there's someone in the school that like speaks Spanish and, like, they will be able to… feel more comfortable coming to school… rather than, like, staying away from it and not getting involved in, like, the child's education.

Ron shared that he was much more likely to engage with content that he felt prepared him for his career goals and future identity as an officer in the military. His example also aligned with the theme and preference for challenging assignments that enabled autonomy:

I think the main class, that I've taken, that has made me want to think more critically would be, personally, a [specific course] that prepares me for leadership. Because I kept, kind of, like, you know, being an officer it's your job to kind of formulate your own opinions and kind of be the critical thinker when you join the army, instead of, you know,

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the enlisted having to take everything, you know, at face value, you know, follow orders and don't question them. You know, do whatever the officer kind of thought… at face value of it. Because eventually that will be your job, and so, they [instructor] had us do critical thinking sort of tasks weekly… and labs every Thursday and, you know, [the instructor] didn't show us a proper way to conduct [the assignment]. But, they don't have an exact way you have to do it. They kind of give you a guide of how you do it, or how you are supposed to do it, and then you kind of formulate your own way of completing [the assignment]… yeah, so after lab we all, we all go back to a certain area and we [reflected on the assignment].

Within the prompt directed at identity factors, several participants remarked that they also found the instructor's identity pertinent, at least initially, to their receptivity to course messaging and critical thinking activities.

Instructor Identity

Six participants expressed that they initially felt more comfortable verbally sharing their thinking with instructors with whom they could visibly discern shared some of the same identities. These reactions were almost exclusively relayed by participants in marginalized groups; predominantly female, LGBTQ, and participants of color. All six participants stated that this was a temporary or tentative state and that their interpretations could change as they were able to better assess the instructor's behaviors and teaching methods. For example, Denise shared:

I think it's a lot easier [to verbally think critically] when a professor's a female, I mean, especially on the harder topics. It's just because they're a lot more caring and loving just naturally, not that men aren't but it's a trait that you see across the board, more likely, for women. But, a lot of the professors I've had are male and so one thing that just completely just shuts me down is when they have this kind of like authoritative like you

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know, "I'm the man" type of thing and I'm like it's really intimidating in a sense, so I don't feel like I can walk up to someone. But. [thinking] I mean, I think it's mostly not looking at them before they speak, because many people look intimidating from the outside, but they're just cuddly Teddy bears, you know? I mean, so, I wait until a person speaks, and then I just kind of take the first couple of impressions. A lot of people say first impressions matter but, for me, the first few matter because I give people the benefit of the doubt of like. You know woke up late, you had a rough night sleep, you had a bad day something happened, I give most people the benefit of the doubt when it comes to meeting people, especially professors, because you never know um. But, yeah if they continue to have this kind of like just very. Even if they're not like "I'm the man" but they're very like closed off in the sense it's very intimidating so I feel like because I asked a lot of questions. I feel like I can't come up and ask you about them, so now I've got to go find it out, on my own, and I may or may not struggle that entire class that semester, because I don't feel like I can talk to you.

Walter relayed a similar experience:

Yeah, I'd say so, you know not saying everyone is biased entirely, though everyone, you know subconsciously might, just because of how they were raised. I keep, kind of keep, that in fact my mind. For me it's male Hispanic professors, older ones, you know because I grew up around a lot of more older Hispanic males in my household and to me, I feel like I can kind of delve into something and kind of feel reciprocated and be understood in that.

A few participants revealed they were initially hesitant with instructors that had identities different from their own. Again, participants with this experience were from marginalized groups; predominantly female, LGBTQ, and participants of color. Gina, a Black female, shared:

I feel like it's more… a personality thing, like I feel like I can just tell, because, like

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usually like an older white man, I'm like [makes a face] initially... Yeah, I mean, I would say, like, skin tone for sure. Like, I feel like if someone looks closer to me or if they are like any person of color, I feel like I'll be a little more comfortable off the bat. Also, like women. I feel like I'm more comfortable, like, off the bat. But, then sometimes I can change my mind depending. But, so yeah, certain things like that. Even, like sometimes, like how people dress, I'm like "I trust you" [giggles].

An adult male participant recalled being unable to interact with an instructor, and subsequently think critically about LGBT topics associated with a specific career, after discovering the instructor's sexual orientation:

Yeah, I didn't realize that the instructor was gay himself. You know, I've talked to him a lot.. he gave the class and then I found out, all that he was going through. He explained the things, experiences, that he went through and I'm like, "oh, this guy is gay, really?" So, after, you know, after the class was over, I was really careful how I really talked to him after. I approached him differently I guess. I was less likely to think critically about it. And, the reason being is because I didn't want to know who he was really. I didn't want to be like, offensive. So, I didn't, I couldn't express my views. And this was... a setting where anything goes [you could talk about anything].

Several participants viewed instructor credibility as an important factor in how they engage with critical thinking instruction as well. Walter, for instance, shared his experiences with perceived instructor credibility and its effect on critical thinking instruction in upper level, or senior level, courses. In a discussion on courses with discussions versus straight lecture, Walter stated:

It [straight lecture] was, like, in some of my critical applications of [criminal justice content] classes. More of, like, let's say a doctor was teaching, you now, because doctors, in my perspective, teach theoretical sciences with a lot of academic journals and

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doctrine… it was like a love hate relationship to me. I mean, there was definitely a lot of knowledge I took away from it, but it was also not really something I felt was productive for me to grow internally, so yeah…. So being in the military, there are a lot of different ways I can, say, move up. To promote me, you have to, let's say, for example, you have a younger person who has higher education and qualifications, well no, not even qualifications, which has a higher education and knowledge of the field and they're promoted to such a degree, versus another guy who really doesn't have a whole lot of like book education, but a lot of hands on experience in the field… [shifted to a positive example from undergraduate experience] The instructor that taught [criminal justice course] wasn't a doctor. He was in the midst of finishing his masters or he had just finished it, I can't recall. But he spent 25 years in the law enforcement field and then got his education. [versus] A doctor who has 30 plus years in academia, but besides research, not a whole lot in terms of like career outside of just the collegiate field, not that I'm downplaying it, but, you know, to me that's [field experience and education] something that attracts me more to want to take away from the class, to critically think. To take away from that, something that relates to me.

This sentiment, for greater appreciation of content and critical thinking exercises based on the perceived field experience of the instructor, was expressed by several participants. The combination of experience and higher education was most highly valued, along with the application-based examples utilized by instructors fitting this description. Participants that articulated this sentiment were predominantly working toward a career in education, criminal justice, or production based fine arts.

The perception of instructor identity manifested discussions about participants' classroom experiences, appreciation of course content, and ability to critically think. The factors that presented themselves during these discussions included: an initial preference for instructors with

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whom participants could visibly discern a shared identity, initial hesitance with instructors that had identities different from their own, and participant interpretation of curriculum based on instructor credibility. One participant expressed that he was unable to interact or critically engage with content relayed by an instructor with an identity other than his own. Aspects of identity appeared throughout participant responses. Some made reference to personal journeys that influenced their ability or decision to return to an undergraduate education and/or regularly engage in critical thinking.

Additional Findings

During the interviews, participants relayed significant life experiences that they felt affected their inclination and ability to critically think. Stevie, for example, attended university for a year before returning home. Her experiences led to a journey of self-discovery. She has since returned to the university, changed her major, and critically analyzed her ideas, ideology, upbringing, religion, and more.

> Growing up, I was very Christian and it wasn't anything beaten into me, I was very personally Christian… Over the last two years, I've really grown a lot in terms of being open minded and critical thinking, because I just grew up just kind of repeating the things I was told basically. Which, was really ignorant of me. Now I'm trying to be more open minded to other things and to think a little harder about my opinions… But when I went to college my freshman semester, it was so different for me. I was told by all my teachers and a lot of my friends "oh, you're going to go crazy in college, you're so sheltered" all this, and I was like "no, I'm Conservative, I hate smoking and all"…yeah, by October, I had smoked my first joint. You know, that wasn't the big thing. For me, the big thing was I just started to question why a lot of the stuff had happened in my life and why I had to have these beliefs. It was like [speaking to self] "you don't have to believe this, your on your own, you can believe whatever you want. You have your freedom and independence

to be whatever you want to be." It was that semester I decided I didn't want to pursue [my major] anymore. I wanted to pursue [another major]. I figured that out on my own because I had space to think and be myself, and it was really overwhelming and probably too much freedom at once to go from, you know, the opposite… Basically, by the end of the semester, I had checked out. I was smoking weed like from the beginning of the day, to the end of the day. And that was the focus, was just being free. And then my parents found out and they made me go live with my grandparents and totally isolated me again. No electronics, no nothing, so I had to suffer through that for a couple months. And, I haven't smoked weed in, like, years. It's not, I wouldn't say, that that was part of my downfall. My downfall was that I didn't know who I was, you know? Because I never experienced the ability to have my own decisions.

Much like Stevie, Vernon reflected on how being a returning adult learner had influenced his critical thinking. His past experiences served to motivate him to adjust his priorities, explore his identity, and continue his education.

I think, maybe life examples have helped. Um, spending time in the ER [employee in an emergency room] has helped me think more critically. I think, I don't want to say the maturity because I have still have a very long way to go with that… I have a really long way to go with that, so I don't want to say that it's that, I just think maybe this time I know that because I'm older and I know how difficult it is to get back into school if you screw up and have to leave or get kicked out, that I understand that I have to be more diligent, despite the fact that I know I can procrastinate I have to be more diligent in my work, so I can actually graduate this time because that's something I've always wanted to do. I'm not sure that.. that I had more gains in critically thinking so much as it kind of like woke be back up, into what I was doing when I was younger, um. Because like I said I had made a lot of those dumb mistakes and left school and then for a while I wasn't

critically thinking, I was just in a very comfortable place. I wasn't outside of my element.

Several adult learners discussed negative aspects from past educational experiences, that ultimately created fear of failure and aided in the evaluation of identity. The participants, however, conceptualized these experiences as motivation for continuing their education, the continued evaluation of identity, and as an important factor in their ability to critically think.

An additional learner shared a similar experience with identity exploration. In our discussion about identity and peer influence, Dwayne shared that he identified as a deeply religious person and faith leader. He shared how his thinking in this regard has evolved in relation to speaking and working with diverse coworkers at his university.

> Yes, and I actually almost forgot to bring up this very important point, so I work in a very diverse large office, with many numbers of student workers. So, I work for a department; we have all kinds of people and actually one of my coworkers that I talk and sit with, we talked about these [hot topic] issues and [they're] atheist, but [they] typically avoid church people. And, the other day, and I quote, [they] said well "[Dwayne] is the right type of church people". The reason I say this is because I've gotten better with age and experience at critical thinking. I talk with diverse people and it helps. With [them], I can talk about any hot topic subject, for example, I know that in some states, maybe not all of them, gay therapy conversion is a real thing, and they seek to tell people what's right or wrong, and you know, and they go protest and they say it all over the streets, that you know "it's wrong, it's wrong", but I'm not going to go out and do that. I've changed in my thinking on this. This is my official answer if someone were to ask me if you say that you don't abide by my faith, there is no reason why I should have to, you know, I should force you to do or say anything. But, for example, I was talking with [them], there's this person I mentor, and [they go] to my church and [they're] having sexual orientation issues and [they] personally requested my help, not that I have approached [them] because I first of

all, I didn't even know. And, [they] asked me to help [them] with this, because [they] don't] want that kind of lifestyle. And, I was talking to my coworker about this. And I said, do you see anything wrong with this and to my pleasant surprise, [they] said I don't see an issue with it because, first, [the person you are mentoring] says [they abide] by your faith and two [they have] personally asked for it so you're not forcing [them], it's [their] personal decision to put more priority in [their] faith than in [their] sexual orientation, or preference. So, now, I think that's the only time I will extend and go out of my way to do or say anything in those terms. Now if [they] were to say, "I change my mind" and say "no", then I don't want to and I can't do anything then. So that's my general stance, where everything is, if you say you abide by my faith, then yes, I will preach to you I will tell you what is, according to our faith, right and wrong.

Summary

The purpose of this study was to explore the attitudes and preferences of undergraduate learners, both emerging and adults, toward critical thinking instruction through the lens of social judgment theory. Participant interviews provided thick and rich descriptions of undergraduate attitudes toward critical thinking instruction. Overall, participant definitions of critical thinking aligned with the Delphi consensus (Facione, 1990) definition. Participants reported having few experiences with critical thinking instruction, with the majority occurring toward the end of their undergraduate career. Attitudes, based on these few experiences fell into two categories, positive and negative. The majority of participants could only recall one or two positive experiences with critical thinking instruction. Many, however, recalled unpleasant or negative experiences. These experiences informed participant preferences for critical thinking instruction.

The predominant themes for learner preferences include group analysis, case studies, challenges, safe spaces, and politics. Many participants relayed that group analysis, both small and large, enabled them to gain alternative perspectives, understand nuance, counter bias, and

bounce ideas off one another. Some participants articulated that not all groups were beneficial, that they were hesitant of group analysis without the opportunity to work individually at first or in introductory courses with greater diversity, the perception of judgment, and ranges of motivation. Participants reported that they preferred critical thinking instruction that involved case studies. This preference was further expanded to include scenarios that were situated, real-world, aligned with student interests, aligned with major or career goals, and involved participant lived experiences. Participants also preferred to be challenged when developing their critical thinking skills. Instructional challenges included difficult topics, ambiguity, and room for autonomy in learning. Learners, however, qualified this with the need for safe spaces. A safe space, according to interview participants, included a positive attitude from the instructor, creative ways to engage students in class discussions, the ability to explore interests without fear of retribution, parameters for difficult discussions. Lastly, participants wanted instructors to refrain from the inclusion of politics, or controversial topics, in the classroom.

Identity factored into every theme and interview response. It was intertwined throughout the findings, though some dominant themes were discerned from direct questioning. The majority of participants felt they were good, if not better than average, critical thinkers. Religion and family factored greatly into discussions about what and where learners felt they could critically analyze topics, be it in the classroom, in their lives, and at home with family. Participants felt they were more likely to engage in critical thinking instruction if they could find personal connections with the content, or were enabled to modify or select assignments that let them do so. And finally, participants adjusted their participation in class and responses to instruction based on their perception of instructor identity. For some, this was a temporary condition, while others reported that specific instructor identities inhibited them from critical thinking.

The additional theme of life experience is also presented in the findings. Several

participants had significant shifts in their perceptions of themselves, that they report, affected their ability to critically think or motivation to so. While this theme does not directly factor into the research questions or theoretical framework, it felt important to include given the emphasis placed on these experiences by participants.

This chapter presented the major findings of this study. The subsequent section provides an analysis of these findings, with implications for practice, policy, and research.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Findings, presented in the preceding chapter, derived from emerging and adult undergraduate learner experiences with critical thinking instruction. The purpose of this chapter is to provide connections with these findings using the theoretical lens of social judgment theory, as well as the conceptual assumptions from emerging adulthood and the field of critical thinking instruction. Chapter V is organized in five sections: (a) summary of the study, (b) discussion of the findings, (c) implications for practice, (d) implications for further research, and (e) conclusions.

Summary of the Study

This chapter begins with a summary of the purpose and structure of the study. It is followed by a discussion of the findings related to social judgment theory, with reference to the undergirding concepts of critical thinking and emerging adulthood. Implications for practice follow, with suggestions and implications for future research. Finally, conclusions are presented for how the findings contribute to the knowledge base.

The purpose of this study was to explore the attitudes and preferences of undergraduate learners, both emerging and adults, toward critical thinking instruction through the lens of social judgment theory. This investigation provides additional context for critical thinking instruction from the student perspective using interpretive interactionist inquiry. Participants were purposively selected based on lifestage and experience with coursework containing explicit critical thinking instruction. A diversity of participants, based on reported demographics such as gender, race, and major were purposefully sought within each lifestage as well. Once participants agreed to participate in the study, semi-structured open-ended interviews were conducted using dual authenticated virtual meeting software. Interviews entailed a series of predetermined

questions, followed by probing, open-ended, questions (Gall, Gall & Borg, 2007). The structured interview questions derived from the theoretical frameworks, preliminary interviews, and researcher experience in teaching critical thinking skills. At the end of the interview, participants were invited to contribute additional experiences and insights.

The study included 16 participants (eight emerging adults and eight adults) that responded to an email solicitation, flyer, or peer invitation. The original email list was obtained from an open records request at the representative institution. The representative institution provided two lists of current student emails, a list of students younger than 25 years of age (emerging adults) and a list of students older than 25 years of age (adults). Both groups had experience, within the last 2.5 years, with a model course that explicitly emphasized and purposefully contained critical thinking instruction. The emerging adult list contained equivalent numbers of the demographics present at the campus based on race, gender, and major. The adult list contained all students that fit this designation due to predicted lower response rates and a smaller overall population.

This study was guided by the following research questions:

1. What are the expressed attitudes of emerging and adult learners toward critical thinking instruction in the undergraduate classroom?

2. What are the expressed preferences of emerging and adult learners for learning experiences intended to improve critical thinking in the undergraduate classroom?

3. To what extent do emerging and adult learners feel their identity and group affiliations affect their attitudes/preferences toward critical thinking instruction in the undergraduate classroom?

Discussion of Findings

Critical thinking research, within the undergraduate context, is typically focused on interventions and student outcomes for skills and dispositions (Abrami et al., 2008; Abrami et al., 2015; Niu, Behar-Horenstein & Garvan, 2013). The literature, however, is sparce on student perspectives toward critical thinking instruction. In addition, the literature lacks the full breadth of student ages (Abrami et al., 2008; Abrami et al., 2015). The goal of this study was to examine emerging and adult undergraduate experiences with, and preferences for, critical thinking instruction in the college classroom. This section discusses the implication of the findings for lifestage, each of the three research questions, and the additional findings of life experience.

Lifestage

Half of the participants in this study identified as emerging adults. Emerging adult participants ranged in age from 19 to 22 years of age. Half of the participants identified as adults. Adult participants ranged in age from 19 to 59 years of age.

Emerging adult participant ages and descriptions of feeling in-between adolescence and adulthood, identifying as students, and having financial, housing, and job instability are all consistent with Arentt's (2000, 2004b) theory of emerging adulthood. Adult participant ages, however, did not. The two participants, whose ages did not align with the theory of emerging adulthood, shared the identities of Hispanic and immigrant in common. Their identity as adults largely centered around having a strong sense of self, financial security, and emotional independence. Our knowledge of immigrant populations in this age range, 18 to 25 years of age, is scant (Rosenbaum, Ahearn, Becker, & Rosenbaum, 2015). Arnett (2007) addressed the limitations of the concept of emerging adulthood, particularly surrounding immigrant cultures from nations outside the parameters and scope of his work. These findings support the decision,

in this study, to ask participants to label and define their own lifestage identities. The conceptualization of adulthood, for these two individuals, matched that of participants in the same age range. The difference being the two individuals felt they met these criteria.

Emerging adult participants largely identified financial stability, housing independence, and career stability as milestones for adulthood. While these milestones were included in the conceptualizations presented by adult participants, adult participants included some key differences. Adult participants, with the exception of the two younger identifying adults, included having children and romantic partners in their definition of adulthood. Emerging adults did not mention these factors. These differences align with the literature on shifting conceptualizations and modern interpretations of adulthood (Arnett1997, 1998, 2000, 2004a, 2004b; Greene, Wheatley & Aldava, 1992; Scheer, Unger & Brown, 1994).

Participants that identified as adults had stronger associations with career goals than that of being students. In fact, any mention of education as an identity factor, from the adult demographic, was in pursuit of realizing one's identity, as a path to finding a career, or part of a lifelong learning endeavor. None of the adult participants mentioned being a student as part of their identity. This is in line with findings by Wirt et al. (2002) who found that traditionally aged, 18-25 year old, undergraduates were more likely to identify as students than their older adult counterparts. Initial questions regarding life stage resulted in little connection to social judgment theory. Later analysis, however, showed that older participants had stronger preferences instruction that strayed away from political, or controversial, topics. These data are analyzed further in the section titled, politics.

After discussions about self-identified life stages, participants were invited to relay their experiences and attitudes with critical thinking instruction.

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Research Question 1: What are the expressed attitudes of emerging and adult learners toward critical thinking instruction in the undergraduate classroom?

The analysis of findings associated with participant attitudes is organized by the dominant themes (a) critical thinking, (b) few opportunities, (c) positive experiences, and (d) negative experiences.

Critical Thinking. Before analyzing undergraduate attitudes and preferences, it is important to iterate their conceptualization of critical thinking. Overall, participant definitions of critical thinking aligned with the Delphi consensus (Facione, 1990) definition. This is the same definition ascribed to in this study. Some participants did elaborate beyond simple agreement.

Participant addendums typically used colloquial language to reiterate or make plain the academic definition provided by Facione (1990). The addition, or distinction, by some participants to reify the importance of disposition was interesting, as this distinction is found within the academic literature as well. The definition of critical thinking used in this study, however, includes both skills and dispositions. While the data were consistent, this is an important consideration for research pertaining to critical thinking instruction. It was imperative to ensure congruent interpretations for both the participants and the researcher, as many disparate interpretations exist both in academia and the critical thinking literature (Cosgrove, 2012).

Few Opportunities. Participants reported having few experiences with critical thinking instruction. Most participants reported having these experiences toward the end of their undergraduate career. While these findings are disappointing, they are not unexpected. Studies have shown that very few undergraduate instructors have a clear conceptualization of critical thinking (Cosgrove, 2012; Paul, Elder, & Bartell, 1997; Stedman & Adams, 2012). These findings also align with the fact that few courses have explicit critical thinking instruction, much less practice critical thinking skills within context (Duron, Limback, & Waugh, 2006; Paul,

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Elder, & Bartell, 1997; Stedman & Adams, 2012; Whittington & Newcomb, 1993). For the programs that do have these criteria and report significant successes in critical thinking gains, overall effect sizes remain low (Abrami et al., 2008; Abrami et al., 2015; Niu, Behar-Horenstein & Garvan, 2013).

Ultimately, participants were expected to have few experiences with critical thinking instruction based on literature reviews and preliminary investigations. This finding supports the decision to have inclusion criteria for participants to have participated in the model course with explicit critical thinking instruction, contextualized practice with field specific content, and documented, significant, gains in critical thinking. Attitudes resulting from these opportunities informed their resultant preferences, which are analyzed in greater detail in subsequent sections. Participants expressed having both positive and negative experiences with critical thinking instruction.

Positive Experiences. The majority of participants could only recall a few positive experiences with critical thinking instruction. Their recollections of positive experiences, however, were typically accompanied with increased enthusiasm and emotion. Examples of positive experiences typically involved a challenge, authentic or situated problems, and "real world" examples. These positive attitudes derived from experiences and informed subsequent preferences analyzed in question two. The elements found in these examples align with the results by Abrami et al. (2015), which found some of the most effective instructional interventions involve dialogue, both whole class and group, and exposure to authentic, situated, problems and examples. These elements and experiences will be further analyzed in subsequent themes.

Negative Experiences. Many participants recalled unpleasant or negative critical thinking learning experiences. These experiences informed participant preferences for critical thinking instruction. Findings associated with negative critical thinking learning experiences

entailed: overly structured or boring instruction, instruction that lacked emotion, irrelevant or outdated examples, the perception that the instructor is not engaged or enjoying the content, seeking a specific answer or viewpoint on presumably open-ended assignments, and biased engagement practices. These findings provide context for instructional practices and learner perspectives for critical thinking instruction.

The negative experiences of outdated examples and inauthentic assignment prompts align with the research by Abrami et al. (2015), which found some of the most effective instructional interventions for the improvement of critical thinking skills involve exposure to authentic, situated, problems and examples.

Instruction that lacked emotion and engagement appears to align with research on source credibility. McCroskey (1975) developed five dimensions of source credibility: competence, character, sociability, composure, and extroversion. Participants in this study referred to these dimensions in articulating negative experiences with critical thinking instruction, namely sociability and extroversion, and reported that this deficit affected their ability to engage in coursework. Vernon, for example, stated that his professor "had spoken with a monotone to begin with. Um, so I guess from the onset of the course I just kind of lost interest".

In addition to contextualized instructional practices, these attitudes and experiences served to catalyze further discussion and deeper analysis of participant preferences. Participant preferences are analyzed in greater detail in subsequent sections.

Research Question 2: What are the expressed preferences of emerging and adult learners for learning experiences intended to improve critical thinking in the undergraduate classroom?

The analysis of findings associated with participant preferences include group analysis, case studies, challenges, safe spaces, and politics.

Group Analysis. Many participants relayed that they preferred critical thinking

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instructions that involved group analysis, both whole class and smaller group. They further articulated that group analysis enabled them to gain alternative perspectives, understand nuance, counter bias, and gave them a chance to bounce ideas off one another. This is promising, as this appears to align with documented instructional practices for improving critical thinking skills. Abrami et al. (2015), for instance, found in their meta-analysis of 117 studies, some of the most effective instructional interventions for improving critical thinking involved whole class and smaller group dialogue.

Learning as a social, or community, endeavor is not a new concept within the fields of education and cognitive development (e.g. Vygotsky, 1978). Additionally, learning as a social endeavor is integral to the field of adult learning. Lindeman (1987), considered a pioneer in the field of adult learning, posited that adult learning requires social interactions as part of successful democratic institutions (e.g. health, education, social services, economic planning) (Lindeman, 1987). More modern learning theorists emphasize that social interactions are integral to learning as well. Jarvis (2006) and Wenger (2018), for example, both maintain that social interactions, experiences, and contexts are essential processes for human learning. More pointedly associated with this research, and with regard to critical thinking, Brookfield (2013) proposed instructional practices that incorporate the group analysis of unfamiliar perspectives among peers. In so doing, Brookfield (2013) argues that learners are more willing to temporarily suspend their own convictions to engage in group conversation, community issues, and decisions. While learning theorists and instructional experts propose group analysis as a means of promoting critical thinking, empirical investigations of their interplay is scant. Given that identity is both personal and social (Tajfel, 1978; Tajfel & Turner, 1979), it would make sense that critical thinking could involve both individual and social aspects as well. The data from this study align with these proposed interventions and explanations of learning. A few participants, however, found that some instances of group analysis were uncomfortable or inhibited their engagement in the

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classroom.

A small number of participants articulated that they were hesitant to engage in group analysis in introductory courses with greater student diversity. Several participants even remarked that they only preferred group analysis in upper-level courses, where identities and career goals were more homogeneous. These preferences could be explained, at least partially, by ego involvement and membership affiliation, as described by social judgment theory (Sherif, 1967; Sherif & Sherif, 1976). Ego involvement describes the level of importance, or centrality of an issue, to a person's life (Sherif & Sherif, 1976; Sherif, Sherif, & Nebergall, 1965). This importance can derive from aspects of a person's identity and group affiliation. In this case, the identity and group affiliation would be tied to a shared major and aligned career goals. Participants with this preference may prefer group analysis in their upper-level coursework, as they likely shared many of the same ideas and group memberships. Participant discussions involving group analysis often involved or segued into the preference for case study prompts, projects, and examples.

Case Studies. Participants reported that they preferred critical thinking instruction that involved case studies. This preference was further expanded to include scenarios that were situated, real-world, involved participant lived experiences, or aligned with the student interests. While case studies can be incorporated into lectures, they are often evaluated in smaller groups, during whole class discussions, and in online discussion boards. This preference for case studies aligns with research on successful classroom interventions involving authentic, situated, problems and examples for improving critical thinking (Abrami et al., 2015). The use of case studies is prevalent in the critical thinking literature. It is argued that the process with which case studies are taught and analyzed is consistent with the skills found in critical thinking (Herreid, 2004). Course messaging relayed using authentic and situated case studies may also enable undergraduate learners to perceive said messaging as being within their latitude of acceptance.

Challenge. Some participants noted a preference for critical thinking instruction that involved a challenge. Instructional challenges mentioned, include: controversial topics, ambiguity, and room for autonomy in learning.

The preference for controversial topics was not shared by all participants. Many, in fact, stated the opposite sentiment, though couched their preference as an opposition to politics in the classroom. Participants that did prefer challenging or controversial topics, noted that the college classroom was the ideal, and only, place suitable for learning to critically think through them. This finding is not consistent with social judgment theory. If a topic was within a student's latitude of rejection, they would be less likely to discuss the topic and have a resultant change in attitude. One interpretation is that these learners were more disposed to critical thinking. If so, this phenomenon needs greater exploration. Another interpretation is these learners may not have found the topics controversial. Rather, they may be acknowledging the topics are controversial to others. In addition to controversy, some students shared they enjoyed critical thinking instruction that involved ambiguity.

The preference for ambiguity is an interesting one. The Sherif's (1967) noted that the presence of ambiguity in messaging makes the recipient more susceptible to assimilation effects. Ambiguous messaging enables the recipient to make sense of the message by filling in the gaps with their own assumptions and knowledge, making the message appear closer to the individual's anchor (Granberg, 1982). Researchers in this field have since identified recipients as being ambiguity avers or neutral, with the latter being more confident in interpreting vague news and messaging (Vinogradov & Makhlouf, 2020). The presence of ambiguity could provide learners with the ability to fill in missing information, or gaps, with their own assumptions and knowledge, making the content appear closer to their anchor and easier to assimilate. The

preference for challenge is not solely one of content. Some participants stated they preferred some autonomy when engaging in critical thinking activities.

The preference for autonomy does not, at least on the surface, appear to have strong ties with social judgment theory. It may, however, be explained through developmental life stages. Emergent learners may prefer greater autonomy with regard to learning, as it can provide greater identity exploration. Greater investigation is required to understand this phenomenon. Even when participants preferred autonomy, many stated that they still wanted the instructor available for mentorship, assistance, and instruction.

Safe Spaces. Participants reported that they were better able to critically think when the learning environment was a safe space. They considered learning environments safe spaces when: (a) the instructor had a positive attitude, (b) instructors used creative ways to engage students in class discussions, (c) students had the ability to explore interests without fear of retribution, (d) where instructors created parameters for rigorous thinking and difficult discussions, (e) and where they felt included.

While these findings are not directly associated with social judgment theory, they do shed light on student preferences associated with critical thinking instruction. One cannot simply engage students in group analysis or challenging assignments without accounting for the risks such activities entail. Learners may not respond or be apt to critically think without some assurances they can do so safely. The fact that safety, or safe spaces, does not appear in the critical thinking literature is an important finding in and of itself. Critical thinking literature is predominantly from the instructor and researcher perspective. Critical thinking requires higher order thinking, risk taking, and vulnerability. bell hooks (2017) argued that critical thought required risk taking, which cannot happen if instructors refuse to create learning environments that are safe for vulnerability; that they must engage in vulnerability themselves.

Critical thinking instruction often entails difficult, or tension filled learning. This type of learning is most effective when the classroom is a safe space (Boostron, 1998; Gayle, Cortez, & Preiss, 2013; Hackford-Peer, 2010; Mayo, 2010; Stengel & Weems, 2010). Participant preferences for challenging assignments and group analysis are consistent with safe space research. The goal of such a space is to promote an "inclusive and effective learning environment in which opportunities for complex cognitive, intrapersonal, and interpersonal development exists for all students" (Baxter Magolda, 2000, p.94). Many participants relayed that their identities played a significant role in their motivations for or against critical thinking instruction. In light of this, instructors can create inclusive spaces for minoritized and underrepresented learners (Gayle, Cortez, & Preiss, 2013). The inclusion of safe spaces adds to the nuance of critical thinking instruction. These findings align with sentiments found in the objections, and rebuttal, of the meta-analysis by Abrami et al. (2015), that critical thinking instructional practices are more complicated than often reported in the literature.

Politics. Half of the participants wanted instructors to refrain from the inclusion of politics, or controversial topics, in the classroom. Participants used the term "politics" as a colloquialism for controversy. The term was almost exclusively mentioned during conversations pertaining to topics that hindered critical thought or as something instructors should avoid. These items included: abortion, age of the Universe, Big Bang, positive representations of business management, child abuse, LGBTQ topics, social issues, and vaccines. When participants elaborated on these topics, they often associated identity factors (i.e. religion) as the explanation for the topics being considered controversial, uncomfortable, or off limits.

This phenomenon is consistent with the concept of ego involvement, a mediating factor for message assimilation in social judgment theory. Ego involvement is the level of importance, or centrality of an issue, to a person's life (Sherif & Sherif, 1976; Sherif, Sherif, & Nebergall, 1965). This importance can derive from aspects of a person's identity and group affiliation. In

this case, the identity was tied to religion and familial group identities. Ego involvement widens a person's latitude of rejection and narrows the latitude of non-commitment. This means message receivers, undergraduate learners in this study, are more likely to reject course content that conflicts with ideologies and understandings associated with their religious and familial identities. Ego involvement and assimilation are inversely related, meaning the more important a message or issue is to a person, the less likely they are to assimilate contradictory information (Sherif & Sherif, 1956, 1967).

Research Question 3: To what extent do emerging and adult learners in the undergraduate classroom feel their identity and group affiliations affect their attitudes/preferences toward critical thinking instruction in the undergraduate classroom?

Identity factored into every theme and interview response. It was intertwined throughout the findings, though some dominant themes were discerned from direct questioning.

Self-Perception. The majority, if not all, participants relayed that they perceived themselves to be adept, or natural, critical thinkers. This observation, or concept, of self-purported estimates of critical thinking ability is not noted in the critical thinking literature. There are a few ways to interpret this finding.

Given the documented difficulty in obtaining gains in critical thinking (e.g. Arum & Roska, 2010; Arum, Roska, & Cho, 2011; Hubern & Kuncel, 2016; Pascarella, Blaich, Martin, & Hanson, 2011; Van Gelder, 2005), it would be reasonable to assume this is an over-estimation of ability (i.e. Dunning-Kruger effect). An alternate interpretation might be that the study was prone to selection bias, with respondents predominantly having greater critical thinking skills and dispositions than typically exist in the undergraduate population. To this point, one of the selection criteria for participant inclusion was the completion of a model course with documented successes in critical thinking skills (Rowe et al., 2015). Even with the documented

successes in critical thinking in the model course, the average gains in this course, while significant, were not substantial. With the large numbers of students taking the course, one would expect at least some participants to be less than average critical thinkers. A combination of these interpretations may hold true as well.

In either event, learners were thinking about their thinking, even if it was for the first time. Vernon, for example, stated "I honestly haven't done a deep dive into my learning" but later surmised he was adept at critical thinking. Metacognition is an awareness of one's own thought processes. The importance of metacognition is written about extensively in relation to critical thinking education (i.e. Costa, 1991; Halpern, 1998; Langer, 1989; Lau, 2015; Paul, Willsen, & Binker, 1993; Perkins, Jay, & Tishmann, 1993), but rarely assessed. This is likely due to the interventionist mindset seen in the field. Much like the findings with safe spaces, the fact that learners' self-perception of critical thinking ability does not appear in the critical thinking literature is an important finding in and of itself. Critical thinking literature is predominantly, if not fully, from the instructor and researcher perspective. These findings align with the closing sentiments by Abrami et al. (2015) that successful critical thinking instruction is more nuanced than typically reported.

Religion and Family. Religion and family factored greatly into discussions about when, or if, learners felt they could critically analyze topics. With some exceptions, most participants stated that they were able to think through concepts that challenged their beliefs and understandings in a classroom environment. Some, however, stated they were not comfortable critically analyzing topics associate with religion around family members. They expressed this distinction as a sign of respect, more as a response to their family's religious convictions and less as a product of their own. This finding is consistent with the fact that identity is both personal and social (Tajfel, 1978; Tajfel & Turner, 1979) and further adds to the idea that critical thinking

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is both an individual and social endeavor. Context and group identity appeared factor into some individuals' ability to engage in critical thinking.

Some participants expressed that they were unable to critically analyze topics associated with religious views in any location, in or outside the classroom. These participants all identified as being religious, or belonging to religious families, in some way. It is important to note that all of the participants that provided these experiences identified as Christian or Catholic. This may be a product of the region or historical moment in which the study was conducted. The terminology used in this section (i.e. religion, religious) were those used by participants during interviews. This phenomenon deserves greater investigation and understanding, as perceptions of acceptable topics may be a product of worldview, familial upbringing, culture, or combination of factors, rather than simply a religious view, tenet, or boundary.

Much like the theme of politics, this phenomenon (i.e. being unable to critically analyze topics associated with religious views) is consistent with the concept of ego involvement, a mediating factor for message assimilation in social judgment theory. This importance can derive from aspects of a person's identity and group affiliation (Sherif & Sherif, 1976; Sherif, Sherif, & Nebergall, 1965). In this case, the group identity was religious affiliation. This results in the message receiver, or undergraduate learners in this instance, being more likely to reject course content if it conflicts with concepts pertinent to their religious identity. Ego involvement and assimilation are inversely related, meaning the more important a message or issue is to a person, the less likely they are to assimilate contradictory information (Sherif & Sherif, 1956, 1967). According to the Sherif's (1961) and Sherif and Hovland (1968), messages that fall within the latitude of rejection tend to be seen as farther from one's position than they actually are; this is called the contrast effect.

Personal connections. Participants expressed that they were more likely to engage in

critical thinking instruction if they could find personal connections with the content or were enabled to modify or select assignments that let them do so. This preference may be aligned with ego involvement as well. Assimilation and contrast effects can be influenced by ego involvement (Sherif, Sherif, & Nebergall, 1965). In this case, a self-selected personal connection would be within a learner's latitude of acceptance. When course content is aligned and processed as part of a learner's identity, it could make the content more palatable and, therefore, more likely to be assimilated. Like the preference for case studies, the preference for personal connections aligns with research on successful classroom interventions by Abrami et al. (2015) involving authentic, situated, problems and examples for improving critical thinking.

Instructor Identity. Participants, largely from marginalized groups, reported that they adjusted their participation in class and responses to instruction based on their perception of instructor identity. For most, this was a temporary condition that could change with additional interaction with the instructor. These data align well with the previously mentioned theme and participant preference for safe and inclusive spaces. If a learner is unable to authentically process information, due to fear of being judged, having their input affect grades, or worse, they will likely be unable to engage in critical thinking.

Sherif and Hovland (1961) predicted that the acceptance, or rejection, of messaging would be affected by source credibility. This conceptualization is now a field unto itself. Social identity theories predict that individual identities are strongly tied to group affiliations. What is more intriguing and pertinent to this study, is that these theories also predict that similarities between the recipient and the source of information, can significantly impact credibility perception and messaging acceptance (Hocevar, Metzger, & Flanagin, 2017; Metzger, Flanagin, Eyal, Lemus, & McCann, 2003; Tajfel & Turner, 1986; Turner, 1991). Participants in this study shared experiences that align with the possibility of this phenomenon. Initially, Sherif and Hovland (1961) proposed that message recipients were more likely to agree with, and assimilate,

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messages from sources viewed as credible. Conversely, they proposed recipients would experience a contrast effect when a source was deemed uncredible or outside their latitude of acceptance.

The individual that shared his experience in being unable to engage with an instructor, or even in critical thought about information from the course taught by this instructor, aligns with the contrast effects proposed by Sherif and Hovland (1961) and Granberg (1982). In this study and with this specific case, the idea of homosexuality was outside the recipient's latitude of acceptance and non-committal. The topic of homosexual identity was in the learner's latitude of rejection, which contrasted with both the identity of the instructor and the topic of the class. Instructor identities, as they relate to learners' identities, appear to be a possible mediating factor for assimilation and acceptance of course messaging.

In addition to instructor identity, some participants pointedly remarked that instructor education and career experiences directly impacted their perception of instructor, or source, credibility. This too is in line with the literature on message assimilation and source credibility. Studies found that speakers had higher source credibility when they were perceived to be more qualified, reliable, animated, poised, and good natured (Hocevar, Metzger, & Flanagin, 2017, Metzger et al., 2003). Participants in this study relayed that they found instructors to be more credible when they had both career experience and attained graduate education. Participants also mentioned, the tone and demeanor of instructors as having an effect on their ability to engage in critical thinking activities. Participant identities and demographic characteristics appeared to be an important component of the learning process. Some participants further elaborated on identity transitions that occurred outside of the classroom, as having an effect on their critical thinking skills and motivation for learning.

Additional Findings

Four participants had significant life experiences that they report positively affected their

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ability to critically think. While this theme does not directly factor into classroom instruction, it felt important to include given the emphasis placed on these experiences.

Three of the participants identified as adult learners with negative past educational experiences. These experiences manifested discussions about fear of failure and identity crises. These findings were consistent with those found by Chao (2009) and Wirt et al. (2002) in their studies on adult learners. These individuals, however, appear to have channeled these experiences as motivation for continuing with their education, exploring their identity, and engaging in critical thinking. This finding is inconsistent with the notion, from various life stage theories, that adults are less likely to engage in identity exploration (Arnett, 2000, 2004b). Perhaps adults that choose to return for undergraduate education are different in this manner and are more likely to engage in identity exploration than their adult counterparts outside of academia.

One of the participants, an emerging adult religious leader, reported that they were able to reassess their strongly held religious beliefs based on interactions with diverse coworkers. This finding is interesting as it sheds light on how some may be able to evaluate their actions based on peer interactions.

Limitations for Discussion and Conclusions

This investigation included participants from a diverse, doctoral research, university in East Texas. The students at this institution were predominantly first generation and non-traditional. Most participants reported that they were employed during their schooling. With one exception, participants that reported being religious referenced associations with Christianity or a Christian denomination. No alternate religious affiliations were reported. Participants opting into the study were purposefully invited from email lists intentionally representative of available demographics at the institution (e.g. major, race, and gender). All participants had completed a model course with explicit and context dependent critical thinking instruction. Participants also

willingly opted into the study by replying to an email announcement, a flyer, or by suggestion from an acquaintance or friend.

This study is situated in the United States and in a very specific location. Undergraduate learners from other institutions, in other regions of the country will likely have different experiences and preferences for critical thinking instruction. It is important to note that participants with greater propensity for critical thinking may have self-selected into this study. This may have skewed preferences to be more representative of individuals with a disposition toward critical thinking.

Researcher Reflections

Leading the interviews for this study was an eye opening and, at times, challenging experience. Many participants were very candid, trusting, and vulnerable in relaying their lived experiences with critical thinking instruction. I am honored that many felt comfortable enough with me to holistically reflect on their experiences. Some of these reflections included sensitive topics that were either omitted from the findings or deidentified to protect participant anonymity. These topics included incidents with individual instructors, epiphanies on personal worldviews and religious ideologies, revelations about sexual identity, ramifications of sexual assault, and awareness of personal and familial prejudices and biases. A few participants shared that their instructor's identity halted their ability to engage in course content and critical thinking all together. For instance, there were individuals that found the sexual identity of their instructor an important factor in their ability to engage in classroom instruction. I found this quite distressing. The notion that students may or may not learn based on an instructor's identity, be it real or perceived, presents an additional, social, aspect to teaching that is rarely discussed or researched. I knew this potentiality existed based on previous experiences, coursework, and training, though I have rarely had the opportunity to hear it so plainly described from students themselves.

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Such a revelation could easily impact an instructor's professional growth, instructional practice, course evaluations, research, and, hypothetically, their tenure and promotion. I actively hid my sexual identity in my early career in public education, as I had colleagues that lost their jobs and reputations once their sexuality became public knowledge. I have since found a more inclusive working environment. There are now, as of 2020, federal protections against employer discrimination based on sexual orientation. I became comfortable sharing this aspect of my identity with time. Hiding one's identity is not an option for everyone (e.g. color), nor should an individual feel the need to do so. I do not hide my sexual identity in my current employment, though I typically do not disclose it without context. I do not feel it is something my students or research participants necessarily need to know. When would it come up in an introductory science class or interview? I do, however, use inclusive language, display diversity ally and membership symbols, am a vocal and action-oriented member of diversity, equity, and inclusion initiatives on campus, and represent myself authentically throughout my workday and when appropriate. The question is, when is it appropriate?

The ability to make such distinctions and choices about disclosure is a privilege for which many marginalized individuals do not have access. For those that can, or do, how does this translate into their research and practice? Within qualitative research, how much should an interviewer share with their participants? Participants did not ask me to share my sexual identity, though may have chosen to withhold some of their reflections had they known. Some participants perceived me to be ideologically right leaning, conservative, and heterosexual. One participant greeted me with "Hi there! Just so you know, I don't live in [city] anymore. I now live in Obama's socialist land of [city]." I can only imagine this perception derives from the fact I am a taller, white, blonde and balding, bearded, middle-aged man in Texas. To what degree do

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we share our identities within the classroom and within our research? The data from this investigation add to the complexity of this decision, from power differentials to safety concerns.

This research has prompted additional personal reflection, literature reviews, and collegiate discussions about the nature of this problem. A student's perception of an instructor is not a simple transaction, relayed from instructor to student. A research participant's perception of a researcher is not a simple transaction either. They involve both sets of identities, experiences, words, visual and vocal cues, prejudices, and biases. These findings and reflections are far from novel for researchers and practitioners that are members of a marginalized community or with expertise in critical pedagogy. It may, however, be a novel concept for educators, administrators, and policy makers outside of these demographics. These findings add nuance to critical thinking research and bare intentional consideration and additional research.

Implications and Suggestions for Practice and Policy

One of the primary goals of higher education is to improve student critical thinking (Bok, 2006; Hart, 2013; Kahneman, 2011; Facione, Sánchez, Facione, & Gainen, 1995; Van Gelder, 2005). According to the National Association of Colleges and Employers (2019), critical thought is one of the main competencies associated with career readiness. In addition, educators and philosophers in the field argue that critical thought is imperative to survival (Brookfield, 2012), can be used as a tool to analyze and escape oppression (Freire, 2017), and ultimately a practice of democratic consciousness and freedom (hooks, 2010, 2017). From university programming to course syllabi, critical thinking aspirations in academia are pervasive.

Undergraduates in this study, however, reported having few experiences with critical thinking instruction. Did they simply miss it? While these finding are disappointing, they are not unexpected. Studies have shown that few undergraduate instructors have a clear conceptualization of critical thinking (Cosgrove, 2012; Paul, Elder, & Bartell, 1997; Stedman &

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Adams, 2012). These findings also align with the fact that few courses have explicit critical thinking instruction, much less provide practice within context (Duron, Limback, & Waugh, 2006; Paul, Elder, & Bartell, 1997; Stedman & Adams, 2012; Whittington & Newcomb, 1993). Findings from this naturalistic study were not intended to be generalizable. Implications for these findings, however, could be a call to action for undergraduate instructors, program directors, and administrators to reflect on the instructional practices employed to improve critical thinking. Critical thinking instruction and programming cannot be purely aspirational, implicit, or ill-defined. Meta-analyses indicate that explicit instruction, containing content specific practice with situated problems, group analysis, and instructor or peer mentorship to be most effective at effecting positive gains in critical thinking thus far (Abrami et al. 2015). Participant data from this study support these findings. Instructors and educational leaders that hope to improve undergraduate critical thinking skills and dispositions must be explicit and intentional in their goal. Course activities and assessments must align with these goals as well. These interventions and practices, however, are difficult to employ without training.

Much of the critical thinking literature is intervention based. Abrami et al. (2015) liken this type of research and intervention approach to a "magic recipe"; just apply an intervention and voilà, improved critical thinking. Abrami et al. (2015) askew this simplistic model to educational intervention and equate it to reform efforts by Skinner in the 1950's or the persistent process-product tradition described by Gage and Needles (1989). Critical thinking instruction is nuanced. Findings from this research indicate that students, exposed to promising interventions, such as group analyses, case studies, and explicit instruction, could still be inhibited from critical thinking instruction due to: (a) personal and group affiliated identity factors, (b) perception of content as being political or controversial, (c) the instructor's perceived identity and credibility, and/or (d) the perception of the learning environment as a safe and inclusive space. This information should not be discouraging, rather it shows the need for instructional training from

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experts in teaching and learning. In fact, Abrami et al. (2008) found the intervention research with the greatest effect appeared to be those with that included training, professional development, or instructional nuance in their descriptions. Policy makers and instructors alike, need to pay heed to these data. There is a wealth of literature for the promising interventions as well as the identified student preferences in this study. Learning which tools, resources, and strategies best fit a given demographic or content area takes time and money. Administrator and policy makers hoping to effect positive critical thinking gains may also heed these data. Critical thinking interventions are not simple. There is no quick fix for such a complex set of skills and dispositions. It takes time, expertise, and practice.

Critical thinking instruction is nuanced because undergraduate learners are nuanced. They arrive in class with their own preconceptions, worldviews, and identities. They are not empty vessels to be filled (Freire, 2017). The findings from this study exemplify this. Participants shared preferences for group analysis as a means to: (a) gain alternative perspectives, (b) understand nuance, (c) counter bias, and (d) try out new ideas. They also preferred analyzing content using personal examples and connections. Primary and secondary education might refer to this as learner centered instruction, with student voice and choice (Mitra, 2001; 2004). In collegiate and adult learning, it might be referred to as an act of liberation (Freire, 2017). Some participants in this study, however, expressed that there were topics that inhibited their ability to learn and critically think. These topics were either viewed as being political or counter to their, or their family's, religious ideologies, worldviews, and understandings. Contemplating these topics out loud or at home could result in the loss of identity, family, home, and resources. One person's liberation may be another's loss.

Critical thinking can be taught as a generalized skill but once we apply course specific content, student dispositions to engage in critical thinking may change. Learners with strong religious convictions appeared to have narrowed latitudes of acceptance for certain content.

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Learning is a social endeavor and ultimately involves more than just the individuals in the classroom. They bring their worlds and communities with them. This does not mean we refrain or hide from our content. Instructors and educational policy makers may wish, however, to provide students with: (a) an acknowledgment for the dissonance the content may create, (b) tools for understanding dissonance, and (b) insight into cognitive biases. They may also wish to evaluate their policies, methods, and messaging with these factors in mind.

Implications and Suggestions for Further Research

While there is a significant body of research on effective instruction in higher education (e.g. Pascarella & Terenzini, 1991, 2005; Perry & Smart, 2007), only a handful of studies have explored student perceptions and preferences for critical thinking instruction (Loes, Salisbury, & Pascarella, 2014; Pascarella, Edison, Nora, Hagedorn, & Braxton, 1996; Shim & Walczak, 2012). These studies were conducted via survey, with quantitative analysis and largely explored instructor organization and preparation. With the exception of a mixed method study (e.g. Trosset, 1998) very little qualitative data exists on undergraduate perspectives attitudes and preference for critical thinking instruction. This study provides some additional insight into this knowledge gap.

Some major findings include a preference for group analysis, case studies, safe and inclusive spaces, challenging instruction, and a reticence toward topics perceived as political or that contradict religious views. With the exception of case studies, empirically based investigations on critical thinking interventions do not appear to include these additional elements. Experimental educational researchers could gain more insight into effect practices by sourcing these studies and tailoring investigations toward critical thinking instruction. These topics are also prevalent in more theoretical and liberatory education literature, with greater emphasis on the critical analysis of educational systems and pragmatic methods for effecting societal change (e.g. Brookfield, Freire, hooks).

Coincidentally, findings and suggested practices from these epistemologically disparate critical thinking fields (e.g. positivist, post-positivist, conscientization, postmodern) align in many ways. The findings from Abrami et al. (2015), for instance, suggest that the interventions with authentic, situated, and personalized content and examples, as well as instruction involving group analysis, were most successful with instructor and peer mentorship. These experimental and quantitative findings appear to, at least partially, align with directives from liberatory educational philosophers, such as: Freire (2017) for authentic student led learning, Brookfield (2012, 2013) for difficult discussions and democratized classrooms, and hooks (2017) for the creation of safe spaces for risk taking and vulnerability in the pursuit of critical thinking.

While the focus of this study was not centered on countering or confirming Knowles's (1984) framework for adult learning, there were some revelations to consider with regard to adult perspectives in the undergraduate environment. Many adult participants in this study reported they were undergoing significant identity exploration. This finding runs contrary to Knowles's (1984) assumption that adult learners largely have resolved their identity-formation issues. Participants that reported they continued to engage in identity exploration, however, made note that this was not in all aspects of their life or identities. Several adult learners, for example, reported that topics they felt were political or encroached on their religious identities inhibited their ability to critically think.

Ultimately, this study sought to investigate critical thinking instruction as a social construct. While many philosophers consider critical thinking skills generic (Abrami, 2015; Glaser, 1941a; Glaser 1941b), participant responses in this study provide evidence that critical thinking dispositions are context dependent. Based on participant attitudes and preferences, some appear to be less disposed to critically think about topics that contradict or challenge various aspects of their identity. Several participants were, for example, unable to critically engage with

content that challenged their religious ideologies, worldviews, or understandings. More work needs to be done to make such a conclusion; however, this would add complexity to intervention or process-product critical thinking research (e.g. Abrami, 2015; Gage & Needels, 1989). Persuasion, or messaging, theories may prove useful in exploring this phenomenon. While social judgment theory proved useful for this study, there are many other persuasion theories to explore (e.g. cognitive dissonance). Given that participant experiences were consistently associated with family, respect, and rearing, insight into participant worldviews may also prove interesting (Engelhardt, Feldman, & Hetherington, 2021). Ultimately, greater knowledge about the factors that influence undergraduates' ability to engage with critical thinking instruction is needed. This understanding necessitates the incorporation of student experiences and worldviews.

Conclusions

The purpose of this study was to explore the attitudes and preferences of undergraduate learners, both emerging and adult, toward critical thinking instruction in the college classroom. As critical thinking instruction is typically less common, less explicit, and/or ill-defined in the undergraduate classroom, this investigation provides context and additional perspective with learners' voices and experiences in mind. Participants shared information about their personal lives, their identities, and their educational journeys. Their participation and candor were invaluable to this study.

Findings suggest that undergraduate learners purported few classroom experiences with critical thinking instruction. This does not mean the only conclusion is that they were not exposed to critical thinking instruction. It does, however, present a call to action for educators, administrators, and policy makers to engage learners in more explicit and intentional critical thinking instruction.

The experiences participants relayed were both positive and negative. Not all critical

thinking instruction resulted in students actively engaging with course material. Some forms of instruction appeared to inhibit learning. Participants' positive experiences aligned with findings from the meta-analyses by Abrami et al. (2008, 2015) for explicit, contextualized critical thinking instruction using interventions with authentic, situated, personalized examples, and group analysis. The preference for this instruction was not without exception. Participants reported that they preferred challenge, safety, and inclusion as well. These are not simple addendums to be relegated to a publication's supplementary materials, rather, they appeared to be integral and deserve closer inspection. These additions call attention to the nuance of critical thinking instruction and need for instructor training. Intertwined throughout discussions on these aspects of learning, participants continually referred to individual and group identities.

Identity appeared to factor significantly into participant perspectives. Some participants stated that topics that ran counter to their religious beliefs and understandings inhibited their ability to engage in critical thinking. These sentiments appeared to be more pronounced with adult learners and emerging adults with greater religiosity. What is troubling, is that the range of topics that may run counter to these beliefs and understandings appeared to be quite broad (i.e. vaccinations, LGBTQIA, abortion, age of the Earth, etc). The interplay between identity and critical thinking instruction deserves greater attention for instructional training and investigation. The revelation that some topics inhibit some learners from engaging in course content challenges the notion that critical thinking skills are wholly generic and transferrable. This complexity also provides insight into the nuance and social elements involved; we can no longer simply apply simplistic interventions, reforms, or product-process strategies without student input, instructional training, and resources for professional development and policy.

Undergraduate students are not empty vessels. They arrive in classrooms with life

experience, individual and group identities, and pre-conceptions about the world. Classroom instruction is processed by students in light of these experiences, identities, and conceptions. Individual and group identity factors can aid or inhibit a learner's ability to engage with and assimilate course information. As such, our understanding of classroom instruction and critical thinking, in general, must include broader student perspectives, social contexts, and realities.

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Project Title: Critical Thinking in the Undergraduate Classroom: Attitudes and Preferences from Emerging and Returning Adult Learners

1. What life stage do you feel you belonged to when you were a student in the course? Do you feel you are still at this life stage?

2. What factors, experiences, skills, decisions, and or contexts do you feel are associated with this life stage? Do you have any personal examples you are willing to share? If you have transitioned into a new life stage, what changed?

3. In the course, we used the following definition by Facione (1990, 2015) for critical thinking: "the process of purposeful, self-regulatory judgment. This process (uses) reasoned consideration to evidence, context, conceptualizations, methods, and criteria." Are you comfortable with the use of this definition throughout the interview? If not, what might you change in this definition? OR What is your conceptualization?

4. Do you recall any of the instructional practices from the course that helped or hindered your ability to think critically, or grow this skill? How so?

5. Since taking the course, have you had the opportunity to critically evaluate claims in other undergraduate classes?

6. Can you remember an example for when you were actively motivated to engage in the critical evaluation of claims? What made you want to do this?

7. Can you remember an example of when you were disengaged from participating in the critical evaluation of claims? What factors contributed to this?

8. Have you had the chance to critically evaluate your own beliefs or claims in this course or any other? Would you mind sharing an example?

9. Do you have any experiences with barriers or catalysts to thinking critically in your undergraduate classes? Why might that be the case? Can you explain? Tell me more about that.

10. Do you have any experiences with barriers or catalysts to thinking critically based on who the instructor was, how they spoke, their behaviors or mannerisms? Why might that be the case? Can you explain? Tell me more about that.

11. Do you have any experience with <u>topics</u> that you are unable to thinking critically about? Why might that be? Can you explain? Tell me more about that.

APPENDIX B

TAMU IRB Approval

DIVISION OF RESEARCH

Ā̄M | TEXAS A&M
UNIVERSITY

Exemption Determination
(Common Rule – Effective January 2018)

October 08, 2021

Title: Critical Thinking in the Undergraduate Classroom: Attitudes and
Preferences from Emerging and Returning Adult Learners
Investigator: Elizabeth Roumell
IRB: IRB2021-1222
Submission Type: Submission Response for Initial Review Submission Form
Funding: Internal
Reference Number: 130837

Dear Elizabeth Roumell:

The HRPP determined on October 08, 2021 that this research meets the
criteria for Exemption in accordance with 45 CFR 46.104.

This determination applies only to the activities described in this IRB
submission and does not apply should any changes be made. Please use the
reviewed, stamped study documents (available in iRIS and outlined below in
the Appendix) for applicable study procedures (e.g. recruitment, consent,
data collection, etc…). If changes are needed to stamped study documents
or study procedures, you must immediately contact the IRB. You may be
required to submit a new request to the IRB.

Your exemption is good for three (3) years from the Approval Start Date
(10/08/2021). Thirty days prior to that time, you will be sent an
Administrative Check-In Notice to provide an update on the status of your
study.

If you have any questions, please contact the IRB Administrative Office at 1-
979-458-4067, toll free at 1-855-795-8636.

Sincerely,

IRB Administration

APPENDIX C

Research Site IRB Approval

IRB #: IRB-2021-326
Title: Critical Thinking in the Undergraduate Classroom: Attitudes and Preferences from Emerging and Returning Adult Learners
Creation Date: 9-29-2021
End Date:
Status: Approved
Principal Investigator: Steven Koether
Review Board: SHSU IRB
Sponsor:

Study History

Submission Type	Initial	Review Type	Limited	Decision	Exempt - Limited IRB

Key Study Contacts

Member	Steven Koether	Role	Principal Investigator	Contact	stevenkoether@shsu.edu
Member	Steven Koether	Role	Primary Contact	Contact	stevenkoether@shsu.edu

Informed Consent

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM

RESEARCH ADVERTISEMENT

Project Title: Critical Thinking in the Undergraduate Classroom: Attitudes and Preferences from Emerging and Returning Adult Learners

Investigators: Dr. Junghwan Kim & Dr. Elizabeth A. Roumell

Student Investigator: Steven D. Koether

Why am I being asked to take part in this research study?

You were selected as a possible participant in this study because you completed the Foundations of Science course at Sam Houston State University. You must be 18 years of age or older to participate.

Why is this research being done?

The purpose of this study is to explore the attitudes and preferences of undergraduate learners, both emerging and returning adults, toward critical thinking instruction.

How long will the research last?

The interview will take about 60 minutes.

What happens if I say "Yes, I want to be in this research"?

If you decide to participate, please do the following: Reply to the email invitation and schedule a time to meet virtually (over Zoom).

What happens if I do not want to be in this research?

Your participation in this study is voluntary. You can decide not to participate in this research, and it will not be held against you. You can leave the study at any time.

Is there any way being in this study could harm me?

There are no sensitive questions in this survey that should cause discomfort. However, you can skip any question you do not wish to answer or exit the survey at any point.

What happens to the information collected for the research?

Your email address will be stored separately from your interview responses and is only being collected to follow up with you. All identifiable information will be kept on a password protected computer and is only accessible by the research team. Compliance offices at Texas A&M may be given access to the study files upon request.

Your information will be kept confidential to the extent allowed by law. The results of the research study may be published but your identity will remain confidential.

Video Recording

This is completely voluntary. As part of this project, an audio/video recording will be made of you during your participation in this research project for transcription purposes only. The session will be password protected and require a waiting room. In any use of the audio/video recording, your name will not be identified. You may request to stop the recording at any time or to erase any portion of your recording. If you wish, you can review the recording. The recording, transcripts, and associated data will be three years after the completion of the study.

Some questions may elicit responses with sensitive or private information. Participants are encouraged to choose a private location to conduct the video conference call. Participants may choose, at any time, to move to a more secure location or refrain from answering a question.

What else do I need to know?

If you agree to take part in this research study, we will provide you with a $25 gift card sent to the email address you provide at the end of the survey. This is optional if you do not want to provide your email address.

Who can I talk to?

Please feel free to ask questions regarding this study. You may contact me later if you have additional questions or concerns at (936)294-4242 or by email: StevenKoether@tamu.edu

You may also contact the Human Research Protection Program at Texas A&M University (which is a group of people who review the research to protect your rights) by phone at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu for additional help with any

questions about the research

voicing concerns or complaints about the research obtaining answers to questions about your

rights as a research participant concerns in the event the research staff could not be reached the

desire to talk to someone other than the research staff

Please email me at the conclusion of the interview for information about compensation. Since

this communication will happen outside of the interview environment, and I do not have the

ability to link responses to identifying information, I will be able to sending participants their

incentive.

Research Advertisement – Emerging Adult

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM

RESEARCH ADVERTISEMENT

Subject Line: Former FoS students – Opportunity to participate in a research study

Bearkats,

You are invited to participate in an interview for a research study through the College of Education and Human Development at Texas A&M University.

To participation in the study, you must:

1. Be 18 years of age or older

2. Have completed the Foundations of Science (BIOL 1436) undergraduate course at Sam Houston State University

3. Be able to participate in an interview conducted in English

Why Is This Study Being Done?

Improving students' critical thinking skills is not an easy task. Only a small number of courses have been able to document significant improvements in one semester. You have participated in one of these courses and we would appreciate learning more about your experiences.

The purpose of this study is to explore the attitudes and preferences of undergraduate learners, both emerging and returning adults, toward critical thinking instruction.

If you choose to participate you will be asked a series of interview questions. Participants will receive a $25 gift card at the completion of the interview. This interview process includes an interview, review of interview notes from interview, response to follow-up questions.

Interviews will be conducted by Study Protocol Director/Texas A&M University doctoral student Steven D. Koether. If you are interested in participating, please contact Steven D. Koether at StevenKoether@tamu.edu / 936-294-4242.

This study has been approved by the Texas A&M Institutional Review Board: IRB2021-1222, toll free at 1-855-795-8636, or by email at irb@tamu.edu.

Thank you,

Steven D. Koether

Steven Koether@tamu.edu

Doctoral Student, EAHR

Texas A&M University

Research Advertisement – Adult

TEXAS A&M UNIVERSITY HUMAN RESEARCH PROTECTION PROGRAM

RESEARCH ADVERTISEMENT

Subject Line: Former Returning Adult FoS students – Opportunity to participate in a research study

Bearkats,

You are invited to participate in an interview for a research study through the College of Education and Human Development at Texas A&M University.

To participation in the study, you must:

1. Be a non-traditional, returning adult, undergraduate (typically 25+ years of age)

2. Have completed the Foundations of Science (BIOL 1436) undergraduate course at Sam Houston State University

3. Be able to participate in an interview conducted in English

Why Is This Study Being Done?

Improving students' critical thinking skills is not an easy task. Only a small number of courses have been able to document significant improvements in one semester. You have participated in one of these

courses and we would appreciate learning more about your experiences.

The purpose of this study is to explore the attitudes and preferences of undergraduate learners, both emerging and returning adults, toward critical thinking instruction.

If you choose to participate you will be asked a series of interview questions. Participants will receive a $25 gift card at the completion of the interview. This interview process includes an interview, review of interview notes from interview, response to follow-up questions.

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This study has been approved by the Texas A&M Institutional Review Board: IRB2021-1222, toll free at 1-855-795-8636, or by email at irb@tamu.edu.

Thank you,

Steven D. Koether

StevenKoether@tamu.edu

Doctoral Student, EAHR

Texas A&M University