

THE RELATIONSHIP BETWEEN LANGUAGE MINDSETS AND FOREIGN LANGUAGE  
ANXIETY

by

Jared David Barber

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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## ABSTRACT

The learning of a second language is distinct from other types of learning, and it involves a complex interplay of cognitive, affective, motivational, and emotional factors. Language mindset, the beliefs that learners hold regarding their language learning ability, is one important affective factor, as is language anxiety. The purpose of this quantitative correlational study was to discover whether a relationship exists between language mindsets and foreign language anxiety for university second language students at a large central Virginia university. The study used four bivariate linear regressions to examine correlations between the predictor variable, foreign language anxiety, and four language mindset-related variables, overall language mindset and its three subdimensions. Results indicated a significant, moderate, positive correlation between foreign language anxiety and fixed mindsets on three of the variables, and a significant, small, positive correlation on the fourth. The study therefore demonstrated a relationship between language mindset and foreign language anxiety, such that higher levels of anxiety correlate with fixed language mindsets, and lower levels with growth mindsets. Suggested areas of future research include duplicating this research with different demographics and conducting multiple regression analyses between language mindsets and several other variables of interest.

*Keywords:* language mindsets, foreign language anxiety, language learning, second language acquisition, fixed mindset, growth mindset

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### **List of Abbreviations**

Age Sensitivity L2 Learning Beliefs (ASB)

Content Learning Mindsets (CM)

Dweck Mindset Inventory (DMI)

First/Native Language (L1)

Foreign Language Anxiety (FLA)

Foreign Language Classroom Anxiety Scale (FLCAS)

General Language Intelligence Beliefs (GLB)

Language Mindsets (LM)

Language Mindsets Inventory (LMI)

Mindsets—Goals—Responses (MGR)

Mindsets of Language Learning Scale (MLLS)

Rejection Sensitivity (RS)

Second Language (L2)

Second Language Acquisition (SLA)

Second Language Aptitude Beliefs (L2B)

Second Language Teacher Education (SLTE)

Statistical Package for Social Sciences (SPSS)



## **CHAPTER ONE: INTRODUCTION**

### **Overview**

Students' language mindsets and language anxiety impact their ability to learn a second language. While both language mindsets and language anxiety have been studied individually, their relationship to each other has yet to be explored. This chapter will provide a detailed introduction to the topic of this dissertation, the relationship between language mindsets and foreign language anxiety.

### **Background**

The learning of a second language (L2) is distinct from other types of learning and involves a complex interplay of cognitive, affective, motivational, and emotional factors (Dörnyei, 2005, 2009, 2015; Ellis, 2008, 2010; Kumar & Nazneen, 2016; Lou & Noels, 2016, 2017, 2019a, 2019b; VanPatten, 2017; VanPatten & Benati, 2010). Studies in educational psychology rarely address L2 learning as a domain distinct from other types of learning. At the same time, studies in L2 learning do not always appropriate and adapt the theories and models of educational psychology. Recently, studies have begun to incorporate the theory of mindsets, from the field of educational psychology, into L2 learning (Lou & Noels, 2016, 2017, 2019a, 2019b). These studies have concluded that the belief that one brings into one's L2 learning process about one's L2 learning ability can actually determine one's L2 learning ability. That is, if students believe that they can improve in an L2 with hard work, they will; if they believe that L2 learning abilities are largely innate and unaffected by effort, they will improve less.

Decades' worth of literature on mindsets has shown that growth mindsets correlate positively with learning outcomes and negatively with classroom anxiety, and that fixed mindsets correlate negatively with learning outcomes and positively with classroom anxiety

(Burnette et al., 2013; Claro et al., 2016; Haimovitz & Dweck, 2017). However, since research in L2 learning has shown that learning an L2 is distinct from any other type of learning, findings on concepts such as motivation, anxiety, learning, or mindsets or other implicit theories cannot extend to the domain of language learning without more research (Ellis, 2008, 2010; Kumar & Nazneen, 2016; Lou & Noels, 2016, 2017, 2019a, 2019b; VanPatten, 2017; VanPatten & Benati, 2010). Mindset research and L2 learning research have historically existed in parallel, with almost no research applying the concept of mindsets to language learning until recently (Altunel, 2019; Lou & Noels, 2016, 2017, 2019a, 2019b; Yang & Priyadarshini, 2019).

Only recently have researchers begun to bridge this gap between findings in mindset research on one hand and L2 learning research on the other. Regrettably, many of these studies begin with the flawed assumption that learning mindsets for content areas such as history, science, math, etc., are relevant to language learning (Altunel, 2019; Yang & Priyadarshini, 2019). This assumption is proven false in a series of studies by Nigel Lou and Kimberly Noels (2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b), which establish the concept of language mindsets (LMs) as distinct from other learning mindsets. These authors have created and validated an instrument for measuring LMs, and in several correlational and quasi-experimental studies have demonstrated that strong relationships exist between LMs and several L2 learning factors such as students' learning goals and consequent behaviors (Lou & Noels, 2016), migrants' sensitivity and anxiety toward being rejected by the majority language group due to their self-perceived L2 deficiencies (Lou & Noels, 2019a, 2020a), and more.

More research is necessary to connect the relatively new theory of LMs to other well-researched L2 learning theories. One such well-researched affective L2 learning factor is foreign language anxiety (FLA), a field whose literature has shown that higher levels of anxiety in the

language classroom correlate to poorer performance and outcomes (Awan et al., 2010; Horwitz, 2010; Horwitz et al., 1986; Torres & Turner, 2016; Zhang, 2019; Zheng & Cheng, 2018). FLA exists as a well-established concept in L2 learning literature, with decades' worth of publications supporting its negative correlation to L2 classroom achievement, persistence in L2 classes, L2 learning motivation, self-efficacy, and more (Awan et al., 2010; Horwitz, 2010; Horwitz et al., 1986; Torres & Turner, 2016; Zhang, 2019; Zheng & Cheng, 2018). While studies in LMs point toward a likely relationship between FLA and LMs, no studies have as yet verified that this relationship exists. Because of the preponderance of evidence in the literature showing that FLA predicts success in several measures, establishing such a relationship carries implications for the field of L2 pedagogy. If FLA is correlated to LMs, and if FLA predicts L2 success, then LMs must predict L2 success as well, and therefore merit more attention by L2 educators and researchers.

Further, much of the research so far conducted on LMs has focused on native speakers of languages other than English and their experiences in learning English as immigrants to English-majority countries (Lou & Noels, 2019a, 2020a). While native English-speaking L2 learners in university-level classrooms have received some attention in the L2 literature (Lou & Noels, 2016), this demographic, consisting of roughly 1.5 million students (Flaherty, 2018), warrants more examination.

### **Problem Statement**

Because LM research is relatively new, many areas remain to be explored, including LMs' potential relationships to university L2 students' FLA. Exploring this relationship is critical for several reasons. First, studies on mindsets in other learning domains have shown that mindset-based interventions lead to marked improvement in student achievement, learner goal

orientations, anxiety, and more (Burnette et al., 2013; Claro et al., 2016). Second, other research has shown that FLA has a negative effect on student achievement (Alsowat, 2016; Horwitz, 2010; Horwitz et al., 1986; Torres & Turner, 2016; Zhang, 2019; Zheng & Cheng, 2018). L2 classrooms are ripe for interventions that might lead to student improvement in all outcomes; they are often classrooms characterized by low motivation, high anxiety, and low achievement (Molway & Mutton, 2019). In relating LMs research to another important language learning variable, FLA, the author hopes to broaden the scope of LMs research and contribute to the discussion the importance of bringing an awareness of LMs to the L2 classroom. The problem is that no studies have yet established a relationship between LMs, along with their subdimensions, and FLA.

### **Purpose Statement**

The purpose of this quantitative correlational study was to discover whether a relationship exists between LMs and FLA for university L2 students at a large central Virginia university. The author used a correlational, cross-sectional survey design with bivariate linear regression analysis. The study tested the strength of the relationship between the predictor variable, FLA, and four LM-related criterion variables. These criterion variables are the overall LM along with three subdimensions of LMs: general language intelligence beliefs (GLB), second language aptitude beliefs (L2B), and age sensitivity L2 learning beliefs (ASB).

The study was cross-sectional, meaning that data were collected at one point in time, rather than longitudinal, with data collected over a period of time. Cross-sectional research is ideal when exploring relationships between variables in a new domain, or when relating a new variable to a more well-researched domain (Spector, 2019), as is the case in this exploratory study. Further, longitudinal research runs the risk of leading to erroneous inferences on

relationships between variables, especially if there may be a causal relationship at play whose timeframe is unknown (Spector, 2019). In short, the cross-sectional approach was ideally suited to this exploratory study, and its ease of implementation over other approaches, as a first step leading to further and more quasi-experimental research, recommended it (Creswell & Creswell, 2018).

The author made use of two survey instruments, one measuring LM and its subdimensions, and another measuring FLA. Survey research is economical and rapid and does not present some of the logistical challenges of quasi-experimental or experimental research (Creswell & Creswell, 2018). The population sampled was all students enrolled in an L2 class at the beginner-intermediate and intermediate level at the university under study, meaning here students in their second, third, or fourth semester of L2 study. The university under study offers classes in Spanish, Mandarin Chinese, French, German, Russian, and Arabic.

### **Significance of the Study**

Nearly half of all universities in the United States require their undergraduate students to engage in some level of study in a language other than English (Flaherty, 2018). Roughly 1.5 million undergraduate students in the United States are enrolled in some form of L2 class, but this number is declining (Flaherty, 2018). Given both the prevalence of language requirements and the seeming decline in interest in language study across universities, understanding how to increase interest and success is more important now than ever. LM research shows promise for helping to increase student success in the L2 classroom. Given that mindset interventions in non-L2 domains have been successful in improving student outcomes and retention (Claro et al., 2016), it stands to reason that LM interventions ought to prove successful in the L2 classroom. That is, if LMs prove to be consequential to student outcomes in the L2 classroom, similar

interventions ought to increase interest and retention in the L2 classroom. This assumption requires empirical exploration and exceeds the scope of this paper. However, the purpose of this study was to further establish the significance of LMs by relating them to FLA, a goal which, if met, justifies such further exploration in the future.

FLA research consistently supports the claim that lower levels of FLA correlate with positive behaviors and outcomes for L2 students (Horwitz, 2010; Horwitz et al., 1986; Zhang, 2019; Zheng & Cheng, 2018). Given the preponderance of evidence demonstrating the importance of FLA as a predictor for student achievement, it stands to reason that, should a strong relationship exist between FLA and LMs, LMs would likely also be strong indicators of student achievement. This relationship must be established, however. Where studies have examined the impact of LMs on student behaviors and outcomes, they consistently support its importance (Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b). However, this area of study is new and ripe for further exploration. Before quasi-experimental studies can proceed to test the impact of LM interventions, and before other studies can proceed to further explore the potential predictive and causal relationships between FLA and LMs, their relationship must be firmly established.

Studies in LMs thus far have focused primarily on learners of English, though some studies have focused on English-speaking students of other languages (Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b). In any case, most participants thus far have been from a university in midwestern Canada. This dissertation expands the generalizability of these findings by examining LMs of students at a university in Virginia, United States. Further, this dissertation integrates the well-established field of FLA research and the burgeoning field of LMs research, thereby helping to bring LMs more into the mainstream of L2 learning literature. Finally, this

dissertation will reach an audience typically well versed in general educational psychology, but less so in L2 learning, thereby sparking dialogue between practitioners in both education teacher preparation programs and L2 programs.

### **Research Questions**

**RQ1:** Can Foreign Language Anxiety predict overall Language Mindset?

**RQ2:** Can Foreign Language Anxiety predict General Language Intelligence Beliefs?

**RQ3:** Can Foreign Language Anxiety predict Second Language Aptitude Beliefs?

**RQ4:** Can Foreign Language Anxiety predict Age Sensitivity L2 Learning Beliefs?

### **Definitions**

1. *Second Language (L2)* - A language which an individual is learning in addition to their native language (Cebrian & Carlet, 2014).
2. *Language Mindset (LM)* - A learner's beliefs about whether L2 learning abilities are largely innate or able to be improved through effort (Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b).
3. *Content Learning Mindset (CM)* - A learner's beliefs about whether their learning abilities in domains other than L2 learning, such as in science, math, history, or other content areas, are largely innate or able to be improved through effort (Dweck, 2006).
4. *Fixed Mindset* - The belief that learning abilities are largely innate; that one is either innately gifted or not in learning in one or several domains (Dweck, 2006; Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b).
5. *Growth Mindset* - The belief that learning abilities can be improved through effort; that strategy and persistence determine learning rather than innate giftedness in one or several domains (Dweck, 2006; Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b).

6. *Incremental Mindset* - A term used interchangeably with growth mindset (Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b).
7. *Entity Mindset* - A term used interchangeably with fixed mindset (Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b).
8. *Foreign Language Anxiety* - The negative beliefs, feelings, and behaviors students experience as part of the unique process of L2 classroom learning (Horwitz et al., 1986).
9. *Second Language Learning* - The cognitive process of learning and acquiring a language other than one's native language, both via guided instruction and conscious process, and via subconscious acquisition through natural language acquisition processes (Chen, 2018; Ellis, 2008).
10. *Second Language Acquisition (SLA)* - Often treated in the literature as distinct from language *learning*, acquisition refers to the wholly subconscious process of processing language input to gain proficiency in a language other than one's native language, though SLA and L2 learning are often treated synonymously in the literature (Chen, 2018; Ellis, 2008). This study focuses on learning as both an instructed, conscious process, and as a subconscious acquisition process as the result of classroom instruction, and therefore uses the terms L2 learning and SLA interchangeably.



## **CHAPTER TWO: LITERATURE REVIEW**

### **Overview**

The author systematically reviewed literature to explore the role of language mindsets (LMs) and foreign language anxiety (FLA) in second language (L2) learning. In this chapter, the author presents his summary and synthesis of this review. In the first section, the author presents relevant theories of content learning mindsets (CMs), LMs, and FLA. In the second section, the author synthesizes current literature regarding each of these theories, demonstrating a gap in need of further exploration, that of research relating LMs and FLA to one another; this synthesis provides the rationale for the current study. Finally, the author summarizes the chapter.

### **Theoretical Frameworks**

Language mindset theory has as its precursor implicit theories, which describe fixed and growth mindsets and their impact on learning. LM theory also draws from the field of L2 learning, which establishes that languages are learned differently than are content areas such as science, math, history, etc. (Chen, 2018; Ellis, 2008, 2010; Kumar & Nazneen, 2016; VanPatten, 2017; VanPatten & Benati, 2010). Meanwhile, FLA research has long examined the relationship of FLA to language learning, classroom achievement, learning motivation, and more. LM research has examined the relationships between LMs and certain learning variables but has as yet to establish the relationship between LMs and FLA. In this study, the author will build upon the foundation of implicit theories to expand into the realm of LMs, and then examine FLA in relationship to LMs. Therefore, in this section, the author presents an overview of implicit theories, LM theory, and FLA theory.

### **Implicit Theories**

Implicit theories, also referred to in the literature as mindset theory, have their origin primarily in the work of Carol Dweck (Dweck, 1999, 2016; Dweck & Leggett, 1988), a professor of psychology at Stanford University. Dweck's background is psychology. She credits her mindset theory's emergence to some of her earlier work (Dweck & Reppucci, 1973), which focused on what would later become her mastery and performance goals constructs (Dweck & Leggett, 1988). Her mindsets work culminates in her seminal 1999 *Self-Theories: Their Role in Motivation, Personality and Development*. Her research has formed the theoretical base for and inspired decades' worth of publications in educational psychology.

### ***The Theory***

Implicit theories or beliefs contrast with explicit beliefs, which individuals are consciously aware of and can articulate; implicit theories are those that exist at an unconscious or subconscious level and typically defy articulation (Dornyei & Ryan, 2015). However, despite the fact that implicit theories are not easily identified or articulated, they are not less important and powerful in influencing and determining individuals' behavior patterns (Dornyei & Ryan, 2015). In fact, in their 1988 work, Dweck and Leggett state that "individuals' implicit theories orient them toward specific goals [which] set up different patterns" of behavior (p. 256).

Implicit theories can be categorized either as entity mindsets or incremental mindsets, terms which Dweck (1999) later updated to fixed mindsets and growth mindsets, respectively. Fixed mindsets break further into one of two categories: fixed with high perceived innate ability and fixed with low perceived innate ability (Dweck & Leggett, 1988). For brevity, the author of this study will refer to these three mindsets as growth, fixed-high, and fixed-low. Each mindset is characterized by its own type of goal, with associated behavior patterns.

**Fixed Mindset Goals and Behaviors.** Individuals with fixed mindsets hold performance goals, which involve seeking praise or avoiding negative judgments (Dweck & Leggett, 1988). Those with a fixed-high mindset will have mastery-oriented behaviors, meaning they seek challenges and are persistent, but with the goal of obtaining praise (Dweck & Leggett, 1988). Those with a fixed-low mindset will exhibit helplessness patterns, meaning they will avoid challenges and give up easily (Dweck & Leggett, 1988). Individuals with a fixed mindset see their abilities as something they have no control over; effort will lead to success only insofar as the individual's inherent abilities predispose them for success in general (Dweck & Leggett, 1988). Effort, these individuals believe, cannot lead to an improvement in abilities (Dweck & Leggett, 1988), hence the term "fixed."

**Growth Mindset Goals and Behaviors.** By contrast, individuals with growth mindsets will have learning goals as opposed to performance goals (Dweck & Leggett, 1988). Learning goals mean a desire for learning itself, rather than for obtaining praise or avoiding criticism (Dweck & Leggett, 1988). Individuals with a growth mindset see challenges as the means to learning, and so will seek challenges irrespective of whether they anticipate a successful outcome in terms of a grade or other such metric (Dweck & Leggett, 1988). Dweck and Leggett (1988) refer to this hunger for learning and challenge seeking as mastery-oriented behavior. For these individuals, learning itself is evidence of success (Dweck & Leggett, 1988). Whereas fixed mindset individuals believe they have no control over their abilities and competencies, growth mindset individuals believe the opposite (Dweck & Leggett, 1988), namely that they can grow their abilities through effort, hence the term "growth." Whether these individuals have low or high self-perception, they will exhibit mastery behaviors with learning itself as the end goal.

**Updates to the Theory.** In her 1999 work, Dweck more clearly delineates the negative effects of fixed mindsets, including the fact that fixed mindsets can sometimes be masked when they are accompanied by a high self-perception of ability, creating what she calls a false growth mindset. She discusses the ways in which fixed mindsets are primed, meaning that mindsets are not immutable and persistent, but rather context specific, and can be changed based on the types of feedback students receive on their efforts (Dweck, 1999). Praising or criticizing individuals based on their abilities primes either a fixed-high or fixed-low mindset, while praising individuals based on their efforts, strategies, and thought processes primes a growth mindset (Dweck, 1999, 2016). Dweck (1999, 2016) provides insights on how to prime growth mindsets instead of fixed mindsets, in the classroom and beyond.

Mindsets are also domain specific, meaning that individuals can hold a fixed mindset in certain learning areas, and a growth mindset in others (Dweck, 1999; Dweck & Yeager, 2019; Lou & Noels, 2016, 2017). For example, a student could hold a fixed-high mindset for their science-learning ability, a fixed-low mindset for their athletic-improvement ability, and a growth mindset for their language-learning ability. This means that studies must focus not on mindsets generally, but on mindsets for distinct learning domains. Language learning especially warrants separate focus, as language learning differs in kind from other types of learning.

### ***Second Language Learning Versus Content Learning***

L2 learning is a domain distinct from other types of learning, a fact which has necessitated its study as distinct from other theories of education and learning (Chen, 2018; Ellis, 2008, 2010; Kumar & Nazneen, 2016; VanPatten, 2017; VanPatten & Benati, 2010). The field of Second Language Acquisition (SLA), as a branch of Applied Linguistics, exists for this reason. The field benefits from more than 50 years of research tradition, and is multidisciplinary,

encompassing such areas as psychology, neuroscience, sociology, linguistics, education, and more (Dornyei, 2015; Ellis, 2008, 2010; Mercer & Ryan, 2016). One area that has received special attention in SLA research, historically and even more so recently, is the role of affective factors in L2 learning. This interest has sparked a subdiscipline within SLA research—that of language psychology (Dornyei, 2015; Mercer & Ryan, 2016). Research on L2 learner motivation, self-efficacy, resilience, and more, and now on LMs, falls within this field.

L2 learning refers to cognitive processes of learning and acquiring a language other than one's native language (L1), both via guided instruction and conscious processes, and via subconscious acquisition through natural language acquisition processes (Chen, 2018). SLA is often treated in the literature as distinct from language *learning*; acquisition typically refers to the wholly subconscious process of processing language input to gain proficiency in a language other than one's L1. Regardless, SLA and L2 learning are often treated synonymously in the literature (Chen, 2018). The author of this current paper focuses on learning as both an instructed, conscious process, and as a subconscious acquisition process as the result of classroom instruction, and will therefore use the terms interchangeably.

That L2 learning differs from other types of learning means that one must not automatically assume that findings in research on other areas of learning can be applied to L2 learning. This fact has inspired Lou and Noels's (2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b) and other researchers' work on LMs specifically—examined below—which contrast with content area learning mindsets.

### ***Mindsets Versus Language Mindsets***

Content area learning, which includes school-based learning in sciences, math, history, social sciences, etc., differs in kind from L2 learning (Ellis, 2008, 2010; Kumar & Nazneen,

2016; VanPatten, 2017; VanPatten & Benati, 2010). Unfortunately, in Dweck's work and in the decades of subsequent mindsets research, researchers have rarely applied insights from the field of L2 learning research to the domain of mindsets to explore whether a relationship exists between mindsets and L2 learning. In the next section, the author provides an overview of the emerging field of LM research, which adapts mindsets research based on the findings of L2 learning research. To distinguish between LMs and general, non-language-related mindsets, the author will henceforth use the terms LMs and content learning mindsets, or CMs. CM encompasses in this paper the findings of mindsets research on student achievement in various learning domains, but excludes any research relating mindsets to L2 learning. This understanding is critical in explaining the need for this study, as many studies on CMs and content learning anxiety exist, whose findings cannot be applied to L2 learning and FLA.

### **Theory of Language Mindsets**

This section will introduce the most pivotal theoretical framework for this study, that of LMs. Nigel M. Lou and Kimberly A. Noels (2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b) are the foremost originators of LM theory, having published several works in recent years on the topic. They credit the genesis of their ideas to previous work by Sarah Mercer and Stephen Ryan (Mercer, 2012; Mercer & Ryan, 2010; Ryan & Mercer, 2012), who in various publications discuss the theoretical relationship between mindsets and L2 learning. While Mercer's and Ryan's work is mostly theoretical, presenting the need for understanding the relationship between L2 learning and mindsets in light of the uniqueness of the former and the importance of the latter, Lou and Noels's work involves more empirical research, including correlational and quasi-experimental research. The authors further developed and validated an instrument to measure LMs, the Language Mindsets Inventory (LMI), which will serve as one of the pivotal

instruments in this current study (Lou & Noels, 2016, 2017). While Lou and Noels often opt to use the terms “incremental” and “entity” in their work (Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b), this author will use the terms “growth” and “fixed.”

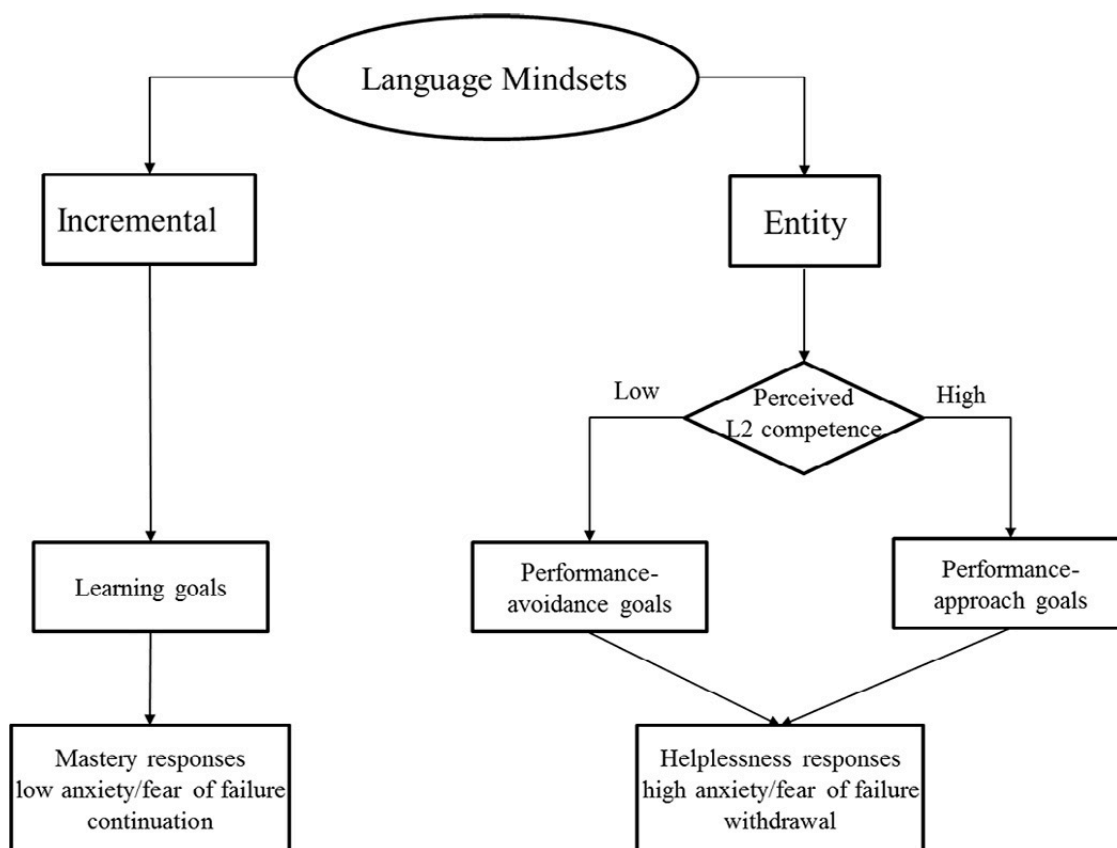
In short, then, the body of work by Lou and Noels (2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b) establishes LMs as a domain distinct from CMs and explores the relationships of both fixed and growth LMs to other variables. The results of LMs research thus far do parallel key findings in CMs research, namely that the LMs an L2 learner holds can in essence determine the student’s L2 learning abilities—if the student holds a growth mindset, they will seek to improve by effort and show greater persistence and resilience; if the student holds a fixed mindset, they will be more likely to become discouraged and exhibit other negative motivational behaviors (Lou & Noels, 2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b). The strength of these findings and their parallel with the consistent findings of CMs research recommend more research of LMs, hence this current study. Lou and Noels (2016, 2017) further propose a theoretical model to encompass the relationship between LMs and L2 learning, the Mindsets—Goals—Responses model (MGR model) and discuss three different categories of fixed and growth LMs. As these ideas form the foundation for this current study, the author examines each in detail below.

### ***Mindsets—Goals—Responses Model***

Lou and Noels (2016, 2017) developed and implemented a theoretical model for L2 learning known as “The Mindsets—Goals—Responses Model of Second Language Learning in Failure Situations.” This M—G—R (MGR) model is based on Dweck and Leggett’s (1988) sociocognitive model of achievement motivation and Dweck’s (1999) work on implicit theories. Like the above discussion on implicit theories, the MGR model involves growth mindsets, fixed-

high mindsets, and fixed-low mindsets, but with regard to L2 learning abilities and efforts specifically (Lou & Noels, 2016, 2017). The MGR model states that L2 learners with growth mindsets will seek to learn language, have lower anxiety and fear of failure, and continue to learn, while those with fixed mindsets will not. Fixed mindsets are divided into low (i.e., a belief that one is simply “bad” at learning language) and high (i.e., that one is simply “gifted” at learning language). Both entity mindsets result in anxiety, fear of failure, and discontinuation of language learning. In short, then, the type of LM that an L2 learner has will predict his or her goals in L2 learning, which will in turn predict his or her responses to challenging situations. Lou and Noels (2016) present the model succinctly in diagram form, which the author reproduces in Figure 1.



**Figure 1***The M—G—R Model*

*Note.* From “Changing Language Mindsets: Implications for Goal Orientations and Responses to Failure In and Outside the Second Language Classroom,” by N. M. Lou and K. A. Noels, 2016, *Contemporary Educational Psychology*, 46, p. 23.

<http://dx.doi.org/10.1016/j.cedpsych.2016.03.004>

### ***The Three Categories of Language Mindsets***

The complexity of LMs goes beyond the binary of fixed and growth mindsets to three separate but related dimensions: general language intelligence beliefs (GLB), second language aptitude beliefs (L2B), and age sensitivity L2 learning beliefs (ASB) (Lou & Noels, 2016, 2017).

**General Language Beliefs and Second Language Aptitude Beliefs.** GLBs describe an individual’s overall mindset regarding whether language intelligence is fixed or growable, and

are distinct from L2Bs, which describe an individual's beliefs about whether effort in learning an L2 leads to an increase in his or her abilities in the L2 (Lou & Noels, 2016, 2017). The distinction between GLB and L2B is important, as studies show that a belief that language abilities can be improved through effort (GLB) does not predict such a belief toward the learning of an L2 (L2B) (Lou & Noels, 2016). In other words, some people may believe that language aptitude in general is a natural ability, while L2 learning requires effort, or that no amount of effort can improve either aptitude (Lou & Noels, 2016).

**Age Sensitivity L2 Learning Beliefs.** ASBs are conditioned by lay beliefs about age and language learning, often formed by misunderstandings of findings in SLA literature. The popularization of the critical period hypothesis has led to a strong reading of the hypothesis which fuels misunderstandings. The critical period hypothesis essentially states that SLA happens best before the onset of puberty due to brain plasticity changes which set in at puberty (Birdsong, 2018). The critical period has been proven; preadolescents do acquire certain elements of an L2 more quickly and more naturally than postpubescents and adults (Birdsong, 2018), and brain changes leading to overall decline in cognitive faculties as a result of aging indirectly lead to less-apt SLA in adults (Birdsong, 2018; Li et al., 2014; Ullman, 2004). However, it is important to note that it is a matter of degree; proponents of the hypothesis argue only that preadolescents acquire certain features of language more naturally, not that they learn a language better in every way, nor that adults are unable to master an L2 (Abello-Contesse, 2008; Birdsong, 2018; Fromont et al., 2018; Li et al., 2014). In fact, adults learn and acquire certain language features better and more rapidly than children due to their higher cognitive abilities and learning strategies (Abello-Contesse, 2008; Birdsong, 2018; Ortega, 2008). It is more accurate to say, then, that there is a *sensitive* period, rather than a *critical* period, of L2 acquisition, and that

any age-based acquisition sensitivity associated with younger learning ages is arguably offset by cognitive and learning strategies present in later learning ages. The lay misinterpretation of the critical period hypothesis, however, leads many people to believe that one cannot truly learn an L2 past a certain point of adolescence (Lou & Noels, 2016, 2017).

Due to this widespread misunderstanding regarding the effect of age on language learning and acquisition, many individuals believe that children learn an L2 better than adults, or even that adults cease to be able to learn an L2 after a certain age (Lou & Noels, 2016, 2017). ASBs therefore describe an individual's beliefs with regard to whether L2 learning abilities are growable until a certain age and fixed beyond it, or whether they are growable throughout a learner's life (Lou & Noels, 2016, 2017).

**The Interaction of the Three Beliefs.** Lou and Noels (2016, 2017) argue that GLB, L2B, and ASB are distinct; that is, people might have incremental beliefs in one area and entity beliefs in another. Specifically, there seems to be a hierarchy wherein people consider some language abilities as incremental up to a certain age but fixed beyond a certain age. This means that, depending on the age of the persons in question, and depending on what they have heard and understood regarding the critical period hypothesis, their ASB may be more likely to lead to a fixed L2B.

The three aspects of language mindsets, GLB, L2B, and ASB, together with the two major categories of each, fixed or growth, lead to a six-factor, complex interaction, which the authors argue captures the overall complexity of LMs (Lou & Noels, 2017). They base the development of their survey instrument, the Language Mindsets Inventory (LMI), on these six factors. It may be possible for an individual to tend more toward a growth mindset in one domain, and more toward a fixed-high or fixed-low in another. Taken altogether and using the

overall score of the LMI as the ultimate factor, it is possible to place an individual's mindset as more fixed (high or low) or growth. The contention of the hypotheses in this current study was that higher FLA will predict a tendency toward a more fixed LM, generally and in each of the three subdimensions. Given that the participants were young adults (postpubescent) who are likely to have been exposed to some version of the critical period hypothesis, it is likely that ASB will strongly coincide with overall LM; in particular, students will likely condition their belief in the malleability of L2 learning on their age.

### ***Chronic Versus Primed Language Mindsets***

LMs are chronic, meaning that they are consistent over time without targeted intervention toward intentional change (Lou & Noels, 2016). However, Lou and Noels (2016, 2020b) show that LMs can be primed—that is, manipulated—via situational cues. Situational cues can have a strong effect temporarily, but “although priming can shift learners’ language mindsets, it is possible, perhaps even likely, that participants will return to their chronic tendency once the situational cues disappear” (Lou & Noels, 2016, p. 30). This study made no use of manipulation or priming; chronic LMs were the area of interest.

### ***Summary of Language Mindsets***

Dweck's (1999) mindset theory is insufficient to deal with LMs as a domain distinct from other types of mindsets, which necessitated the development of LM theory. LM theory applies findings from L2 learning research to mindset theory and presents a complex picture of LMs as involving not only general fixed or growth mindsets, but also GLB, L2B, and ASB. The MGR model encapsulates the basic interaction between LMs and resultant learning behaviors of students. Lou and Noels's (2016, 2017, 2019a, 2019b, 2020b) body of work examines the

relationship between LMs and certain other variables, but no one has as yet examined the relationship between LMs and FLA.

### **Theory of Foreign Language Anxiety**

Research on learning anxieties has shown a consistent, negative relationship between learning anxieties and such factors as emotional intelligence, classroom achievement, and more (Jan et al., 2017). Further, research shows that learning anxieties can be limited to certain situations, such that “psychologists use the term specific anxiety reaction to differentiate people who are generally anxious in a variety of situations from those who are anxious only in specific situations” (Horwitz et al., 1986, p. 125). In their 1986 work, Elaine Horwitz et al. point out that L2 researchers and theorists widely acknowledge that a specific anxiety in the realm of L2 learning exists, which they name foreign language anxiety (FLA). In this section, the author gives a background of FLA theory, elaborates on its subdimensions, and bridges it to LM research.

#### ***Background of the Theory***

Early research in language learning and related anxiety did not adequately define and explore FLA and its interaction with L2 learning. Horwitz et al. (1986) therefore set forth a theory of FLA which has inspired hundreds of research publications in the intervening decades (Al-Shboul et al., 2013; Horwitz, 2010; Teimouri et al., 2019; Zhang, 2019). In their 1986 work, Horwitz et al. developed and later validated the Foreign Language Classroom Anxiety Scale (FLCAS) (Horwitz, 1986; Horwitz et al., 1986), whose use in the literature has clearly and systematically established negative correlations between high FLA and various measures of L2 performance, including students’ L2 classroom grades, persistence, self-efficacy, and more (Al-Shboul et al., 2013; Horwitz, 2010; Teimouri et al., 2019; Zhang, 2019).

FLA is unique to language learning, possible for those with little or no other learning anxieties, and ubiquitous in all proficiency levels and ages. Horwitz et al. (1986) define FLA as “a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process” (p. 128). Because it is unique to the L2 learning process, it is possible for students who are otherwise confident and who do not suffer from anxiety in content learning areas to suffer severe FLA in the L2 classroom (Horwitz et al., 1986).

### ***Moderator Variables Affecting FLA***

In the intervening decades since Horwitz et al.’s (1986) work, researchers have adapted the FLCAS and developed associated measures to look at nuanced language anxieties, such as skill-specific anxieties in reading, writing, listening, and speaking (Al-Shboul et al., 2013; Teimouri et al., 2019; Zhang, 2019). Researchers have examined such nuances as language-specific anxieties, learner backgrounds, and L2 learning in a second language context (learning the target language abroad within a culture where the majority of speakers speak the target language natively) versus in a foreign language context (learning the target language in one’s own native-language environment) (Al-Shboul et al., 2013; Teimouri et al., 2019; Zhang, 2019).

A number of these moderating factors have not been strongly shown to correlate with FLA, but a few have, and are worth mentioning. First, in line with ASB examined above, age seems an important factor (Zhang, 2019). Zhang (2019) argues that though no theory exists as yet to predict the effect of age on FLA, several age-related factors point toward a strong nexus between increased age and increased FLA. In keeping with evidence in favor of the critical period hypothesis, many areas of L2 learning are negatively correlated to age of acquisition: areas such as grammar, pronunciation, rate of acquisition, memory, L1 entrenchment (the

strength of the native language overriding attempts to acquire the L2), and more (Zhang, 2019). In short, then, adult learners generally have a harder time learning an L2 than do younger learners, though by no means is mastery beyond their reach. The increased difficulty, though, may very likely create higher levels of FLA in older learners (Zhang, 2019).

Second, proficiency in the L2 seems to have some effect on FLA. FLA may not be more prevalent at any specific level of language learning; several studies examining the potential for level-specific differences found no relationship between proficiency level or grade level and FLA (Capan & Simsek, 2012; Torres & Turner, 2015), while others found that progression from one semester of study to another did not correlate with any decline in FLA—that is, that there is no longitudinal decline in FLA without some sort of intervention (Casado & Dershowsky, 2001). However, some studies suggest that higher proficiency does in fact correlate with lower FLA (Zhang, 2019). This seeming discrepancy may be resolvable in this: Studies showing high FLA across multiple proficiencies seem to focus on the beginner to intermediate levels, while those showing a lessening FLA at higher proficiencies range to advanced levels. In other words, FLA may decrease as a result of increased proficiency *only* when learners migrate from an intermediate to a more advanced proficiency level. As this current study will focus solely on beginner-intermediate students, the mitigating effects of higher proficiency should not obtain. In fact, this assumption serves as the rationale for using only beginner-intermediate students as participants in the current study.

### ***The Current Status of FLA Research***

Zhang (2019), as a substantive meta-analysis, allows for a panoramic view of the status of most FLA research published in the last few decades. The paper is a meta-analysis of 46 publications on FLA. Publications included date from 1986, the year that the Foreign Language

Classroom Anxiety Scale (FLCAS) was published and validated (Horwitz et al., 1986), to 2019. All 46 publications relied on Horwitz et al.'s (1986) FLA theory, as well as some version of the FLCAS. The publications analyzed included more than 10,000 participants in total (Zhang, 2019). Participants were all university language students, and the article is geared toward language educators in public universities. The purpose of the study was to evaluate the “overall correlation between FL anxiety and language performance with control over the type of performance measure...In addition...to examine why and how the correlation magnitude varies across studies by evaluating the moderator effect of a number of variables” (Zhang, 2019, pp. 765–766). The study concluded that the overall correlation coefficient between FLA and performance was  $-.34$  ( $p < .01$ ), that the correlation remained stable across L2 proficiency level, and that student age potentially increases FLA and lowers performance, with older students exhibiting more anxiety than younger students (Zhang, 2019).

Zhang (2019) is a strong meta-analysis. The author included clear inclusion/exclusion criteria for studies, reported extensively on all methodology and procedures, and commented at length on the study's limitations. Limitations addressed included that the study focused on few variables, excluding several potential moderator variables (Zhang, 2019). The article further redressed a weakness of another FLA meta-analysis published in the same year, Teimouri et al. (2019). Zhang included only the “two performance measures [that] are the most commonly used tools in the literature to evaluate the anxiety–performance correlation,” (p. 772), namely course grades and language tests. Teimouri et al. included several performance measures beyond these two; by limiting the study to the two key measures, Zhang captured a narrower and more accurate view of the overall data in the field of FLA literature. The article confirmed the consensus in the literature that FLA negatively correlates with L2 performance. It adds to the



discussion by highlighting that FLA pervades all proficiency levels, and that it could affect older students more keenly—a finding with wide-ranging pedagogical implications.

As Zhang (2019) points out, “with all the evidence, it is now generally agreed that FL anxiety is negatively correlated with FL performance” (p. 763). This consensus is supported by, and has inspired, hundreds of publications on FLA, spanning areas from general FLA, to FLA specific to different language skills (speaking, listening, reading, writing), to gender differences, age differences, context differences, proficiency differences, and more (Zhang, 2019). By conducting an exhaustive search of the literature, and including only those articles approaching FLA more broadly, Zhang bolsters the overall argument in the field and brings unity to the variety of voices publishing across various domains. Meta-analyses such as Zhang go beyond the individual articles they analyze in highlighting an issue and drawing attention to pedagogical and practical implications. In this case, Zhang highlights the need for L2 educators to focus on FLA as a challenge to be overcome in their classrooms. For the purposes of this current author’s research, Zhang brings to the fore the challenges faced in public university language programs regarding FLA.

Most nuances introduced by examining mitigating variables exceed the scope of this current research, which focuses on general FLA, as conceived of by Horwitz et al. (1986). However, taking the above findings together, it is reasonable to assume that this study’s participants, as beginner-intermediate, adult learners, should exhibit a high baseline FLA. There is more complexity to FLA than whether students have it and in what degree, however. In the same way that LMs go beyond a growth versus fixed binary to include several subdimensions, FLA also goes beyond an either/or, have or have not binary; it consists of the interaction of three subdimensions.

### *The Three Dimensions of Foreign Language Anxiety*

Like LMs, FLA is complex, going beyond an either/or conception, where students either suffer from it or do not. It breaks into three interrelated but distinct subdimensions—communication apprehension, test anxiety, and fear of negative evaluation (Horwitz et al., 1986). Communication apprehension has to do with a fear of communicating with people in the L2, either with native speakers of the language, fellow classmates, or the language teacher; either one-on-one, or in front of groups (Horwitz et al., 1986). Test anxiety is a type of performance anxiety involving a fear of failure on classroom assessments (Horwitz et al., 1986). Fear of negative evaluation is “apprehension about others' evaluations, avoidance of evaluative situations, and the expectation that others would evaluate oneself negatively” (Horwitz et al., 1986, p. 128). While related to test anxiety, fear of negative evaluation encompasses any type of interaction in the L2, including the ideas, whether accurate or not, that a student may have about their peers' potential perceptions of their abilities, whereas test anxiety has more to do with a student's fears of their overall success in the course and in the eyes of their teacher (Horwitz et al., 1986). It is possible for students to have higher or lower levels of each type of anxiety, and for anxieties to increase or decrease as students progress in their language-learning journey (Horwitz et al., 1986).

The FLCAS can be used to measure the three subdimensions separately, or to measure overall FLA. The author of this current study purports to focus on the complexities of LMs rather than those of FLA and treat FLA as a single entity and as a matter of degree. In other words, this study made use of the overall FLCAS score and situated students' levels of anxiety based on their overall score. This approach is in keeping with much of the FLA literature, where authors

often note the subdimensions but opt to use the overall instrument score as a main variable (Zhang, 2019).

### ***Foreign Language Anxiety and Second Language Classroom Achievement***

The importance of FLA in the field of L2 pedagogy cannot be overstated. A widespread consensus exists that FLA is a critical predictor of student success in the L2 classroom. Recent studies on the relationship between general FLA and L2 classroom achievement consistently point to a significant negative correlation (Awan et al., 2010; Capan & Simsek, 2012; Gomari & Lucas, 2013; Liu & Huang, 2011; Torres & Turner, 2015; Woodrow, 2006; Zhang, 2019; Zheng & Cheng, 2018). Some research goes so far as to claim that FLA is perhaps the strongest single affective predictor of L2 classroom achievement (Liu & Huang, 2011). In a 2010 literature review examining the state of FLA in the literature, Horwitz concludes that the trend is clear throughout—FLA is indeed a strong and important factor in L2 learning. As many as 30 to 40 percent of students in L2 classrooms report experiencing FLA (Horwitz, 2016). Several studies examine specific aspects of FLA, but all in common find that FLA negatively correlates with classroom achievement. Several meta-analyses on hundreds of publications establish, without a doubt, a significant negative correlation between FLA and academic achievement, as variously measured by grades, test scores, and more (Al-Shboul et al., 2013; Teimouri et al., 2019; Zhang, 2019). Conclusively, then, FLA figures as an important factor in the L2 learning process, and warrants exploration alongside the burgeoning field of LMs.

### ***Anxiety and Language Mindsets***

No research has as yet examined the relationship between FLA and LMs, but this relationship warrants examination for several reasons. First, while certain LM studies use the term “anxiety” and discuss it as relevant to LMs, they do not use FLA as above defined. Second,

such studies have thus far focused more on anxiety which immigrants experience in their interactions with native speakers, while FLA is more specific to the L2 classroom setting. These studies therefore point to a likely correlation between FLA and LMs, but this correlation must be proven.

LM research frequently mentions anxiety and language anxiety; however, no research has implemented the FLCAS alongside the LMI, nor have any studies in LMs yet applied FLA as above defined. Where studies mention anxiety, they treat it as an extension of and corollary to language-based rejection sensitivity (RS), defined as “the tendency to anxiously expect rejection from native speakers due to a lack of language proficiency” (Lou & Noels, 2019a, p. 478). RS therefore involves elements of anxiety, but does not fit within the framework of FLA. Several studies establish a strong relationship between RS and fixed LMs (Lou & Noels, 2019a, 2020a), and Lou and Noels (2019b) argue that “performance-approach goals are associated with stronger language anxiety, and performance-avoidance goals are related to stronger language anxiety and poorer oral test performance” (p. 545). Clearly, anxiety figures strongly in the paradigm of LMs. However, no research has as yet tested the relationship between LMs and FLA as above defined.

Lou and Noels’s (2016, 2017) MGR model proposes that those with fixed LMs will have higher anxiety in L2 learning and usage situations, while those with growth LMs will have lower anxiety in such situations. Again, though they use the term “anxiety,” they seem to use it as interchangeable with RS. In their 2020a work, Lou and Noels use the term “language anxiety,” though not in the same way that the current study, nor the FLA literature, uses it. They use RS plus avoidance as their metric. Further, RS applies mostly to anxiety which English language learners experience in an L2 context, as immigrants using the language outside of the classroom setting with native speakers. FLA, on the other hand, applies to the foreign language L2

classroom and classroom-related anxieties more specifically. This distinction is important, as this current study examined FLA as experienced by native-English-speaking L2 students in a foreign language context, where exposure to the L2 happens almost exclusively in the classroom setting.

Finally, FLA as a theory benefits from decades of research, whereas LM research is relatively new. By tying LMs to FLA, this researcher hopes to bolster the profile of LMs within the literature. If FLA is a strong predictor of L2 achievement, and if LMs and FLA are strongly correlated, it stands to reason that LMs may themselves be a strong predictor of L2 achievement. While this predictive relationship will require future research, such research will only be warranted by studies such as this present one, establishing the importance of LMs alongside other more established constructs.

### ***Summary of Foreign Language Anxiety***

FLA is a critical construct in the fields of L2 research and pedagogy. It is distinct from other academic anxieties and from RS. It is consistently shown to be an important predictor of academic success in the L2 classroom. While LMs research alludes to “anxiety,” it typically uses the term interchangeably with language-based RS. The current study aims to bring FLA specifically into the field of LMs research, attempting to establish a relationship between FLA and LMs. This is a critical step forward for LM research, as FLA research enjoys a well-established status in the literature.

### **On Treating Foreign Languages as a Homogenous Category**

It is worth noting that in both bodies of literature, for LMs and FLA, foreign languages are grouped together categorically. That is, most FLA studies, and all LM studies thus far treat the learning of a second/foreign language as a describable process regardless of the L1 of the learner and of the L2 being learned. Though some studies involve homogenous L1 samples with

one shared L2, these studies rarely consider L1 or L2 as having an effect on overall LM or FLA (Zhang, 2019). It might be assumed that large language-family distance between the L1 and the L2, or differences in things like script (alphabetic versus non-alphabetic), might correlate with higher levels of FLA or other negative affective learning factors. However, Zhang (2019) found no such correlation in the FLA literature. It may be worthwhile to run a between-groups comparison of students from a single L1 (such as English) learning various L2s to discover whether there is a predictive relationship between LM and L1-L2 distance. Such an analysis exceeds the scope of this study, however, and this study is in keeping with the majority of publications in FLA and LM in treating L2 learning categorically regardless of students' L1 or L2.

### **Related Literature**

Researchers in mindset theory have largely focused on establishing that students' mindsets do in fact bear on their academic performance. They have also sought to prove that mindset intervention, that is, training teachers and students to foster growth mindsets, leads to better performance. Most studies have lent credence to these claims, which has led to the current interest in applying mindsets theory to L2 learning. While LM theory represents a valid and ripe field for research, as it begins from the understanding that L2 learning is a domain distinct from content learning, a few researchers have erroneously attempted to apply general mindset theory to language learning and performance, and even to FLA. In this section, the author discusses the current state of mindset research, showing that it is an important field with important pedagogical implications, and one ripe for application to the domain of L2 learning. He then presents a few studies whose authors attempted to apply mindset theory to L2 learning without

the insights of LM theory. Next, he examines trends in and efficacy of interventions to address FLA.

### **Content Learning Mindsets**

Much research in CMs has contributed support to two claims regarding mindsets, namely that they are important predictors of student achievement, and that mindset interventions are successful in fostering growth mindsets and therefore increasing student achievement. In terms of academic achievement, the literature demonstrates that mindsets predict achievement in general (Claro et al., 2016; Paunesku, 2015), goal achievement (Burnette et al., 2013), grade point average (Yeager et al., 2016, 2019), and resilience (Yeager & Dweck, 2012). A few studies counter this claim, asserting that growth mindsets do not in fact correlate with scholastic achievement (Bahník & Vranka, 2017; Sisk et al., 2018); the weight of the evidence, however, seems in favor, rather than against, the predictive power of mindsets on achievement.

In terms of the effectiveness of interventions, the bulk of studies again show that mindset interventions increase student achievement, including in general academic achievement (Paunesku et al., 2015), in grade point average (Yeager et al., 2016, 2019), and resilience (Yeager & Dweck, 2012). Again, a few studies run counter to this claim, including Sisk et al. (2018), a meta-analysis whose authors assert that in general mindset interventions are not effective, only showing significant effect for students of low socioeconomic background. The overall consensus seems to be, however, that mindsets predict achievement, whether growth leading to improvement or fixed leading to no improvement, and that interventions are in fact effective.

Because of the weight of evidence in favor of these claims, researchers have recently begun to attempt to apply mindset research to L2 learning achievement. While Lou and Noels's

(2016, 2017, 2019a, 2019b) body of work has successfully done so, creating the new field of LM research, a few other studies have fallen short by attempting to apply CM findings and theory to the L2 learning domain.

### **Mindset Theory and Foreign Language Anxiety**

In a systematic and exhaustive literature review, Burnette et al. (2013) review literature on quantifiable assessment of implicit theories—namely, growth versus fixed mindsets, and self-regulation. Somehow, despite analyzing findings from 85 publications (a number reduced from several thousand possible candidates), the authors do not mention the word “language” once throughout their paper. This proves the immensity of the gap between mindset research and L2 learning research and provides further rationale for the current study. Other researchers have noticed this gap and have attempted to redress it by testing for relationships between mindsets and FLA, mindsets and L2 achievement, and the effect of mindset interventions on L2 learning.

### ***Mindsets and FLA***

Altunel (2019) uses two Likert-scale surveys, the Dweck Mindset Instrument (DMI) and the FLCAS, to compare L2 students’ mindsets (CMs, though he does not use this term) to their FLA. He points out that FLA is “one of the most powerful predictors of language achievement and has long been the focus of teachers and educators in the world” (Altunel, 2019, p. 690). With this in mind, he hypothesizes that high FLA would correlate with a fixed mindset, and lower FLA with a growth mindset. However, his results show no significant correlation.

Altunel’s (2019) study, in many ways, serves as a model for this current study, in that it examines the relationship between FLA and mindsets. However, Altunel is fatally flawed in that the author conflates CMs with LMs, while Lou and Noels (2016, 2017, 2019a, 2019b) establish



that LM is a distinct construct. Even though Altunel published after many of Lou and Noels's works were published, he seems unaware of their body of work.

Based upon his findings, Altunel (2019) concludes that no significant relationship exists between mindsets on the one hand and FLA on the other. He goes on to argue that teachers and curriculum designers should avoid assuming that mindsets matter with regard to FLA and L2 learning—that they should, in fact, assume that mindsets have no bearing on L2 learning. The author of the current study tested this potential relationship more effectively by situating the study within LM theory, thereby redressing Altunel's shortcomings and potentially countering his discussion of implications.

### ***Mindsets and L2 Achievement***

Another study, Yang & Priyadarshini (2019), makes the same fatal error as that of Altunel (2019), applying CM research (again, without using that term) to the domain of L2 learning. Specifically, the authors find a low, significant, positive correlation between growth mindset and L2 student achievement. They measure the former with the DMI, and the latter with scores from a mandatory standardized L2 test. Their findings cut against the findings of Altunel, indicating that a relationship between mindsets and L2 achievement exists, which could imply that a relationship between FLA and mindsets exists; Altunel himself, after all, states that FLA is “one of the most powerful predictors of language achievement” (p. 290). In both studies, CM, rather than LM, is measured; this is a significant flaw that the current study hoped to redress. As in other studies, the authors must rely on findings from studies with no input from the field of L2 learning research in order to bolster their rationale for conducting their studies.

Like Yang and Priyadarshini (2019), Brown and Siebert Hanson (2019) bring mindset theory into the world of L2 learning. Brown and Siebert Hanson's purpose “was to test if a

positive experience promotes the belief that language learning is an ability that can be developed through persistence and effort” (p. 1). This question is important, as many students believe that inherent language ability determines one’s ability to acquire an L2 in adulthood (Brown & Siebert Hanson, 2019; Lou & Noels, 2016, 2017). In other words, Brown and Siebert Hanson’s participants exhibit the lay understanding of the critical period hypothesis, believing that language learning is age determined, and that children and adolescents are better able to learn language than are adults. The authors’ aim, then, was to create a quasi-experiment in which adult learners would experience success in learning. After a pretest determining that the learners held negative beliefs in their own abilities, they underwent the treatment—a positive learning experience with Japanese. Their posttests, and posttests two weeks later, showed that the positive experience indeed improved their implicit beliefs in their own abilities, and by extension, their disposition toward language learning in general.

Brown and Siebert Hanson’s (2019) study is directed toward L2 educators. While not specifically geared toward private school educators, its implications hold for language programs at both private and public institutions. The study follows solid quasi-experimental design, identifying participants, methods, procedures, and instruments, and reporting faithfully on the pretest-posttest results and their implications (Creswell & Creswell, 2018). The study builds on findings from other studies showing the impact of students’ implicit beliefs on their actual abilities and adds to this discussion by demonstrating a marked effect in learning approach and attitude when an intervention led to a shift in these implicit beliefs.

The article owns up to its own limitations. These include the fact that a limited pool of participants ( $N = 72$ ) was included, and could not be randomly assigned, but rather was chosen as a convenience sample (Brown & Siebert Hanson, 2019). Further, only one group was tested,

largely of native English speakers, with one target language, Japanese. This meant that the generalizability of findings was limited (Brown & Siebert Hanson, 2019). Despite these and other limitations, however, the study was well designed and implemented, such that future researchers might duplicate it with larger and more diverse participant pools.

The article lends credence both to the idea of LMs in general and ASBs specifically. Again, though, like other articles mentioned above, the authors did not make use of Lou and Noels's (2016, 2017) LMI. However, their instrument goes beyond those used by Yang and Priyadarshini (2019) and Altunel (2019). These authors used instruments designed to measure general implicit theories, or CMs. Brown and Siebert Hanson (2019), meanwhile, "adapted a preexisting domain-specific measure of implicit theories, Biddle et al.'s (2003) short version of the Conceptions of the Nature of Athletic Ability scale (Sarrazin et al., 1996), to apply to second language acquisition" (p. 4). In other words, they understood the need to treat SLA as distinct from CMs and adapted an instrument to those ends. Their findings therefore further bolster the rationale for this current study, showing that a growing interest in the interaction between implicit theories and L2 learning merits deeper research in the field. This current study ought to both build upon Brown and Siebert Hanson and go beyond it by bringing the more meticulously designed and validated LMI to bear, and on a larger sample.

### ***Mindset Interventions and L2 Achievement***

Several studies show the positive impact of mindset interventions in the L2 classroom. Molway and Mutton (2019) conducted a "year-long intervention study with a quasi-experimental design" (p. 1) on the mindsets (what they call *theories of intelligence*) of students in an L2 classroom. The goal of the mindset interventions was to increase students' growth mindset; results show that "targeted intervention can influence FL students' intelligence theories in both

the short term and the longer term” (Molway & Mutton, 2019, p. 13). Further, results indicate that the increase in growth mindset as a result of the interventions led to more strategic classroom behaviors and less maladaptive behaviors, as well as to more motivation to continue language study. Most importantly for the current study, the authors also reported a positive correlation between an increase in growth mindset and the level of academic progress students made over the year. In other words, growth mindset in the L2 classroom correlates with achievement, and teachers’ mindset interventions effectively improve students’ mindsets. Unfortunately, however, this study suffers the same weakness of conflating CMs with LMs.

Lanvers (2020) also showed the positive effect of mindset interventions in the L2 classroom. Lanvers conducted a mixed-methods evaluation research program. Her research was primarily quantitative in nature, using a quasi-experimental design with pretest and posttest analyses of questionnaires, though there was qualitative data analysis on open-ended prose comments provided by both students and teachers who had been involved in the intervention. The purpose of the study was to evaluate the effectiveness of a six-session course of interventions on students’ language mindsets and self-efficacy. Participants were 13-14-year-old students in three schools in Northern England ( $N = 515$ ). Though the author reports on gender differences in findings, she strangely fails to mention exact number breakdowns by gender. The author chose the three schools from a wider pool of schools in Northern England based on what she describes as their relative diversity, meaning they represent a balance of small-town, large-town, and rural communities, as well as students of various socioeconomic and ethnic backgrounds. To strengthen validity of her findings, she randomly selected control groups and intervention groups in all three schools.

The intervention involved six mentoring sessions on various metalinguistic issues such as student beliefs on the importance of language learning carried out over a period of nine weeks. The mentoring sessions were designed with awareness-raising principles in mind. Mentors were language teachers and older students in the schools, all of whom were trained beforehand to deliver the sessions effectively. Data were collected with a survey instrument before and after all interventions. Qualitative data were further collected via an open-ended comments section at the end of the posttest survey.

Survey data were analyzed with paired-sample *t* tests to evaluate pre-post differences. Qualitative data were analyzed with an inductive, iterative coding scheme. Results showed that students in the intervention groups moved toward more positive mindsets, while those in the control groups moved toward more negative mindsets. The improvement was most marked in students with lower beginning mindsets, who also happened, on the whole, to be male participants. In other words, the intervention was effective in improving language mindsets in all students, and especially in those most in need of improvement. Self-efficacy showed little change in any group. Results further indicated that students preferred and better remembered the teacher-led, as opposed to the peer-led, mentoring sessions.

Lanvers (2020) set out to determine whether the program, in this case mentoring intervention to improve language mindsets, would have the intended result, and answered this question clearly (Check & Schutt, 2012). The research questions were clearly and narrowly defined, and the intervention geared with specific theoretical underpinnings in mind. The research was limited in that it only targeted adolescent, English-speaking L2 learners in Northern England. Its generalizability therefore hinges on similar research being carried out with different populations. The overall aim, though, of conducting an intervention to improve mindsets among

all learner levels and abilities (within a target demographic) was met. This has implications for future research. Primarily, it indicates that such research is worth carrying out.

Brown and Siebert Hanson (2019) warrant mention again, as their positive learning experience intervention proved successful in helping students move from a more fixed mindset regarding their L2 learning abilities to a more growth mindset and a more positive overall disposition to L2 learning. Mindset interventions work, both for CMs and for L2s. This current study adds to the discussion by treating LMs as their own domain and bringing FLA into the discussion as well.

### ***FLA Interventions and L2 Achievement***

Perhaps the best strategy to redress FLA is to address it directly, both in teacher training and in the L2 classroom. Kao and Craigie (2018) show that teachers who know the causes of FLA, discuss it directly and often with their students, and try to tailor their classrooms so as to reduce it, see great success. Among successful strategies are including innovative assessments which encourage authentic interaction rather than using more traditional test materials (Kao & Craigie, 2018). Further, one-one-one interventions with struggling students, extensive peer interaction in the L2, and ample exposure to opportunities outside the classroom to engage the L2, help (Kao & Craigie, 2018).

Alsowat (2019) and Kruk (2018), like Kao and Craigie (2018), argue for the importance of the teacher's role in establishing a low-anxiety L2 classroom. Alsowat argues that L2 educators, before even stepping into the classroom, must work to improve their practices, bringing their pedagogy into the modern era of SLA findings, not treating the L2 classroom as any other classroom. While teaching, teachers should use pair- and group-work to increase student autonomy and encourage a learner-directed classroom (Alsowat, 2019). Finally, after

teaching, the effective L2 educator ought to deeply reflect on their methods, seeking innovative assessments, the best and most current methods, and more to lessen anxiety in the classroom (Alswat, 2019). Kruk argues that “teachers should provide their students with detailed description of the course (for example, its content, assignments and assessment criteria) at the very beginning of a semester in order to neutralize the students’ perception of doing something unfamiliar” (p. 43); to be forewarned in this way allows students to be forearmed against anxiety, calibrating their expectations themselves and their L2 classroom learning.

### **Recent Developments in LMs Research**

This current study is important in part because it builds upon and advances the work done in Lou and Noels’s (2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b) body of work, which, while it has examined many relationships and nuances surrounding LMs, has yet to relate them to FLA. Further, though the authors’ LMI instrument has been rigorously validated, no other researchers have as yet used it. This study expands their work and hopefully anchors it to the long tradition of FLA research.

One study that warrants mention is Sadeghi et al. (2020), which, unlike Altunel (2019), Yang and Priyadarshini (2019), Brown and Siebert Hanson (2019), Molway and Mutton (2019), and Lanvers (2020), does make use of some of Lou’s (2014) early LM work. Sadeghi et al. asked whether there were any relationships between LMs and goal orientations, and whether there were any relationships between LMs and learners’ responses to failure. They found a positive trend toward significance between growth LMs and learning goals, and a positive correlation between fixed LMs and anxious and helpless responses (Sadeghi et al., 2020). In other words, their findings confirmed those of all of Lou and Noels’s (2016, 2017, 2019a, 2019b, 2019c, 2020a, 2020b) work and lend further support to the validity and importance of LMs research. However,

their work is limited by the fact that they base their discussion of LMs on Lou's (2014) unpublished master's thesis and use the instrument he developed and validated for that thesis, the Mindsets of Language Learning Scale (MLLS). This instrument is a precursor to the LMI; the authors improved upon it for all of their subsequent work. Thus, Sadeghi et al.'s work does not make use of the latest and best research in the field of LMs. So, while their findings advance the field somewhat, their approach could be improved upon by appropriating the LMI and the most up-to-date research on LMs.

### **Implications to the Current Study**

The findings of these studies are critical for the current study, as they demonstrate the potential implications of LMs in the language classroom. If students can develop growth LMs, it is likely that their FLA will decrease and that their classroom achievement will increase. If teachers address FLA head on, they can create an environment where it is less likely to metastasize. Further, studies show that L2 teachers' attitudes about their students impact their classroom behaviors (Pettit, 2011), and even that teachers' beliefs about their students' abilities and the type of feedback teachers provide can influence or even change students' LMs for better or worse (Lou & Noels, 2020b). This means that teachers with a fixed view of LMs generally, and especially those with a fixed view of the LMs of their students, might be fostering fixed LMs in the classroom rather than creating environments for growth LMs to flourish. Should the results of this current study show a positive correlation between growth LMs and classroom achievement and a negative correlation between growth LMs and FLA, these findings in conjunction with those of studies in CMs generally and on CMs and L2 learning specifically form a strong basis for a case to be made for educating L2 educators about LMs. If teachers can



both improve their view of their students' abilities and foster growth LMs in their students, their students may be able to improve achievement and experience less FLA in the L2 classroom.

### **Summary**

Mindset research and L2 learning research have existed largely in parallel, with only the recent advent of LM research marking the correct application of the theoretical concepts of mindsets to language learning. A gap exists in examining LMs on one hand and their relationship to various L2 learning measures on the other, including to FLA. To redress this gap, the author designed a study to help broaden the scope of literature on LMs, exploring their relationship to FLA. To this end, the author undertook a systematic review of the literature, and presented summaries of relevant theoretical frameworks and related literature. Throughout, the author synthesized this research to demonstrate the need for his study to help deepen knowledge of L2 learning and LMs in the field of L2 research and pedagogy.

## **CHAPTER THREE: METHODS**

### **Overview**

In this chapter, the author details the methods used in this quantitative study. The chapter includes the research design, research question and null hypotheses, participants and setting, instrumentation, procedures, and data analysis.

### **Design**

The purpose of this research study was to discover whether a relationship exists between language mindsets (LMs) and foreign language anxiety (FLA), as well as to discover whether relationships exist between the three subscales of LMs and FLA. To test for these relationships, this study used a correlational design. Per Mills and Gay (2019), “correlational research involves collecting data to determine whether, and to what degree, a relationship exists between two or more quantifiable variables” (p. 11). A correlational research approach produces a correlation coefficient, which is a “precise way of stating the degree to which one variable is related to another, and the direction of the relationship (positive or negative)” (Gall et al., 2007, p. 333).

This study used four bivariate linear regressions to test the predictive ability of a predictor variable on four separate criterion variables. The predictor for all four was FLA, defined as “a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process” (Horwitz et al., 1986, p. 128). FLA was measured by the Foreign Language Classroom Anxiety Scale (FLCAS), developed and validated by Horwitz et al. (1986). The criterion variables involved language mindsets and were measured by the Language Mindsets Inventory (LMI), developed and validated by Lou & Noels (2016, 2017). The overall score of the instrument was the first criterion variable, with scores indicating whether learners hold a stronger overall fixed

or growth mindset. The other three variables were subscales of the instrument, representing different dimensions of LMs. These are general language intelligence beliefs (GLB), second language aptitude beliefs (L2B), and age sensitivity L2 learning beliefs (ASB).

The purpose of this study was to determine whether, to what degree, and in which direction a relationship exists between LMs, including their three subdimensions, and FLA; therefore, correlational design was an ideal fit. Feasibility further drove this decision, as quasi-experimental and experimental designs present many logistical challenges which correlational research, with its reliance on merely collecting data on variables rather than manipulating variables, does not (Creswell & Creswell, 2018). Finally, while experimental and other research designs can provide more substantive cause-effect conclusions, these designs are more expensive and time consuming (Creswell & Creswell, 2018). While their use may be warranted as the field of LM research expands, key relationships, such as the possibility of the relationship between FLA and LMs, must first be established by studies such as this one.

The study was cross-sectional, meaning that data were collected at one point in time, rather than longitudinal, with data collected over a period of time. Cross-sectional research is ideal when exploring relationships between variables in a new domain, or when relating a new variable to a more well-researched domain (Spector, 2019), as was the case in this exploratory study. Further, longitudinal research runs the risk of leading to erroneous inferences on relationships between variables, especially if there may be a causal relationship at play whose timeframe is unknown (Spector, 2019). In short, the cross-sectional approach was ideally suited to this exploratory study, and its ease of implementation over other approaches, as a first step leading to further and more quasi-experimental research, recommended it (Creswell & Creswell, 2018).

### Research Questions

**RQ1:** Can Foreign Language Anxiety predict overall Language Mindset?

**RQ2:** Can Foreign Language Anxiety predict General Language Intelligence Beliefs?

**RQ3:** Can Foreign Language Anxiety predict Second Language Aptitude Beliefs?

**RQ4:** Can Foreign Language Anxiety predict Age Sensitivity L2 Learning Beliefs?

### Hypotheses

The null hypotheses for this study are:

**H<sub>01</sub>:** There is no significant predictive relationship between Foreign Language Anxiety and Language Mindsets.

**H<sub>02</sub>:** There is no significant predictive relationship between Foreign Language Anxiety and General Language Intelligence Beliefs.

**H<sub>03</sub>:** There is no significant predictive relationship between Foreign Language Anxiety and Second Language Aptitude Beliefs.

**H<sub>04</sub>:** There is no significant predictive relationship between Foreign Language Anxiety and Age Sensitivity L2 Learning Beliefs.

### Participants and Setting

The participants were drawn from a convenience sample of university students enrolled in beginner-intermediate and intermediate L2 classes at a large, private university in Virginia. For the purposes of this study, beginner-intermediate and intermediate students are those in their second, third, or fourth semester of study. At the university in question, these courses receive the numbers 102, 201, and 202. The 101, 102, 201, and 202 course sequence is meant to encompass the basics of grammar and vocabulary of the languages offered. 202-level courses are the prerequisite for junior- and senior-level, advanced-study courses, at the 300- and 400-level.

These higher-level courses are typically required only for those pursuing minors and majors in a language, while the 101-202 sequence is required of all Bachelor of Arts degrees at the university. The languages offered with the 101-202 sequence are Spanish, French, German, Mandarin Chinese, Russian, and Arabic. While American Sign Language is also offered, these participants were excluded, due to the modality difference (manual-visual language versus oral-aural).

A total of 198 students (64% female) took part in this study. The sample ranged in age from 18 to 29 years ( $M = 20.17$ ,  $SD = 1.65$ ). Of these students, 31 were enrolled in Arabic courses, 24 in French, 20 in German, 25 in Mandarin Chinese, 27 in Russian, and 71 in Spanish. 99 were enrolled in 102-level courses, and 79 in 202. Only 20 students were enrolled in 201-level courses, as many of these languages offer 201 and 202 levels in alternating fall and spring semesters, respectively, and data were collected in a spring semester. The vast majority of participants (95.45%) spoke English as their native language. A minimum sample size ( $N$ ) of 100 participants is recommended for a one-predictor bivariate analysis (Warner, 2013), and for populations around roughly 500, give or take a hundred, at least 50% of the population is recommended for the sample size (Mills & Gay, 2019). There were 324 students who met eligibility criteria; the sample size of this study ( $N = 198$ ) represents 61% of this population, and is therefore robust.

This sample was homogenous, appropriate, and large. It is important for a sample to have a high degree of homogeneity, as wide differences between participants can obscure causal relationships between variables (Gall et al., 2007). While there are differences in level (second through fourth semester) and language, these students all fit within the beginner-intermediate to intermediate category. Pure beginners (those in the 101-level) were excluded, due to their limited

exposure to the L2 classroom at the host institution; their mindsets and anxieties might not have fully formed. Advanced students were excluded, as this group comprises minor and major students. It is reasonable to assume that this group self-selects for students who are likely to have a more positive disposition toward language learning generally, which might skew results. Finally, while there is some debate in the literature about whether FLA tends toward decline as students progress in their L2 studies, the consensus seems to be that beginner-intermediate to intermediate students ought to be relatively homogenous in their overall FLA patterns and show little change at these levels of difference (Capan & Simsek, 2012; Casado & Dershewisky, 2001; Torres & Turner, 2015). In other words, though advanced students would likely hold lower levels of FLA (Zhang, 2019), the chosen participant range ought to be relatively homogenous in FLA.

### **Instrumentation**

The study made use of two survey questionnaire instruments. The first instrument was Lou and Noels's (2017) Language Mindsets Inventory (LMI), whose overall score indicates the type of overall language mindset of participants, and whose subscale scores indicate their subscale language mindsets. The second instrument was Horwitz's (1986) Foreign Language Classroom Anxiety Scale (FLCAS) to measure students' foreign language anxiety (FLA). Below, the author provides descriptions and validity and reliability information of both instruments.

#### **The Language Mindsets Inventory**

The LMI was developed and validated by Lou and Noels (2016, 2017) as a 21-question Likert scale, and later updated to an 18-question version (Lou & Noels, 2019c). The LMI uses a 6-point Likert scale that ranges from Strongly Agree to Strongly Disagree. Responses are as

follows: Strongly Agree = 6, Moderately Agree = 5, Slightly Agree = 4, Slightly Disagree = 3, Moderately Disagree = 2, and Strongly Disagree = 1. The 18 items break into three subscales, measured by six items each. These are general language intelligence beliefs (GLB), second language aptitude beliefs (L2B), and age sensitivity L2 learning beliefs (ASB). The instrument measures whether a participant has an overall growth or fixed language mindset, as well as whether they hold more of a growth or fixed mindset in each individual subscale. Nine total items reflect growth mindset views, and nine reflect fixed mindsets, with three each in each of the three subscale categories. The combined possible score ranges from 18 points as the lowest score, and 108 as the highest, as long as no items are left blank. Growth mindset items are reverse scored, such that a higher overall score on the instrument indicates a stronger fixed LM, while a lower overall score indicates a stronger growth LM. Within each subscale, scores range from 6 to 36. With reverse scoring of growth items, lower scores likewise indicate a stronger subscale-specific growth mindset, and higher scores a stronger subscale-specific fixed mindset.

The LMI was designed to be able to be used to indicate the strength of participants' fixed or growth overall LMs based on their overall score (Lou & Noels, 2017, 2019c). It was also designed such that either all three subscales could be analyzed, or such that researchers, depending on their needs, could focus on one or two subscales instead of all three (Lou & Noels, 2017, 2019c). The instrument allows for researchers to measure the overall strength of either the fixed or growth LM held by participants; however, LMs are multidimensional and not only binary, and it is possible for a participant to hold more of a growth LM in one or two subscales, and more of a fixed LM in the other(s). Therefore, this study examined the overall score as one variable against FLA, as well as each subscale score in turn as separate variables against FLA.

The LMI, as a new instrument, has not been extensively used so far. However, its

originators have provided robust evidence of its validity and reliability. Lou and Noels's (2017) purpose was to test and prove the reliability and validity of the LMI. They further purposed to prove the validity of the MGR model. The paper reported the results of two studies which establish the validity and reliability of the LMI. The first study established evidences of reliability with some evidence of validity; the second study more thoroughly confirmed and explicated validity.

### ***Study One Participants, Method, Results: Reliability***

The authors used convenience sampling of university students at the Canadian university where the authors work. Study One involved students enrolled in an introductory psychology course ( $N = 1,633$ ). Participants completed the LMI at the beginning of the academic year as part of an online mass-testing session. 117 participants completed the questionnaire again a month later to establish test-retest reliability. The authors used Confirmatory Factor Analysis and Hierarchical Confirmatory Factor Analysis to test the internal structure of the instrument and establish subscales. The authors established reliability for the overall LMI instrument by a pretest ( $\alpha = .91$ ), posttest ( $\alpha = .94$ ), and test-retest correlation ( $\alpha = .77$ ). They established overall internal consistency as high at  $\alpha = .92$ .

### ***Study Two Participants, Method, Results: Validity***

Study Two involved students registered in L2 classes ( $N = 189$ ). 17 languages were represented. No participants from Study One also participated in Study Two. For Study Two, participants completed the LMI questionnaire alongside several other instruments at the beginning of the academic year as part of a testing session conducted online. Participants' scores on the LMI became the predictor variable, which was tested against several criterion variables in order to provide evidences of validity via several strategies. One measure was an open-ended,



paragraph-response question on language mindsets; these were scored by raters and compared to LMI results. Results supported strong construct validity. Another came from other questionnaires whose reliability and validity had been well established in the literature and which were known to assess similar constructs. Analyses “indicated that people’s language mindsets were similar to their mindsets in other domains, *but they were not so convergent as to suggest that they were the same construct* [emphasis added]” (Lou & Noels, 2017, p. 224); “the correlational results also showed the expected pattern of associations between the LMI and variables theoretically linked with mindsets” (Lou & Noels, 2017, pp. 224–225). In sum, results demonstrated strong validity and reliability for the LMI.

The author of this current study requested permission to use the LMI of Nigel Mantou-Lou on December 30, 2020 and received permission to use the LMI on that same date (see Appendix C).

### **The Foreign Language Classroom Anxiety Scale**

The FLCAS was developed and validated by Horwitz (1986) and Horwitz et al. (1986). The instrument consists of 33 questions and uses a 5-point Likert scale that ranges from Strongly Agree to Strongly Disagree. Responses were as follows: Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, and Strongly Disagree = 1. Scores on the instrument can range from 33 to 165 points. A higher score indicates a higher degree of FLA, while a lower score indicates a lower degree of FLA. Most questions in the instrument are negatively formulated, but nine questions (2, 5, 8, 11, 14, 18, 22, 28, and 32) are positively formulated, and must therefore be reverse scored.

Horwitz et al. (1986) found the FLCAS to be reliable ( $\alpha = .93$ ), with an 8-week test-retest reliability of  $r = .83$  ( $p < .001$ ). The authors also reported on a number of construct validity

criterion scales which demonstrated high construct validity. Since 1986, the FLCAS has been used in several hundred peer-reviewed studies, which have in turn inspired several meta-analyses and literature review articles (Al-Shboul et al., 2013; Horwitz, 2001; Teimouri et al., 2019; Zhang, 2019).

The FLCAS, like the LMI, was designed to be able to be used in toto or with three of its own subscales, with certain items pertaining to different aspects of FLA (Horwitz et al., 1986). However, most studies use only the aggregate score in their analyses (Al-Shboul et al., 2013; Teimouri et al., 2019; Zhang, 2019), and so the author of this study did the same. In fact, the aggregate is the strongest for measuring FLA across varying learning contexts (Zhang, 2019), so it is best suited to the diverse target participant pool.

The author of this current study requested permission to use the FLCAS on December 30, 2020 of Elaine K. Horwitz and received permission to use it on January 1, 2021 (see Appendix C).

### **Procedures**

The researcher first sought and received approval to collect data from his university's Institutional Review Board (IRB) (see Appendix B). He then sought approval from university administration to contact participants (see Appendix D). He converted both instruments into one Internet survey using Qualtrics. The first page of the survey was a waiver of signed consent, and data collection was anonymous. The survey also included demographics questions to gather information such as participants' gender, age, the L2 they were studying, and L2 class level in which they were enrolled at the time of the study. The researcher, with Department Head approval, asked for all teachers of 102, 201, or 202 classes in either Spanish, French, German, Mandarin Chinese, Arabic, or Russian, to allow 15 minutes of class to run the survey. The

researcher provided recruitment/instruction scripts for these teachers to read (see Appendix E).

### **Data Analysis**

Data were input into the Statistical Package for Social Sciences (SPSS) tool for analysis. Data were first examined to screen for missing values and inconsistent responses, and to verify that data were normally distributed. Next, the researcher used scatterplots to test the three assumptions of Bivariate Outliers, Linearity, and Bivariate Normal Distribution (Warner, 2013).

Data were analyzed using four separate bivariate linear regression analyses. Bivariate linear regression describes the predictive relationship between a predictor variable, such as FLA, and a criterion variable, or in this case, four separate criterion variables—LMs and the three subscales (Warner, 2013). For the null hypotheses to be rejected, scores on the FLCAS ought to increase as scores on the LMI and its subscales increase as well; this would indicate that higher FLA predicts more of a fixed, as opposed to growth, LM.

Since four bivariate linear regression analyses were used, the risk of Type I error was increased. Type I error refers to a researcher's rejecting the null hypothesis or hypotheses when they are actually correct (Warner, 2013). To limit Type I error risk, the per-comparison alpha level ( $PC_{\alpha}$ ) was determined using a Bonferroni correction. The Bonferroni correction lowers the alpha level by dividing the experiment-wise  $\alpha$  ( $EW_{\alpha}$ ) by the number of correlations tested ( $k$ ) (Warner, 2013). By lowering the alpha level, the risk of Type I error is lowered, as "in theory the risk of committing a Type I error corresponds to the alpha level chosen by the researcher" (Warner, 2013, p. 85).  $EW_{\alpha}$  is most often set at .05, which indicates a 5% risk of mistakenly rejecting a correct null. The Bonferroni correction uses the formula  $PC_{\alpha} = EW_{\alpha}/k$ ; for this study, then,  $PC_{\alpha} = .05/4 = .0125$ . This alpha of .0125 is very conservative and lowered the risk of committing a Type I error.

The conservative nature of the Bonferroni correction is its strength, but also presents a weakness, as lowering Type I risk in this way can increase the risk of committing a Type II error (Warner, 2013). A Type II error is committed when a researcher fails to reject an incorrect null hypothesis. Researchers must do what they can to mitigate both types of risk; they “want the risk of both types of error ( $\alpha$  and  $\beta$ ) to be reasonably low” (Warner, 2013, p. 85). One way to reduce Type II error risk is to use a sufficiently large and appropriate sample size (Mills & Gay, 2019; Warner, 2013). The sample size of ( $N$ ) = 198 is large and appropriate to the population and therefore robust against Type II error.

### **Summary**

This correlational study sought to discover whether a relationship exists between LMs and FLA. The participants were drawn from a convenience sample of university students enrolled in beginner-intermediate and intermediate L2 classes at a large, private university in Virginia. The study used a sample size ( $N$ ) of 198 participants. The study used two survey instruments, the LMI and the FLCAS; both have been proven reliable and valid, and the author received permission from the copyright holders of both to use them in the study. Data were analyzed using four separate bivariate linear regression analyses, which tested the relationships of four LM-related variables to overall FLA. A Bonferroni correction was used to establish a conservative alpha of .0125 to reduce risk of Type I error.

## CHAPTER FOUR: FINDINGS

### Overview

This study used four Pearson's  $r$  bivariate linear correlations to test the predictive ability of a predictor variable on four separate criterion variables. The predictor for all four was Foreign Language Anxiety (FLA), and the criterion variables were the overall Language Mindsets Inventory (LMI) score and the three subscale scores of the LMI, representing different dimensions of Language Mindsets (LMs): general language intelligence beliefs (GLB), second language aptitude beliefs (L2B), and age sensitivity L2 learning beliefs (ASB). This chapter provides descriptive statistics and Statistical Package for Social Sciences (SPSS) statistical analysis of the study's data.

### Research Questions

**RQ1:** Can Foreign Language Anxiety predict overall Language Mindset?

**RQ2:** Can Foreign Language Anxiety predict General Language Intelligence Beliefs?

**RQ3:** Can Foreign Language Anxiety predict Second Language Aptitude Beliefs?

**RQ4:** Can Foreign Language Anxiety predict Age Sensitivity L2 Learning Beliefs?

### Hypotheses

The null hypotheses for this study are:

**H<sub>0</sub>1:** There is no significant predictive relationship between Foreign Language Anxiety and Language Mindsets.

**H<sub>0</sub>2:** There is no significant predictive relationship between Foreign Language Anxiety and General Language Intelligence Beliefs.

**H<sub>0</sub>3:** There is no significant predictive relationship between Foreign Language Anxiety and Second Language Aptitude Beliefs.

**H<sub>0</sub>4:** There is no significant predictive relationship between Foreign Language Anxiety and Age Sensitivity L2 Learning Beliefs.

### Descriptive Statistics

The study tested the strength of the relationship between the predictor variable, FLA, and four LM-related criterion variables. These criterion variables are the overall LM along with three subdimensions of LMs: GLB, L2B, and ASB. FLA was measured by the FLCAS, whose possible scores range from 33 to 165 points, with a higher score indicating a higher degree of FLA, and a lower score indicating a lower degree of FLA. LM and LM subdimensions were measured by the LMI. The overall possible score ranges from 18 to 108 points, with a higher overall score on the instrument indicating a stronger fixed LM, and a lower overall score indicating a stronger growth LM. Within each subscale, scores range from 6 to 36; lower scores likewise indicate a stronger subscale-specific growth mindset, and higher scores a stronger subscale-specific fixed mindset. An extreme bivariate outlier was identified and eliminated in the GLB data set. The mean, median, and standard deviation of scores for total FLA, LMI, GLB (outlier removed), L2B, and ASB are presented in Table 1.

**Table 1**

*Descriptive Statistics for FLA and All LMI Scores*

<i>Variable</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>	<i>N</i>
FLA_Total	99.67	100.00	24.64	198
LMI_Total	42.09	41.50	11.04	198
GLB	13.13	13.00	4.47	197
L2B	14.20	14.00	3.65	198
ASB	14.76	14.00	4.96	198

Based on the average of FLA scores, students in the sample are slightly anxious; Horwitz (2020) defines an average item score of 3 (total score divided by number of items, 33) as slightly

anxious. The score of 99.67 divided by 33 gives an average item score of 3.02. Scores ranged from 45 to 161: not anxious to highly anxious. 53% of the sample registered as slightly anxious or more ( $N = 105$ ). In other words, a majority of students in the sample suffers FLA in the L2 classroom.

The average of the LM scores indicates a tendency toward growth mindsets, as all four scores fall well below the midpoint of the scales, which is 54 for the LMI total and 18 for each subscale. Scores for the total LMI ranged from 18 on the low end—a “perfect” growth mindset score—to 75. Scores for subscales ranged from 6 to 25 (29 before removal of outlier), 6 to 24, and 6 to 27, for GLB, L2B, and ASB, respectively. Only 17% of the sample scored above the midpoint of 54 for the total LMI ( $N = 33$ ), with 17% ( $N = 34$ ) and 20% ( $N = 39$ ) scoring above the midpoint of 18 for GLB and L2B. For overall LMI and these two subdimensions, then, roughly four fifths of the sample exhibited more of a growth than fixed mindset. However, 32% ( $N = 63$ ) scored higher than the midpoint of 18 for ASB, indicating a slightly higher fixed mindset regarding age-related L2 learning mindset over other types of mindsets. In summary, while the sample exhibited a mixture of growth and fixed LMs, it tended toward more growth than fixed, and the sample as a whole tended toward significant levels of FLA.

## **Results**

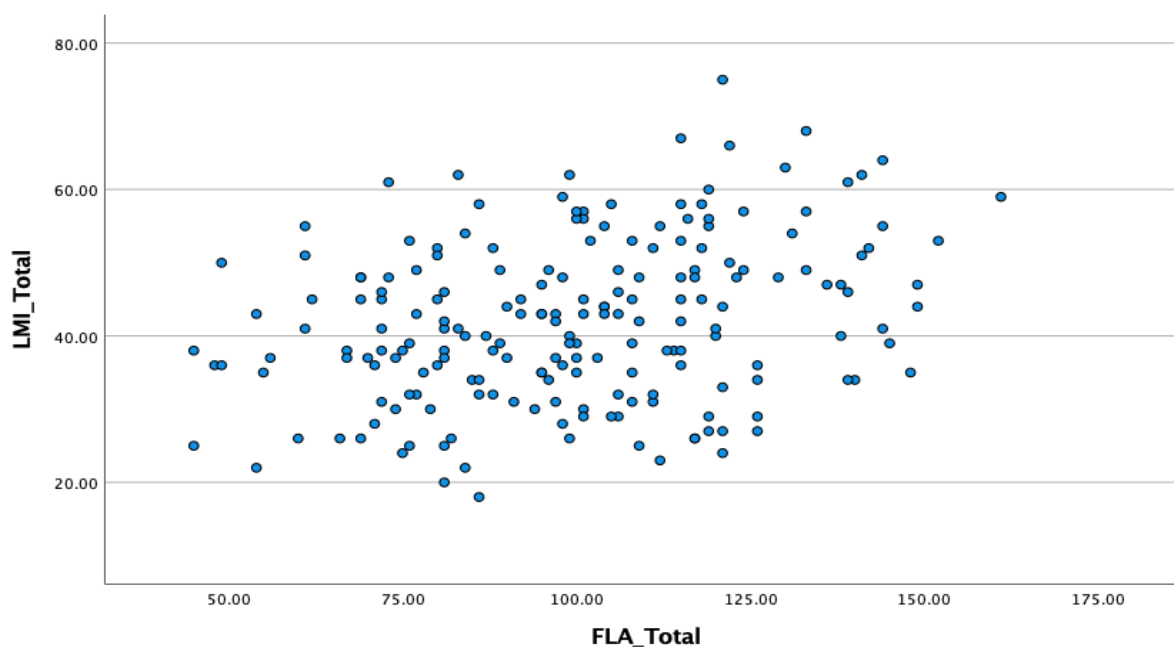
### **Assumption Tests**

Data were first examined to screen for missing values and inconsistent responses, and to verify that data were normally distributed. Next, the researcher used scatterplots to test the three assumptions of Bivariate Outliers, Linearity, and Bivariate Normal Distribution (Warner, 2013). All three bivariate regression assumptions were tested with scatterplots between the predictor variables ( $x$ ) and the criterion variable ( $y$ ). The Assumption of Bivariate Outliers was tested by

examining the scatterplots for extreme outliers. No extreme outliers were found for total FLA and LMI scores, nor for L2B and ASB scores, so this assumption was determined tenable for these variables. One outlier was found in the GLB data set. The researcher chose to eliminate this outlier for discussion of results, but scatterplots are provided below both with and without the outlier. The Assumption of Linearity was tested by examining the scatterplots for a linear relationship. A linear relationship was found for every variable set, so this assumption was determined tenable. The Assumption of Bivariate Normal Distribution was tested by examining the scatterplots for the classic “cigar shape.” The “cigar shape” is present in all scatterplots, so this assumption was determined tenable for all variable sets. Figures 2 through 4 are scatterplots for each of the following three variable pairs: FLA total as the predictor variable in all three, and LMI total, L2B and ASB as criterion variables.

**Figure 2**

*FLA Total Versus LMI Total Scatterplot*





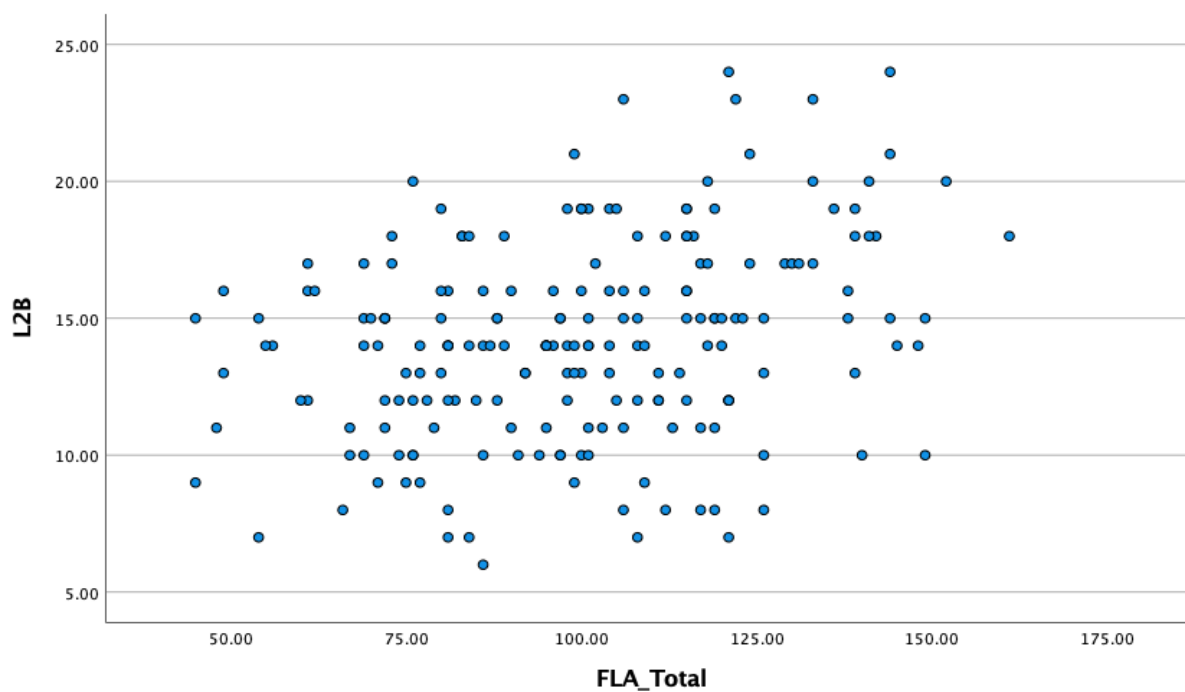
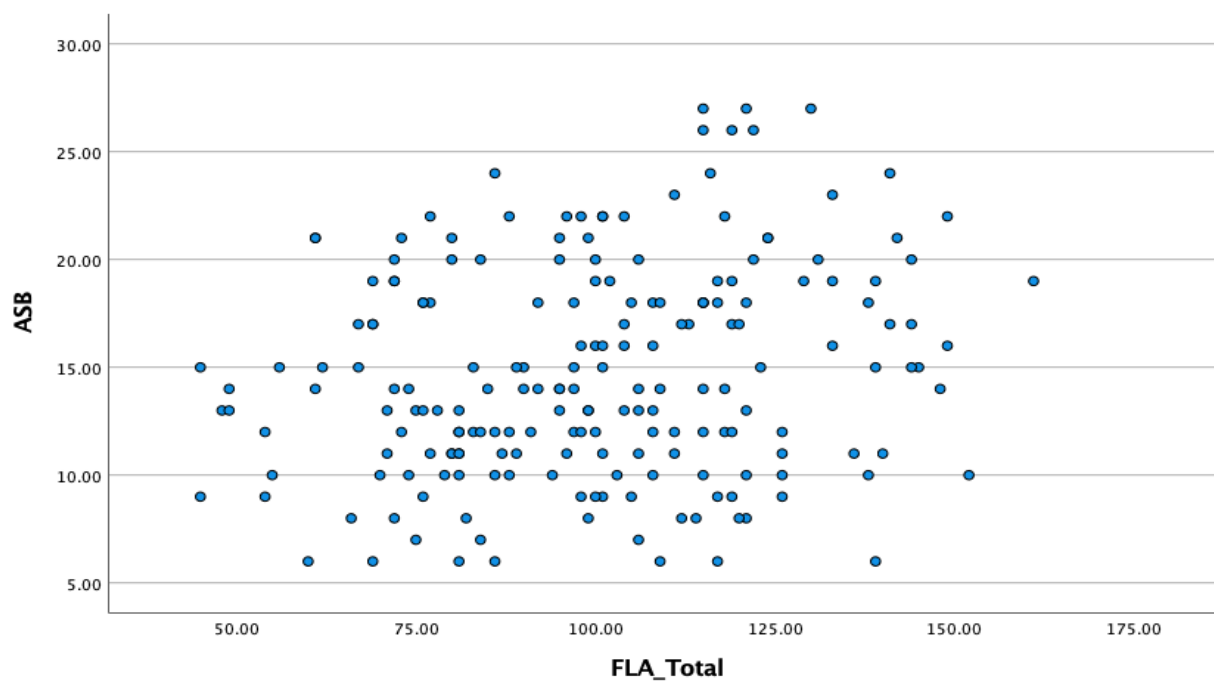
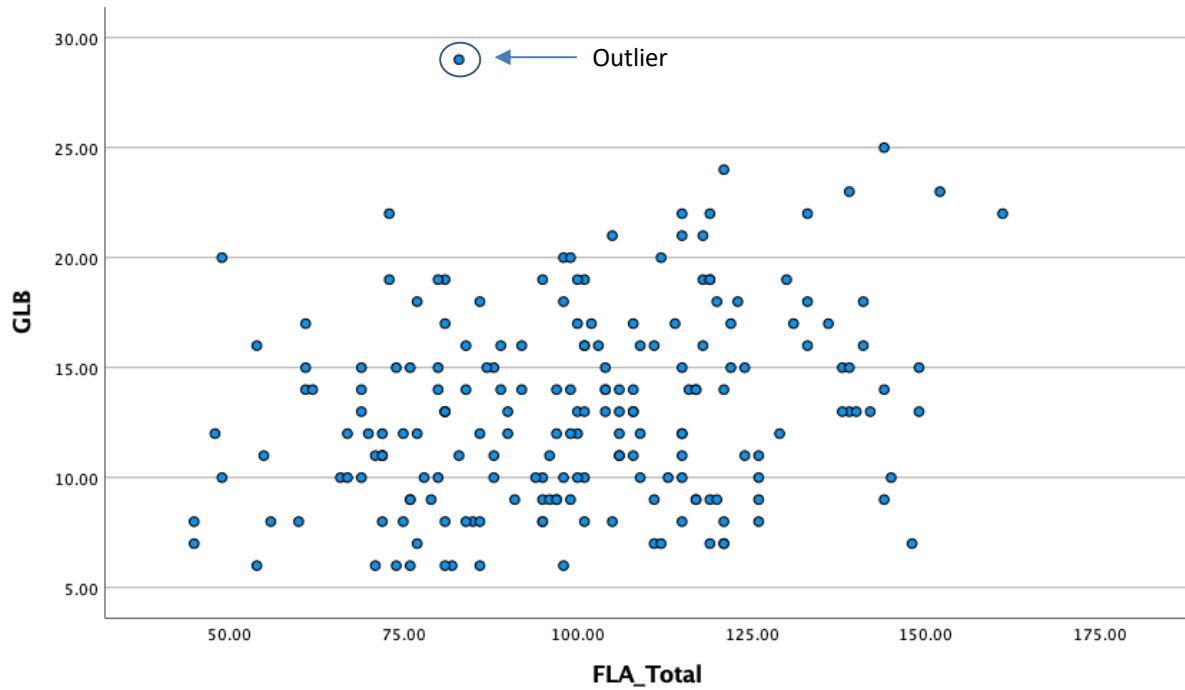
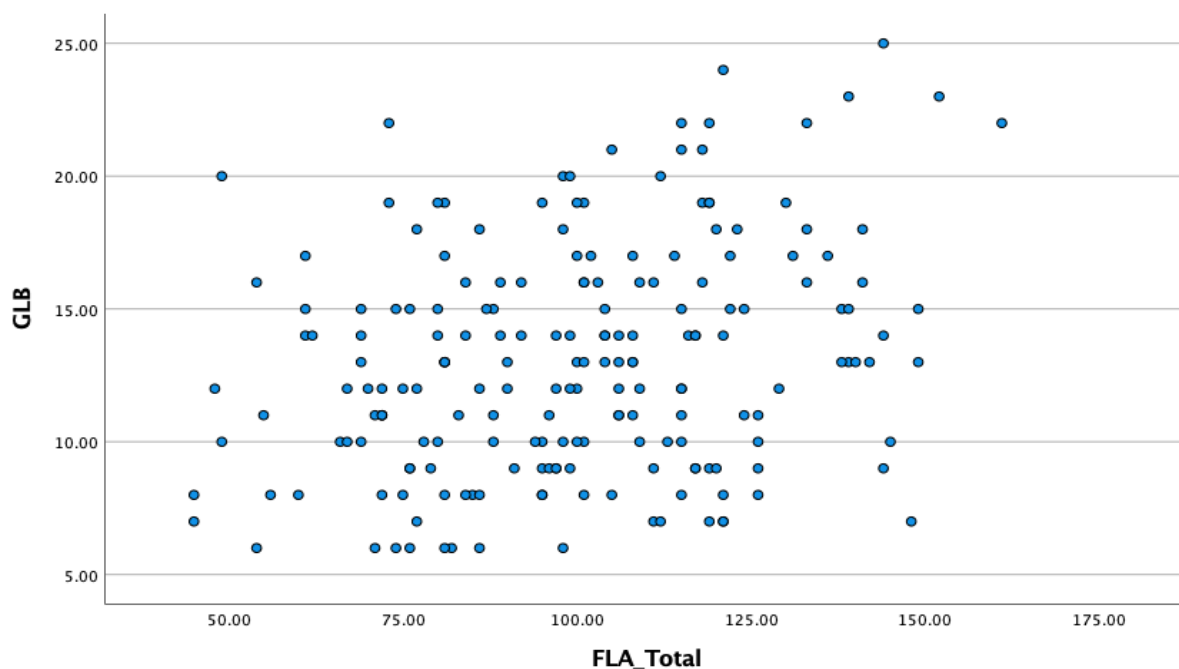
**Figure 3***FLA Total Versus L2B Scatterplot***Figure 4***FLA Total Versus ASB Scatterplot*

Figure 5 shows the variable pair FLA as predictor and GLB as criterion and includes the outlier case (FLA total = 101, GLB = 29). Figure 6 shows the same variables with the extreme outlier removed.

**Figure 5**

*FLA Total Versus GLB – Outlier Included Scatterplot*



**Figure 6***FLA Total Versus GLB – Outlier Removed Scatterplot*

## Hypotheses

This section addresses each null hypothesis. Four separate bivariate linear regression analyses were run, one for each hypothesis. A bivariate linear regression results in a correlation coefficient known as Pearson's  $r$ ; this metric has a small standard of error and is therefore the most extensively used bivariate correlation measure (Warner, 2013). Pearson's  $r$  ranges from -1.00 to +1.00, with negative values indicating a negative correlation between two variables, and positive values a positive correlation, a value of  $\pm 1.00$  indicating perfect correlation, and 0 indicating no relationship whatsoever (Warner, 2013). Value ranges are divided into three categories of effect size:  $< \pm 0.100$  is small,  $\sim \pm 0.300$  is medium, and  $> \pm 0.500$  is large.

### *First Null Hypothesis*

The first null hypothesis stated that there would be no significant predictive relationship between FLA and LMs. The SPSS bivariate linear regression analysis between total FLA and

total LM resulted in Pearson's  $r(198) = +.300, p < .001$ . This  $r$  value represents a moderate positive correlation between FLA and LM, and the  $p$  value meets the conservative .0125 alpha set by the Bonferroni correction. Therefore, the first null hypothesis was rejected. In other words, and in answer to RQ<sub>1</sub>, FLA can moderately predict LM. As participants' FLA increased, their tendency toward overall fixed LM and away from growth LM increased as well. Results are summarized in Table 2.

**Table 2**

*Correlation Between Total FLA and Total LM*

		FLA Total	LMI Total
FLA_Total	Pearson Correlation	1	.300**
	Sig. (two-tailed)		.000
	N	198	198
LMI_Total	Pearson Correlation	.300**	1
	Sig. (two-tailed)	.000	
	N	198	198

\*\* . Correlation is significant at the 0.01 level (two-tailed).

### ***Second Null Hypothesis***

The second null hypothesis stated that there would be no significant predictive relationship between FLA and GLB. The SPSS scatterplot for bivariate linear regression analysis between total FLA and total GLB resulted in Pearson's  $r(197) = +.276, p < .001$ . This  $r$  value represents a moderate positive correlation between FLA and GLB, and the  $p$  value meets the conservative 0.0125 alpha set by the Bonferroni correction. Therefore, the second null hypothesis was rejected. In other words, and in answer to RQ<sub>2</sub>, FLA can moderately predict GLB. As participants' FLA increased, their tendency toward fixed mindset GLB and away from growth mindset GLB increased as well. Results are summarized in Table 3.

**Table 3***Correlation Between Total FLA and GLB*

		FLA Total	GLB
FLA_Total	Pearson Correlation	1	.276**
	Sig. (two-tailed)		.000
	N	198	198
GLB	Pearson Correlation	.276**	1
	Sig. (two-tailed)	.000	
	N	197	197

\*\* . Correlation is significant at the 0.01 level (two-tailed).

### ***Third Null Hypothesis***

The third null hypothesis stated that there would be no significant predictive relationship between FLA and L2B. The SPSS scatterplot for bivariate linear regression analysis between total FLA and total L2B resulted in Pearson's  $r(198) = +.305$ ,  $p < .001$ . This  $r$  value represents a moderate positive correlation between FLA and L2B, and the  $p$  value meets the conservative 0.0125 alpha set by the Bonferroni correction. Therefore, the third null hypothesis was rejected. In other words, and in answer to RQ<sub>3</sub>, FLA can moderately predict L2B. As participants' FLA increased, their tendency toward fixed mindset L2B and away from growth mindset L2B increased as well. Results are summarized in Table 4.

**Table 4***Correlation Between Total FLA and L2B*

		FLA Total	L2B
FLA_Total	Pearson Correlation	1	.276**
	Sig. (two-tailed)		.000
	N	198	198
L2B	Pearson Correlation	.276**	1
	Sig. (two-tailed)	.000	
	N	197	197

\*\* . Correlation is significant at the 0.01 level (two-tailed).

#### ***Fourth Null Hypothesis***

The fourth null hypothesis stated that there would be no significant predictive relationship between FLA and ASB. The SPSS scatterplot for bivariate linear regression analysis between total FLA and total ASB resulted in Pearson's  $r(198) = +.213, p < .001$ . This  $r$  value represents a small positive correlation between FLA and ASB, and the  $p$  value meets the conservative 0.0125 alpha set by the Bonferroni correction. Therefore, the fourth null hypothesis was rejected. In other words, and in answer to RQ<sub>4</sub>, FLA can weakly predict ASB. As participants' FLA increased, their tendency toward fixed mindset ASB and away from growth mindset ASB increased as well. Results are summarized in Table 5.

**Table 5***Correlation Between Total FLA and ASB*

		FLA Total	ASB
FLA_Total	Pearson Correlation	1	.213**
	Sig. (two-tailed)		.000
	N	198	198
ASB	Pearson Correlation	.213**	1
	Sig. (two-tailed)	.000	
	N	197	197

\*\* . Correlation is significant at the 0.01 level (two-tailed).

## **CHAPTER FIVE: CONCLUSIONS**

### **Overview**

This study used four bivariate linear correlations to examine the relationship between Foreign Language Anxiety (FLA) and Language Mindsets (LMs), including the three subdimensions of LMs. Results indicated a significant predictive relationship wherein fixed mindsets correlated with higher levels of anxiety. These findings have implications for the university Second Language (L2) classroom and Second Language Acquisition (SLA) and educational research. In this final chapter, the author discusses the study's findings, reviews implications and limitations, and provides recommendations for future research.

### **Discussion**

The purpose of this quantitative correlational study was to discover whether a relationship exists between LMs and FLA for university L2 students at a large central Virginia university. The results warranted the rejection of all four null hypotheses, meaning that a relationship was demonstrated to exist. In this section, the author discusses the results with regard to each of the research questions.

### **Research Questions and Overall Results**

Research Question 1 asked whether FLA can predict overall LM. Results indicate that yes, there is a statistically significant, moderate, positive correlation between FLA and LM ( $r(198) = +.300, p < .001$ ). As participants' FLA increased, their tendency toward overall fixed LM and away from growth LM increased as well. Research Question 2 asked whether FLA can predict GLB. Results indicate that yes, there is a statistically significant, moderate, positive correlation between FLA and GLB ( $r(197) = +.276, p < .001$ ). As participants' FLA increased, their tendency toward fixed GLB and away from growth GLB increased as well. Research



Question 3 asked whether FLA can predict L2B. Results indicate that yes, there is a statistically significant, moderate, positive correlation between FLA and L2B ( $r(198) = +.305, p < .001$ ). As participants' FLA increased, their tendency toward fixed L2B and away from growth L2B increased as well. Research Question 4 asked whether FLA can predict ASB. Results indicate that yes, there is a statistically significant, small, positive correlation between FLA and ASB ( $r(198) = +.213, p < .001$ ). As participants' FLA increased, their tendency toward fixed ASB and away from growth ASB increased as well. In short, then, fixed LM and FLA are positively correlated.

These results are generally in keeping with expectations based upon findings in LM literature, FLA literature, Content Mindset (CM) literature, and more. Regarding LMs, previous research found comparable levels of LMs in a similar demographic. Lou and Noels (2017) found that university L2 students enrolled in an L2 class at a large Canadian university ( $N = 189$ ; 84.1% females; mean age = 19.11) scored an average of 50.04 ( $SD = 12.96$ ) on the LMI. This current study's participants scored 42.09 ( $SD = 11.04$ ). The average difference of 7.95 points on the LMI total amounts to a 7.39% total score difference between the two samples (the total LMI score being 108;  $7.95/108 = .0739$ ). While this difference is appreciable, both demographics display a less-than-midline (i.e., toward growth) LMI score.

Regarding FLA, the literature shows that roughly 30% to 50% of L2 students experience at least a moderate level of FLA (Alsowat, 2016; Horwitz, 2016). In this current study, 53% of students registered at least a moderate level of anxiety. This higher-than-average level accords with the fact that the 30% to 50% figure includes studies with younger students, and that FLA tends to increase with age (Han, 2013); university students, therefore, ought to skew to the higher end. Further, FLA has been shown to significantly correlate with generalized anxiety (Sokolová

& Suplatová, 2018). Given that generalized anxiety levels exceed 60% across American universities and have been rising in the past several decades (Anxiety in college: What we know and how to cope, 2019), and given that many FLA studies were conducted in years and decades prior, it stands to reason that FLA studies with American university students in future will show higher levels. This 53% figure, then, accords with trends.

Regarding the relationship between LMs and FLA, the overall significant, moderate correlation was to be expected, given that a) LM literature has shown that anxiety and fixed LM are correlated (though not FLA, hence this current study) (Lou & Noels, 2016, 2017), and given that b) FLA typically correlates with other negative affective learning factors (Al-Shboul et al., 2013; Han, 2013). Further, CM literature consistently shows a positive correlation between fixed CM and anxiety and other negative affective learning factors (Burnette et al., 2013). Even though LMs are distinct from CMs, their relatedness in this regard is to be expected. To summarize, then, in keeping with findings from the literature, most criterion variables showed a moderate, positive correlation with the predictor. ASB, however, showed only a small correlation, a result that the researcher found surprising, and which warrants discussion.

### **Age Sensitivity L2 Learning Beliefs**

Chapter 2 briefly discussed the lay misinterpretation of the critical period hypothesis, which leads many people to believe that one cannot truly learn an L2 past a certain point of adolescence (Lou & Noels, 2016, 2017). Due to this widespread misunderstanding regarding the effect of age on language learning and acquisition, many individuals believe that children learn an L2 better than adults, or even that adults cease to be able to learn an L2 after a certain age (Lou & Noels, 2016, 2017). While an age-related affect has been proven to exist, it is better characterized as a *sensitive* period, rather than a *critical* period, of L2 acquisition, such that any

age-based acquisition sensitivity associated with younger learning ages is arguably offset by cognitive and learning strategies present in later learning ages (Abello-Contesse, 2008; Birdsong, 2018; Ortega, 2008). In Chapter 2, the researcher postulated that, given that the participants were young adults (postpubescent) who are likely to have been exposed to some version of the critical period hypothesis, it was likely that ASB would strongly coincide with overall LM; in particular, students would likely condition their belief in the malleability of L2 learning on their age. While this hypothesis exceeds the scope of this paper, the researcher reasonably expected, based on this discussion, to find that ASB would be more likely to correlate more strongly with FLA than the other criterion variables. This was not the case; in fact, this variable showed the weakest correlation.

Though this result is surprising, other elements of the ASB metric accorded with expectations. For instance, while only roughly one fifth of participants' scores for other criterion variables lay above the possible midpoint, nearly one third of ASB scores did. In other words, fully 50% more students lay on the fixed side of the midpoint in this subscale compared to the other variables. Further, of the three subdimensions, ASB showed the highest mean score and highest standard deviation. ASB therefore skewed more toward fixed than the other variables.

It seems, then, given the overall more fixed mindset nature of ASB compared to its lower-than-expected correlation with FLA, that this subdimension must have shown more variance than others, such that the correlation did not result as expected. This discrepancy led the researcher to suspect that one or more of the ASB-related LMI questions might have shown much higher variance than other survey items. This prompted the researcher to perform a post-hoc, informal analysis of question-by-question variance. While all other LMI questions' variance from their means (typically around two or three out of a possible total of six) ranged from .50 to

1.82, one question, item 13, “How well a person speaks a foreign language depends on how early in life he/she learned it,” showed a 2.33 variance from its mean, which was much higher than any other question. This seemed, then, to be the most polarizing question in the survey by far, and likely skewed the ASB results. Students showed much more consistency in answering other ASB questions. For example, they were more consistent in answering number 15, another negatively worded (fixed) question, “Even if you try, the skill level you achieve in a foreign language will advance very little if you learn it when you are an adult,” whose variance was only 1.22 points away from its mean. In future studies, question 13 ought to be revisited and recalibrated, such that ASB results show more consistency with other subscale results.

### **Implications**

FLA was prevalent in this study’s sample, with 53% of participants registering moderate or higher levels of FLA. While LMs tended slightly toward growth rather than fixed, a clear correlation was found between movement toward fixed LMs and growth in FLA. FLA and LMs are two important and related affective L2 learning factors. Both warrant attention by L2 educators and researchers. This section discusses implications for pedagogy and research.

### **FLA and LM Classroom Interventions**

Per Chapter 2, a significant body of literature already exists that demonstrates that classroom interventions to lower FLA show excellent results, and lead to improvement in L2 achievement and affective factors. Similarly, a rich body of CM literature has shown conclusively that CM interventions are effective. Though LMs and CMs are distinct, their relatedness lends credence to the idea that similar interventions in LMs ought to have similar effects. Those few studies that do exist examining interventions in LM and in LM-adjacent areas also demonstrate that interventions to encourage growth over fixed mindsets in the L2 classroom

work, and that they improve student experiences and outcomes. Given that this current study has demonstrated a relationship between FLA and LMs, it stands to reason that such interventions ought to improve growth mindsets as well. These studies and interventions were discussed at length in Chapter 2 but warrant revisiting here. Chief among them, studies indicate that instructors ought to know the cause of and directly address FLA with their students, encourage growth mindsets early and often, and combine efforts in both areas to improve the overall classroom environment.

First, studies indicate that instructors ought to know the cause of and directly address FLA with their students (Alsowat, 2019; Kao & Craigie, 2018; Kruk, 2018). This indicates that Second Language Teacher Education (SLTE) programs ought to include FLA as part of future language educators' course of study. The same goes for LMs. L2 educators ought to encourage growth mindsets early and often, as targeted intervention on mindsets, wherein teachers seek to increase their students' growth mindset, have proven effective again and again in general mindset literature (Paunesku et al., 2015; Yeager & Dweck, 2012; Yeager et al., 2016, 2019). Interventions in the L2 classroom have also improved LMs (even if not couched in LM terminology); interventions such as providing students with explicit training in mindsets and encouraging them to adopt growth mindsets (Molway & Mutton, 2019), providing metalinguistic, awareness-raising mentoring sessions with students (Lanvers, 2020), aiming for positive learning experiences in the L2 classroom (Brown & Siebert Hanson, 2019), and more.

### **Addressing Anxiety and Mindsets Together**

Since FLA and fixed LMs are positively correlated, it stands to reason that reducing anxiety creates space for more growth mindsets, and that promoting growth mindsets reduces learning anxiety. Addressing both together ought to create a positive feedback loop. In other

words, a language educator bringing mindsets theory into the classroom explicitly and addressing it often, as well as seeking to prime a growth mindset, ought to lessen anxiety. Lower anxiety ought to create space for more positive mindsets, and so on. Perhaps the greatest implication from this current study, then, is for SLTE programs and L2 educator continuing education programs. Namely, they should increase their focus on affective L2 learning factors, especially LMs and FLA, so that future language educators can bring awareness of these factors to bear on their pedagogy. These future educators will then be able to address these factors explicitly with their students and encourage their students seek to lower their anxiety and to adopt growth LM.

The importance of L2 educators' own beliefs about their students' abilities, and their role in inspiring or lessening anxiety and growth mindsets in students, cannot be understated. L2 teachers' attitudes about their students impact their classroom behaviors (Pettit, 2011), and L2 teachers' beliefs about their students' abilities and the type of feedback teachers provide can influence or even change students' LMs for better or worse (Lou & Noels, 2020b). In fact, Lou and Noels (2020b) conducted a study in which English language learners

experienced challenges in an English test, and one group of learners received ability-consoling feedback, the second group received improvement feedback, while the third group received no additional feedback (i.e., control group). [They] found that compared to learners who received no feedback, those who received improvement-oriented feedback perceived that their teacher believed that they could improve their ability (i.e., growth meta-lay theory). In contrast, compared to learners who received no feedback, those who received ability-consoling feedback perceived the teacher believed less in their potential to improve and had a weaker sense of competence in English. (p. 9)

This means that teachers with a fixed view of LMs generally, and especially those with a fixed view of the LMs of their students, might be fostering fixed LMs in the classroom rather than creating environments for growth LMs to flourish. L2 educators ought to therefore be educated about LMs and FLA. If teachers can both improve their view of their students' abilities and foster growth LMs in their students, their students may be able to improve achievement and experience less FLA in the L2 classroom. Beyond pedagogical implications, this study also demonstrates the need for further research in LMs; some potential studies are discussed in the "Recommendations for Future Research" section below. First, however, this study's limitations need to be addressed.

### **Limitations**

This study was carefully planned and executed, and methods and procedures accorded with best practices in educational research. Data conformed to assumption tests, and statistical analysis demonstrated robust findings. Regardless, this study, like any research study, suffered many limitations to validity. This section addresses and discusses many such limitations in terms of threats to general validity, internal validity, external validity, and statistical conclusion validity.

#### **Threats to General Validity**

While both the FLCAS and the LMI have been proven valid and reliable, the LMI, as used in this study, reduces LMs to a binary measurement—either toward fixed or growth—and therefore does not capture the complexity of LMs. Specifically, scores cannot indicate whether a student has a fixed-high (fixed with high perceived innate ability), fixed-low (fixed with low perceived innate ability), or true growth mindset. Some of what may seem as growth may in fact be false growth, or fixed-high mindset (Dweck, 1999). Since "a measure is valid if it measures

what it purports to measure...if the scores provide information about the underlying construct or theoretical variable that it is intended to measure” (Warner, 2013, p. 902), this is a critical limitation. Lou and Noels (2019c) warn that “some incautious educators may adopt [an] oversimplified framework and even differentiate students as either a fixed-mindset learner or a growth-mindset learner,” but “this dichotomous formulation of mindsets has received little support in research” (p. 539). In other words, while this study’s participants tended toward growth LMs in their scores, it could be that many show a false growth (fixed-high) mindset instead. Lou and Noels’s (2016, 2017) paths analysis approach to data interpretation seems to allow for more nuance than the binary of higher/lower scores; future research ought to follow suit.

### **Threats to Internal Validity**

For experimental research, internal validity “refers to the degree to which observed differences on the dependent variable are a direct result of manipulation of the independent variable, not some other variable” (Mills & Gay, 2019, p. 277). While the current study is correlational rather than experimental, it bears repeating that correlation does not imply causation. Though this study demonstrated a relationship between FLA and LMs, there is no indication that they are directly related such that manipulation of one would lead to change in the other. Further, this study was unable to account for several other variables which may have a mediating effect between the two variables of interest, variables such as participant characteristics (e.g., age, gender), L1, L2 being studied, prior L2 study experience, L1-L2 distance, and more. Future research ought to examine relationships between these and the target variables. Future research ought also to consider the complexity of FLA, with its three



subdimensions, to determine whether generalized FLA relates differently to LMs than do its subdimensions.

### **Threats to External Validity**

External validity “is the degree to which study results are generalizable, or applicable, to groups and environments outside the experimental setting” (Mills & Gay, 2019, p. 278).

Generalizability improves in proportion to how much the sample reflects the real-world population it is meant to represent. External validity threats also arise due to factors such as timing and setting of research collection.

### ***Generalizability***

That this study’s sample size was large and diverse in terms of age, gender, language studied, and more, recommends its generalizability to the broader American university L2 student population. That this study’s findings align well with other findings in LM and FLA literature also recommend their generalizability. However, several threats to generalizability arise.

First, this was a convenience sample of adult university students enrolled in beginner to beginner-intermediate L2 classes. As such, the sample already self-selected for L2 students, meaning that findings cannot be extended to university students more broadly. Second, the university where data were collected is overtly Christian and Evangelical in nature. It could be that students’ worldview and background therefore limit extension to non-similar populations. Finally, demographic details such as L1 background, other L2s studied, time studying the current L2 in high school, and more, were collected, but not analyzed. Each of these factors could prove to be a moderating variable. For example, it could be that students with prior L2 experience, who are currently studying a third or fourth foreign language, might pattern similarly with each other

and differently from students who are only beginning an L2. It could be that non-native English speakers pattern differently from native speakers learning an L2 as well. Future research ought to examine these nuances.

### ***Timing and Setting***

LMs are chronic, meaning that they are consistent over time without targeted intervention toward intentional change (Lou & Noels, 2016). However, Lou and Noels (2016, 2020b) show that LMs can be primed—that is, manipulated—via situational cues. Situational cues can have a strong effect temporarily, but “although priming can shift learners’ language mindsets, it is possible, perhaps even likely, that participants will return to their chronic tendency once the situational cues disappear” (Lou & Noels, 2016, p. 30). This study made no use of manipulation or priming, and therefore findings were interpreted to represent chronic LMs. It is possible, though, that some unaccounted-for situational cue may have prejudiced results. For example, data were collected near the end of the semester, when students’ overall anxiety levels were likely higher due to impending final exams, papers, and projects. This might have skewed their answers. Future research could mitigate the situational and timing effect by collecting data at two or three times in the semester and averaging each students’ responses.

### **Recommendations for Future Research**

1. Duplicate this study at other universities in the United States and abroad to improve generalizability
2. Conduct multiple regression analysis including other variables, such as
  - a. L1 background
  - b. L2 being studied
  - c. Participant age

- d. Participant gender
  - e. Participants' self-reported perceived L2 aptitude
  - f. Participants' L2 aptitude as measured by
    - i. L2 course grades
    - ii. L2 proficiency tests
  - g. L1-L2 distance
  - h. Participants' prior L2 study experience
  - i. FLA subdimensions
3. Duplicate this study, but collect data at multiple different times to mitigate any situational primes
  4. Duplicate Lou and Noels's (2017) semi-experimental LM-priming research with this demographic

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## Appendix A: Informed Consent

### Consent

**Title of the Project:** The Relationship Between Language Mindsets and Foreign Language Anxiety

**Principal Investigator:** Jared David Barber, Assistant Professor and doctoral candidate, Liberty University

#### Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must be 18 years of age or older, and currently enrolled in a 102, 201, or 202 level Spanish, Mandarin Chinese, French, German, Russian, or Arabic course at Liberty University. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

#### What is the study about and why is it being done?

The purpose of the study is to discover whether a relationship exists between language mindsets and foreign language anxiety for university second language students.

#### What will happen if you take part in this study?

If you agree to be in this study, I would ask you to do the following things:

1. Complete an online survey. It should take approximately 20 minutes to complete.

#### How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include a deeper understanding of the relationship between language mindsets and foreign language anxiety. This knowledge might help language educators to provide a better learning experience for their students.

#### What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

#### How will personal information be protected?

The records of this study will be kept private. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be anonymous. This means that I, as the researcher, will not be able to link data (e.g., survey responses, grades, etc.) to the specific participants who provided, or are associated with, the data.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.

Liberty University  
IRB-FY20-21-823  
Approved on 4-21-2021

## Appendix B: IRB Approval

**Subject:** [External] IRB-FY20-21-823 - Initial: Initial - Exempt  
**Date:** Wednesday, April 21, 2021 at 9:00:30 AM Mountain Daylight Time  
**From:** do-not-reply@cayuse.com  
**To:** Barber, Jared David (Modern Languages), Shenkle, Michael Thomas (Online Academic Affairs Admin)  
**Attachments:** ATT00001.png

[ EXTERNAL EMAIL: Do not click any links or open attachments unless you know the sender and trust the content. ]

### LIBERTY UNIVERSITY INSTITUTIONAL REVIEW BOARD

April 21, 2021

Jared Barber  
Michael Shenkle

Re: IRB Exemption - IRB-FY20-21-823 The Relationship Between Language Mindsets and Foreign Language Anxiety

Dear Jared Barber, Michael Shenkle:

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46: 101(b):

Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording).

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.

Your stamped consent form(s) and final versions of your study documents can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at [irb@liberty.edu](mailto:irb@liberty.edu).

Sincerely,  
**G. Michele Baker, MA, CIP**  
*Administrative Chair of Institutional Research*  
**Research Ethics Office**



## Appendix C: Permission to Use Instruments

### Email exchange for permission to use the Language Mindsets Inventory

Wednesday, December 30, 2020 at 2:03 PM

From: Jared Barber

To: Nigel Lou

Subject: Request to Use Language Mindsets Inventory in Dissertation Study

Dear Dr. Lou,

I am an assistant professor and doctoral student at Liberty University completing a dissertation toward a PhD in Higher Education. My background is in Linguistics, and I teach courses in Teaching English as a Second Language, Linguistics, and Spanish. My dissertation topic involves Language Mindsets. I am a great fan of your work and seek to encourage growth mindsets in my students.

I am writing to ask written permission to use the Language Mindsets Inventory in my research study. The working title of my dissertation is, 'The Relationship Between Language Mindsets and Foreign Language Anxiety.' The purpose of my study is to discover whether a relationship exists between Language Mindsets (LM) and Foreign Language Anxiety (FLA), as well as to discover whether relationships exist between the three subscales of LM and FLA. FLA is measured by the Foreign Language Classroom Anxiety Scale (FLCAS), developed and validated by Horwitz, Horwitz, and Cope (1986); I will be seeking permission to use it as well. The participants will be drawn from a convenience sample of university students enrolled in beginner intermediate and intermediate L2 classes at my university.

I would hope to use the LMI in its entirety with no modifications. I would be happy to provide any other information about my study that you might be interested in receiving.

I would like to use your Language Mindsets Inventory under the following conditions:

- I will use the Language Mindsets Inventory only for my research study and will not sell or use it for any other purposes.
- I will include a statement of attribution and copyright on all copies of the instrument. If you have a specific statement of attribution that you would like for me to include, please provide it in your response. I do not plan to reproduce the instrument in my dissertation itself; if this changes, I will seek your written permission in a separate message.
- At your request, I will send a copy of my completed research study to you upon completion of the study and/or provide a hyperlink to the final manuscript.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at [email address redacted]. If not, please let me know the conditions under which I might be allowed to use the instrument.

Thank you very much for your consideration of this matter.

Warm regards,

**Professor Jared D. Barber**

*Assistant Professor of Linguistics, Spanish, and TESL*

*Program Head, TESL*

*Director, LU Spanish Institute*

**Department of Modern Languages**

**LIBERTY UNIVERSITY**

*Training Champions for Christ since 1971*

Wednesday, December 30, 2020 at 2:13 PM  
 From: Nigel Lou  
 To: Jared Barber  
 Subject: RE: Request to Use Language Mindsets Inventory in Dissertation Study

Dear Prof Barber,

Thank you for your email and interest in my research. Your work sounds interesting and important to the field.

Please feel free to use the LMI and to make changes to suit your research purposes.

Good luck with your dissertation!

Nigel

### **Email exchange for permission to use the Foreign Language Classroom Anxiety Scale**

Wednesday, December 30, 2020 at 2:14 PM  
 From: Jared Barber  
 To: Elaine Horwitz  
 Subject: Request to Use FLCAS in Dissertation Study

Dear Dr. Horwitz,

I am an assistant professor and doctoral student at Liberty University completing a dissertation toward a PhD in Higher Education. My background is in Linguistics, and I teach courses in Teaching English as a Second Language, Linguistics, and Spanish. My dissertation topic involves Foreign Language Anxiety.

I am writing to ask written permission to use the Foreign Language Classroom Anxiety Scale in my research study. The working title of my dissertation is, 'The Relationship Between Language Mindsets and Foreign Language Anxiety.' The purpose of my study is to discover whether a relationship exists between Language Mindsets (LMs) and Foreign Language Anxiety (FLA), as well as to discover whether relationships exist between the three subscales of LMs and FLA. LMs are measured by the Language Mindsets Inventory, developed and validated by Lou & Noels (2016, 2017); I will be seeking permission to use it separately. The participants will be drawn from a convenience sample of university students enrolled in beginner intermediate and intermediate L2 classes at my university.

I would hope to use the FLCAS in its entirety with no modifications. I would be happy to provide any other information about my study that you might be interested in receiving.

I would like to use your FLCAS under the following conditions:

- I will use the FLCAS only for my research study and will not sell or use it for any other purposes.
- I will include a statement of attribution and copyright on all copies of the instrument. If you have a specific statement of attribution that you would like for me to include, please provide it in your response. I do not plan to reproduce the instrument in my dissertation itself; if this changes, I will seek your written permission in a separate message.
- At your request, I will send a copy of my completed research study to you upon completion of the study and/or provide a hyperlink to the final manuscript.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at [email address redacted]. If not, please let me know the conditions under which I might be allowed to use the instrument.

Thank you very much for your consideration of this matter.

Warm regards,

**Professor Jared D. Barber**

*Assistant Professor of Linguistics, Spanish, and TESL*

*Program Head, TESL*

*Director, LU Spanish Institute*

**Department of Modern Languages**

**LIBERTY UNIVERSITY**

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Friday, January 1, 2021 at 8:58 PM

From: Elaine Horwitz

To: Jared Barber

Subject: Request to Use FLCAS in Dissertation Study

You may use the Foreign Language Classroom Anxiety in your research.

Best wishes,

Elaine K. Horwitz

## Appendix D: Permission to Conduct Study in Department at University

### Permission Request Letter

16 April 2021

Dr. Annik Miller  
Chair, Department of Modern Languages  
Liberty University  
1971 University Blvd  
Lynchburg, VA 24515

Dear Dr. Miller,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a PhD in Higher Education Administration degree. The title of my research project is The Relationship Between Language Mindsets and Foreign Language Anxiety and the purpose of my research is to discover whether a relationship exists between language mindsets and foreign language anxiety for university second language students.

I am writing to request your permission to conduct my research at Liberty University, with students in 102, 201, and 202 level language classes within the Department of Modern Languages.

Participants will be asked to follow a link and complete the attached survey. Participants will be presented with informed consent information prior to participating. Taking part in this study is completely voluntary, and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, please provide a signed statement on official letterhead indicating your approval. A permission letter document is attached for your convenience.

Sincerely,

**Professor Jared D. Barber**  
*Assistant Professor of Linguistics, Spanish, and TESL*  
*Program Head, TESL*  
*Director, LU Spanish Institute*  
**Department of Modern Languages**

**LIBERTY UNIVERSITY**  
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## Permission Letter



16 April 2021

Jared Barber  
Assistant Professor, Department of Modern Languages  
Liberty University  
1971 University Blvd  
Lynchburg, VA 24515

Dear Professor Barber:

After careful review of your research proposal *The Relationship Between Language Mindsets and Foreign Language Anxiety*, I have decided to grant you permission to conduct your study at Liberty University with students in all 102, 201, and 202 level language classes within the Department of Modern Languages.

Sincerely,

**Dr. Annik Miller**  
*Chair and Assistant Professor of German and French*  
**Department of Modern Languages**  
**Liberty University**

## **Appendix E: Recruitment/Instructions Scripts**

### **VERBAL SCRIPT FOR COLLEAGUES**

Dear Students,

As a student in the School of Education at Liberty University, my colleague, Professor Barber, is conducting research as part of the requirements for a doctoral degree. The purpose of his research is to discover whether a relationship exists between language mindsets and foreign language anxiety for university second language students. He has asked me to invite eligible participants to join his study.

Participants must be 18 years of age or older, and currently enrolled in a 102, 201, or 202 level Spanish, Mandarin Chinese, French, German, Russian, or Arabic course at Liberty University. Participants, if willing, will be asked to follow a link and complete an online survey. It should take approximately twenty minutes to complete the procedure listed. Participation will be completely anonymous, and no personal, identifying information will be collected.

In order to participate, please follow the link on the screen and complete the survey. Contact Professor Barber at \_\_\_\_\_ for more information.

A consent document is provided as the first page of the survey. The consent document contains additional information about my research. After you have read the consent form, please click the button to proceed to the survey. Doing so will indicate that you have read the consent information and would like to take part in the survey.

### **VERBAL SCRIPT FOR RESEARCHER**

Dear Students,

As a student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to discover whether a relationship exists between language mindsets and foreign language anxiety for university second language students, and I am here to invite eligible participants to join my study.

Participants must be 18 years of age or older, and currently enrolled in a 102, 201, or 202 level Spanish, Mandarin Chinese, French, German, Russian, or Arabic course at Liberty University. Participants, if willing, will be asked to follow a link and complete an online survey. It should take approximately twenty minutes to complete the procedure listed. Participation will be completely anonymous, and no personal, identifying information will be collected.

In order to participate, please follow the link on the screen and complete the survey. Contact me at \_\_\_\_\_ for more information.

A consent document is provided as the first page of the survey. The consent document contains additional information about my research. After you have read the consent form, please click the button to proceed to the survey. Doing so will indicate that you have read the consent information and would like to take part in the survey.