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The Effects of Autonomy-based Instruction on Motivation to Learn and Academic Performance

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accepted by the committee members in partial fulfillment of the requirements for the degree,
Doctor of Education, in the College of Education and Human Development, Georgia State
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The Dissertation Advisory Committee and the student's Department Chairperson, as
representatives of the faculty, certify that this dissertation has met all standards of excellence and
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THE EFFECTS OF AUTONOMY-BASED INSTRUCTION ON MOTIVATION TO LEARN AND ACADEMIC PERFORMANCE

by

Mariana Stone

ABSTRACT

This study, which was informed by self-determination theory, examined the impact of an autonomy-based instructional intervention on the motivation and academic performance of American university students (N=219) enrolled in an elementary Spanish course. This study utilized a quasi-experimental design with the experimental group receiving an autonomy-based instructional intervention while a comparison group receiving a business as usual course experience. Both the experimental and comparison groups were exposed to the same curricular material, with the difference being that the experimental group was given the opportunity to apply autonomous decision-making to structuring their learning experience. The following research questions were examined: (1) Does the autonomy-based instructional intervention increase the motivation of elementary-level foreign language students to learn Spanish? (2) Does the autonomy-based instructional intervention increase the academic performance of elementary-level foreign language students in Spanish? (3) Does the autonomy-based instructional intervention increase the level of autonomy of elementary-level foreign language students in Spanish? Results showed improvement on both motivation and language performance. Neither autonomy nor motivation were related to improvements in students' language performance.

INDEX WORDS: language learning, autonomy, motivation.

The Effects of Autonomy-Based Instruction on Motivation to Learn and Academic Performance

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A Dissertation

Presented in Partial Fulfillment of Requirements for the

Degree of

Doctor in Education

in

Foreign Language Education

in

Departmentof Middle and Secondary Education

in

the College of Education and Human Development

Georgia State University

Atlanta, GA
2018

ACKNOWLEDGMENTS

I had expected that the acknowledgements section of the dissertation would be the easiest to write. But much like with the rest of this process I was wrong and it has served to keep me humble the entire way.

I want to start by thanking the committee that gave their time to read all of my writing all the way from comprehensive exams to this point. I can hear their voice in my head (don't worry I am not hearing things) and their support has guided me throughout. I have to specially thank Dr. Swanson and Dr. Bingham for their back and forth feedback and for teaching me to learn from the process as much as the product. I cannot emphasize enough how vital they were to my learning.

I also want to thank the faculty at GSU, I am in awe at the personal investment and genuine concern they all have had for our growth as future academicians. Dr. Sullivan in particular is the rock of this program.

To my friends at work, Kristi and Elizabeth, many times you had more faith in me than I had on myself and I did not want to disappoint you so when I felt like giving up I pushed forward because of you. Thank you from the bottom of my heart

To my parents who I know are proud of me for getting to this point and who have given up so much all their lives to support and encourage me. I am forever grateful.

To my dear children, I want to thank you for believing in me and cheering me on. You all had to have extra patience for me this whole time and enjoyed only a part-time mom. Although I have been somewhat mentally absent, you have been in my heart the whole time.

To me beloved classmates, I want to thank Hannah for her endless contagious energy, Jennifer for her strength, Magz for her outlook on life, Erica for exuding so much love, and Julie for your friendship.

Last but not least my sweet husband who took on so many roles at home and at work to make sure I had the time and space to work on this. You are my everything.

And to God, without whom I am nothing.

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CHAPTER 1: INTRODUCTION

Background

With millions of students from elementary school to universities studying second

languages (Edele & Stanat, 2016), second-language instruction in the United States is nearly

ubiquitous. The most widespread of these foreign languages with fifty percent of the students

enrolled in is Spanish, but many other second languages are also taught in the United States

(Nakatsukasa & Loewen, 2015; Stein-Smith, 2013).

Second-language instruction has, for over two centuries, been hailed as one of the

foundations of a liberal arts education in the United States (Sacco, 2014). However, existing data

suggest that a very low proportion of Americans obtain proficiency in a second language by

virtue of instruction in a classroom environment (as opposed to home exposure or other learning

modalities). By some estimates, less than 1% of Americans who have been exposed to a second

language in a classroom have become proficient at that language (Shin & Kominski, 2010). This

inference is supported by analysis of data from the United States Census and from other

academic sources as well (Shin & Kominski, 2010).

The low level of second-language proficiency based on classroom instruction is a widely

recognized and important problem in American and global education (Allen & Mills, 2016).

Substantial resources are spent on the teaching of second languages; if the purpose of second-

language instruction is held to be the development of proficiency in that language, then it is

possible to argue that the current state of second-language instruction in the United States is

inefficient or inadequate.

Scholars have identified several possible reasons for the inefficient state of second-

language education in the contemporary United States. One such reason involves the traditional

structure of the language-learning experience, in which it is the teacher, rather than the student, guides the experience of learning a second language (Danesi, 2016). While some students are responsive to instructor-led learning, evidence suggests that opportunities for student autonomy in structuring the learning experience itself—not the actual learning content—is important in promoting engagement in students (Adkins-Coleman, 2010; Blondal & Adalbjarnardottir, 2012; Bouta, Retalis, & Paraskeva, 2012; Cejda & Hoover, 2010; Fan & Williams, 2010; Mo & Singh, 2008; Mo, Singh, & Chang, 2013; Price & Tovar, 2014; Rodriguez & Elbaum, 2014; Ross, Bondy, Gallingane, & Hambacher, 2008; Sun, 2014). Students who exercise some measure of control over how, when, and in what manner they encounter second-language teaching materials are, in theory, more engaged and thereby more likely to do well in these classes (Adkins-Coleman, 2010; Blondal & Adalbjarnardottir, 2012; Bouta et al., 2012; Cejda & Hoover, 2010; Fan & Williams, 2010; Mo & Singh, 2008; Mo et al., 2013; Price & Tovar, 2014; Rodriguez & Elbaum, 2014; Ross et al., 2008; Sun, 2014).

In the context of contemporary education, the principle of learner autonomy has been enshrined in practices such as e-learning—in which students exercise a substantial amount of autonomy over their learning (Bahhouth & Bahhouth, 2011; Boshier & Onn, 2007; Ho & Kuo, 2010; Lee, 2010; Lentell, 2012; Nawaz & Kundi, 2013; Rumble, 2012; Simpson, 2013)—as well as by a general shift in society that promotes the centrality of the individual experience, for example, in such venues as social media (Best, Manktelow, & Taylor, 2016; Bright, Kleiser, & Grau, 2015; Chan & Yazdanifard, 2014; Ngai, Tao, & Moon, 2015; Wibben, 2016). Language instruction has also entered the domain of student autonomy, as numerous computer programs and other tools have made it possible for students of a second language to exert more control over the nature of their learning experiences.

In practice, the use of autonomy-based instruction in language settings could result in higher levels of motivation and academic proficiency. The objective of this quantitative, quasi-experimental study is to examine the ability of an autonomy-based intervention that combines technological tools and personal guidance to improve the motivation and academic performance of American university students of elementary Spanish.

Problem Statement

The problem addressed in this study is the low level of language proficiency among Americans who have studied second languages in school. The purpose of teaching foreign languages is, among other things, to inculcate proficiency in that language among students (Allen & Mills, 2016; Nakatsukasa & Loewen, 2015; Sacco, 2014). To the extent that American students are not likely to obtain proficiency in a second language from classroom instruction (Shin & Kominski, 2010), this underlying purpose of education is not being achieved.

The problem of deficiency in second languages is a problem that involves the waste of resources. Large sums of money, teacher time, physical infrastructure, and other resources are devoted to the teaching of second languages in the United States (Thoms & Thoms, 2014). Low levels of second language proficiency, therefore, reflect a low return on investment (ROI) for the educational system. Deficiency in second languages is also a social problem in that the failure to equip more Americans with second language proficiency can result in higher levels of cultural isolation, xenophobia, and other undesirable social outcomes (Wiley, 2014).

Purpose of the Study

The purpose of this study is to examine the ability of an autonomy-based instructional intervention to improve the motivation and academic performance of American university students of elementary Spanish. This purpose was achieved by exposing an experimental group of elementary Spanish learners to an autonomy-based instructional intervention. Both the comparison and experimental groups were exposed to the same pedagogical and curricular material, with the difference being that the experimental group was equipped to apply autonomous decision-making in structuring the learning experience. Measuring the impact of the autonomy-based instructional intervention were to equip policy-makers, educational leaders, language teachers, and other stakeholders with important information about the usefulness of autonomy-based approaches to the learning of second languages.

Nature of the Study

The study is quantitative and quasi-experimental in nature. The study is quantitative because it is based on the mathematical analysis of the relationship between variables, which is the distinguishing feature of quantitative studies (Balnaves & Caputi, 2001; Creswell, 2015; Dantzker & Hunter, 2006; Given, 2008; Jackson, 2015; Leary, 2011; McBurney & White, 2011; McNabb, 2010; Moustakas, 2014; Trochim, Donnelly, & Arora, 2015; Zikmund, 2003). The study is quasi-experimental in that there is an intervention. However, because not all of the elements of the study (in particular, the content of Spanish instruction) were under the control of the researcher, the study is not, by the standards of the methodological literature (Balnaves & Caputi, 2001; Creswell, 2015; Dantzker & Hunter, 2006; Given, 2008; Jackson, 2015; Leary, 2011; McBurney & White, 2011; McNabb, 2010; Moustakas, 2014; Trochim et al., 2015; Zikmund, 2003), a true experiment.

Theoretical Framework

The theoretical framework for the study is that of self-determination theory (Ryan & Deci, 2000). Self-determination theory is not a single theoretical framework; rather, it encompasses elements of expectancy theory, self-efficacy theory, arousal theory, self-determination theory, engagement theory, and other theories applicable to instructional psychology (Adkins-Coleman, 2010; Blondal & Adalbjarnardottir, 2012; Bouta et al., 2012; Cejda & Hoover, 2010; Fan & Williams, 2010; Mo & Singh, 2008; Mo et al., 2013; Price & Tovar, 2014; Rodriguez & Elbaum, 2014; Ross et al., 2008; Sun, 2014). The main premise of self-determination theory as applied to this study is that various behavioral, affective, and cognitive qualities play an independent role with respect to obtaining proficiency in a second language or any other complex cognitive task (Adkins-Coleman, 2010; Blondal & Adalbjarnardottir, 2012; Bouta et al., 2012; Cejda & Hoover, 2010; Fan & Williams, 2010; Mo & Singh, 2008; Mo et al., 2013; Price & Tovar, 2014; Rodriguez & Elbaum, 2014; Ross et al., 2008; Sun, 2014). When cognitive capabilities are held constant, self-determination is the factor that has been observed to result in superior learning outcomes, not only for foreign languages but for other topic areas as well (Adkins-Coleman, 2010; Blondal & Adalbjarnardottir, 2012; Bouta et al., 2012; Cejda & Hoover, 2010; Fan & Williams, 2010; Mo & Singh, 2008; Mo et al., 2013; Price & Tovar, 2014; Rodriguez & Elbaum, 2014; Ross et al., 2008; Sun, 2014). Further information on self-determination and its constituent theories is provided in the second chapter of the study, as part of the literature review.

Research Questions

The research questions of the study are as follows:

RQ1: Does the autonomy-based instructional intervention increase the motivation of elementary-level foreign language students to learn Spanish?

RQ2: Does the autonomy-based instructional intervention increase the academic performance of elementary-level foreign language students in Spanish?

RQ3: Does the autonomy-based instructional intervention increase the level of autonomy of elementary-level foreign language students in Spanish?

Definition of Terms

There are a few terms in the study that require specific definitions.

Autonomy-based instruction is "the development of learners' abilities to work more effectively in a self-directed fashion" (Smith, 2008, pp. 395-396).

Learner autonomy means to take responsibility for managing and regulating one's learning (Little, 2007).

Motivation is understood to denote the strength of a person's desire to achieve a goal. Motivation can be considered within a spectrum ranging from amotivation, to extrinsic motivation, and then to intrinsic motivation (Deci & Ryan, 2000/2008).

Significance of the Study

The main significance of the study is in its ability to contribute to what little is known about the ability of autonomy-based interventions to improve both the motivation and the academic performance of second-language learners of Spanish. Second-language learners who do well in class, and who are highly motivated to acquire greater proficiency in their target language, are more likely to acquire proficiency over time (De Jong, Groenhout, Schoonen,

&Hulstijn, 2015; Hu et al., 2013; Luk & Bialystok, 2013). Therefore, obtaining a better understanding of how practices such as autonomy-based approaches can improve learning offers educational policy-makers and other stakeholders, important insight into how to improve the state of second-language learning in the United States. The quasi-experimental results generated in this study can offer insight into whether—and, if so, to what extent—a relatively simple autonomy-based intervention can improve the effectiveness of second-language teaching. If the autonomy-based intervention is observed to have a positive impact on second-language learning, it can be used in other contexts to improve the efficiency of second-language programs.

The study's significance can also be understood in the context of an important gap in the literature. According to Little, "The concept of learner autonomy is often applied to the process and content of language learning but not specifically to its intended outcome, the development of proficiency in a second or foreign language" (Little, 2007, p. 14). Thus, in terms of the research base of autonomy and performance, the study's significance can be understood in light of a design that relates learner autonomy to the outcome of performance.

Finally, the study's significance can be considered in light of larger trends in American education that favor autonomy. As was clear from the review of literature carried out in the second chapter, there is widespread praise—among educators, policy-makers, and scholars—for autonomous learning, because such learning appears to be theoretically and conceptually related to higher achievement through a number of mechanisms (including arousal, engagement, self-determination, and other theories discussed at greater length in the second chapter of the study). However, for autonomous learning to become more widely accepted and practiced in American classrooms, including American foreign language classrooms, it is necessary for scholars to provide more detail on the success of such approaches in terms of generating higher levels of

performance. If learner autonomy is not positively associated with performance, then, in an evidence-based setting, it is unlikely that learner autonomy will continue to receive budgetary and other resources. Thus, the provision of quantitative information about the relationships between autonomy, motivation, and performance can constitute important decision support for educational leaders in the United States.

Summary and Conclusion

Second language acquisition (SLA) is a field of research that seeks to inform, among other things, language learning and teaching (Ellis, 2005). SLA research focuses to a large extent on understanding language learning as a process, and what factors affect it. Research demonstrates that both affective and cognitive factors influence the level of success that can be achieved while learning a second language (Lightbown & Spada, 2006). Investigating the effect of affective factors such as motivation has been a focus of SLA investigations for several years (Gardner, 1985). Motivation has emerged as one of the main affective factors associated with successful language learning experience (Dörnyei, 2005; Gardner & Clement, 1990; Ushioda, 2001). Cognitive factors that have an effect on the language learning process such as intelligence and language aptitude, although significant, are insufficient alone at explaining differences in language acquisition (Gardner, 1985).

One of the primary concerns for language teachers is to raise language learners' motivation towards learning a language given that studies show higher motivation is associated with higher achievement (Carreira, 2012). In the present study, the researcher seeks to explore the effect of an autonomy driven instructional approach on linguistic competence and motivation to study a foreign language. The goal of this research project is to understand and affect positively the sentiment towards the experience of taking a foreign language by providing an

opportunity to engage in strategies that help learners rethink the language learning experience itself.

This study is divided into five chapters. The first chapter introduced the problem of low levels of second-language proficiency in the United States and offered a background of the topic and the proposed attempt to address it in this study. The second chapter, the review of literature, contains a discussion, analysis, and synthesis of empirical articles on the topics of motivation, performance, and autonomy-based learning in second-language instruction, as well as a discussion of relevant theories. The third chapter, the methodology, contains a description and defense of the components of the study's methodology and research design. The fourth and fifth chapters include results and discussion.

CHAPTER 2: LITERATURE REVIEW

Introduction

The purpose of this quantitative, quasi-experimental study is to examine the ability of an autonomy-based instructional intervention to improve the motivation and academic performance of American university students of elementary Spanish. The purpose of the literature review is to discuss, analyze, and synthesize both theories and empirical findings that are related to the purpose of the study, with an emphasis on identifying both points of consensus and gaps in the literature. In the United States, Spanish has been, and continues to be, a language of immense significance (Leeman, 2015). Spanish is, after English itself, the most widely spoken language in the United States, and the demographics of Spanish speakers suggest that Spanish will only continue to increase in prominence in the years to come. Spanish is a language of importance not only within the internal context of the United States but also with respect to communication with South America, Central America, and large parts of Europe. For all of these reasons, Spanish is a crucial second language in American classrooms and homes (Leeman, 2015).

In order to achieve its purposes, the literature review has been divided into several subsections. First, the theoretical framework of the study, Self-determination Theory, under which the role of autonomy and its effect on motivation, is discussed. Because there is over a century of empirically informed scholarship on autonomy, dating from the foundational Yerkes-Dodson experiment (Yerkes & Dodson, 1908), this section contains first an overview of SDT and then a section on relevant theories, including theories related to engagement and motivation.Second, empirical articles relevant to motivation and learner autonomy are discussed. Third, opportunities for research are identified in the literature. Fourth, a brief summary

containing anoverview of the theoretical framework, the empirical findings, and the gaps in the literature is discussed.

Theoretical Framework

A theory is a set of interrelated concepts, definitions, and propositions that explains or predicts events or situations by specifying relations among variables. The notion of generality, or broad application, is important. Thus, theories are by their nature abstract and not content- or topic-specific. Henderikus (2010) stated that a theory "is typically aimed at providing explanatory leverage on a problem, describing innovative features of a phenomenon or providing predictive utility" (p. 1498). Accordingly, a theory of why an autonomy-based instructional learning intervention might improve student motivation and academic performance ought to make empirically testable predictions, offer an explanation of the nature and content of the process of learning a second language, and describe the phenomenon of language learning in terms of relevant factors.

The theoretical framework of this study is self-determination theory (SDT). SDT aims to explain human behavior by analyzing the choices people make in order to satisfy psychological needs. The study of human needs, or the needs of learners, occupied a central role of early research on motivation and such study was "widely employed in empirical psychology" (Deci & Ryan, 2000, p. 227). This idea within SDT, of satisfying human needs, is partially related to a tenant of humanism that ascribes to the idea that "human beings have the potential to flourish while living full, authentic lives provided that certain innate psychological needs are satisfied" (Noels et al., 2016, p.2).

The shift from behaviorist based theories toward cognitive-based theories led motivation researchers to move away from the study of needs and concentrate on more goal-related

research. Researchers recognized the importance of the study of goal-oriented behavior (Pintrich, Conley, & Kempler, 2003), but Deci and Ryan (2008) argue that such study is not complete if it is not complemented by understanding the needs that give power to those goals. There are several theories that relate to SDT that have proven to be fruitful in the examination of learning behaviors. The next section attends to relevant theoretical perspectives that guide the current investigation, with a particular focus SDT.

Self-Determination Theory

Self-determination theory and related theoriesare the lens through which this study is framed. In SDT, for individuals to be actively engaged in learning, classrooms have to be set up to support three basic psychological needs. According to SDT theory, there are three psychological needs to be fulfilled: autonomy, competence, and relatedness. Autonomy refers to the feeling of being free to choose how to carry out a task. Competence is described as the feeling that one can engage physically and socially with the environment and handle the situation. Finally, relatedness refers to the feeling that people can care or are being cared about by those with whom we interact. According to Deci and Ryan (2008), individuals who become engaged in learning situations that help them experience feelings of autonomy, competence, and relatedness manifest more self-determined behaviors. Conversely, individuals' self-determined behaviors are thwarted when learning conditions do not promote autonomy, competence, and relatedness.

According to self-determination theory, motivational orientations vary across a continuum depending on the level of self-determination (Deci & Ryan, 2000/2008). This continuum ranges from amotivation, being the lowest level of motivation, to intrinsic motivation being the highest form of motivation (See Figure 1). Amotivation is described as an unwillingness to personally be

involved in the activity, while intrinsic motivation is considered to inherent enjoyment in

engaging personally with an activity (Deci & Ryan, 2000/2008).

Behavior	Nonself-Determined					Self-Determined
Type of Motivation	Amotivation	Extrinsic Motivation				Intrinsic Motivation
Type of Regulation	Non-regulation	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation	Intrinsic Regulation
Source of motivation	Impersonal	External	Somewhat external	Somewhat internal	Internal	Internal
What regulates the motivation?	Non-intentional, external rewards and punishments	Compliance, external rewards, and punishments	Self-control, involvement, internal rewards and punishments	Personal importance, conscious valuing	Congruence, awareness, synthesis, with self	Interest, enjoyment, inherent satisfaction

Figure 1. Self-determination Continuum (adapted from Deci & Ryan, 2000)

Between the extremes, Deci and Ryan (2008) distinguished four levels of extrinsic

motivation: external regulation, introjected regulation, identified regulation, and integrated

regulation. External regulation refers to those activities that are performed for reasons external to

the person (Ryan & Deci, 2000). Such as a student who takes a class solely to get credit towards

a degree. Introjected regulation is considered to be more self-determined than external

regulation. Such motivation results in behaviors that are rooted in guilt, worry, or shame (Ryan

& Deci, 2000). For example, a student who works hard in a class to not be embarrassed if the

professor asks a question in front of the class. Identified regulation involves those activities that

are somewhat internalized (Ryan & Deci, 2000). Ryan and Deci suggested that this action is

self-initiated, and there is more ownership even if the activity itself is not viewed as fun or

interesting. For example, Noel, Pelletier, Clement, and Vallerand (2000) explained this self-

determination level by saying that language learners with identified regulation are learners who

feel L2 fluency is important to them and they are willing to complete repetitive and boring exercises to achieve the level of linguistic competence they desire. Integrated motivation, considered the most autonomous form of extrinsic motivation, is described as resembling intrinsic motivation in the sense that it is highly self-determined (Ryan & Deci, 2002). The two differ from in the way learners perceive the activity itself. While both learners are highly motivated, those who have integrated motivation may find the activity important for purposes of self-gain but only those intrinsically motivated might find the activity interesting and fun in and of itself (Deci & Ryan, 2002).

As noted by Ryan and Deci (2000) feeling competent alone does not suffice to enhance intrinsic motivation unless it is accompanied by supporting a sense of autonomy. Therefore, a growing trend within the research field on motivation and language learning focuses on the role of autonomy (Chang, 2010; Liu, 2005; Vandergrief, 2005). Although autonomy has been found to increase self-regulation, there is still a recognized need for more studies that help to explain what features of instruction support autonomy and how it affects motivation and learning (Stefanou, Perencevick, DiCintio, & Turner, 2004).

SDT is a distinct theory that encompasses the learner's affective, behavioral, and cognitive responses. Thus, SDT is related to factors such as engagement, arousal, self-efficacy, and expectancy, which is why SDT has to be discussed in terms of pre-existing theories as well as in its own right. If SDT is correct, then the failure of second-language learning can be considered as a self-determinative failure— a failure that is likely to contain flaws in one or more of the following elements:

- Valence (the learner's desire to learn the second language)

- Expectancy (the learner's belief that engaging with the material in a specific way—such as a traditional teaching way—will lead to actually learning the second language)

- Self-efficacy (the learner's ability to apply existing skills and qualities to achieve the desired goal of learning a second language)

- Arousal (the learner's response to the perceived difficulty of the task of learning a second language)

- Engagement (an overall measure of the learner's interaction with the task of learning a second language)

Thus, there is a need to discuss these other theories as well, particularly in relation to SDT itself.

Another definition of self-determination was provided by Price, Wolensky, and Mulligan (2002, p. 111). As shown in Table 1 below, Price et al.'s ideas relate self-determination to elements of behavioral autonomy, self-regulated behavior, psychological empowerment, and self-realization. Their definition of self-determination is particularly useful in light of the theories discussed in the subsequent sections of the literature review because these theories can be accommodated within one or more categories of self-determination. At the conclusion of the discussion of each theory, the theory's location within the specific components of self-determination—as discussed by Ryan and Deci (2000) or by Price et al. (2002)—has been identified.

Table 1

Proposed Components of Self-Determination / Autonomy (Price, Wolensky, & Mulligan, 2002)

Dimension	Components
Behavioral autonomy	Progression from dependence to self-care and self-direction, as expressed in: • Choice-making skills: Select from among alternatives based on preferences • Decision-making skills: Weigh adequacy of various solutions • Problem-solving skills: Respond in order to function effectively in one's environment • Goal-setting / attachment skills: Develop goals and perform necessary actions • Independence, risk-taking, and safety skills: Perform tasks without help
Self-regulated behavior	The decision to plan, act, evaluate, and revised plans as needed, as expressed in: • Goal-setting / attachment skills: Develop goals and perform necessary actions • Self-observation, evaluation, and reinforcement skills: Access, observe, and record what you discover • Self-instruction skills: Self-talk to provide prompts for problem-solving • Self-advocacy skills: Speak up to defend oneself, a cause, or a person
Psychological empowerment	Possessing an internal locus of control, self-efficacy, and outcome expectations, as expressed in: • Internal locus of control: Belief that one has control over critical outcomes • Positive attributions of efficacy/outcome expectancy: Behavior leads to expected outcomes
Self-realization	Possessing accurate knowledge of individual strengths and needs, along with the ability to act in a manner that capitalizes on that knowledge, as expressed in: • Self-awareness: Basic understanding of one's strengths, needs, and abilities • Self-evaluation: Ability to use/apply personal insights to real-world settings

Price et al., 2000, p. 111

Relevant Theories

Self-determination Theory is closely related to several other theories—Arousal Theory, Self-efficacy Theory, Expectancy Theory, and Engagement Theory. Each of these theories contributes and relates in some way to Ryan and Deci's (2000) SDT model that posits that individuals will show greater levels of self-determined behavior if their needs for autonomy, competence, and relatedness are satisfied. These theories are presented in the following subsections in order to give context to the study of motivation under SDT.

Arousal Theory. Learning is the end result of a series of complex and planned behaviors, such as reading, listening, asking questions, and otherwise engaging in the kinds of cognition, and accompanying affective states, associated with gathering and synthesizing information (O'Malley & Chamot, 1990; Prevatt, Welles, Li, & Proctor, 2010; Seel, 2012; Tsay & Brady, 2012). In fact, learning can be described not only as the end result of behaviors (a result measurable through tests and other measures) but also as the behaviors themselves (Adkins-Coleman, 2010; Arguel & Jamet, 2009; Chen & Jang, 2010; Zastrow & Kirst-Ashman, 2009). If learning can be described in this manner, there is an open question as to why someone people engage more closely with learning behaviors. One possible answer to this question was presented in the seminal Yerkes-Dodson study (Yerkes & Dodson, 1908) of arousal.

Yerkes and Dodson (1908) carried out an experiment that led them to conclude that the highest motivation to complete a task (or to engage in the behaviors associated with the task) occurs in the presence of a moderate stimulus. The Yerkes-Dodson Law has been empirically proven not only with rats but also with other animal and human populations (Ito et al., 2015).

The Yerkes-Dodson Law has also been found to apply in learning environments, with the relevant finding being that students who find tasks moderately stimulating are most motivated to

complete these tasks (Broadhurst, 1959; MacIntyre, 1995; Mills, D'Mello, & Kopp, 2015; Tulis & Fulmer, 2013; Wang et al., 2015). If students find a task to be either too simple or too difficult, they are not highly motivated to complete it; on the other hand, if students find a task to be moderately difficult, they are more motivated to engage with the task. This finding has been replicated (Broadhurst, 1959; MacIntyre, 1995; Mills et al., 2015; Tulis & Fulmer, 2013; Wang et al., 2015) so often that it is now at the basis of the pedagogical approach known as scaffolding.

In scaffolding, tasks are introduced to students in order of increasing difficulty, with each task attempting to engage and challenge students' current levels of competence (Mattanah, Pratt, Cowan, & Cowan, 2005; Pratt, Green, MacVicar, & Bountrogianni, 1992). In scaffolding, when a task becomes easy, it is replaced by an incrementally harder task (Mattanah et al., 2005; Pratt et al., 1992). If the distance in difficulty levels is too great, then students are not motivated to continue and will turn instead to procrastination and other avoidance behaviors. If the distance between difficulty levels is too small, then students are likely to become bored.

Arousal is a means of explaining intrinsic motivation, which is in Ryan and Deci's (2000) SDT model, on the spectrum of self-determined behavior. Arousal is, in particular, a theory of intrinsic motivation that predicts that intrinsic motivation is itself a function of task complexity, and the strength of intrinsic motivation emerges from the difficulty of the task. Thus, arousal theory can be approached as one possible explanation of what intrinsic motivation is and how it works within Ryan and Deci's (2000) SDT model.

Self-efficacy Theory. Self-efficacy Theory can be summarized as the belief one has on one's own ability to be able to succeed in a specific situation or to accomplish a task successfully (Bandura, 1997). In the context of second language learning, self-efficacy posits that neither motivation nor cognitive preparation is sufficient in themselves to generate academic

performance. Students have to be able to apply their various skills or qualities in order to obtain the desired result. According to Bandura and other researchers, self-efficacy overlaps closely with the exercise of autonomy (Bandura, 1977; Brown et al., 2014; Jiang, Song, Lee, & Bong, 2014; R.M. Klassen & Durksen, 2014; R. M. Klassen & Tze, 2014; Kuo, Walker, Schroder, & Belland, 2014; Skaalvik, Federici, & Klassen, 2015). Self-efficacious individuals are able to autonomously translate their existing qualities to the achievement of a behavioral task. Therefore, self-efficacy theory appears to predict that, in fact, the link between motivation and academic performance might be stronger for individuals exposed to the autonomy-based intervention because (1) autonomy-based instruction would improve self-efficacy and (2) increased self-efficacy would improve the ability to translate motivation into academic achievement.

Self-efficacy is a justified feeling of confidence that translates into appropriate behavioral actions. As such, self-efficacy can be understood as an account of regulation, which is one of the factors in Ryan and Deci's (2000) SDT model. Self-efficacy is, in particular, a form of what Ryan and Deci referred to as integrated regulation—someone with high self-efficacy is able to intrinsically regulate himself or herself in order to achieve a specific behavioral task. Thus, self-efficacy theory appears to be particularly relevant to the regulation component of Ryan and Deci's SDT model.

Expectancy Theory. Expectancy theory (Hackman & Porter, 1968) is a classic account of motivation and behavioral propensities. Expectancy theory as:

Expectancy theory states that the strength of the tendency for an individual to perform a particular act is a function of (a) the strength with which he expects certain outcomes to be obtained from the act, times (b) the attractiveness to him of the expected outcomes.

Thus, the theory frequently is summarized by the phrase, "Force equals expectancy times valence"(p. 418).

Understood from the standpoint of expectancy theory, second-language instruction consists of (a) behavioral force (which could be reflected in the amount of time a student applied to language learning and other measurable outcomes); (b) the attractiveness of wanting to work harder at the second language; and (c) the belief that approaching language learning in a specific way would actually result in the outcome of learning the language.

These aspects of expectancy theory are aligned with the nature of the autonomy-based learning intervention. The literature on e-learning (Bahhouth & Bahhouth, 2011; Boshier & Onn, 2007; Ho & Kuo, 2010; Lee, 2010; Lentell, 2012; Nawaz & Kundi, 2013; Rumble, 2012; Simpson, 2013) suggests that allowing students to structure their approach to learning in an autonomous way makes learning more pleasurable. Hence, with reference to learning a second language, expectancy theory predicts that students exposed to the autonomy-based learning intervention would be more motivated because of higher valence. In addition, because the autonomy-based learning intervention is designed to address expectancy—by helping students how they can approach and structure their learning in a more effective manner—expectancy theory would also predict that students exposed to the autonomy-based learning program would have greater expectancy. Cumulatively, these two empirical predictions supported by expectancy theory vis-à-vis the quasi-experiment suggest that students exposed to the autonomy-based learning intervention would have higher levels of academic success and motivation, both of which are variables that have been incorporated into the research questions of the study.

Expectancy theory is closely related to what, in Ryan and Deci's (2000) SDT model, is described as the regulatory source of motivation. In expectancy theory, *valence* is the term given

to the aspect of motivation—whether intrinsic or extrinsic—with respect to which the individual forms an effective stance. Expectancy theory relates the strength of a specific behavior to the product of what Ryan and Deci described as an intrinsic regulatory source of motivation and another factor, expectancy, that is not in the Ryan and Deci model.

Engagement Theory. The variable that Yerkes and Dodson (1908) referred to as *stimulation* in the context of rat learning has been described as *engagement* in the context of human learning (Adkins-Coleman, 2010; Bobbitt-Zeher, 2004; Fan & Williams, 2010; Green et al., 2012; Houchen, 2013; Plunkett, Behnke, Sands, & Choi, 2009; Ross et al., 2008; Sun, 2014). However, engagement has dimensions that go beyond arousal as well; engagement encompasses not only the mental and behavioral states of the individual but also various attributes of teachers and the overall pedagogical environment.

The theory of engagement is explanatorily powerful in explaining differences in learning between human populations and has informed various policy responses as well. For example, the formative theory behind the Head Start program in the United States was that academically vulnerable are not exposed to cognitive environments of sufficient richness in youth, putting them behind other students as early as Kindergarten (Webster-Stratton & Hammond, 1998). If the theory of engagement as applied to the scaffolding paradigm is correct, then the difference in the learning of different groups (such as students who are successful at second-language learning and students who are not successful at second-language learning) grows over time; students might begin school with only slight differences in learning performance, but, over time, such differences widen as the students who are behind engage in more avoidance behavior. In fact, empirical research (Appel & Kronberger, 2012; Bobbitt-Zeher, 2004; Bower, 2013; Condron, Tope, Steidl, & Freeman, 2013; Cummins, 2009; Durham, 2012; Griner & Stewart, 2013;

Hartney & Flavin, 2014; Jeynes, 2014; Rios, 2012; Torbeyns, Schneider, Xin, & Siegler, 2015; Torff, 2014) has demonstrated that the academic gap between students does, in fact, widen over time, which means that schools' failures to engage all students through proper scaffolding also cascade over time.

There is a body of empirical research (Adkins-Coleman, 2010; Bobbitt-Zeher, 2004; Fan & Williams, 2010; Green et al., 2012; Houchen, 2013; Plunkett et al., 2009; Ross et al., 2008; Sun, 2014) suggesting that what is currently considered a failure of learners to learn can be more accurately described as a failure of pedagogy, with this failure understandable in terms of engagement. Well-designed curricula taught by teachers who are both warm and sufficiently demanding have been observed to close the academic gap between low and high performers (Bondy, Ross, Hambacher, & Acosta, 2013; Bonner, 2014; Ford & Sassi, 2014; Houchen, 2013; Ross et al., 2008; Xu, Coats, & Davidson, 2012). More recently, the analysis of so-called gamified learning has suggested that adapting traditional lessons into games and game-link formats improves learning by better engaging the learner (Blohm & Leimeister, 2013; Domínguez et al., 2013; Poole, Kemp, Williams, & Patterson, 2014; Simões, Redondo, & Vilas, 2013). Multiple learning theories, which is older than gamification theory, holds that, in many cases, learning failures occur because learners are being approached through mediums of instruction that are not aligned with their personal learning styles (Reeve, Scherbaum, & Goldstein, 2015).

Engagement theory, like expectancy theory, is closely related to what Ryan and Deci (2000) described as the regulatory source of motivation. Engagement regulates motivation by more closely involving the learner. The following diagram serves to summarize and highlight the main point of each theory and their relationship to SDT.
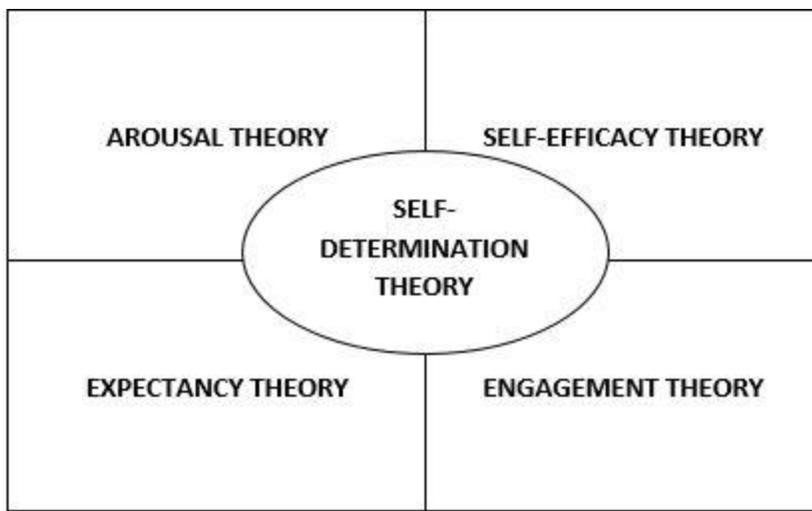
Figure 2. Theories related to Self-Determination Theory

Empirical Studies

The following section will include a discussion on the empirical research done in the area of motivation as it relates the field of language learning, learner autonomy, and language learner autonomy specifically in the context of second language learning.

Much of the research in second language acquisition is directed towards understanding what helps and hinders people as they learn a language. Noting hindrances, Wong and Csikszentmihalyi (1991) suggested that the main difficulty with language learning seems to reside not so much in the complexity of the material itself or contextual variables, but in the lack of desire to learn it; the obstacle is more affective in nature than cognitive. In a study of high school and college students in the United States, Dörnyei (1998) reported that one of the reasons for the lack of desire to learn a second language stems from the compulsory nature of Second language study. Therefore, studying how to incorporate opportunities for autonomous decision making in the experience of the learner becomes all the more relevant.

The Role of Motivation

According to Ryan and Deci (2002) when learners perceive themselves to be more

autonomous, competent and relate to the class, then they become more self-determined and more

motivated to complete the task. To get a clearer picture of what Ryan and Deci refer to as

"motivated to complete the task", one has to first review the work of Gardner and Lambert

(1972).

Gardner and Lambert (1972) studied the role of motivation in language learning and how

it affects the learners' experience and operationalized the concept of motivation as "a

combination of effort and desire to learn a language as well as positive attitude towards learning

the language" (p. 12). Gardner and Lambert recognized the key role motivation plays in

determining a successful or unsuccessful language learning experience and considered it an

unchangeable trait over time. But more recent research has shown that supporting certain

conditions in the classroom can facilitate intrinsic motivation over time (Ryan & Deci, 2000).

Among those conditions are, creating a student-centered classroom, encouraging students'

actions rather than their character, having high but realistic expectations, and proving learning

goals for them (Davis, 2009). Dörnyei (2005) explained the undeniable role of motivation in

language acquisition noting that "all other factors involved in second language acquisition

presuppose motivation to some extent" (p. 65). But Dörnyei also noted that second-language

acquisition is somewhat different from other academic disciplines in the sense that for the learner

to become proficient in a second language there has to be consistent, regular efforts, and strong

motivation can make up for the deficiencies in both language aptitude and learning conditions.

Gardner (1985) advanced a motivational model, sometimes referred in the literature as

the socio-educational model, that described two types of orientations in motivation: integrative

orientation and instrumental orientation. Within the context of second language learning, integrative motivation encompasses a motivational orientation that is energized by the desire to be part of the second language group and interact with members of that second language community (Dörnyei, 2009). Dörnyei and Csizér (2002) pointed out that this integrative disposition may be better explained as a process of identification and development of the concept of one's self. Instrumental orientation is described as one's desire to learn a second language with the functional goal of improving work conditions or achieving higher social status (Gardner, 1988). Someone with an instrumental orientation may pursue language learning as a way of getting ahead at work or in their career. Some empirical studies document that individuals with integrative orientation become more successful language learners (Gardner, 2000; Masgoret & Gardner, 2003; Masgoret, Bernaus, & Gardner, 2001). However, the context of these studies applies majorly to English as a foreign language where the instrumental quality of learning English as a tool to advance in the workforce has direct results.

Gardner's initial integrative/instrumental framework was revised and expanded by others to include a larger spectrum of sources of motivation (Crookes & Schmidt, 1991) to accommodate alternative contexts. Second language researchers have challenged the relevance of the concept of integrative orientation in the context of foreign language learning claiming it is more appropriate for the SL context rather than the foreign language context (Chen, Warden, & Chang, 2005; Dörnyei, 2007; Kormos & Dörnyei, 2015). Gardner himself stated that when studying language learning, looking at motivation solely within the integrative/instrumental dichotomy is restrictive (Gardner & MacIntyre, 1993).

Crookes and Smith (1991) added that there is a need to ground the study of second language motivation research within the context of the classroom. According to Masgoret and

Gardner (2003), a motivated language learner is one that puts forth the effort, pays attention, and is persistent, has goals, desires, and enjoys the task. Language teachers and researchers alike, seek to understand what sparks the learner's interest and what may cause a shift in attitude.

Most research in motivation and language learning has focused in a second language or bilingual contexts (Noels, Pelletier, Clément, & Vallerand, 2000; Noels, 2001; Pu, 2009). Within the foreign language context, studies examining motivation and language learning are often carried out in English as a foreign language setting(Li, 2006; Pae, 2008; Rueda & Chen, 2005; Wong, 2008). As suggested by Carreira (2012) findings from English as a foreign language should be generalized with caution in other foreign language settings and more research is needed mainly because the role of English as a world language greatly affects the drive learners show. There is a dearth of research in the area of motivation in the foreign language context, specifically the study of Spanish in higher education in the United States.

One reason behind using Self-determination Theory in this study is because SDT ascribes to an understanding of motivation in a way that language teachers can understand and find useful when designing strategies that promote student motivation, for example when teachers consider how SDT explains the role of autonomy in promoting more self-determined behaviors. The next section addresses a review of the literature on learner autonomy studies.

Learner Autonomy

Understanding learner autonomy becomes increasingly more important as we try to understand how to promote it. The concept of learner autonomy was introduced by Holec (1981) and he defined it as "the ability on the part of the learner to take charge of his/her learning" (p. 17). Such conceptualization remains central to the discussion of the role of autonomy in language learning today and has been used in a variety of studies. For example, Benson and

Voller (1997) cite five different ways researchers have referred to learner autonomy: (1) situations where the learners study independently, (2) skills that can be learned and applied within a self-directed environment, (3) the innate capacity suppressed by formal education, (4) the exercise of learners' responsibility for their own learning, and (5) the right learners have to determine the direction of their own learning. But an important work of caution came from Little (1990) who argued that learner autonomy should not be seen as a synonym to self-learning because learner autonomy has to do with "the learner's psychological relation to the process and content of learning" (p. 4).

Autonomy and motivation. The relationship between autonomy and motivation is rooted in the notion that the more autonomous the learner is, the more motivated the learner tends to be (Dickinson, 1995). The association between autonomy and motivation has been studied by many researchers such as Benson (2001), Ushioda (2006), and Spratt, Humphreys, and Chan (2007). Spratt et al. cited that motivated language learners tend to engage in more autonomous learning activities outside of class. Pu (2009) found that when learners are more involved in the decision-making process around the learning experience, their motivation improves. Liu (2012) explored the relationship between language anxiety, motivation, autonomy, and proficiency among university students in Taiwan and found a strong correlation between autonomy and motivation.

Although there is an understanding that motivation and autonomy are linked, the causality is not clear. Researchers still question whether autonomy precedes motivation or motivation precedes autonomy (Spratt, Humphreys, & Chan, 2002). In other words, autonomy and motivation are likely reciprocal processes and it is difficult to determine in what way one relates to the other, and vice versa. Researchers are not clear whether learners need to be first

motivated or autonomous to be successful language learners, hence more research is needed in this area.

Autonomy-supporting strategies.Another question that remains unanswered in research is with regards to the multiple ways autonomy can be supported in the classroom (Stefanou, Perencevich, DiCintio, & Turner, 2004). Although much effort has been spent on defining autonomy, the practical realization of how language learner autonomy can be influenced remains elusive (Little, 2007). Stefanou et al. suggest that important avenues of research should consider exploring how a particular way of supporting autonomy, impacts student outcomes and motivation. Several researchers argue for the importance of integrating autonomy training into the curriculum (Little, 2007; Little, 2009). One possible way of incorporating this type of training that has been proposed by the above researchers is by involving the learner in the setting up of activities, and discussion over content covered, target language use, and pace of task completion.

Autonomy in the classroom. Research examining the role of learner autonomy reflects a shift in pedagogical approaches from a teacher-centered approach to a learner-centered approach. The concept of autonomy in the classroom exists within a broader framework that posits that teachers should take the role of facilitator or guide. In this classroom, context learners are no longer viewed as passive recipients of information. Learners are considered active practitioners who seek to fulfill their own interests and needs. In certain educational settings, some teachers tend to control learner behavior and in some other cases teachers will allow or support more autonomy (Deci & Ryan, 2005). Learner autonomy in the classroom has to be considered in relation to the pedagogical approach of the teacher and the learning context.

The empirical case for instruction that supports the autonomy of the learner comes from Pelletier, Fortier, Tuson, Briere, and Blais (2001) who conducted research comparing autonomy supported vs. controlling classroom conditions. Autonomy classroom conditions fostered an environment where the learner had a more central role in the activities led in class, whereas a controlling classroom experience in this study was one in which the instructor was the center of all interaction. In this study, Pelletier et al. found that greater levels of self-determined behavior were found in more autonomous settings. Little (1990/2001) posits that a classroom environment that fosters autonomy requires that the teacher makes learners share the responsibility of the learning agenda and the selection of the learning activities. This type of pedagogical approach invites learners to engage with content in a plurality of ways promoting a participatory, collaborative construction of knowledge (Bruner, 1996) where learners explore and interact with the content, not just repeat the content. Autonomy according to Little (2007) is the "product of an interactive process in which the teacher gradually enlarges the scope of the learner's autonomy by gradually allowing them more control of the process and content of the learning" (p. 26).

Few learners arrive at the classroom ready to take charge of their own learning from day one, "self-management in learning is something they have to learn" (Little, 2007, p.23). In a study by Bekleyen and Selimoglu (2016) where they looked at learners' perceptions of autonomous language learning and motivation to study a foreign language, they found that most learners were reluctant to engage in outside of classroom activities that were not directed by the teachers because they did not know how to do it. The authors concluded that teachers can help students with resources on how to learn autonomously.

Although research documents the connection between self-determined behavior and motivation, fewer studies have attempted to directly manipulate the conditions to improve self-determined behavior to improve motivation and academic achievement, even more so in the field of FL learning. Railton and Watson (2005) suggested that "autonomous learning should be explicitly conceived as a skill that can be acquired in the same way as other academic skills" (p. 192). Little (2007) and Snodin (2013) pointed out that learner autonomy is not an innate quality. Learner autonomy can be supported by others and encouraged (Benson, 2001; Chang, 2010). Further research, particularly in this area of exploring the conditions that promote autonomy, is needed.

Autonomy in the FL field. In the existing literature on autonomy and language learning, research has been focused mostly on the learning of English as a foreign language. Research on language learner autonomy is expansive in northern Europe (Thomsen, 2000, 2003; Dam, 1995, 2000) and in Asia (Yildririm, 2008; Zhong, 2013).

The literature suggests many different ways to promote learner autonomy. Among these are: Offering choices (Patall, Dent, Oyer, and Wynn, 2013); providing explanatory rationales (Jang & Reeve, 2005); fostering awareness of the language learning process (McDevitt, 1997); offering opportunities for self-direction with the learning activity (Nix, Ryan, Manly, & Deci, 1999); and allowing students to work at their own pace (Reeve & Jang, 2006). Most of the research on ways to promote learner autonomy is also in the context of English as a foreign language.

A General View of Autonomous Approaches to Learning

According to Ho and Kuo (2010), autonomous learning experiences are a more effective means of promoting learning than traditional methods because they promote flow states, which

are intrinsically pleasurable (i.e., possessing high valence). Thus, if expectancy is held equal, the superior valence of an autonomous learning experiences interface will mean that learners approaching a learning task through autonomous learning experiences will be more likely to perform the kinds of acts needed to learn what is being taught.

It is important to note that, in the context in which they apply to autonomous learning experiences, neither flow-states theory nor expectancy theory are theories of cognition *per se*. In other words, expectancy theory and flow-states theory do not explain changes in the cognitive ability of the learner but rather changes in the motivation of the learner to engage with the material that is being taught. As a theory that is associated with behaviorism, expectancy theory posits that learning takes place as the result of continued behaviors such as information-gathering and attentional processes (Hackman & Porter, 1968; Purvis, Zagenczyk, & McCray, 2015; Renko, Kroeck, & Bullough, 2012). Ho and Kuo's (2010) flow-states theory posits that any learning modality (such as autonomous learning experiences) that motivates learners to stay engaged is successful not because it improves the cognitions of the learner, but because it deepens and prolongs the behavioral actions that result in learning. In other words, based on flow-states theory, the mechanism of the superiority of autonomous learning experiences is behavioral rather than cognitive.

However, other theories about the effectiveness of learning techniques also exist. For example, multiple intelligences theory (Gardner, 2011) is a cognitively oriented alternative to the behaviorally inspired flow-states theory (Ho & Kuo, 2010). Gardner might have argued that autonomous learning experiences are successful because they are more aligned with the cognitive abilities and proclivities of people who prefer rich media to text or lectures as a modality of learning.

There have been several statistical meta-analyses of the effect of autonomous learning experiences on learning (Clark et al., 2016; Folkvord, 2012; Sitzmann, 2011; Vogel et al., 2006; Wouters et al., 2013). Four of these meta-analytical studies have been introduced in Table 2 below. The consensus in the existing statistical meta-analyses appears to be that there is a statistically significant and middle-sized effect of autonomous learning experiences on learning.

Sitzmann's (2011) statistical meta-analysis was carried out on the basis of 65 existing primary studies with a cumulative sample size greater than 10,000 individuals (see Table 2). Sitzmann hypothesized that exposure to autonomous learning experiences, in comparison to exposure to traditional learning, would be associated with improved learning because of the cognitive advantages conferred on certain learners by exposure to rich media instead of text and lectures and the affective attractiveness of autonomous learning experiences. Sitzmann was justified in the identification of multiple intelligences theory (Gardner, 2011) as a theoretical framework, as the comparison groups of the studies included in Sitzmann's meta-analysis consisted mainly of individuals exposed to traditional (that is, text- and lecture-based) learning. Sitzmann's identification of affective theory was close to the behavioral aspects of Expectancy Theory (Hackman & Porter, 1968) and Flow States Theory (Ho & Kuo, 2010).

Table 2

Summary of Previous Statistical Meta-Analyses

Study	Empirical Base	N	Design	IV(s)	DV(s)	Analytical Method	Results	Limitations
1	65 primary studies	> 10,000	Meta-analysis based on pretest posttest studies	Autonomous learning experience	Knowledge, self-efficacy, other variables	Hedges and Olkin d	Declarative knowledge ($d = 0.28$) and procedural knowledge ($d = 0.37$) significantly higher after autonomous learning experience	Potential arbitrariness in coding of learning task characteristics 16 of the studies were not peer-reviewed
2	209 primary studies	> 5,000	Meta-analysis based on pretest posttest studies	Autonomous learning experience	Learning	Hedges g	Hedges $g = 0.33$; learning significantly higher after autonomous learning experience	Potential arbitrariness in coding of learning task characteristics
3	38 studies	> 5,000	Meta-analysis based on pretest posttest studies	Autonomous learning experience	Learning, retention, motivation	Cohen's d	'Serious' learning experiences found to have significantly higher effect ($d = 0.29$) on learning	Potential arbitrariness in coding of learning task characteristics 'Serious' learning task distinction might be invalid or unreliable Alternative group's instruction methods treated homogenously
4	32 studies	8,549	Meta-analysis based on pretest posttest studies	Autonomous learning experience	Learning	Cohen's d, z test	Autonomous learning experience s were superior, in terms of learning outcomes, to traditional methods, $z = 6.051$, $p < 0.0001$	Several non-peer-reviewed studies included

Key: (1): Sitzmann, 2011; (2) Clark et al., 2016; (3) Wouters et al., 2013; (4) Vogel et al., 2006

One of the strengths of Sitzmann's (2011) meta-analysis was the identification of several possible outcomes, including increases in declarative knowledge, procedural knowledge, self-

efficacy, and retention. Sitzmann reported that, in comparison to traditional learning, autonomous learning experiences were 11% more effective in terms of declarative knowledge. Sitzmann also identified qualitative explanatory themes for the success of autonomous learning experiences, including greater engagement and flexibility and repeatability of access to the autonomous learning experiences interface. In terms of effect sizes, Sitzmann calculated a pooled effect size of 0.28 (measured as Hedges & Olkin g), which was statistically significant at $p < .05$. However, Sitzmann did not report a 95% confidence interval for this effect size estimate. In addition, Sitzmann's findings were not delimited to older learners and included no comparators other than traditional learning. Thus, Sitzmann's findings do not address the important questions of (a) whether autonomous learning experiences is superior to non-autonomous learning experiences in terms of imparting improved declarative knowledge and (b) what the effect of e-learning on adult populations might be.

Clark et al. (2016) conducted both a systematic review and a meta-analysis on autonomous learning experiences. Clark et al. discovered that there was a statistically significant effect of 0.33 (measured as Hedges & Olkin g) of autonomous learning experiences on declarative knowledge improvement. However, like Sitzmann (2011), Clark et al. did not make an effort to code the autonomous in the various studies included in the meta-analysis. Clark et al. drew on more studies (209) than Sitzmann, but did not disclose the total sample encompassed by those studies. The main limitation of Clark et al.'s work was that,while promising a systematic review in addition to a meta-analysis, the study did not extract explanatory themes that could explain the superior effect of autonomous learning experiences on declarative learning.

The meta-analysis conducted by Wouters, Nimwegen, Oostendorp, and van der Spek (2013)found a significant effect of autonomous learning experiences on declarative learning,

measured as a Cohen's *d* of 0.29. Wouters et al. also conducted a meta-analysis designed to determine whether autonomous learning experiences were more motivating to learners in comparison to traditional learning. The motivational aspects of autonomous learning experiences are encompassed both in general expectancy theory (Hackman & Porter, 1968) and flow states theory (Ho & Kuo, 2010). Under expectancy theory, expected outcomes drive the motivation to complete tasks, while flow states theory holds that entering a state of flow is among the best ways to complete tasks effectively and with precision. Wouters et al. found that there was no statistically significant difference between autonomous learning experiences and traditional learning methods in terms of motivation. However, despite the conceptual similarities between motivation and flow states, Wouters et al. did not specifically test for the kinds of flow-state experiences enumerated by Ho and Kuo (2010). Thus, the apparent similarity in motivational levels between e-learners and traditional learners does not necessarily suggest that flow states theory does not explain the effectiveness of autonomous learning experiences. The motivation behind effective autonomous learning experience may be explained by a number of different factors and from a number of different approaches.

There are a number of studies on the mediation to learn in a variety of educational contexts, such as online learning and group-based learning contexts. For example, Erhel and Jamet (2013) found that serious game environments increase motivation to learn when students are prompted to actively process information. Table 3 below contains a review of some (Belanich, Orvis, & Mullin, 2005; Dobrescu, Greiner, & Motta, 2015; Ebner & Holzinger, 2007; Erhel & Jamet, 2013; Gremmen & Potters, 1996; Ricci, Salas, & Cannon-Bowers, 1996; Woo, 2014) of the primary studies on the topic of the effect of autonomous learning experiences on

learning. It should be noted that several of these studies are dated and have several other limitations as well, as described below.

Table 3

Summary of Previous Primary Studies

Study	Units & Settings	Design	IV(s)	DV(s)	Analytical Method	Results	Strengths	Limitations
1	21 U.S. Army recruits	1-sample pretest posttest with 1 treatment	Exposure to PC game	Knowledge (procedural, episodic, factual)	ANOVA	Significant + positive effect of exposure on all 3 kinds of knowledge	Multiple types of knowledge measured	Effect size of pretest-posttest differences not calculated No control group
2	60 students in Naval Training Center	1-sample pretest posttest with 3 treatments (game, text, Q&A sheets)	Exposure to 3 types of learning	Subjective opinion Score on test	ANOVA	Significant + positive effect of learning types on score improvement	Multiple treatments Measurement of subjective and objective outcomes	No control group No calculation of effect size No post hoc test to determine which group, if any, improved more Only 4 women in sample of 60
3	63 university students	1-sample posttest only with 1 treatment	Exposure to online game	Domain-specific knowledge, domain-specific skills, motivation, cognitive load	Canonical correlation	Motivation and cognitive load impact domain-0specific knowledge and skill performance in different ways	Complex and informative testing of variables that can explain game-based learning Excellent theoretical discussion of games	No pretest score No control group No effect size calculations Insufficient use of covariates Mediating design might have been better suited for a structural equation model
4	38 Dutch university students	1-sample pretest posttest with 1 treatment and control	Exposure to PC-based economics game	Learning (economics)	Independent samples *t* test	Exposure to the game was not, at an Alpha of 0.05, associated with higher mean performance on the test	Thoughtful discussion of experiment conditions	Control group Randomized assignment to control group Insufficient use of covariates
5	81 undergraduate economics student	1-sample pretest posttest with 1 treatment and control	Exposure to PC-based economics game	Learning (economics) as measured through essay questions and multiple-choice questions	Tobit regression	Exposure to the game was not, at an Alpha of 0.05, associated with higher mean performance on the test	Clear discussion of all outcome measures Learning outcomes delimited	Insufficient use of covariates Non-randomized assignment to control group No effect size calculations
6	46 students from French universities	1-sample pretest posttest with 1 treatment and control	Exposure to computer game	Knowledge (medical procedure)	Mann-Whitney U test, ANOVA	Exposure to the game was not, at an Alpha of 0.05, associated with higher mean performance on the test	Exclusion criteria excluded students with prior knowledge of subject matter	Non-randomized assignment to control group No effect size calculations
7	121 graduate students in engineering	1-sample pretest posttest with 1 treatment and 1 control	Exposure to a computer game	Knowledge (geography), Enjoyment, other variables	Mann-Whitney U test, Chi-square, Wilcoxon	Experimental group students reported superior enjoyment of the game, but there was no significant effect of the game on knowledge	Well-specified research questions and hypotheses Detailed discussion of game components, game development and intervention	Insufficient use of covariates No effect size calculations

Key: (1) Belanich, Orvis, & Sibley, 2004; (2) Ricci, Salas, & Cannon-Bowers, 1996; (3) Woo, 2014; (4) Gremmen & Potters, 1996; (5) Dobrescu et al., 2015; (6) Erhel & Jamet, 2013; (7) Ebner & Holzinger, 2007

Most of the primary studies (Belanich et al., 2005; Dobrescu et al., 2015; Ebner & Holzinger, 2007; Erhel & Jamet, 2013; Gremmen & Potters, 1996; Ricci et al., 1996; Woo, 2014) described in Table 2 found a significant effect of autonomous learning experiences on performance. However, the studies were not comparable in terms of design, treatment, or outcome. While the incommensurability of the studies makes it methodologically impossible to estimate a truly shared effect of autonomous learning experiences exposure on learning, the fact that a significant relationship so often existed despite the profusion of methods, treatments, and outcomes indicates that autonomous learning experiences does in fact improve learning.

The studies and meta-analyses reviewed in this section of the literature review provide substantial support for the claim that an autonomous learning environment—such as an environment enabled by a self-paced e-learning system—is positively associated with performance, after controlling for various confounding variables. However, most of the studies in which autonomous learning environments—particularly e-learning environments—have been featured have not focused on second language performance as the dependent variable of interest. It is possible that autonomous learning environments have generically beneficial effects on learning, such that these environments involve learning in all spheres, including second language performance. However, the absence of studies specifically oriented to second language performance is an important gap in the research, because it is possible that autonomous learning environments are not necessarily as predictive of success in second language learning as they might be predictive of success in learning tasks that are in the native language of the learner. Thus, while acknowledging the likelihood that autonomous learning environments are likely to improve learning performance in general, it is appropriate to seek further empirical documentation of the effects of autonomy on second language performance in particular.

The Effect of Autonomous Strategies and Environments on Second Language Learning

Spratt, Humphreys, and Chan (2002) conducted a quantitative study whose purpose was to measure whether autonomy or motivation came first in learners. In this study, *autonomy* was operationalized as strategic autonomy, that is, an autonomy that measured the extent to which students took charge of their own learning. Specifically, autonomy was measured as the sum of three complementary kinds of strategic autonomy: (a) Beliefs about whether it was the student's responsibility to take charge of his or her learning, (b) beliefs about students' abilities to manage their own learning both inside and outside the language classroom, and (c) actual instances of autonomous learning behavior. As is clear from this list, Spratt et al. only measured autonomy as an intrinsic quality of the learner, not in terms of the actual learning platform design or other aspects of the learning environment. In addition, Spratt et al. defined motivation in terms of a polytomous variable that included the possibilities of no motivation, slight motivation, ordinary motivation, well-motivation, and high motivation.

Spratt et al.'s (2002) study was conducted on a sample of 508 students. All of the students were from a single institution, Hong Kong Polytechnic University. The majority ($n = 356$) of the sample was female, with 135 males and 17 students of unidentified gender. The study was conducted solely on English language learners; although participants came from several departments, all participants were learning English as a second language.

The first form of data analysis in Spratt et al.'s (2002) study involved Chi-square analysis of students' assessments of whether students or teachers were more responsible for learning. The main findings from this data analysis were that students believed themselves, rather than teachers, to be more responsible for progressing outside class, working harder, deciding to learn outside class. However, students judged teachers to be more responsible for making sure that

students progressed during lessons, were stimulated to learn English, had their English weaknesses identified, had their course objectives defined, had their activities chosen, had their time allocated, had their materials chosen, had their learning evaluated, and had their course evaluated. Thus, the students in Spratt et al.'s study appeared to allocate most of the responsibility for learning to teachers rather than to themselves.

Spratt et al.'s (2002) measurement of autonomous behaviors outside the classroom suggests that students tend not to autonomously seek to learn without being prompted. For example, 61.4% of the students in the sample never or rarely read grammar books on their own; 74.3% of students rarely or never did non-compulsory assignments; and 51.9% had never written a diary entry in English. There was only one autonomous behavior, that of sending e-mails in English, in which more than half of the sample engaged often.

The final form of statistical analysis presented by Spratt et al. (2002) was a Chi-square tabulation of autonomous, out-of-classroom behaviors with levels of motivation. Spratt et al. found that highly motivated students were more likely to engage in roughly half of the autonomous behaviors; in the remaining behaviors, highly motivated students were statistically comparable to well-motivated students in terms of task frequency. From these findings, Spratt et al. derived the conclusion that motivation was closely correlated with autonomous behaviors. However, Spratt et al. went further and concluded that "absence of motivation seemed to inhibit practice of learner autonomy" (Spratt et al., 2002, p. 262). This conclusion was not necessarily supported by the data analysis carried out by Spratt et al, which lacked the kind of longitudinal, experimental, or quasi-experimental component that would have been necessary to reach conclusions about whether autonomy or motivation came first.

Another, more relevant limitation of Spratt et al.'s (2002) study was the absence of a performance component. Although it is helpful for educators to know that there is a positive correlation between autonomous behaviors and motivation related to the learning of a second language, policy-makers and other educational leaders also require information about the extent to which both motivation and autonomy are correlated with actual performance. Spratt et al.'s study lacked a measure of performance.

A final weakness of Spratt et al.'s (2002) study was the operationalization of the variables, which limited the statistical analyses that could be carried out on the data. Spratt et al. utilized ordinal data for motivation, thus requiring the use of Chi-square analysis to measure differences in distribution. Had Spratt et al. operationalized motivation as a ratio or interval variable, it would have been possible to use regression analysis or other forms of statistical analysis that could have allowed more direct comparisons between students.

Autonomous learning. A qualitative study by Chan (2001) addressed some of the same issues that Spratt et al. (2002) examined, particularly in terms of the characteristics of autonomy. As discussed above, Spratt et al. provided an operational definition of learner autonomy that encompassed several student behaviors and orientations, including keeping a diary in the second language, reading non-assigned material, etc. Spratt et al. defined these components of learner autonomy with reference to the pre-existing literature; however, Chan's study was of particular interest because of the identification of learner autonomy characteristics that were based on students' own rich descriptions.

Chan's (2001) qualitative case study, carried out among learners of English as a second language at the Hong Kong Polytechnic University, was designed to explore autonomous learning in terms of (a) student attitudes, (b) student capabilities of learning autonomously, and

(c) best practices in facilitating greater learning autonomy in the second language classroom. In terms of attitudes, Chan discovered that most students viewed autonomy in terms reminiscent of those already identified in the literature (for example, Smith, 2008). Students in Chan's study recognized that learner autonomy reflected both the quantity and quality of engagement with a second language absent guidance or pressure from the teacher and the pre-existing learning environment. When asked to provide further detail about the characteristics of autonomous learners, Chan's (2013) students advanced the following qualities:Highly motivated, goal-orientated, having an inquisitive mind (e.g. willing to ask questions in class), well-organized (e.g. having good time management skills), hardworking, curious about language, interested and enthusiastic about what is learnt, active (e.g. trying different ways to improve one's learning), having initiative, making use of every opportunity to improve one's standard, and flexible. (p.513)

One of the strengths of Chan's study was the identification of several components of learner autonomy as defined by students themselves rather than as defined by teachers or as derived from the literature. Overall, the students in Chan's study had anin-depth and sophisticated understanding of what constituted learner autonomy, and their detailed definition of this concept provides a helpful complement to existing definition of learner autonomy (e.g., Smith, 2008).

However, one of the limitations of Chan's study was the fact that Chan was the teacher of the students she interviewed as part of the case study. Because of the power dynamic between Chan and her students, it is possible that students who were not autonomous, or who had negative views of autonomy, did not contribute data to the study. It is also possible that students exaggerated their own autonomy because of a tacit pressure to tell their researcher what they

thought she wanted to hear. Chan's study could have overcome these biases by utilizing an anonymous data collection design.

Autonomy and performance. One of the most comprehensive studies of autonomy and performance is Il-Pae's (2008) study, which draws extensively on self-determination theory. Il-Pae's study was conducted based on data collected from 315 university students in South Korea. These students were all learning English as a foreign language. Il-Pae subjected the students to extensive testing and was able to collect data for a number of variables, including intrinsic motivation, self-confidence, motivation, and achievement. Achievement, the dependent variable of the study, was operationally defined as performance on the Test of English for International Communication.

One of the weaknesses of Il-Pae's (2008) study was the absence of validated scales. Il-Pae created original measures of intrinsic motivation, self-confidence, and motivation on the basis of mixing and matching existing items from equivalent scales published in English. In addition, although Il-Pae grounded the study in self-determination theory, a separate scale to measure self-determination in the study was lacking.

Using a structural equation model, Il-Pae (2008) was able to identify several significant relationships between variables. First, Il-Pae found a moderate and positive relationship between intrinsic motivation and motivation; given that intrinsic motivation is a subset of motivation, it was surprising that this direct effect was not stronger, but Il-Pae did not provide any discussion of this topic. Second, Il-Pae found that there was a moderate to strong relationship between intrinsic motivation and confidence. Third, Il-Pae found that there was a weak relationship between confidence and achievement. Fourth, Il-Pae found that there were weak relationships between confidence and motivation and motivation and achievement.

An important limitation of Il-Pae's (2008) study was the failure to control for prior knowledge of English, prior academic performance, or other variables that could have introduced bias into the structural equation model utilized by Il-Pae. It is possible, for example, that the positive relationship between confidence and achievement detected by Il-Pae was in fact an effect of academic performance or knowledge of English. The failure to control for these kinds of academic variables meant that Il-Pae's results were not as reliable as they might otherwise have been.

Social anxiety, autonomy, and learning. Zhou (2016) conducted a quantitative study on the impact of social anxiety, autonomy, and learning orientation on second language learning. The study was conducted on a sample of 303 fifth-grade students in China who were learners of English. In keeping with the use of structural equation modeling (SEM), Zhou was able to study the relationships between numbers of variables in a more complex manner than ordinarily possible with the use of regression.

Zhou (2016) was concerned with four variables—three independent variables and a fourth, dependent variables. The independent variables in Zhou's study were (a) autonomy, (b) social anxiety, and (c) classroom learning orientation. Zhou was particularly interested in differences between male and female students, so gender was a covariate in the model. The dependent variable was English achievement. Each of these variables was measured as a ratio variable, which allowed Zhou to utilize regression coefficients and an SEM approach, allowing deeper insights into the relationships between variables than possible with categorically defined variables (as in Spratt et al.'s, 2002 study).

The first form of statistical analysis carried out by Zhou (2016) was a simple correlation analysis. In this analysis, social anxiety was found to be negatively correlated with autonomy,

and social anxiety was also found to be negatively correlated with a collaborative learning orientation in the classroom. Next, collaborative learning orientation was found to be positively correlated with autonomy, and relative autonomy was found to be positively correlated with English achievement. Finally, collaborative learning orientation was found to be positively correlated with English achievement.

These results were reported for the entire sample; in addition, Zhou (2016) provided different results for male and female students. The results were somewhat different when categorized by gender. For example, for male students, there was a positive and significant correlation between autonomy and English achievement; for female students, there was not a significant correlation between autonomy and English achievement. In addition, for male students, there was a significant and negative correlation between social anxiety and classroom learning orientation, but there was no such significant correlation for female students. These results suggested that autonomy was more likely to predict academic success for male students, which, in turn, suggests that the provision of autonomous learning environments or the inculcation of autonomous learning strategies might be more beneficial to male than to female students. Given that Zhou operationalized autonomy in terms of intrinsic characteristics rather than in terms of the learning environment, it seems more likely that, for male students, strengthening intrinsic autonomy is more likely to lead to improvements in academic performance.

Zhou's (2016) identification of an effect of gender on the relationship between autonomy and achievement was an important contribution to the scholarly literature. However, there were some gaps in Zhou's research design that made this finding of limited interest in terms of educators' approaches. One of Zhou's variables was classroom learning orientation, and, based

on Zhou's approach, learning orientation was posited to be a mediator between autonomy and achievement. If learning orientation was a mediator, then, in theory, the indirect effect of learning orientation on the relationship between autonomy and achievement would have been stronger the direct effect of autonomy on achievement. For this hypothesis to be tested, however, Zhou would have had to report the unstandardized regression coefficients of the relationships among (a) autonomy and classroom learning orientation, (b) classroom learning orientation and English achievement, and (c) autonomy and English achievement. However, Zhou did not report the unstandardized regression coefficients, which made it impossible to calculate the indirect effect of learning orientation on the relationship between autonomy and achievement. On the assumption that learning orientation is conceptually related to autonomous strategies, Zhou's failure to report unstandardized regression coefficients therefore resulted in a failure of Zhou's model to explore the interaction between intrinsic autonomy and autonomy as a function of learning design in terms of these variables' relationships with academic achievement.

Autonomization Study. As mentioned in the introduction to the study, *autonomy* refers to two interrelated kinds of autonomy. Learner autonomy involves the intrinsic qualities of the learner in terms of being able to take charge of his or her learning. Experiential autonomy involves the extent to which a learning environment supports or fails to support learner autonomy. Finally, autonomization is the name given to the interaction between experiential autonomy and learner autonomy, specifically in terms of the ability of the experiential environment to inculcate intrinsic qualities of autonomy in the learner. Few of the studies identified in the literature review focused on the phenomenon of autonomization; an exception was Murphy's (2008) study, which focused specifically on autonomization.

Working with qualitative data from the Open University in the United Kingdom, Murphy (2008) explored the relationship between course materials and metacognitive strategies that promote the exercise of autonomy by learners. Murphy's overarching hypothesis was that autonomization emerges organically from well-designed, critically engaged, and interactive course materials, but that there likely to be further areas of development for autonomization in the context of teaching second languages. Murphy identified 14 distinct aspects of course materials and design that can support autonomization, and was able to synthesize these 14 aspects into five larger themes. These findings are summarized below on table 4.

Table 4

Murphy's Aspects of Autonomization in Second Language Courses

Criteria	Synthesis / Discussion
* Teaching about reflection * Opportunities / prompts for reflection	Key capacity for autonomy, according to cognitive, experiential, and social constructivist theorists.
* Choice / decision-making opportunities	Reflection is a conscious process leading to decisions and choices by learners. Freedom to make choices is essential for the exercise of responsibility by learners.
* Self-evaluation teaching * Self-evaluation practice * Opportunities to evaluate performance * Opportunities for goal-setting / planning * Self-assessment teaching * Self-assessment practice * Opportunities for self-assessment	Metacognitive strategies of goal-setting, planning, implementing, self-assessment, and self-evaluation under the concept of 'knowing how to learn' and can be related to the stages in Kolb's learning cycle / spiral: Concrete experience, reflective observation, abstract conceptualization, and active experimentation. Essential for successful autonomous learning and distance language learning.
* 'Pedagogic dialogue' and interaction	'Scaffolding' performance and supporting development of internal cognitive processes, including reflection and self-direction.
* Language learning strategy teaching * Language learning strategy practice * Opportunities to select strategies	Awareness of strategies and ability to select and deploy appropriately according to need is an important areas of choice.

Murphy (2008, p. 88)

Murphy's (2008) analysis found that the OU drew upon many of the criteria listed above

in its language courses, thus supporting the process of autonomization. Murphy noted that the

fourteen-autonomization criteria required a combination of resources, including resources related

to curricula, pedagogy, classroom organization, and other factors. The main implication of this

finding is that it is not sufficient to create an autonomous learning system, such as an e-learning system, and assume that the autonomous characteristics of the system itself will lead to improved learning. Rather, for true autonomization to prevail, second language courses must combine elements of curricular design, pedagogical interaction, and learning platform design, as all three of these factors are necessary to deliver the 14 criteria for autonomization identified by Murphy.

Learner characteristics in Spanish language learning context.Coleman and Furnborough (2010) conducted a study designed to identify the relationship between learner characteristics and learning outcomes—specifically, performance—in the context of a distance Spanish course offered for beginners. One of the strengths of Coleman and Furnborough's quantitative study was the collection of data from a large number of students, with 584 students from the U.K.'s OU completing two questionnaires distributed by the researchers (once before the beginning Spanish course and once after the beginning Spanish course). The main weakness of Coleman and Furnborough's study was that autonomy was not directly measured as a learner characteristic, but was measured by type with students being grouped as intrinsically or extrinsically motivated. However, several of the prompts in Coleman and Furnborough's study were conceptually related to autonomy, in particular, intrinsic autonomy, and are therefore worthy of further discussion and examination.

Coleman and Furnborough (2010) divided students into four outcome groups: Complete and continue, complete and pass, complete and fail, and non-complete and fail. Coleman and Furnborough then examined the distribution of these four groups in terms of several responder characteristics. One of the responder characteristics that appeared to align with learner autonomy was speaking another (third) language. Ostensibly, individuals who have succeeded at learning a second language already would have demonstrated some autonomy. Coleman and Furnburough

found that 24.5% of the students who completed and passed the beginning Spanish course were fluent in a third language; by comparison, 0% of the students who completed and failed the course were fluent in a third language, whereas 2.9% of the students who neither completed nor passed the course were fluent in a third language. These data suggest the likelihood that learner autonomy—as demonstrated in learning a third language—was a predictor of superior performance in the beginning Spanish class.

Role of language teacher in promoting autonomy. Teachers have important roles to play in terms of both inculcating intrinsic autonomy in their students, and designing autonomous learning experiences and environments for students. Field and Hoffman (2002) conducted a qualitative case study designed to identify how teachers could implement curricula and related learning platforms designed to support both of these kinds of autonomy in students. Field and Hoffman's study was particularly important because of its identification (Field & Hoffman, 2002) of specific, sequential steps that teachers could take to support learner autonomy:

1. Know themselves and their students. They need to understand the strengths, weaknesses, needs, and preferences of their students and have a solid grasp of their own strengths and weaknesses as teachers.

2. Value themselves. They need to believe in their assessment of their skills and their situation, and they need to be able to move forward with their curriculum implementation plans with confidence.

3. Put their knowledge and beliefs about the needs of their students and what they as teachers can offer to their students into a plan. They need to undertake the necessary preparation that will help to ensure success for their curriculum implementation.

4. Put their plan into action.

5. Evaluate their implementation efforts, modify their plans for the future, if needed, and celebrate their successes. (p. 93)

Field and Hoffman described their findings as constituting an important reminder that teachers play a pivotal role in learner autonomy, and that there are specific, sequential steps that teachers need to take in order to increase the chances of improving learner autonomy. These findings were, however, limited by their applicability to a structured curriculum, the Steps to Self-Determination Curriculum. It is not clear if Field and Hoffman's findings would apply in the same manner to non-program-based, general attempts to improve learner autonomy.

The role of teachers in supporting learner autonomy was also examined in Reeve and Jang's (2006) study. Reeve and Jang's study was not limited to the implementation of a self-determination plan, so its results are more likely to be generalizable and relevant than those of Field and Hoffman (2002). However, because Reeve and Jang's experiment focused on a very specific task—the solution of a puzzle—it might not apply to real-world learning scenarios. Reeve and Jang (2006) were particularly interested in teacher behaviors and orientations as precursors of student autonomy and performance. Reeve and Jang hypothesized that there was a difference between autonomy-promoting and autonomy-inhibiting behaviors among teachers and students who were exposed to autonomy-promoting behaviors would actually be more autonomous. One of the strengths of Reeve and Jang's study was the detailed operationalization of autonomy-supportive and autonomy-corrosive instructional behaviors. The autonomy-supportive behaviors were as follows:

- Time spent listening
- Asking what students wanted
- Time spent in allowing students to work in their own ways

- Time that students spent talking

- Seating arrangements

- Providing rationales

- Providing praise as informational feedback

- Encouraging statements

- Offering hints

- Responding to student-generated questions

- Communicating perspective-taking statements

  The autonomy-corrosive behaviors were as follows:

- Time teacher talking

- Time in possession of learning materials

- Exhibition of solutions / answers

- Uttering solutions or answers

- Making 'should' or 'ought to' statements

- Asking controlling questions

- Deadline statements

- Praise as contingent reward

- Criticizing the student (p. 211)

Reeve and Jang provided operational definitions that were easily quantified, thus allowing the researchers to validly differentiate between teachers whose behaviors supported autonomy and teachers whose behaviors corroded autonomy. In addition, the operational definitions were grounded in pre-existing theories as well as empirical findings, ensuring

construct validity in the attempt to differentiate between autonomy-promoting and autonomy-corroding behaviors among teachers.

In terms of dependent measures, Reeve and Jang defined students' perceived autonomy through the Perceived Self-Determination Scale, which consists of three sub-scales: Internal perceived locus of causality, volition, and perceived choice over actions. The three student outcomes in which Reeve and Jang were particularly interested were interest-enjoyment, engagement, and performance. Interest-enjoyment was measured through the Self-Report Intrinsic Motivation Scale. Engagement was measured on a researcher-created scale, whereas performance was operationalized as the number of puzzles that the student was able to solve.

Reeve and Jang analyzed their findings by correlating scores for each of the 20 measurements of teacher behaviors with the outcome variables. First, Reeve and Jang discovered that all 11 of the autonomy-promoting behaviors were significantly and positively correlated with students' perceived autonomy. Second, Reeve and Jang discovered that six or the nine autonomy-corroding behaviors were significantly and negatively correlated with students' perceived autonomy. These findings were taken to support the interpretation that teacher behaviors meaningfully influence the degree of autonomy that students feel.

An important limitation in Reeve and Jang's study was that, despite the fact that performance was designated as an outcome variable, the researchers did not report on the relationship between teacher behaviors and performance. Another limitation was that Reeve and Jang did not aggregate the individual behaviors into index measures of both autonomy-promoting and autonomy-corroding behaviors, which prevented the use of regression and other statistical techniques that could have been more useful in terms of exploring the data.

Reeve and Jang could conceivably have created a single scale of teacher behavior, with lower scores representing more autonomy-corroding and higher scores representing more autonomy-promoting behavior. Had Reeve and Jang operationalized teacher behavior in this manner—which, given the quantification strategy employed for each of the prompts, was statistically possible—it would have been possible to regress teacher attitudes on the dependent variable of student achievement. In an approach of this kind, Reeve and Jang could have utilized linear regression to identify the extent to which a 1-unit change in teachers' autonomy-promoting behavior could have improved student performance. The absence of a regression model meant that Reeve and Jang's findings did not address important questions about the precise relationship of teachers' autonomy-promoting behaviors to student outcomes.

Task motivation and autonomy study. A study carried out by Wang, Huang, and Hsu (2015) examined the relationships between task motivation, task engagement, and trait motivation. This quantitative study sampled 48 northern Taiwanese university students (none of whom spoke English as a native language) who were English majors. These students were given a vocabulary learning task in a quasi-experimental format. The students were randomly sorted into a control group and an experimental group, with the experimental group being asked to choose their own target vocabulary words for seven vocabulary notebook tasks to be conducted every two weeks for the fourteen-week study period. Both the experimental and the control group were, over the course of the seven vocabulary exercises, presented with the same reading materials, which were English passages from newspapers. The control group was given a pre-selected list of 70 words, with 10 words chosen from each reading passage. Wang et al. hypothesized that there would be an effect of autonomy—operationalized dichotomously, as the ability to choose target words—on both motivation and engagement. Wang et al. noted that, on

the basis of self-determination theory, it was likely that the motivation and engagement levels of the autonomous group (that is, the experimental group) would be higher than the motivation and engagement levels, respectively, of the control group. In testing this hypothesis, Wang et al. defined engagement through a researcher-designed scale, trait motivation through the Language Learning Orientation Scale, and task motivation through the Intrinsic Motivation Inventory.

First, Wang et al. utilized a multivariate analysis of variance (MANOVA) to measure the relationship between autonomy and task motivation, with task motivation subdivided into its four constituent subscales of interest, perceived choice, perceived competence, and pressure. There was a statistically significant relationship between autonomy and three of the task motivation measures; namely, interest, perceived choice, and perceived competence, with the largest effect of autonomy bring on perceived choice. Wang et al. found that the experimental group was 11.17% more interested, 11.31% more likely to perceive choice, and 12.11% more likely to perceive competence.

In terms of task engagement, Wang et al. measured differences in attention, participation, and interaction between the control group and the experimental group, once again utilizing a MANOVA in order to do so. There was a statistically significant relationship between autonomy and two of the measures of task engagement, attention and participation. Wang et al. found that attention was 2.77% higher in the experimental group and that participation was 5.34% higher in the experimental group.

Wang et al.'s (2015) findings were important in terms of their disclosure of a significant and positive effect of autonomy on key measures of motivation and engagement. The use of a MANOVA approach was a strength of the study, as it addressed the problem of Alpha inflation that would have arisen with multiple separate ANOVA models and also controlled the effects of

the independent variable on simultaneous dependent variables. However, the study had some important limitations as well. In particular, the decision to operationalize autonomy as choice of vocabulary words is vulnerable to critique, because, as discussed earlier in the literature review and defined in the first chapter of the study, autonomy consists of several dimensions. It is not clear that the mere ability to choose vocabulary words actually measured the kinds of learner autonomy that are,for example, posited in Smith's (2008) definition or in other relevant studies. Particularly if autonomy is treated as an ongoing process—rather than the discrete decision to study a particular set of vocabulary words—Wang et al.'s finding do not necessarily reflect the actual richness of the concept of learning (or intrinsic) autonomy. Nonetheless, Wang et al.'s findings are important for demonstrating how even a conceptually limited exercise of learner autonomy is positively associated with both engagement and motivation.

There are other studies partially reminiscent of Wang et al.'s (2008) study in terms of their examination of the learning effects of pleasure and choice as related to the task. An early empirical study established that the correlation between reading for pleasure and reading achievement was 0.44 (Greaney & Hegarty, 1987). This figure was obtained by comparing the standardized English tests of 5th-grade American students on the basis of self-described enjoyment of reading. Much of the subsequent literature on the connection between reading enjoyment and reading achievement has been delimited to native language speakers, and findings have been mixed. For example, while Greaney and Hegarty found a positive correlation between reading for enjoyment and reading achievement, one recent study drawing on a sample from Hong Kong and Taiwan found a negative correlation (Tse et al., 2014).

One statistical study of reading achievement found that reading for enjoyment is primarily an outcome of motivation, while reading for school is an outcome of strategy (Wang

&Guthrie, 2004). In other words, there is a conceptual distinction between the motivation to read for reading's sake and the motivation to read to achieve a specific outcome in a school or other setting. Despite the lip service paid by many educators to the usefulness of reading for pleasure, there are not enough empirical data to firmly establish the superiority of either strategy in terms of reading achievement, particularly in a second language. Furthermore, the paucity of empirical literature means that there is no way of knowing whether, if reading for pleasure is indeed associated with better reading achievement, the effect is because of improved decoding / cognition, improved psychological factors, or both.

Opportunities for Further Research

There are several gaps in the literature that justify further empirical research. One such gap is that many previous empirical studies on the effects of autonomous learning experienceshave not focused on second-language performance as the dependent variable of interest. Instead, the bulk of the empirical research base on the effect of autonomous learning experiences focuses on native-language learning topics, typically taught through an e-learning interface.

Another important gap in the literature is the disproportionate amount of empirical research on autonomous learning environments as opposed to autonomous learning strategies. Learning strategies are the reflections of students' cognitive, behavioral, and affective tendencies, whereas learning environments are reflections of pedagogical and curricular design. In this sense, learning environments are extrinsic to the student, whereas learning strategies are intrinsic to the student. Although several studies on language learning strategies were indeed identified in this study, the majority of the empirical literature appears to focus on learning environments rather than on learning strategies.

A third gap in the literature pertains to the operationalization of autonomous learning environments. Autonomous learning environments are not merely those environments in which students can avail themselves of self-paced, self-service tools, such as e-learning tools, to learn a second language. An autonomous learning environment is any environment in which students are encouraged and given the toolsto take charge of their own learning. Thus, conceptually, an autonomous learning environment is not necessarily an e-learning environment; however, in practice, many empirical articles conflate autonomous learning environments with e-learning environments. While e-learning environments can certainly be examples of autonomous learning environments, the definitions of autonomy presented earlier in the literature review are not delimited to either online or offline learning environments.

If it is agreed that any learning environment that is designed to facilitate language learners' taking charge of their own learning is an autonomous learning environment, a conclusion that is in alignment with the existing literature on autonomy, then previous empirical researchers' disproportionate focus on e-learning can be considered a gap in the literature. In short, there is not a comparable volume of empirical studies on non-e-learning autonomous learning environments, meaning that the general body of knowledge pertaining to autonomous learning bodies is largely delimited to e-learning settings.

A final gap in the literature is the existence of relatively few studies that have taken both autonomous experiences and autonomous strategies into account. As noted earlier in this section of this paper, as well as in the earlier discussion on autonomy, autonomous experiences and autonomous strategies are distinct from each other, although they can coexist. Theoretically, it is likely that both kinds of autonomy—the intrinsic autonomy that a learner brings to the task of learning a second language and the autonomy that is a design feature of the learning

environment—make a difference in the quality of learning. As Murphy has written, "The development of autonomous learners is an important goal for language teaching programs. However, achievement of this goal depends on teachers creating an environment where learners can experience autonomy in order to become more autonomous" (Murphy, 2008, p. 83). If so, then the most appropriate kinds of research designs would involve interactions between these two kinds of autonomy. Murphy attempted to explore these interactions in a qualitative manner, but such an approach is necessarily unable to generate precise measurements of how both kinds of autonomy support learning.

If it were held that autonomous strategies come before autonomous environments, then an appropriate research design would be one in which the relationship between an autonomous learning strategy and second language performance could be moderated by an autonomous learning environment. The conceptual basis of such a basis would be the assumption that there would be a significant and positive link between autonomous strategy and performance, but that this link would be even stronger with the addition of the predictor variable of autonomous experience. This proposed design is one possible example of how interactions between autonomy of strategy and autonomy of experience could both be included into a single research design, thus aligning with the theoretical likelihood that both autonomous strategy and autonomous experience are likely to exert unique, and possibly mutually moderating, effects on the dependent variable of learning performance.

Conclusion

The purpose of the literature review was to review theories as well as empirical studies relevant to issues of performance, motivation, and autonomy when learning a second language. The literature review covered self-determination theory as well as several other theories; the

literature review also explored various empirical findings related to the study variables. The most important outcome of the literature review was the identification of several gaps that justify further empirical research on the topics of autonomy, motivation, and performance in the context of a second language.

CHAPTER 3: METHODOLOGY

Introduction

This quasi-experimental study examined the impact of an autonomy-based instructional intervention to improve the motivation and academic performance of American university students learning Spanish. This chapter describes the research methodology and design with specific attention to procedures, participants, intervention design, methods, and data analysis.

Research Methodology

A quantitative, quasi-experimental research design was selected for the present study. Because quantitative methods are distinct from qualitative lines of inquiry based on the nature of the topic, problem or purpose chosen by researchers, this design allows for an estimation of intervention program effects (Balnaves & Caputi, 2001; Creswell, 2015; Dantzker & Hunter, 2006; Given, 2008; Jackson, 2015; Leary, 2011; McNabb, 2010; McBurney & White, 2011; McNabb, 2010). In this study, the main problem is the lack of consensus on the contribution of autonomy-based interventions to improvements in motivation and academic performance in a foreign language (FL). This problem can be subdivided into two sub-problems, one that involves the question of how much of a contribution autonomy-based interventions make to improvements in motivation and academic performance in a FL, and the other question that involves understanding how and why autonomy-based interventions might improve motivation and academic performance in a FL.

Research Questions

The following research questions pertain to the importance of evaluating the effects of an autonomy-based intervention while seeking to understand the conditions under which motivation

and academic performance are affected by such an intervention. The questions that guide this study are:

1. Does the autonomy-based instructional intervention increase the motivation of elementary-level foreign language students to learn Spanish?

2. Does the autonomy-based instructional intervention increase the Spanish academic performance of elementary-level foreign language students?

3. Does the autonomy-based instructional intervention increase the level of autonomy of elementary-level foreign language students who are learning Spanish?

Setting

This study took place in a language lab at a university in a state in the southeastern United States. The university used for this study has multiple campuses and it is an institution that was formed because of a state mandate to merge two institutions of higher education. This merger led to a series of subsequent changes at different levels of the institutions that brought about challenging situations. Different departments in the institution faced different challenges. One specific challenge the administrators in the Spanish language department identified was the substantial curricular differences between the same elementary Spanish courses at the different campuses. These differences were seen as a potential problem for students who transition from one campus to another.

To accomplish a desired cohesion in courses, the university administration charged the language lab director with the development of curricular content that would create a common thread among all students taking an elementary level Spanish course that would be delivered via the language lab. The common thread came in the form of a series of tasks (often referred to as labs) that all learners enrolled in an elementary Spanish course had to complete through the

language lab and the university's elearning platform. These tasks were designed by lab personnel to align with the curriculum chosen by the Spanish language faculty.

Students at this particular institution are required to take a foreign language course as part of their core-curriculum. All students enrolled in foreign language classes at this university are also required to complete the lab component of the course as part of what it is called the fourth credit hour. These language courses are four-credit hour courses, students complete three of those hours face-to-face in the classroom, and the fourth hour is completed through tasks in the language lab. Although the university offers language courses across four different campuses, only three of these campuses have a physical language lab. Therefore, the students at the campus without a language lab complete their lab work online via the university online content delivery platform called Desire2Learn. There are a total of six lab tasks that students complete in the course of a semester. Labs occur every two weeks, are begun in the second week of school, and end the next to last week of the semester. This study is designed around the context of a language course and lab requirements/experiences.

Research Design

This study integrates a pretest-posttest quasi-experimental group design with one experimental group and one comparison group. Spanish courses in a campus with a language lab were randomly assigned, via a random number generator, to the experimental group (six classes), and to the comparison group (six classes). All classes entered in the excel randomization tool were daytime classes. In the current study, the intervention is autonomy-based in terms of learning design and organization, but the actual learning content is not designed or controlled by the researcher.

The current study examined the effect of the intervention, as the independent variable, on students' motivation to learn a foreign language, language learner autonomy, and performance on a classroom test (i.e., dependent variables). These variables are discussed in detail in the next section.

Variables

Statement and Operational Definitions of the Independent Variable

The independent variable included in this study is the intervention given by the researcher in the form of a workshop that is geared towards promoting learner autonomy. This workshop gave the participants an opportunity to plan their path to complete their language lab tasks in a way that allows for alterations in: activities, pace, and content of lab tasks based on participants' preferences. This workshop was embedded into the learners' obligatory ongoing participation in the language lab program as a part of their language class.

Autonomy-based intervention. The intervention consisted of a workshop given by the researcher that was geared towards promoting language learner autonomy by giving the participants an opportunity to plan out their path to complete their language lab tasks in a way that allows for alterations in: activities, pace, and content of the lab tasks based on the participants' preferences. This workshop was embedded into the learners' obligatory ongoing participation in the language lab program as a part of their language class. Specifically, the participants were asked to be deliberative in planning out how they would approach their learning tasks and the general goal of language acquisition in order to foster motivation to learn and autonomy. The intervention took place after completion of lab 1, around week 4. At that point participants in the experimental group were given the choice on how to complete labs 2, 3, and 4. Participants completed their posttest at the completion of lab 4. For labs 5 and 6 the

experimental group would go back to complete labs in the same way all students enrolled in elementary Spanish did. The comparison group completed labs 1 to 6 as mandated by the lab which amounts to the tasks that appear at the bottom of figure 4 (a task that earns the students 3 points). The following figure (Figure 3) gives a graphic idea of the time period affected by the intervention.

Figure 3. Lab Tasks affected by intervention

	Lab 1		Lab 2	Lab 3	Lab 4	Lab 5	Lab 6
Comparison group	X	INTERVENTION	✓	✓	✓	X	X
Control group	X	X	X	X	X	X	X

Participants who were assigned to the autonomy-based intervention attended the language lab for the completion of the first lab task. First, the researcher gave participants a snapshot of the whole semester in terms of communicative goals, and language structures that are expected to be learned throughout the semester. At this time, the researcher also communicated to participants the role of the lab in supporting their language learning experience, how the lab personnel cares for their success, the importance of them taking charge of their learning process, and the connection and relationship between the expectations of what they did in the language lab to real world tasks. Second, they were presented with a series of options on how to achieve those course goals. The options included a variety in terms of the number of labs to complete, which was intended to impact pace, content, and depth of the tasks (see Appendix A for full

description of intervention). For example, for each lab, participants have to earn three points. Participants can decide how they want to go about earning those three points. The figure below (Figure 4) details an example of the types of decisions that the student is allowed to make in order to meet the assignment requirements for the second language lab.

  The design of this workshop is based following Little's (2007) recommendations that "autonomy is the product of an interactive process in which the teacher gradually enlarges the scope of the learner's autonomy" (p. 20). Although the standards and curriculum themselves may not be up for negotiation, the experience was structured so that the participants would feel some degree of ownership of the process in order an effect on the learning itself.

Figure 4. Example of Autonomy-Intervention for lab 2.

LAB #2			
COMPLETE **BETWEEN** **JANUARY 29**TH **and** **FEBRUARY 9**TH	**1 POINT**	**Listening Activity for lab #2** You will come to the lab to complete a short 15 min listening task. * ask lab assistant for activity	**Recording Activity for lab #2** You will come to the lab to complete a short 15 min speaking task. * ask lab assistant for activity	**Description Activity for lab #2** You will get a picture with prompts and have to describe the picture following the prompts. * ask lab assistant for activity

	1 POINT	**Listening Activity for lab #2** You will come to the lab to complete a short 15 min listening task. * ask lab assistant for activity	**Recording Activity for lab #2** You will come to the lab to complete a short 15 min speaking task. * ask lab assistant for activity	**Description Activity for lab #2** You will get a picture with prompts and have to describe the picture following the prompts. * ask lab assistant for activity
	2 POINTS	**CONVERSATION WORKSHOP** Monday January 29th @ 8:00 am Tuesday January 30th @ 10:00 am Wednesday January 31st @ 2:30 pm * In the language lab.	**GRAMMAR WORKSHOP** Tuesday February 6th @ 4:00 pm Wednesday February 7th @ noon Thursday February 8th @ 10:00 am * In the language lab.	
	3 POINTS	You and a classmate are going to pretend you work for the admissions office and you are preparing a short video tour to potential Spanish speaking visitors. You can incorporate campus maps, and campus pictures into the video presentation of this tour. Each of you are required to have the following in your dialogue: • Explanation of majors, classes, places and things to do in school • Use the verb SER in various forms • Use at least 6 other verbs • Incorporate 2 questions each		
TOTAL POINTS				

Statement and Operational Definitions of Dependent Variables

The dependent variables included in this study are motivation to study a foreign language, learner autonomy, and academic performance. These variables have been operationalized in the following manner. Motivation and autonomy have been operationalized as continuous variables (specifically, ratio variables) in a manner consistent with the scoring procedures described in the measures section of this document. Academic performance is determined by student's performance on Spanish test, which is also considered to be a ratio score (see measures).

Statement and Operational Definition of Covariates

There are characteristics of the participants in a study that may or may not affect the result of the study; these characteristics were treated as covariates during data analysis. As part of this study, the researcher collected certain demographic information on the participants, including: age, gender, native language, year in school, length of time spent in a Spanish-speaking country, years since graduating from high school, and exposure to Spanish in high school (see Appendix A).

These variables have been operationalization in the following manner. Age was determined to be the age of the student in years, rounding off to the last birthday. Gender was operationalized as a dummy variable with 0 = male and 1 = female. Native language is coded as a dummy variable with 0 = any non-English language and 1 = English. Year in school was operationalized as a continuous variable with 1 = freshman, 2 = sophomore, 3 = junior, 4 = senior, 5 = Fifth-Year senior or beyond. The length of time spent in Spanish-speaking countries were measured as a continuous variable, specifically, the amount of time spent in Spanish-speaking countries. Exposure to Spanish in high school were operationalized as a continuous

variable with 1 = one semester, 2 = two semesters, 3 = three semesters, 4 = four semesters, and 5 = five or more.

Recruitment Procedures

Prior to the beginning of the semester, a meeting was held with the faculty teaching the Spanish courses to review the purpose of the study, procedures for data collection, and the consent process. The sample for the study consists of individuals who are enrolled in a first-semester Spanish course at the university that is the setting for the study. Sampling for the study took place through convenience means.

A letter explaining the research project and consent forms were sent to the students enrolled in the randomly selected courses via a random number generator. All letters were sent by email. These letters went out on the first day after the period of drop/add ended at the university to avoid having students complete the forms that later would not be part of the class. Students were made aware that participation in research is voluntary and that their participation would not have any bearing on their course grades. Instructors did not know which students consented to participate in the study, nor had access to any data pertaining to the study.

Participants

Participants for this study consisted of adults aged 18 and older who were enrolled in a first semester Spanish course. Participation in this study was voluntary and data was collected while students participated in activities in the language lab. The researcher, rather than course instructors, completed the consent procedures with all students, explained to them that participating in research was voluntary and would not influence students' grades. Participants came from twelve course sections with an average enrolment of 20 students in each class (N =

219). Participants came from a university that has a student body of primarily white students (75%), undergraduate (97%), and with a majority of in-state students (92%).

Throughout the research, the researcher maintained records in a way that protected the anonymity of the students (i.e., students were assigned a numerical ID that was used in place of their name). Students were allowed to withdraw from participating in the research at any time without any negative consequences. Nobody withdrew from the study.

The majority ($n = 208$) reported ages between 18 and 23. Of the 219 participants, 144 (66%) were female and 75 (34%) were male. Four participants were not native English speakers. One hundred and fifty-two reported to be in the first year in year, 47 (21%) in their second year, and 15 (7%) in their third year; the remainder were beyond their third year of enrollment. Several participants reported backgrounds in language study in high school, as indicated in Table 5 below.

Table 5

Distribution of Language Study Experience in High School

Type of Study	Frequency	Percent
None	10	4.57
Spanish, 1 year	22	10.05
Spanish, 2 years	96	43.84
Spanish, 3 or more years	63	28.77
Other, 1 year	1	0.46
Other, 2 years	11	5.02
Other, 3 or more years	16	7.31

One hundred and ninety-three (88%) of the participants reported not having studied abroad, whereas 24 (11%) had studied abroad for between one week to one month. Only two of the participants had more than a month of experience studying abroad.

Measures

Information for this study was collected using surveys frequently used in the field and researcher developed tools. Survey tools were selected for their validity and reliability as well as their use in prior research studies examining student autonomy and motivation. Student classroom performance was assessed using a performance assessment tool course instructors were already using to evaluate Spanish language proficiency. Each measure is described below.

Student Motivation. Student motivation was measured the mean score of theAttitudes/Motivation Test Battery (AMTB) designed by Gardner (2004, see Appendix B) to target motivational disposition towards their current L2 studies. This instrument contains 41 statements that are subdivided into three categories: attitude towards learning a foreign language, motivational orientation, and desire to learn Spanish. Examples of statements linked to measuring attitude towards learning a language are: *Studying a foreign language is an important part of education* or *speaking a foreign language is especially relevant in today's world*. To address the area of motivational orientation there are statements like *Knowing Spanish has financial benefits for me*. To gather information about the desire to learn Spanish there are statements like the following in the survey *I wish I had begun studying Spanish at an early age.* Items are scored on a 6-point Likert scale following Gardner's AMTB Manual. Assuming the use of a 1-7 scoring system, and assuming that lower scores represent lower levels of motivation while higher scores represent higher levels of motivation, the scoring range of the Attitudes/ Motivation Test Battery is from 41 to 287.

Autonomy. Autonomy was measured through the mean score of the autonomy questionnaire used by Spratt, Humphreys, and Chan (2002). The questionnaire has 28 questions divided into three parts (see Appendix C). The first part has ten items aimed at identifying the

responder's sense of personal responsibility towards learning. In this section of the survey respondents are asked to say how much responsibility they take concerning tasks designed to assess (a) setting goals for the semester or (b) assessing their own learning. The second part, which contains 9 items, focuses on students' views of their ability to perform learning autonomously. Statements in this section ask to what extent responders have *until now* or from *now on* being involved in a series of tasks like decide topics in the class, or decide the amount, type or frequency of homework. The third section, with ten items, focuses on the responders' frequency in engaging in activities inside and outside the classroom that help him/her to learn a language. Items in this section ask questions focused on how often responders have participated in activities and how often they participate in certain activities (e.g., read a Spanish newspaper, listen to Spanish songs, etc.). Assuming the use of a 1-5 scoring system, and assuming that lower scores represent lower levels of autonomy while higher scores represent higher levels of autonomy, the scoring range for the Autonomy Questionnaire is from 28 to 140.

Academic Performance. Academic performance was assessed by the mean score of a classroom assessment tool that targets specific the linguistic goals covered in the language courses students are enrolled in. The assessment consisted of a listening comprehension activity, and a fill in the blank activity. The content of this assessment included topics such as: likes and dislikes, physical and personal descriptions, daily activities, family related topics, and things students do at a university. These assessment tools are pulled from the assessment bank that comes from the publisher of the book used at the university. Assessors completed an assessment training given by the university to calibrate their feedback on these cross-section assessments.

Instrument Reliability

Both the motivation and the autonomy instruments had their internal reliability checked through the measure of Cronbach's Alpha. A Cronbach's Alpha of .8 or greater demonstrates a high level of internal reliability. If the Cronbach's Alpha of either one, or both, of the instruments for the study is found to be below .8, this fact was noted as a limitation in the fifth chapter of the study. Examinations of inter consistency was undertaken at both the subscale and scale (i.e., entire measure) level.

Data Collection Procedures

Data were collected twice during this study. Data collection involved survey responses and performance on a classroom assessment that all students completed. Participants completed the survey and language performance assessment on or before the third week of school during the time assigned by classes as language lab time. Survey measures were completed in English, while proficiencies were established in Spanish. These data served as their pre-assessment information. They completed the assessments again once they completed the fourth lab, which was during the ninth week of school. The completion of the surveys and proficiency test at week 9 served as student's posttest.

Students who gave consent completed a background questionnaire in which they were asked for information regarding their: age, gender, native language, year in school, how many years, if any, they had studied Spanish in high school, how long ago they graduated from high school, and the length of time, if any, they had spent in Spanish-speaking countries (see Appendix A). This questionnaire was distributed via email for them to fill out during the first two weeks of school prior to their completion of their first lab task.

Participants attended the language lab, as they do for their lab time, for the intervention that took place during the fourth week of school. The researcher led the intervention and worked individually with students planning their learning path. The intervention was in the form of a workshop that lasted about 60 minutes. The following diagram (Figure 5) shows data collection and intervention timeline.

Figure 5. Data collection and intervention timeline

	Week 2	Week 3	Week 4	Week 8
Comparison Group	Invitation and Consent	Pretest	Intervention	Posttest
Control Group	Invitation and Consent	Pretest		Posttest

Ethical Considerations

There are several ethical considerations that should be considered. One important ethical consideration noted in the literature (Balnaves & Caputi, 2001; Creswell, 2015; Dantzker & Hunter, 2006; Given, 2008; Jackson, 2015; Leary, 2011; McBurney & White, 2011; McNabb, 2010; Moustakas, 2014; Trochim et al., 2015) on human-subjects research is that of power differences between study recruiters and study participants. In the current study, the sample consisted of students who are enrolled in an elementary-level Spanish course. One of the most important ethical considerations involved in working with this population is to ensure that students do not feel compelled to participate in the study. Students are a vulnerable research population insofar as they might feel obligated to participate in a research study on the assumption that not doing so could harm their academic standing at the institution where they are

students or reflect badly on themselves in some other way. Therefore, it is important to ensure that students do not feel in any way obliged to participate in the study.

In addition, according to the literature (Balnaves & Caputi, 2001; Creswell, 2015; Dantzker & Hunter, 2006; Given, 2008; Jackson, 2015; Leary, 2011; McBurney & White, 2011; McNabb, 2010; Moustakas, 2014; Trochim et al., 2015), ensuring the rights of vulnerable subjects in a research study requires the creation of an appropriate informed consent letter. Such a letter must inform individuals of their rights in a research study, such as the right to leave the study—at any time, for any reason, and without penalty. Such rights mitigate the risk of the power imbalance between the researcher and human subjects who are part of a vulnerable population. Consent forms were collected by the researcher and not shared with course instructors. Hence, course instructors were not known who is and who is not participating in the research study.

In this study, the researcher is not in a position to influence the grades of students. Thus, the power differential between the researcher and the participants is not as great as it would have been had the researcher been the grader of the students. This fact, in conjunction with the various ethical protections afforded to study members, helps to ensure that the study was conducted in accordance with the ethical norms of research.

Data Analysis

The primary purpose of this study is to examine whether students exposed to the autonomy based intervention perform better than the students who do not receive it. In order to answer these questions, a series of comparative analyses were carried out. For the first, second, and third research questions of the study an analysis of covariance (ANCOVA) was estimated, and the fourth research question was answered through a correlation analysis.

The first research question is as follows, *does the autonomy-based instructional intervention increase the motivation of elementary-level foreign language students to learn Spanish?* This question was answered through the use of an ANCOVA in which the dependent variable is change in motivation, measured from the pre-test to the post-test; the independent variable is group membership (with the two groups being the control group and the intervention group); and the covariates are age, gender, native language, year in school, length of time spent in Spanish-speaking countries, years since graduating high school, and exposure to Spanish in high school.

The second research question is *does the autonomy-based instructional intervention increase the academic performance of elementary-level foreign language students in Spanish?* An ANCOVA was also employed to examine this question. The dependent variable is the change in score on the in-house Spanish test, measured from the pre-test to the post-test; the independent variable is group membership (with the two groups being the control group and the intervention group); and the covariates are, gender, native language, year in school, length of time spent in Spanish-speaking countries, years since graduating high school, and exposure to Spanish in high school. A similar approach for attending to covariates described in the analysis for research question one was employed for the analysis of research question two.

The third research question is, *does the autonomy-based instructional intervention increase the level of autonomy of elementary-level foreign language students in Spanish?* As in the first two, this question was answered also using an ANCOVA, but in this case the dependent variable is change in score on the *autonomy survey*, measured from the pre-test to the post-test. The independent variable for this analysis is group membership (with the two groups being the control group and the intervention group) while the covariates are, gender, native language, year

in school, length of time spent in Spanish-speaking countries, years since graduating high school, and exposure to Spanish in high school. As with the other research questions, because there might be insufficient group membership in the covariates, adjustments were made as deemed necessary from the data.

The fourth research question is as follows, *is motivation a positive predictor of academic performance among elementary-level university students?* This question was answered through a correlation analysis between language improvement and motivational improvement.

Summary and Conclusion

The purpose of this chapter was to describe and justify all appropriate components of research methodology and design for the study. In order to do so, the chapter was subdivided into separate discussions of (a) research methodology; (b) research design; (c) research questions and hypotheses; (d) setting, population, and sample; (e); materials and instruments, (f) data collection, (g) data analysis, and (h) ethical issues and protections. The purpose of the conclusion is to summarize the methodological orientations of the study.

The four research questions were aimed at answering the effect of an autonomy-based instructional intervention on motivation to study a foreign language, learner autonomy, and academic performance. The data analysis was applied to a sample of undergraduate students of Spanish from a single university in the southeastern United States. A sample of 219 students was sought for the study. The results in the fourth chapter are presented in accordance with the research methodology and design presented and defended in the third chapter of this study.

CHAPTER FOUR: RESULTS

Introduction

The purpose of this chapter is to present the results of the study. Results are presented in two sections. First, the descriptive statistics of the study are presented. Second, analyses are presented that examine each research question with a section on general considerations for the first three research questions. For all procedures, an Alpha of .05 was adopted as the threshold of statistical significance.

Descriptive Statistics

The initial sample consisted of 219 students, and data were collected on seven covariates: age, gender, participants' native language, the participants' year of enrollment, length of foreign language studied in high school, the student's study-abroad experiences, and the student's desire to take Spanish 2. Descriptive statistics on each of these variables are presented below.

Given that the normality of variables was an important consideration in the decision to include non-parametric statistical procedures, normality testing of the continuous variables was also conducted. The normality of the distributions for autonomy, motivation, and academic performance were tested through (a) the Shapiro-Wilk test for normal data and (b) skewness / kurtosis tests for normality. According to the Shapiro-Wilk test, autonomy was distributed normally, $W = 0.99$, $z = 0.90$, $p = .18$. However, according to the Shapiro-Wilk test, language performance was not distributed normally, $W = 0.98$, $z = 2.50$, $p = .006$. According to the skewness-kurtosis tests of normality, neither the skewness ($p = .07$) nor the kurtosis ($p = .79$) of autonomy were distributed abnormally. While the kurtosis ($p = .60$) of language performance was distributed normally, the skewness ($p = .004$) of language performance was distributed abnormally, perhaps due to the covariate of years of having studied Spanish. According to the

Shapiro-Wilk test, motivation was not distributed normally, $W = 0.94$, $z = 5.20$, $p < .001$. While the kurtosis ($p = .06$) of motivation was distributed normally, the skewness ($p < .001$) of motivation was not distributed abnormally.

Next, examinations of the distribution of autonomy and language performance were carried out for the intervention group ($n = 142$) only. For the intervention group, autonomy was not normally distributed, Shapiro Wilk $W = 0.98$, $z = 1.80$, $p = .036$. However, for the intervention group, language performance was normally distributed, Shapiro Wilk $W = 0.98$, $z = 1.52$, $p = .064$. A skewness / kurtosis test for normality found that, for the intervention group, the skewness ($p = .07$) as well as the kurtosis ($p = .24$) for autonomy were normal. However, for the intervention group, the skewness ($p = .014$) of language performance was abnormal, whereas the skewness of the kurtosis group ($p = .55$) was normal.

Next, examinations of the distribution of autonomy and language performance were carried out for the control group ($n = 77$) only. For the control group, autonomy was normally distributed, Shapiro Wilk $W = 0.99$, $z = -0.54$, $p = .71$, and language performance was also normally distributed, Shapiro Wilk $W = 0.98$, $z = 0.64$, $p = .26$. A skewness / kurtosis test for normality found that, for the control group, the skewness ($p = .57$) as well as the kurtosis ($p = .47$) of autonomy were normal, as were the skewness ($p = .19$) and kurtosis ($p = .10$) of language performance.

For the variable of motivation, distribution was abnormal for the intervention group (Shapiro Wilk $W = 0.92$, $z = 5.00$, $p < .001$) as well as for the control group (Shapiro Wilk $W = 0.94$, $z = 2.99$, $p = .001$). The skewness of motivation for the intervention group ($p < .001$) was not normal, but the skewness of motivation for the control group ($p = .42$) was normal. The skewness of motivation for the intervention group ($p < .001$) and for the control group ($p = .002$)

were not normal. Therefore, there was justification for the non-parametric tests conducted later in the study.

In order to validate the randomness of the assignments to conditions, the groups were compared to each other. An independent samples t-test approach was utilized to determine whether baseline autonomy was statistically similar between the intervention and control groups. It was found that autonomy for the intervention group ($M = 72.96$, $SD = 15.22$) was significantly lower than the autonomy for the control group ($M = 79.00$, $SD = 16.02$), $t(217) = -2.75$, $p = .003$, suggesting that the intervention decreased autonomy. The existence of a statistically significant disparity between mean autonomy in the intervention and control groups was not due to the influence of outliers. The only outlier, participant #119, was identified in the comparison of autonomy scores between the intervention and control group at baseline. Their scores were identified and removed from analysis.

Data from participant #118 was deleted from the data analysis because he was a native speaker of Spanish. Although data from #118 were taken into account in the descriptive statistics, none of the post-test data from #118 were taken into account.

Differences between pretest and posttest

An independent samples t-test approach was utilized to determine whether baseline language score was statistically similar between the intervention and control groups. Results showed that the language score for the experimental group ($M = 64.61$, $SD = 16.54$) was significantly lower than the language score for the control group ($M = 77.60$, $SD = 14.25$), $t(217) = -5.82$, $p < .001$, indicating a nearly six point lower score for the comparison group. The disparity in baseline language scores between the experimental and the comparison group before the intervention should be noted as a limitation of this study. The existence of a statistically

significant disparity between mean language score in the experimental and comparison groups was not due to the influence of outliers. Only two outliers, participants #22 and 62, were identified in the comparison of language score scores between the experimental and comparison group at baseline. The following table shows the difference in pre- and post-test of language scores.

Table 6 Pre- and Post-test Statistical Differences

	Intervention (N=142)		Control (N=77)	
	Pretest	Posttest	Pretest	Posttest
Mean	64.61	75.21	77.60	79.76

Finally, an independent samples *t*-test approach was utilized to determine whether baseline motivation was statistically similar between the intervention and control groups. It was found that motivation for the intervention group ($M = 169.72$, $SD = 16.28$) was not significantly different from motivation for the control group ($M = 170.00$, $SD = 18.55$), $t(217) = -0.10$, $p = .92$.

General considerations for Research Questions 1 to 3

In order to answer the first three research questions, the first step was to calculate change in motivation (RQ 1), change in academic performance (RQ 2), and change in autonomy (RQ 3) from the pre-intervention state to the post-intervention state. The vector of motivation, language performance, and autonomy change was subjected to an independent samples *t*-test. As one of the assumptions of the independent samples *t*-test is normality of variances, a variance ratio test was conducted to determine whether this assumption was met in the *t*-test comparison of motivation, language performance, and autonomy change in the intervention group as opposed to the control group. Another assumption of the independent samples *t*-test is that the dependent variable will be normally distributed; for which a Shapiro-Wilk test was run complemented by a

two-sample Wilcoxon rank-sum (Mann-Whitney) test, which is robust to both non-normality of

the dependent variable and inequality of variances between compared groups. The pre-test for

both groups is shown below in Table 7.

Table 7. Pre-test Summary Statistics

	Intervention	Control
Mean	64.61	77.60
Standard Error	1.34	1.62
Median	67.50	77.50
Mode	75	92.5
Standard Deviation	16.54	14.25
Sample Variance	273.70	203.01
Kurtosis	0.18	-0.67
Skewness	-0.51	-0.35
Range	90	55
Minimum	10	45
Maximum	100	100
Sum	9,175	5,975
N	142	77

A pre-intervention comparison was made of both groups. It was found that there was no

significant difference in language skill and background.

The independent samples t-test is useful as a means of establishing the magnitude and

statistical significance of the improvement in motivation, language performance, and autonomy

after the intervention. However, the t-test alone is incapable of considering covariates; therefore,

an ANCOVA was utilized to determine whether the effect of the intervention on motivation,

language performance, and autonomy improvement in existed after taking the seven covariates

of the study into account.

Results for Research Question 1 (RQ1)

According to the independent samples t-test, the mean improvement in motivation for the

experimental group ($M = 16.28$, $SD = 22.98$) was significantly greater than the mean

improvement in motivation for the comparison group ($M = 7.31$, $SD = 17.99$), $t(216) = 2.97$, $p = .002$. A. The variance ratio test indicated that there was a statistically significant difference between the standard deviations of motivation change in the intervention and control groups, $F(140, 76) = 1.63$, $p = .02$. The Shapiro-Wilk test showed that change in motivation was not normally distributed $W = 0.95$, $z = 4.91$, $p < .001$. Results from a two-sample Wilcoxon rank-sum (Mann-Whitney) test also show a statistically significant difference in mean motivation improvement for the experimental group versus the control group, $z = 3.33$, $p < .001$. Mean motivation improvement was higher for the experimental group than for the comparison group. For example, participant 31 showed a score of 87 at pretest and 200 at posttest time.

The *t*-test also offered an opportunity to measure the effect size of motivation change in terms of Cohen's *d*, which was found to be 0.42 (95% confidence interval = 0.14 to 0.70). Thus, the improvement in motivation was nearly half a standard deviation greater for the experimental group. To further understand if the covariates of the study had an effect on the results of the intervention, an ANCOVA was conducted. The ANCOVA results are presented in Table 8.

Table 8

ANCOVA Results, RQ1

Source	df	MS	F	p
Age	3	528.37	1.13	0.33
Gender	1	324.20	0.69	0.40
English-speaking status	1	113.05	0.24	0.62
Year of enrollment	4	39.97	0.09	0.98
Length of high-school Language study	6	688.89	1.47	0.19
Study-abroad experience	3	140.19	0.3	0.82
Desire to take Spanish 2	2	520.78	1.11	0.33
Total	216	474.34		

The ANCOVA was not significant, $F(21, 216) = 1.13$, $p = .32$. However, the predictor of group was statistically significant in the ANCOVA for RQ1, $F = 7.10$, $p = .008$, whereas none of

the covariates were significant. These findings suggest that the improvement in motivation

observed in the experimental group were independent of the factors of age, gender, English-

speaking status, year of enrollment, length of language study in high school, experience studying

abroad, or desire to take Spanish 2. The effect size (based on *F*) for Table 8 was 0.72. Based on

the *p* value for group observed in Table 8, the null hypothesis for RQ1 was rejected. There was

sufficient evidence, at an Alpha of .05, that the individuals exposed to the intervention had a

higher mean improvement in motivation than the individuals not exposed to the intervention.

Results for Research Question 2 (RQ 2)

To address the second research question of whether an autonomy-based instructional

intervention increases the language performance of elementary-level foreign language, the null

hypothesis stated that there would be no effect of the autonomy-based instructional intervention

on the language performance of elementary-level Spanish learners.

According to the independent samples *t*-test, the mean improvement in language

performance for the experimental group ($M = 10.46$, $SD = 10.67$) was significantly greater than

the mean improvement in language performance for the comparison group ($M = 2.04$, $SD =$

4.96), $t(216) = 6.54$, $p < .001$. The variance ratio test indicated a statistically significant

difference between the standard deviations of language performance change in the experimental

and comparison groups, $F(140, 76) = 4.63$, $p < .001$.

. Mean language performance improvement was higher for the experimental group than for the

comparison group.

The *t*-test also offered an opportunity to measure the effect size of language performance

change in terms of Cohen's *d*, which was found to be 0.93 (95% confidence interval = 0.63 to

1.22). Thus, the improvement in language performance was nearly a full standard deviation

greater for the intervention group, suggesting a major improvement in language performance. An

ANCOVA was utilized to determine whether the effect of the intervention on language

performance improvement in the intervention group remained after taking the seven covariates of

the study into account. The ANCOVA results are presented in Table 9

Table 9

ANCOVA Results, RQ2

Source	df	MS	F	*p*
Model	21	283.58	3.62	0.00
Group	1	4138.66	52.83	0.00
Age	3	290.68	3.71	0.01
Gender	1	0.01	0.00	0.99
English-speaking status	1	69.29	0.88	0.34
Year of enrollment	4	8.48	0.11	0.97
Length of high-school Language study	6	186.95	2.39	0.03
Study-abroad experience	3	70.26	0.9	0.44
Desire to take Spanish 2	2	55.84	0.71	0.49
Total	216	98.30		

The ANCOVA for RQ2 was significant, $F(21, 216) = 3.62$, $p < .001$. The predictor of group was statistically significant in the ANCOVA for RQ2, $F = 52.83$, $p = .013$. The variables of length of high-school language study ($F = 2.39$, $p = .0301$) and age ($F = 3.71$, $p = .013$) were also significant predictors in the ANCOVA. The effect size (based on *F*) was 7.24. In order to better understand the influence of these covariates, an OLS regression was conducted. The results of the OLS regression are presented in Table 10.

Table 10

OLS Results, RQ2

Language Score Improvement	Coef.	Std. Err.	t	P>|t|
Group	-9.17	1.28	-7.19	0
Age 24-30	-0.74	3.41	-0.22	0.83
Age 31-40	-3.12	9.01	-0.35	0.73
Age 41-50	30.75	9.24	3.33	0.00
Spanish 1 year	8.04	3.52	2.29	0.02
Spanish 2 years	7.50	3.12	2.41	0.02
Spanish 3 or more years	3.97	3.17	1.25	0.21
Other language 1 yr	0.75	9.24	0.08	0.93
Other language 2 yrs	9.14	4.04	2.26	0.03
Other language 3 or more yrs	10.46	3.74	2.8	0.00
_cons	13.42	3.21	4.18	0

These findings suggested that the improvement in language performance observed in the experimental group were independent of the factors of age, gender, English-speaking status, year of enrollment, length of language study in high school, experience studying abroad, or desire to take Spanish 2. There were, however, independent effects of (a) being older and (b) having lower levels (2 years or less) of Spanish instruction on language score improvement. In terms of the higher language performance improvements for students who studied Spanish for 2 or less years, this finding could be due to the fact that participants who studied Spanish for 3 or more years did not as much room to improve.

Students who had already had 3 or more years of Spanish had higher pre-test scores and therefore less scope to improve in the aftermath of the intervention. There was sufficient evidence, at an Alpha of .05, that the individuals exposed to the intervention had a higher mean improvement in language performance than the individuals not exposed to the intervention. The superior language performance improvement of the experimental group persisted after controlling for the possible effects of the covariates of age, gender, English-speaking status, year

of enrollment, length of language study in high school, experience studying abroad, or desire to

take Spanish 2.

Results for Research Question 3 (RQ 3)

Turning to the third research question inquiring about whether an autonomy-based

instructional intervention increased the autonomy of elementary-level foreign language to learn

Spanish, the null hypothesis was that there would be no effect of the autonomy-based

instructional intervention on the autonomy of elementary-level foreign language students.

The independent samples t-test, the mean improvement in autonomy for the intervention

group ($M = -1.77$, $SD = 13.27$) was not significantly lower than the mean improvement in

autonomy for the experimental group ($M = 1.94$, $SD = 20.87$), $t(216) = -1.42$, $p = .08$. The

variance ratio test indicated that there was a statistically significant difference between the

standard deviations of autonomy change in the experimental and comparison groups, $F(140, 76)$

$= 2.47$, $p < .001$. According to the Shapiro-Wilk test, the change in autonomy was not normally

distributed $W = 0.99$, $z = 1.99$, $p = .02$. To strengthen the analysis, an additional two-sample

Wilcoxon rank-sum (Mann-Whitney) test was conducted. The test revealed no statistically

significant difference in mean autonomy improvement for the experimental group versus the

comparison group, $z = 1.05$, $p = .29$. Mean autonomy improvement was shown to be no higher

for the experimental group than for the comparison group.

The t-test also allowed for the measurement of the effect size of autonomy change in terms of

Cohen's d, which was found to be 0.20 (95% confidence interval = -0.08 to 0.48). Because 0

was in the 95% confidence interval of Cohen's d, there was no practical effect of group

membership on autonomy change. However, the independent samples t-test was incapable of

taking covariates into account. Therefore, for RQ3, an ANCOVA was utilized to determine

whether the effect of the intervention on autonomy improvement in the experimental group

remained after taking the 7 covariates of the study into account, as shown in Table 11.

Table 11

ANCOVA Results, RQ3

Source	Partial SS	df	MS	F	*p*
Age	317.68	3	105.89	0.32	0.81
Gender	483.68	1	483.68	1.47	0.23
English-speaking status	371.38	1	371.38	1.13	0.29
Year of enrollment	698.22	4	174.56	0.53	0.71
Length of high- school language study	1806.49	6	301.08	0.92	0.48
Study-abroad experience	1913.29	3	637.76	1.94	0.12
Desire to take Spanish 2	2684.31	2	1342.15	4.08	0.02
Residual	64154.35	195	328.99		
Total	74931.41	216	346.90		

The ANCOVA for RQ3 was not statistically significant, $F(21, 216) = 1.56$, $p = .104$. In addition,

the predictor of group was not statistically significant in the ANCOVA for RQ3, $F = 2.67$, $p =$

.104, and the covariate of the desire to take Spanish 2 was significant, $F = 4.08$, $p = .018$. The

effect size (based on F) was 1.48. Autonomy improvement after the intervention appeared to be

higher for individuals who did not want to take Spanish 2, which was an unexpected finding.

Based on the p value for group observed in Table 11, the null hypothesis for RQ3 could not be

rejected, unlike the previous finding. There was insufficient evidence that the individuals

exposed to the intervention had a higher mean improvement in autonomy than the individuals not

exposed to the intervention.

Summary of Results Based on Research Questions

The first research question of the study investigated if the autonomy-based instructional

intervention increased the motivation of elementary-level foreign language to learn Spanish. The

results showed that the predictor of group was statistically significant, $F = 7.10$, $p = .008$.

There was sufficient evidence, at an Alpha of .05, that participants in the experimental group had

a higher mean improvement in motivation than the individuals not exposed to the intervention.

The answer to the first research question of the study was that there was a statistically significant relationship between the intervention and increased motivation, $F = 7.10$, $p = .008$. In terms of the intervention-motivation relationship, it could be the case that increases in motivation were due to (a) students' autonomy, the exercise of which could have resulted in greater motivation or (b) students' beliefs that they were becoming better at Spanish, which could have been a source of motivation.

The second research question was about the effect of the autonomy-based instructional intervention on the language performance of elementary-level foreign language. The predictor of group was statistically significant, $F = 52.83$, $p = .013$. There was sufficient evidence, at an Alpha of .05, that the individuals exposed to the intervention had a higher mean improvement in language performance than the individuals not exposed to the intervention.

Data analysis regarding the third research question of the study investigated whether the autonomy-based instructional intervention increase the autonomy of elementary-level foreign language to learn Spanish which has the null hypothesis that there would be no effect of the autonomy-based instructional intervention on the autonomy of elementary-level foreign language students. The predictor of group was not statistically significant, $F = 2.67$, $p = .104$, failing to reject the null hypothesis for RQ3. For a summary of results, see Table 11 below:

Table 12

Hypothesis Testing Results

Research Question	Hypotheses	Results
RQ1: Does the autonomy-based instructional intervention increase the motivation of elementary-level foreign language to learn Spanish?	H1_0: There would be no effect of the autonomy-based instructional intervention on the motivation of elementary-level foreign language students to learn Spanish. H1_A: There would be an effect of the autonomy-based instructional intervention on the motivation of elementary-level foreign language students to learn Spanish.	Null hypothesis rejected; there was sufficient evidence, at an Alpha of .05, that the individuals exposed to the intervention had a higher mean improvement in motivation than the individuals not exposed to the intervention, $F = 7.10$, $p = .008$.
RQ2: Does the autonomy-based instructional intervention increase the language performance of elementary-level foreign language?	H2_0: There would be no effect of the autonomy-based instructional intervention on the language performance of elementary-level Spanish learners. H2_A: There would be an effect of the autonomy-based instructional intervention on the language performance of elementary-level Spanish learners.	Null hypothesis rejected; there was sufficient evidence, at an Alpha of .05, that the individuals exposed to the intervention had a higher mean improvement in language performance than the individuals not exposed to the intervention, $F = 52.83$, $p = .013$.
RQ3: Does the autonomy-based instructional intervention increase the autonomy of elementary-level foreign language to learn Spanish?	H3_0: There would be no effect of the autonomy-based instructional intervention on the autonomy of elementary-level foreign language students. H3_A: There would be an effect of the autonomy-based instructional intervention on the autonomy of elementary-level foreign language students.	Null hypothesis not rejected; there was insufficient evidence, at an Alpha of .05, that the individuals exposed to the intervention had a higher mean improvement in autonomy than the individuals not exposed to the intervention. The null hypothesis for RQ3 could not be rejected, $F = 2.67$, $p = .104$.

Conclusion

      The purpose of this chapter was to present the results of the study. The results were presented in three sections. First, the descriptive statistics of the study were presented. Second, the research questions of the study were answered. Third, additional statistical examination of the data were provided. Exposure to the intervention group was not significantly associated with a change in autonomy. While autonomy increase is indeed positively associated with improvement in language performance, the intervention that was the centerpiece of the current study was not able to increase autonomy significantly. The mechanisms for the success of the intervention are not clear, because, as emerged from the Sobel-Goodman and bootstrapped mediation analyses, the intervention did not succeed through the mediation of motivation or autonomy increases. The findings of the study have been discussed with reference to both theory and past literature in Chapter 5.

CHAPTER FIVE: DISCUSSION

The purpose of the current study was to examine the impact of an autonomy-based Spanish foreign language approach on student motivation and performance. Featured in this chapter is a discussion of finding from this study in relation to existing research. Limitations of this study, implications for practice, and avenues for future research will also be discussed.

Summary of the Findings

The results of the current study suggest that the group exposed to the intervention showed a significantly higher increase in motivation than the group not exposed to the intervention. The autonomy intervention, then, can be concluded to be successful in increasing motivation. Also, the autonomy intervention appears to have significantly increased the language performance of participants. Those in the comparison group did not show such improvement. However, the results did not show that the intervention sufficiently increased autonomy or that motivation could be used as a significant predictor of language score. The data analysis revealed that each 1-point increase in autonomy was significantly associated with a 0.09-point increase in language performance from the pre-test to the post-test. As Deci and Ryan (2008) demonstrate, Self-Determination Theory holds that motivational orientations vary across a continuum of self-determination that is affected depending on whether basic needs—autonomy, competence, and relatedness—are met. Thus, increases in autonomy were expected to increase scoring in motivation and performance dependent on the level of self-determination exhibited by participants. The results revealed that all of the participants who had major performance increases—calculated as increases greater than 1 standard deviation beyond the mean improvement of 7.49—were in the intervention group. This provides support for the notion that supporting autonomy to promote self-determination was a significant factor in driving the

motivation of students. Although, the research pointed towards a positive relationship between the promotion of autonomous learning experiences, and motivation to learn (Liu, 2012; Pu, 2009; Ushioda, 2012), results from this study suggest that the increase in motivation by the participants in the experimental group could be the result of a combination of factors. Ryan and Deci (2000) note that all three components: autonomy, competence, and relatedness, affect how an individual moves across the self-determination continuum. Supporting autonomy as described by Stefanou, Perencevich, DiCintio, and Turner (2004) may still require also supporting competence and relatedness in order for autonomy itself to become a mediating factor.

The results indicate that a member of the experimental group was 6.25 times as likely as a member of the control group to increase motivation by 35 points or more. Thus, the intervention was found to significantly increase the motivation of the students, which was expected to, in turn, lead to improvements in performance. Moreover, a member of the experimental group was 7.69 times as likely as a member of the comparison group to increase autonomy by 20 points or more. A member of the intervention group was 7.84 times as likely as a member of the comparison group to decrease autonomy by 20 points or more. An individual who experienced a change in motivation more than 1 standard deviation greater than the group mean of 13.11 for motivation was 4.14 times as likely as someone with a lower change in motivation to experience a 1-standard deviation increase in performance. Based on the specific theoretical approach adopted, there are a few ways to interpret these results. One theoretical reason for this is students entering flow states, as Ho and Kuo (2010) explain, which increase autonomy and promotes learning. The degree of self-determination, too, may play a role or even serve as an explanation for the variance between the groups in motivation, autonomy, and

performance. These approaches and the potential associations between the factors will be discussed in more detail in the next sections.

Autonomy and Motivation

One of the significant findings of this study was that autonomy did not correlate with motivation. However, this finding contrasts with several of the theories and studies. For example, Spratt et al. (2002) found that the "absence of motivation seemed to inhibit practice of learner autonomy" (p. 262), indicating a positive correlation between motivation and autonomy. Such a relationship was also found in the work of Chan (2001) and Il-Pae (2008). Deci and Ryan's (1985) self-determination theory also suggests an intrinsic link between autonomy and motivation. According to theory, if autonomy is present, motivation is also likely to increase. With respect to the current study, an explanation of this finding could be that participants' motivation may have been at different points along the self-determination continuum. The strong correlation that Spratt et al. suggest may hold true in the case of intrinsically motivated learners but not necessarily at other points in the motivation continuum. In which case the absence of a relationship between autonomy and motivation could still be aligned with Deci and Ryan's theory. However, further research would be needed to determine the relationships between intrinsic motivation, extrinsic motivation, autonomy, and motivation.

Theory suggests that when learning tasks that are moderate in difficulty, learners are highly aroused and therefore achieve higher levels of learning performance (Ito et al., 2015). When language-learning tasks are perceived to be too easy, there is a low level of, as individuals lack the cognitive stimulation and motivation to complete tasks arousal (Mattanah, Prat, Cowan, & Cowan, 2005). However, when language-learning tasks are perceived to be too difficult, there is also a low level of arousal. Perhaps such low levels are due to cognitive load and even other

factors that, language-leaners abandon learning tasks that are too difficult. As discussed earlier, the concept of scaffolding emerged as a means through which learning designers tried to ensure that language learners, or learners of any kind of cognitive skill, were consistently kept at a moderate level of arousal. Indeed, the basis of the concept of scaffolding is to give learners challenges that are just challenging enough to keep their interest without discouraging them—an objective that is clearly related to the Yerkes-Dodson identification of moderate arousal as the optimal learning environment.

One possible explanation of the lack of a relationship between autonomy and motivation is that task arousal was either too low or too high (see Table 8). In the context of the study, a state of low task arousal would have meant that the Spanish tests were too easy for students; if so, students would have, according to the Wang et al. (2015), lacked motivation in an autonomous environment. However, the lack of a link between motivation and autonomy was present in both group conditions. That is, it was present in the experimental group as well as the comparison group.

Therefore, the absence of a significant link between motivation and autonomy in the current study contrasts with previous findings (Chan, 2001; Il-Pae, 2008; Spratt et al., 2002) about the relationship between motivation and autonomy. It is possible that the absence of a relationship between motivation and autonomy in the current study was a result of some characteristic of the sample or the university that does not exist in the population of the previous studies. Learners of Spanish as a foreign language may respond differently as a function of context. The current study was conducted on the basis of a sample from a single school tested on a single foreign language, which the students were required to take. It is possible that, in this limited context, there was no link between autonomy and motivation, but that such a link could

exist in other contexts and settings. However, it is also worth considering some theoretical reasons why autonomy and motivation might not be connected.

It is possible that a link between autonomy and motivation might only exist to the extent that the objective is deemed desirable by the problem-solver in the case of this study, by a student of Spanish, which again, it may be reflected differently in the ESL context where the learning of English is seen as an instrumental tool of social and economic advancement.. Hackman and Porter's (1968) description of expectancy theory bears mention as well because it provides the basis of a possible explanation for why autonomy and motivation might not be connected.

> Expectancy theory states that the strength of the tendency for an individual to perform a particular act is a function of (a) the strength with which he expects certain outcomes to be obtained from the act, times (b) the attractiveness to him of the expected outcomes. Thus, the theory frequently is summarized by the phrase, "Force equals expectancy times valence" (p. 418).

In the context of this study, the variable of force represents the determination that participants applied to paying attention to learning material, performing exercises, and otherwise equipping themselves to be better Spanish students and thus doing better on the post-test than they had on the pre-test. Hackman and Porter pointed out that valence, or the fundamental attractiveness of the goal, is a precursor of motivation. The absence of a statistically significant link between autonomy and motivation could therefore be the result of Spanish having a low valence for learners. Most students would be unlikely to take Spanish 2 unless they were obligated to by their degree requirements. The relationship between motivation and performance among students

taking Spanish 2 may, then, be quite complex. Given the nature of Spanish 2, as escribed above, it may be the case that Spanish 2 has above average variance in motivation.

Autonomy and Performance Improvement

As part of the analyses for this study (see Table 7), it was found that autonomy was positively correlated with language performance improvement. The revealed positive correlation between autonomy and performance suggests that interventions that can increase autonomy may be related with increases in performance. The purpose of this section of the chapter is to discuss possible reasons for the positive correlation between autonomy and performance improvement.

Deci and Ryan's (1985) Self-determination Theory suggests that autonomy and competence are both contributors to self-determination. Given that competence was conceptually understood as Spanish performance, then the correlation between autonomy and performance in the current study aligns with Deci and Ryan's conceptual grouping of autonomy and competence as well as other theories. Learner autonomy is frequently found to be applicable in language learning, even if there are no direct connections between autonomy and specific language learning outcomes, such as language acquisition performance (Little, 2007). Developing proficiency in language, then, may be indirectly connected to both self-determination and improved language learning outcomes. Understanding the relationship between self-determination, autonomy, and language learning outcomes may be an important focus for future research.

For instance, Blohm and Leimeister's (2013) discussion of games suggests that one of the reasons that people tend to learn more from game-based environments, also known as gamified environments, than from traditional formats such as lectures and textbooks is that, in certain environments, there is a sense of intellectual curiosity, exploration, and freedom. Even though

the current study did not feature such an environment, the results may be particularly useful for research assessing motivation and autonomy in such environments. In this context, Blohm and Leimeister defined autonomy as one of the basic components of human happiness and fulfillment, as a basic characteristic that is continually exercised throughout the lifespan. It is possible that the relationship between autonomy and motivation is based on the increase of valence (Hackman & Porter, 1968). If the exercise of autonomy is intrinsically pleasurable, then the autonomy-performance link could be based on connection between valence and behavioral force. As Hackman and Porter noted, when a task or goal are perceived as pleasurable, then more effort is put into achievement. Spratt et al.'s (2002) measurement of autonomy outside of the classroom suggests that students generally do not tend to autonomously seek the achievement of learning outcomes without being explicitly prompted, generally by educators. In Spratt et al.'s study, 61.4% of the students never or only rarely read grammar books on their own, suggesting that they needed additional prompting to learn and a discernible lack of learning-related autonomy. Meanwhile, 74.3% of students rarely or not at all completed compulsory assignments. Such findings suggest that autonomy-driven motivation may require additional reinforcement or prompting. In the context of the current study, it could have been the case that those students who perceived higher levels of autonomy in the context of their language study was because of the mediation of valence, more likely to engage in the kinds of work necessary to do well at the performance task. The autonomy intervention gave participants the added valence to improve their motivation but in itself did not bring awareness to the autonomy they had.

The final form of statistical analysis presented by Spratt et al. (2002) was a Chi-square tabulation of autonomous, out-of-classroom behaviors with levels of motivation. Spratt et al. found that highly motivated students were more likely to engage in roughly half of the

autonomous behaviors; in the remaining behaviors, highly motivated students were statistically comparable to well-motivated students in terms of task frequency. From these findings, Spratt et al. derived the conclusion that motivation was closely correlated with autonomous behaviors. However, Spratt et al. went further and concluded that "absence of motivation seemed to inhibit practice of learner autonomy" (Spratt et al., 2002, p. 262). In the present study, motivation was present and prompted by an intervention that supported autonomous behaviors. Perhaps what is needed is to promote autonomy as a skill and not just as an opportunity.

Autonomy and Performance Improvement: Other Factors

It was revealed above that the intervention was associated with a statistically significant increase in performance. Yet, this positive result did not correlate with an increase in autonomy. One possible explanation that the intervention might have worked to increase performance without increasing autonomy is through purely behavioral mechanisms. It may be that the autonomy-based intervention allowed students to choose to perform more work, which, in turn, led to higher scores. If the intervention resulted in more contact with the language, the reason for the improvement in intervention could be due to this added work. Participants in the experimental group voluntarily decided to complete more than the required work, a finding that goes against expected behavior. Thus, the relationship between autonomy and performance improvements that have been observed in previous studies (Belanich et al., 2005; Dobrescu et al., 2015; Ebner & Holzinger, 2007; Erhel & Jamet, 2013; Gremmen & Potters, 1996; Ricci et al., 1996; Woo, 2014) may not depend on motivation, a finding that the current study supports.

In the context of Deci and Ryan's (1985) Self-Determination Theory and specifically when it comes to language learning, it may be that the component of competence is more important than the other components in predicting performance on a language test. Deci and

Ryan's theory does not specify that any of its three components are more important than the others. But given the results of the current study, it is possible that the element of competence in self-determination theory may be the key predictor of language performance, more so than autonomy.

As noted by Blohm and Leimeister (2008), one of the potential benefits of autonomous approaches is the cultivation of a flow state. In a flow state, individual learners feel as if they have lost track of time; they are completely and positively immersed in the new activities before them and *in the groove* (Purvis, Zagenczyk, & McCray, 2015). The key characteristic of the flow state is that autonomy is high in the flow state itself, not necessarily out of the flow state. If so, then it is theoretically possible for an autonomy-based intervention to succeed in raising performance without raising general autonomy. Autonomy increases solely min flow-state periods could be an explanation of how, in the current study, membership in the intervention group was associated with significantly greater language performance, but not through the mediation of autonomy.

A Failure of the Intervention to Increase Autonomy

One of the main findings of the study was that, contrary to expectations, the autonomy-based intervention of the study was not successful in increasing the autonomy of students. It was assumed that the autonomy intervention would push the students towards more autonomous behaviors, as was supported by previous research on autonomous interventions and learning (Ebner & Holzinger, 2007; Erhel & Jamet, 2013; Gremmen & Potters, 1996; Ricci et al., 1996). This failure might be the result of deficiencies in learning design, pedagogical philosophy, teacher execution, or other factors that are related to the design and execution of the intervention. It is worth noting that although the intervention gave participants opportunities for experiencing

autonomy within the context of the lab work, the lab work per se and their mandate to take a foreign language course, has likely a higher effect on the inability of the intervention to increase autonomy more than anything else.

However, it may be that the failure of the intervention to increase the autonomy of students is rooted in some aspect of psychology, such as the failure of the intervention to increase self-efficacy among students in the intervention group or in terms of self-determination theory. According to Deci and Ryan (1985), the exercise of any of the individual theory components, such as autonomy, depends on the other components. It may be that the intervention did not increase autonomy because the participants had not made an overall commitment—for example, through the construct of relatedness—to enter into the full spirit of the intervention. If the intervention was not embraced for its own sake, according to self-determination theory, gaps in both relatedness and intrinsic autonomy could explain the study's failure to raise autonomy.

Self-efficacy founder, Albert Bandura, noted that efficacy

is a generative capability in which cognitive, social, emotional, and behavioral subskills must be organized and effectively orchestrated to serve innumerable purposes. There is a marked difference between possessing subskills and being able to integrate them into appropriate courses of action and to execute them well under difficult circumstances. People often fail to perform optimally even though they know full well what to do and possess the requisite skills to do it. (Bandura, 1997, pp. 36-37).

The concept of self-efficacy strongly suggests that student autonomy did not necessarily increase merely because the students were given access to new resources and approaches designed to increase autonomy. As Bandura noted, students may possess the ability to act autonomously in the context of any complex and planned behavior, such as learning a language, may not

necessarily exercise this ability. Self-efficacy theory purports that people have to be able to bring themselves to take actions of which they are capable. If the students who participated in the current study had low levels of self-efficacy, then, according to Bandura's theory, they would not necessarily have increased their autonomy. Self-efficacy, therefore, seems to be a plausible variable in terms of explaining why an autonomy-based intervention, such as the intervention featured in the current study, might fail to raise the autonomy of students.

Low self-efficacy is not the only possible reason that the intervention features in current study might have failed to raise autonomy among student participants. Improper pedagogical design and delivery constitute other plausible reasons for the failure of the intervention to increase autonomy. For example, a more precise pedagogical design could have led to an increase in autonomy in the participants. The difficulty in making such determinations is that an intervention performance measure was not included. Such a measure could have provided objective criteria for the completion of the intervention and, then, allowed for a determination about whether the intervention was properly designed and carried out.

The apparent effect of the intervention is that there positive as well as negative responders to the autonomy-based intervention. By contrast, in the control group, the vast majority of participants experienced unchanged levels of autonomy—a finding that fits motivational theory given that the members of comparison group were not exposed to any intervention designed to act upon their autonomy. The unexpected finding vis-à-vis the experimental group was not that several individuals in the intervention group experienced quite large (+1 standard deviation) improvements in autonomy as measured from the pre-test to the post-test. Rather, the unexpected finding was that many members of the experimental group experienced substantial declines in autonomy in the aftermath of exposure to the autonomy-

based intervention. There were many members of the intervention group whose autonomy was not merely unchanged by the administration of the autonomy-based intervention, but, rather, declined significantly. Previous studies that implemented autonomy-based interventions did not have this issue (Ebner & Holzinger, 2007; Erhel & Jamet, 2013; Gremmen & Potters, 1996; Ricci et al., 1996; Woo, 2014). As such, the members of the intervention group can be segmented into two classes: positive responders (those who experienced an increase in autonomy that was more than 1 standard deviation greater than the group mean for autonomy change) and negative responders (those who experienced an increase in autonomy that was more than 1 standard deviation below the group mean for autonomy change). In terms of negative responders, it was found that a member of the intervention group was 7.69 times as likely as a member of the control group to decrease autonomy by 20.

A possible explanation for the negative responders is that participants in the experimental group were aware that at the time the study ended they were going back to the model that all the other Spanish classes were following and they would be losing their ability to choose. At the time the study started several participants expressed feeling encouraged and happy that compared to all the other students taking Spanish they had more choices on how to complete the lab requirement.

Theoretically, the existence of negative responders can also be explained by Yerkes-Dodson's (1908) theory. That is, individuals who find a task too difficult were not expected to be sufficiently aroused to exert behavioral force toward completing the task. Effectively, at a sufficiently high level of challenge, most people give up. This may have been true in the case of the currents study. The scaffolding method generally ensures that the appropriate levels of challenge are introduced to the students as interventions and tests are carried out (Mattanah,

Pratt, Cowan, & Cowan, 2005; Pratt, Green, MacVicar, & Bountrogianni, 1992). After all, it was possible that the negative responders in the intervention group—that is, the individuals who experienced a significant decline, rather than increase, in autonomy in the aftermath of the intervention—were those individuals who found the material too challenging. Having the appropriate level of challenge, then, is an important consideration for future studies.

Data analysis demonstrated that the Yerkes-Dodson (1908) theory helps explain the existence of positive and negative responders to autonomy in the intervention group. The theory strongly suggests that individuals who were negative autonomy responders in the intervention group also had significantly lower performance improvements than intervention group members who were positive autonomy responders. Such a relationship did not exist in the control group, in which there was no statistically significant relationship between autonomy change and language performance. An interpretation of such findings is that for a higher proportion of negative autonomy responders in the intervention group was task difficulty—for example, task difficulty related to the autonomy tasks. If the autonomy tasks proved difficult for some members of the intervention group to carry out, it is possible that for members of the control group to withdraw from the autonomy tasks, leading, in turn, to a decline in language performance improvement. After all, these tasks reflected a change in demands on the intervention group, whereas the control group persisted in the *status quo*. Strictly speaking, such relationships would be better inferred from a longitudinal model; however, this interpretation is consistent with the cross-sectional findings in Chapter 4 that identified the existence of a much higher proportion of negative and positive autonomy responders in the intervention group.

What is noteworthy is that the performance improvement of the negative autonomy responders in the intervention group was significantly lower than the performance improvement

of the positive autonomy responders in the intervention group, while such a distinction did not exist in the control group. According to theory (Yerkes-Dodson, 1908), asking participants to replace their existing behaviors with autonomous behaviors may lead to a perception of task difficulty that reduced the amount of behavioral force applying to studying and other forms of academic engagement.

Implications

While previous research offers mixed results on the role of autonomy-based interventions on motivation to learn, there is evidence that at least some autonomy-based interventions may improve motivation. Consequently, increasing results of learning outcomes is sufficient to improve the quality of education in programs and to justify future research. One implication of the positive correlation between autonomy and performance found in Chapter 4 is that language classrooms should re-assess their curricula, content, and pedagogy from the perspective of autonomy.

The main implication of the study, coinciding with the main suggestion for practice, is that, because an increase in autonomy coincides with an increase in performance, schools, teachers, and learning designers should identify ways of increasing the autonomy of students who are learning languages. As noted in Chapter 1, the state of second-language learning in the United States is considerably behind the state of second-language learning in many other developed countries. Based on the findings of this study, one of the possible means of overcoming this crisis in second-language learning in the United States is to insert greater autonomy into the processes of learning a second language. Such a need is particularly relevant in the context of contemporary young learners, who are already highly familiar with autonomy-based approaches in games, on the Internet, and in other venues of modern life. The demand for

autonomy is, as was argued in Chapter 2, in fundamental alignment of what is known of learning psychology; autonomy coincides with feelings of arousal, engagement, and motivation that result in greater behavioral force being applied to the specific tasks of learning a language.

In response to the statistical analyses presented in Chapter 4, the intervention should be re-engineered incorporating meta-analytical opportunities to understand what it is to learn autonomously, to ensure that it results in higher amounts of positive autonomy change among students who are exposed to it. Autonomous learning in itself is a skill (Railton & Watson, 2005) and although the treatment provided an enhanced autonomous experience, there was no explicit attention directed towards how to learn autonomously. There are other autonomy-based approaches in language learning that have been more rigorously tested and that can be plausibly administered to second-language students across the United States. The intensification of autonomy-based approaches does not mean the obsolescence or displacement of traditional classroom approaches, which have a demonstrated positive role in the teaching of second languages. However, especially in an era of gamification and socio-digital autonomy, introducing more autonomy in language-teaching is important, not only as a means of improving the performance of students but also as a means of meeting their changing expectations about how languages are learned.

Limitations of the Study

In light of the findings, a number of limitations exist. The correlative design of this study limits the explanatory power of it. Without causal conclusions being drawn, findings on motivation, autonomy, and pedagogy in language instruction programs are limited. Further studies would have to be conducted to make support such conclusions. Also, given that the subject was delimited to students from a single educational institution and students of only one

language (Spanish), the results might fail to be generalizable to other school environments and to students of languages other than Spanish. After all, such an individual educational institution may have unique characteristics and features that differentiate the students in this institution from those in broader groups.

Furthermore, the inclusion of additional covariates that might have additional explanatory power could help. For example, the addition of a covariate of valence could have refined the models presented in Chapter 4 and added some explanatory power to the study. Consider, for example, the inclusion of self-efficacy as a covariate as a means of providing greater insight. Although self-efficacy was not measured in the context of the intervention, it appears to play an important role with respect to the pursuit of complex behavioral tasks such as the behaviors associated with learning a second language. Given the theoretical premises and the findings, self-efficacy may be able to help explain in part why the autonomy-based intervention of the study did not increase autonomy.

In addition, given the quasi-experimental nature of this study the experimental and comparison groups were not equal. The disparity in baseline autonomy and language performance scores between the intervention and the control group before the intervention should be noted as one of the limitations of the study. Another limitation relates to measurement in that analysis was unable to distinguish between the effects of environmental or experiential autonomy and strategic autonomy. As described the second chapter of the study, there is a crucial distinction between autonomy of experience and autonomy of strategy.

In autonomy of experience, the actual learning environment—in terms of learning platform, underlying curricular, and other such extrinsic factors—encourages students to take charge of their learning experiences, for example, by moving through material at their own

space. By contrast, strategic autonomy is an intrinsic property of learners—the combination of motivations, skills, affects, cognitions, and behaviors that students apply to the task of learning a language, independent of the learning environment itself. In this study, both autonomy of experience and strategic autonomy are present, as the intervention is designed to improve learners' autonomous strategies and provide an autonomous experience and environment. Because the intervention combines the two kinds of two autonomy, the effects of each kind of autonomy cannot be measured separately, which is a limitation of the study.

Another limitation to consider is the possibility that the current study measured language performance in the form of achievement in a classroom assessment and not in the sense of overall linguistic proficiency. The researcher's decision to measure achievement was merely pragmatic and attributed to limitations of where the research took place. Further studies should consider replicating this model but using proficiency as a dependent variable.

Avenues for Future Research

There remain strong reasons to continue researching autonomy and the motivation to learn. The growing body of research on the relationships between autonomy, motivation, and language learning provides opportunities to identify pedagogical strategies to improve learning outcomes. Given the findings reported here, future research may focus on establishing stronger links between theory and practice. After all there is insufficient data to show a statistically significant link between autonomy and motivation (see Table 8 in Chapter 4). Moreover, the theoretical underpinning of expectancy theory (Hackman & Porter, 1968) is to measure the variable of valence in future studies. It is possible that motivation to learn Spanish, as measured on AMTB, does not necessarily capture the variable of valence, which represents the fundamental attractiveness of learning Spanish. As described by Hackman and Porter, valence

measures an underlying emotion about the value or lack of value of a goal that might be imperfectly or incompletely measured in AMTB. The inclusion of a valence in future empirical studies could add an important construct whose presence can improve the sorts of models presented in Chapter 4 and, more specifically, offer a potential explanation of the possible absence of an autonomy-motivation link. In language-learning contexts, the absence of such a link could be a function of low valence, a hypothesis that can be tested by future researchers who include the variable of valence in their analyses.

Another suggestion for future researchers is to add the covariate of self-efficacy to empirical models. As noted earlier in the chapter, self-efficacy is a plausible explanation of exercising autonomy; therefore, if individuals who are offered an autonomy-based pedagogical intervention fail to act more autonomously, one possible explanation of this behavior is that they have insufficient levels of self-efficacy. This hypothesis can be tested by future researchers who can include the variable of self-efficacy in their models. If self-efficacy has no explanatory power—as, for example, a mediator of the relationship between an autonomy-based intervention and an increase in intervention—then it might be more plausible to conclude that failures to elicit higher levels of autonomy in such interventions could be a function of intervention design and execution.

Another recommendation for future research is to adopt a repeated-measures approach to measuring changes in the performance of students who are included in an intervention based on an autonomous approach to language teaching. In the current study, participants were measured before and after the intervention. However, it is possible that variables such as autonomy, motivation, and performance underwent numerous changes over the course of the study. If so, then future researchers could consider a statistical approach such as repeated-measures analysis

of covariance instead of the cross-sectional approach to analysis of covariance demonstrated in Chapter 4.

Finally, future researchers should measure the usefulness of gamified approaches to autonomy in instruction. As noted in Chapter 2, game interfaces represent perhaps the highest level if autonomy that can be incorporated into pedagogy, as students are free to access games at times, in venues, and in circumstances of their own choosing. In particular, it would be useful for future researchers to determine the extent to which second-language tasks can be entered into a gamified learning environment.

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APPENDIXES

APPENDIX A

Individual Background Questionnaire

Your gender: Male Female   Age: _____

Is English your primary (native) language? Yes/ No

If no, what is your native language? _____

Year at the University:

_____1st year, undergraduate

_____2nd year, undergraduate

_____3rd year, undergraduate

_____4th year, undergraduate

_____5th year, undergraduate

_____Other: _____

Did you study a foreign language in high school? Yes / No

If yes: Which one(s):

_____
How many years: _____

Have you spent time living in a Spanish speaking country? Yes / No

If yes, for how long: _____

APPENDIX B

Modified AMTB

Strongly	Moderately	Slightly	Neither Agree	Slightly	Moderately	Strongly
Disagree	Disagree	Disagree	nor disagree	Agree	Agree	Agree

Attitude towards learning a language

1. Studying a foreign language is an important part of education.
2. Speaking a foreign language is especially relevant in today's world.
3. I wish I could speak another language perfectly.
4. If I planned to stay in another country, I would make the effort to learn the language even if I could get by in English.
5. I enjoy meeting and listening to people who speak other languages.
6. It is not important for Americans to speak a language other than English.
7. I really have no desire to speak any foreign language.
8. The foreign language requirement should be eliminated.
9. Studying a foreign language is not a pleasant experience.
10. I would rather see a foreign film dubbed in English than in its original language with sub-titles.
11. I do not like when people speak languages other than English in the U.S.

Motivational Orientation:

1. Knowing Spanish will have financial benefits for me.
2. If I learn Spanish, I will get a better job.
3. I plan to use Spanish in my future career.
4. I plan to travel to Spanish-speaking countries.
5. Being able to speak Spanish will add to my social status.
6. I am learning Spanish to become a more educated person.
7. I want people to think I speak Spanish well.
8. Learning Spanish will give me a broader view of the world.
9. I have a personal attachment to Spanish.
10. Studying Spanish is important because it will help me understand the culture of the Spanish-speakers in my community.
11. I wish I had begun studying Spanish at an early age.
12. I do the bare minimum in Spanish class to get by.
13. I want to learn Spanish so well that it becomes second nature to me.
14. I would like to learn as much Spanish as possible.

Desire to Learn Spanish

1. I would like to be fluent in Spanish
2. I never try to use Spanish outside of class.
3. I work hard in Spanish class even when I do not like what we are doing.
4. I try to use Spanish outside of class whenever I have a chance.
5. I can honestly say that I really put my best effort into trying to learn Spanish
6. I plan to take Spanish even beyond the language requirement.
7. I would take Spanish even if it were not required. I hate Spanish.
8. Knowing Spanish is not an important goal in my life.
9. I sometimes wish I could drop Spanish.
10. If it were up to me, I would spend all of my time studying Spanish.
11. To be honest, I have little desire to learn Spanish.
12. I find the study of Spanish very boring.
13. Studying Spanish is a waste of time.
14. To be honest, I do not put very much effort into learning Spanish.
15. When I finish the language requirement, I will quit studying Spanish because I am not interested in it.
16. If there were no language requirement, I would have never taken Spanish.

APPENDIX C

Questionnaire on LearnerAutonomy

Section 1－Perception of responsibilities towardlearning

When you are taking classes, how much responsibility should you take concerning the followingitems?

1-Notatall   2-Hardly   3-Tosomeextent   4-Mostly   5-Totally

1) To decide your goal of study in onesemester
2) To check how much progress youmake
3) To decide the textbook and materials you use inclass
4) To decide topics and activities you learn inclass
5) To decide the pace of the lesson in onelesson
6) To decide the type of classroom activities, such as individual, pair and groupwork
7) To decide the amount, type and frequency ofhomework
8) To decide ways of assessment, such as attendance, essay and self- evaluation
9) To assess yourstudy
10) To evaluate thecourse

Section 2－Responsibilities toward learning in the past and thefuture.

Until now: To what extent, have you got involved in the following items in the Spanish classes you have taken since you entered theuniversity?	From now on: To what extent, would you like to get involved if you are given opportunities in thefuture?

(Items with odd number, students were asked "until now", to items with even number, "from nowon")

11), 12) To decide your goal of study in onesemester.

13), 14) To decide your class's goal of study in one semester.

15), 16) To check how much progress youmake.

RelationshipBetweenLearnerAutonomyandSpanishLanguageProficiencyof…

17), 18) To keep record of your studies such as assignments, attendance and testscores.

19), 20) To decide the textbook and materials you use in class.

21), 22) To decide topics and activities you learn inclass.

23), 24) To decide the pace of the lesson in onelesson.

25), 26) To decide the type of classroom activities, such as individual, pair and groupwork.

27), 28) To decide the amount, type and frequency ofhomework.

29), 30) To decide classroom management, such as seating and class rules.

31), 32) To decide ways of assessment, such as attendance, essay andself-evaluation.

33), 34) To assess yourstudy.

35), 36) To evaluate thecourse.

Section 3- Spanish learning activities outside theclass

Questions37-49   How often have you done the following Englishlearningactivities voluntarily since you entered theuniversity?

Questions 50-65 How often would you like to do this from now on?
1- Never   2-Seldom 3-Sometimes   4-Often   5-Usually

37) To read Spanish newspaper

38) To read web pages inSpanish

39) To watch and listen to Spanish learning TV and radioprograms

40) To watch and listen to TV and radio programs inSpanish

41) To listen to Spanishsongs

42) To watch Spanish movies without subtitles in yourlanguage

43) To talk to foreigners inSpanish

44) To practice speaking Spanish with yourfriends

45) To learn Spanishgrammar

46) To learn Spanish vocabularywords