ABSTRACT

Thriving Through Relationships: Exploring the Influence of Interactions on College Student Success for Living-Learning Community Students

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College student interactions have long been categorized around academic and social domains of students' lives. Studies of interactions also often omit how professional campus staff are involved. In addition to including the influence of staff, recent scholarship (Sriram et al., 2020) presents deeper life interactions (addressing meaning, purpose, and deeper elements of conversation) as a needed construct. Despite decades of research, student success theory is also typically bifurcated into social and academic areas. Schreiner (2010a) supplements this with a more holistic depiction: *thriving*, or optimal functioning related to academic engagement and performance, interpersonal relationships, and intrapersonal well-being.

As campus residential settings are primed as laboratories to explore the ways students interact with others and their environment, this quantitative study sought to focus on the experiences of living-learning community students. Weaving together the above areas, this was pursued through the questions: Do social, academic, and deeper life interactions with peers, faculty, and staff influence thriving for living-learning

community students? If so, what is a model that can explain the relative strength of the effects on five thriving factors? Participants included 903 undergraduates in living-learning communities at eight US research universities. The sample was predominately female (70.3%), White (64.4%), first-year students (73.9%). Structural equation modeling (SEM) was employed to detect specific pathways of how interactions predict factors of thriving.

The final model indicated acceptable model fit [χ_2 = 3147.083 (*df* = 1195, *p* < .001), CFI = .946, RMSEA = .043] and explained 51% of the variance in Engaged Learning, 51% of the variance in Academic Determination, 47% of the variance in Social Connectedness, 54% of the variance in Diverse Citizenship, and 28% of the variance in Positive Perspective. Individual interaction variables were able to predict thriving factors in unique ways with moderate to strong effects. Recommendations for practice include the need to (1) foster deeper life interactions, (2) encourage living-learning community participation, (3) create opportunities for interactions across campus, (4) tailor programming to promote interactions with professional staff, and (5) consider how success should be measured holistically.

Keywords: higher education; student interactions; deeper life interactions; college student success; thriving; living-learning communities

Thriving Through Relationships: Exploring the Influence of Interactions on College Student Success for Living-Learning Community Students

by

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A Dissertation

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DEDICATION

This dissertation is dedicated to my loving wife, Kasey. Thank you for your consistent encouragement, love, and support. I also dedicate this to my children, Aubrey and William. May you thrive in all of your endeavors.

CHAPTER ONE

Introduction

The Pursuit of Success

Higher education leaders continuously search for practices that promote successful college student experiences. Although history is full of changes aimed at improving the student experience, it was not until the mid-1980s that public commotion stirred an unyielding reform movement in this area. State and federal lawmakers, in addition to various other stakeholders, answered the uproar for refining undergraduate education by mandating improved accountability with measures such as access and retention. Some scholars have highlighted how these shifts prompted an "age of accountability" in higher education (Duke, Grogan, Tucker, & Heinecke, 2003).

Since then, numerous reports highlight the shortcomings of U.S. education and promising responses to the call for reform. A sample of these reports include: the National Institute of Education's (1984) *Involvement in Learning: Realizing the Potential of American Higher Education*, the Kellogg Commission on the Future of State and Land-Grant Universities' (1996-2000) multi-part series *Returning to Our Roots*, The Boyer Commission's (1998) *Reinventing Undergraduate Education*, the Association of American Colleges and Universities' (2002) G*reater Expectations: A New Vision for Learning as a Nation Goes to College*, Kuh's (2008) *High-Impact Educational Practices*, and the Association of American Colleges and Universities' (2015) *Committing to Equity and Inclusive Excellence*. The idealistic spirit in these reports can be summarized in the

preface of the final *Returning to Our Roots* (2000) segment: A loftier goal now exists of getting colleges to become "once more the transformational institutions they were intended to be" (p. 7). This noble goal, however, set in motion a new challenge: applying theory to practice in order to meet the demands of improving post-secondary education.

The task of translating theory to practice to provide a successful college experience for students has been difficult. Sanders and McPeck (1976) started a conversation many years ago about the educational antinomy of translating theory to practice. Andersen (2004) expanded the discussion by specifically highlighting how the difficulty in converting theory into practice is magnified when psychological theory is translated into educational practice. Most recently, Kinzie and Kuh (2017) emphasized the deficit that continues to remain in this translation when noting that "institutions do not faithfully and effectively implement the kinds of promising policies and practices that seem to work elsewhere and in ways that are appropriate for their campus context and students" (p. 19). These promising policies and practices need to be measured against validated standards of student success in order to continually call for their implementation on college campuses.

Different Approaches to College Student Success

The standard for what constitutes success in college has been argued over of time. Historically, a liberal education was the higher-order goal of college, and a focus on utilitarian ends was far from the university's agenda (Thelin, 2004). From the nineteenth century onward, contemporary ideals started to include components such as GPA, career placement, or persistence to graduation. However, could one conclude from any of these elements that students are truly "successful" when they finish college? For example, does

a 3.8 GPA allow a university to label a student successful? What if that student secures her first job in a lucrative industry—is this success? The higher education literature paints a clear picture on the diversity of what exactly is meant by "success" in college (e.g., Astin, 1984, 1993; Braxton, 2000, 2003; Kuh, Kinzie, Shuh, Whitt, & Associates, 2010; Kuh, Schuh, Whitt, & Associates, 1991; Mayhew, et al., 2016; Pascarella & Terenzini, 1991, 2005; Tinto, 1975, 1993; Upcraft, Gardner, & Barefoot, 2005). Recently, Kinzie and Kuh (2017) defined student success as:

> increasing the numbers of students from different backgrounds proportionate to their age cohort consistent with national goals for postsecondary attainment who participate in high-quality educational programs and practices culminating in high quality credentials (e.g., certifications, certificates, degrees) and proficiencies that enable them to be economically self-sufficient and civically responsible post college. (p. 20)

Although the above definition is indeed thorough, it appears to be constructed in a cautious manner that attempts to defend against anyone pointing out gaps in the definition. In saying so much from an institutional perspective, it says very little about holistic success from a student perspective. Therefore, other theories of success are necessary to focus more aptly on the comprehensive student experience.

From Tinto's (1975) seminal work on college student success, which was derived from Tinto and Cullen (1973) and has slightly evolved over time (i.e., Tinto, 1987; 1993), and the plethora of studies which ensued, studying the social and academic domains of students' lives has become the status quo for understanding success. Examining the personal and environmental influences in students' social and academic spheres has become the widely-accepted "formula" in understanding student success. Braxton, Sullivan, and Johnson (1997) highlight how Tinto's work is extremely influential in studying dropout based on students' academic and social experiences in college.

Furthermore, Berger and Lyon (2005) stress how Tinto's work laid a foundation from which retention emerged as one of the most widely researched areas of higher education. Tinto's model stresses the importance of *both* the academic and social domains of students' lives, which can have a profound influence on persistence to graduation (Tinto, 1975).

Though revisions have occurred in Tinto's work, Metz (2004) provided a historical overview of the challenges to Tinto's original 1975 persistence theory by focusing distinctly on scholarship that supplemented or enhanced it (e.g., Berger & Braxton, 1998; Braxton et al., 1997; Metzner & Bean, 1987; Nora, 1990; Tierney, 1992). More recent research also highlights suggested alterations to Tinto's seminal student retention work (Braxton et al., 2013; Davidson & Wilson, 2013). Nonetheless, Tinto's (1975) original persistence framework remains at a paradigmatic status in research (Braxton, et al., 1997). Student success, however, encapsulates much more than retention and persistence. Although graduation is a helpful metric when studying the college experience, it falls short of encompassing a more holistic or complete picture of success. Schreiner, Pothoven, Nelson, and McIntosh (2009) offer an alternative to these classic views: *thriving*. Thriving refers to optimal functioning in the academic, interpersonal, and intrapersonal domains of a student's life.

Thriving as a More Complete Picture of Student Success

As opposed to merely good grades or graduation, thriving was developed in an effort to more holistically approach student success (Schreiner, Pothoven et al., 2009). The concept is not intended to imply that grades and graduation are unimportant; they are insufficient. Thriving students experience optimal functioning in three areas that

contribute to success and persistence: 1) academic engagement and performance, 2) interpersonal relationships, and 3) intrapersonal well-being (Schreiner, McIntosh, et al., 2009). Essentially, students who thrive are fully engaged in the college endeavor—intellectually, socially, and emotionally (Schreiner, Louis, & Nelson, 2012).

Within the four most prevalent disciplinary perspectives under which success theories typically fall—sociological, economic, organizational, and psychological (Braxton et al., 2013; Kinzie, 2012)—thriving fits chiefly within the psychological approach. Specifically, the thriving construct is rooted in the field of positive psychology with specific connections to and primarily derived from the construct of flourishing (Keyes & Haidt, 2003). Positive psychology scholars highlight the idea of flourishing as deep engagement with and optimal functioning in life (Keyes, 2003; Keys & Haidt, 2003). This perspective "expands on theories of motivation and individual psychological processes that can be influenced by practices at the individual, classroom, and programmatic levels, enabling more students to flourish in college" (Kinzie, 2012, p. xvii). Thriving implies a form of success that is more than just surviving in the college environment. It conveys that students are fully engaged in the three areas mentioned above and experience a sense of community and psychological well-being that contributes not only to their persistence toward graduation, but also to general success in life (Schreiner, Pothoven, et al., 2009). This more holistic view of success embodies the components of academic engagement, effort regulation, citizenship, openness to diversity, goal-setting, optimism, and self-regulated learning (Schreiner, McIntosh, et al., 2009). These outcomes often overlay the espoused values and outcomes of living-learning communities (Inkelas, Jessup-Anger, Benjamin, & Wawrzynski, 2018).

Living-Learning Communities as Contributors to Student Success

Previous research on living-learning communities does not give adequate attention to components of holistic success. Some studies touch on one or two aspects, but few studies examine multiple components together. Living environments in higher education are often categorized at the macro level, with little attention to what occurs inside these environments on the micro level. In other words, scholars distinguish living on campus from living off campus. Or they distinguish traditional halls from living-learning communities. Or they create categories of residential learning communities, such as themed housing and residential colleges. Such macro categorization makes unproven assumptions that these environments provide similar experiences to college students. For example, it is unproven that all residential colleges provide a similar student experience or that all living-learning communities increase student-faculty interaction equally.

What previous research does not do is sufficiently analyze these communities for the opportunities of engagement they offer when studying student success. Due to the structured assimilation of in- and out-of-class experiences while assembling together faculty, staff, and student peers, living-learning communities are primed as an experimental lab to study the ways students interact with others and their environment. Virtually no studies from previous decades analyze student interactions to predict a holistic outcome such as thriving while focusing on living-learning environments. This is important to note because, although Habley (2004) demonstrated that interactions with concerned individuals on campus can directly influence retention, more recent interaction research shows the depth in which these experiences might lead to not only retention, but multiple variations of student success.

Though the history of living-learning communities can be traced back to English residential colleges, commonly referred to as the "Oxbridge" model, their beginning in the United States was Alexander Meiklejohn's experimental college at the University of Wisconsin (Nelson, 2009). Inkelas & Soldner (2011) designate Meiklejohn's Experimental College as the progenitor of the modern living-learning community. Since this establishment in the late 1920s, living-learning communities have come to embody a variety of prospects for colleges to promote success on campus through creating intentional spaces for interaction. Student-faculty interaction, peer interaction, cocurricular involvement, diverse interactions, and student affairs-academic affairs collaborations, to name only a handful, are a few of these opportunities mentioned in the literature (Inkelas, Brower, & Associates, 2008).

Living-learning communities are heralded as on-campus environments linked to a variety of positive outcomes associated with success, such as academic achievement, student engagement, retention, high application of critical thinking skills, high commitment to civic engagement, and smoother social and academic transition to college (Brower & Inkelas, 2010; Inkelas et al., 2018; Inkelas, 2008; Inkelas & Associates, 2004; Mayhew et al., 2016; Pike, Schroeder, & Berry, 1997; Stassen, 2003). When studied longitudinally, students who lived in a living-learning community during their first year in college had greater academic self-confidence, were more likely to mentor fellow students, and had higher commitment to civic engagement three years later (Brower & Inkelas, 2010). Brower and Inkelas (2010) describe successful living-learning communities as representations of what our colleges and universities can and should be: "intentionally designed learning environments that work doggedly to maximize student

learning, and particularly student learning related to the high-order skills and abilities that allow students to become citizens and leaders of the world" (p. 43).

A Different Kind of Residence

Living on campus is a significant predictor for a number of college student success metrics. The positive effects of living on campus—such as student engagement, openness to diversity, and sense of belonging—are well documented in the higher education literature (Blimling, 1993; Kuh, Kinzie, Schuh, Whitt, & Associates, 2010; Long, 2014; Pascarella & Terenzini, 2005; Pike, 2002). Pascarella and Terenzini (1991), in the first volume of their meta-analysis of *How College Affects Students,* outline additional effects that living on campus has on student outcomes, including grades; persistence and graduation; involvement and satisfaction; personal growth and development; attitudes, values, and moral judgment; and general cognitive growth. Similarly, Pascarella, Terenzini, and Blimling (1994) suggest a number of benefits for campus residents when compared to their commuting or off-campus counterparts, including higher participation in social events, more faculty and peer interaction, and a higher likelihood of graduation.

These indirect benefits are perhaps the underlying reason why living on campus has been such a prevalent area of scholarly inquiry in previous decades. More recent research, however, may tell a different story. As Mayhew et al. (2016) posit, research examining on-campus residence in the twenty-first century is scarce for many outcomes of interest, and the findings often no longer support the previously known benefits of living on campus. One possible reason for the reduction in positive effects may be improved and more rigorous methodologies. Another possible reason Mayhew et al.

(2016) offer is that the actual impact of living on campus may have decreased over time. They write:

> Living on campus probably used to be a more immersive experience, with students within a residence hall communicating very frequently with one another and going home somewhat rarely. However, residents may be psychologically and physically less immersed on campuses today, given the proliferation and use of technology for communicating frequently with off-campus friends and family, the increase in suite- and apartment-style residence halls that are less conducive to peer interactions, and the greater prevalence of students with their own cars who leave campus on weekends. (pp. 545-546)

Based on more than three decades of research linking college-going to developmental outcomes and student success across various domains, Mayhew et al. (2016) determine that the research paradigm has shifted from one of empiricism to one of assumption. They note that scholars are no longer questioning if college-going and subsequent environments like residence halls have an influence on students, but rather assume such relationships exist and therefore focus their studies on the specific practices and psychological mechanisms responsible for the changes experienced by students. Scholars are asking more *why* than *if* questions regarding how college impacts students. To elaborate, Eisenberg, King, Whitlock, Brower, Inkelas (2012) write, "Despite the intuitive appeal of improving outcomes through residential settings, the empirical evidence is far from conclusive or complete, and much of it is dated" (p. 1). These authors continue to highlight how previous studies demonstrate correlations between on-campus residence and student success outcomes, but they often have major limitations (e.g., small effect sizes or data from a single institution). Some of these studies even highlight negative influences of living on campus (Sax, Bryant, & Gilmartin, 2004).

It is clear that the *if* question must be continually asked by researchers. Though residence halls in Europe were originally designed to bring students and faculty together

in a common life which was both intellectual and moral (Brubacher & Rudy, 1968), higher education administrators can no longer rely on anecdotal assumptions that desirable outcomes actually occur. Instead it is imperative to examine, through rigorous scholarship methods, the possible processes, such as student interactions, that lead to specific outcomes. Continual testing must be completed to best inform the practice of creating environments (whether residential or not) that promote success. Tinto (1999) highlighted the implications of such continual testing in noting that institutions, in order to be serious about student success, must recognize that the "roots of attrition lie not only in their students and the situations they face, but also in the very character of the educational settings, now assumed to be natural to higher education, in which they ask students to learn" (p. 5).

Living on campus is a broad measurable category, with different residential communities creating different environments that lead to different educational settings in which students are asked to live and learn. Some residential communities may not be significantly different from the experience of living off campus. Others, however, create a meaningfully different educational setting. One such setting is a living-learning community; a residential environment, as Inkelas et al. (2018) note, "with its own types of benefits for students" (p. 5). Inkelas et al. (2018) summarize the uniqueness of living-learning communities and their potential to serve as a promising lab with which to study holistic success:

> Although living on campus is a defining aspect of the collegiate experience in terms of building community and helping students establish a solid social and academic foundation, living-learning communities are distinct, structured learning environments that emphasize the intentional integration of academic and residential experiences (p. vii).

It is important to note that many of the positive outcomes associated with living-learning communities are the result of the focused academic and social opportunities they offer students (Mayhew et al., 2016). In this sense, living-learning communities further distinguish themselves from both off-campus and traditional on-campus living environments. They also provide a logical space for studying student interactions.

Types of Interactions and Their Role in Student Success

Living-learning communities provide a space for increased interaction amongst peers, staff, and faculty. These interactions, in turn, are opportunistically positioned to act as possible contributors to students' success in college. Most research regarding student interactions has focused on student-faculty interaction (e.g., Kuh & Hu, 2001; Umbach & Wawrzynski, 2005; Sriram & McLevain, 2016) or student-peer interaction (e.g., Stassen, 2003; Domizi, 2008). Although faculty and peer interactions are often highlighted in the literature on living-learning communities as espoused values and goals (Inkelas et al., 2008), student interactions with staff members are overlooked. However, student-staff interactions likewise have the potential to impact success in meaningful ways. Wyckoff (1998) suggested that interaction with various groups, including peers, faculty, staff, and administrators, can influence a student's intent to remain at the university. Demetriou and Schmitz-Sciborski (2011) further stress the importance of interactions to student success by noting how "interactions students have on campus with individuals in academic, personal, and support service centers can influence a students' sense of connection to the college or university as well as their ability to navigate the campus culture, meet expectations, and graduate" (p. 4). As such, it is clear the impact of students' interactions

should not be limited to exchanges between one or two groups, but should be examined through a more comprehensive framework.

In addition to approaching interactions within a wider scope regarding whom is involved, it is also important to categorize the types of interactions that occur. Utilizing Tinto's (1975) original framework, living-learning communities emphasize the social and academic opportunities they provide with faculty and peers (Inkelas, Soldner, et al., 2008). Most studies describe student interaction as occurring only through these two dichotomous categories (Benjamin & Griffin, 2013; Kuh & Hu, 2001; Mara & Mara, 2010). However, in other recent literature, a third and central point of interaction (other than social and academic) is presented: "deeper life" interactions (Sriram & McLevain, 2016). Deeper life interactions include discussions about relationships, meaning making, and spirituality, and have emerged as a focal area of interaction distinct from academic and social. Sriram and McLevain (2016) define deeper life interactions as those that occur around life's big questions and meaning-making. Deeper life adds an additional layer of clarification and explanation to the traditional social and academic lenses typically utilized to view the student experience. These interactions are descriptive of the encounters students have which reflect a level of engagement "on a more personal level that prompt critical thinking about meaning, value, and purpose" (Sriram, Haynes, Weintraub, Cheatle, Marquart, & Murray, 2020, p. 1). Multiple studies with different student populations demonstrate that deeper life interaction is a valid and reliable latent variable that is distinct from social or academic interaction (Beckowski & Gebauer, 2018; McLevain & Sriram, unpublished manuscript; Sriram, Haynes, Cheatle, Marquart,

Murray, & Weintraub, 2020; Sriram, Haynes, Weintraub, et al., 2020; Sriram & McLevain, 2016).

Unique approaches to the distinct ways students find success need to be tested through the *if* and *how* questions (Mayhew, et al., 2016). As such, this study examined if interactions influence holistic student success and how this occurs for students who participate in living-learning communities. Specifically, this study measures student satisfaction with various interactions (i.e., academic, social, and deeper life) that occur with peers, staff, and faculty and presents a model to explain how those variables influence the construct of student thriving.

Conceptual Framework

The conceptual framework of this study is partially informed by Astin's (1991) Inputs-Environments-Outputs (I-E-O) model. The I-E-O Model leverages Astin's (1984) student involvement theory, which states that student outcomes are a function of students' influences prior to college, combined with the effects the college environment has on their development during their time as a student. The model is based on the premise that students enter college with a multitude of prior influences and background characteristics (Inputs). They engage in experiences that inform their development within their specific college environment (Environment). In response to these inputs and experiences within the environment, students demonstrate change in measurable outcomes of interest (Outcomes). Astin's (1991) I-E-O model is graphically represented below in Figure 1.1.

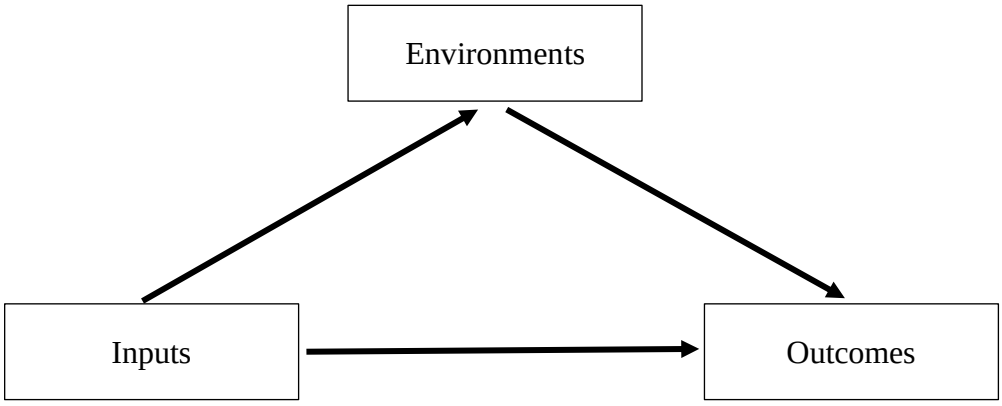

Figure 1.1. Astin's Original I-E-O Model

Students arrive to college with certain background characteristics that precondition their experience or predetermine, to some extent, elements of their development through such experiences. These include academic preparation, socio-economic status, high school GPA, race, and gender. Inputs are important. A great volume of research outlines how understanding inputs helps us better understand college outcomes. Nevertheless, Pascarella and Terenzini (2005) stress the importance of what happens to students *after* they enroll in college.

Terenzini, Ro, and Yin (2010) make this case in stating, "Once students enroll, their college outcomes are shaped primarily by their individual curricular, classroom, and out-of-class experiences" (p. 5). This is illustrated by Hurtado and Ponjuan's (2005) findings that demonstrate students' experiences in their college environment are more important than their background in predicting perceptions of hostile diversity climates. Kuh (2001) summarizes this line of thought:

> What students do during college counts more in terms of desired outcomes than who they are or even where they go to college. That is, the voluminous research on college student development shows that the time and energy students devote to educationally purposeful activities is the single best predictor of their learning and personal development. (p. 1)

The Inputs part of this study's conceptual framework acknowledges that inputs are important and do indeed impact the student experience. This study does not seek to determine the effect of inputs on outputs (though some of these inputs are gathered through sample demographics). Though this is a limitation in the current study, future analyses can expand on the population data here to determine how conditional effects contribute to understanding interactions. The focus of this study, however, rests primarily on what students do (i.e., interactions) and how this influences holistic student outcomes (i.e., factors of thriving). As such, this study seeks to create a baseline omnibus model for how interactions influence thriving.

For the Environment part of this study's conceptual framework, there are two elements, or layers, in this study. The first is the *types* of interactions students have. This study examines students within the context of living-learning communities. Students certainly engage in interactions outside of this context and across their respective campuses. However, living-learning community participation is used in this study as a delimitation to strictly observe an environment where academic, social, and deeper life interactions are purposefully implemented.

This is graphically represented in Figure 1.2 below. The inclusion of deeper life interactions helps fill a void in the traditional academic and social interaction literature (demonstrated by the dotted line).

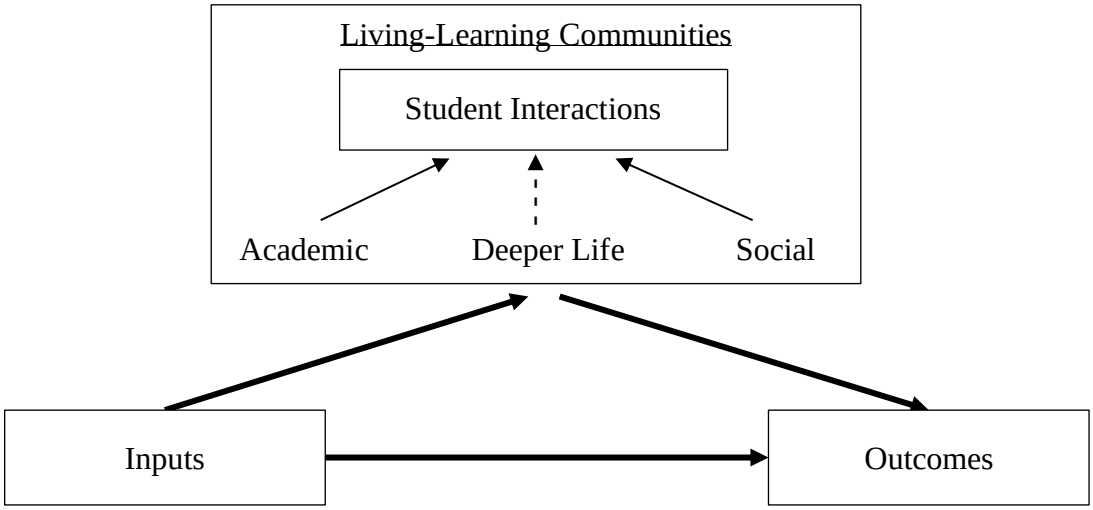

Figure 1.2. I-E-O Model with First Environmental Layer

The second environmental layer in this study represents the individuals *with whom* students interact. Though studying different types of interactions helps conceptualize their significance, investigating the constituents with whom these interactions occur adds additional understanding. By setting apart the parties involved in students' interactions, a more detailed awareness can emerge around the influence of interactions.

Again, students unquestionably interact with professors, peers, and professionals outside of living-learning communities, but these programs provide one of, if not the best space on a college campus through which to study interactions. Further, the inclusion of staff interactions helps fill a void in the traditional faculty and peer interaction literature (demonstrated by the dotted line). This comprehensive understanding of interactions is graphically represented in Figure 1.3 below.

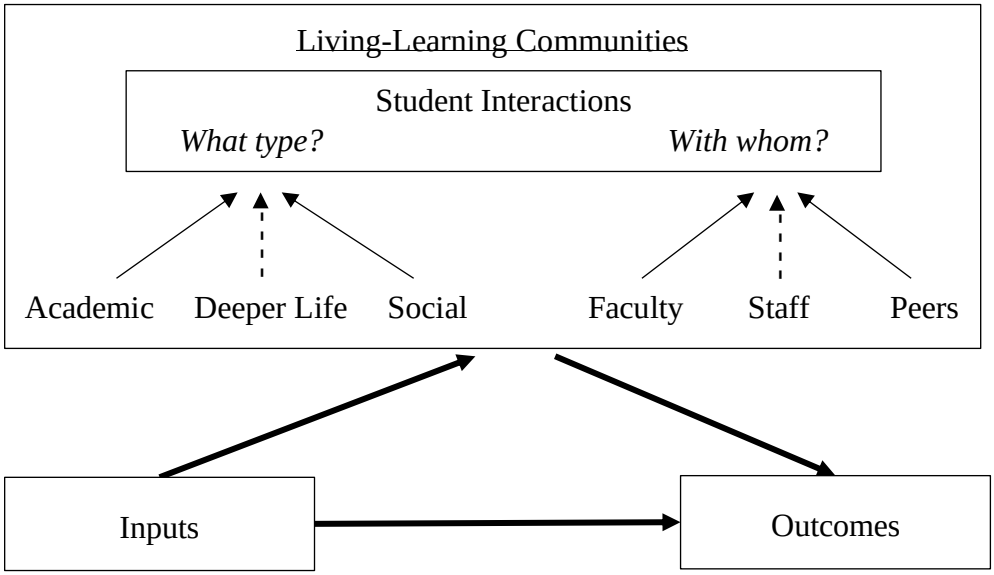

Figure 1.3. I-E-O Model with First and Second Environmental Layers

College student thriving (Schriener, Pothoven et al., 2009) represents the holistic outcome metric of student success in this framework. The five factors of thriving were examined in regards to their relationship with the elements of student interactions, including what type and with whom the interactions occur. As student success is often a confounded variable implying a variety of features (such as GPA or persistence), thriving allowed the current study to determine how well student interactions inform a more holistic approach to success.

Figure 1.4 below conceptually represents the goal of this study: understanding how environmental factors (interactions) influence student success (thriving).

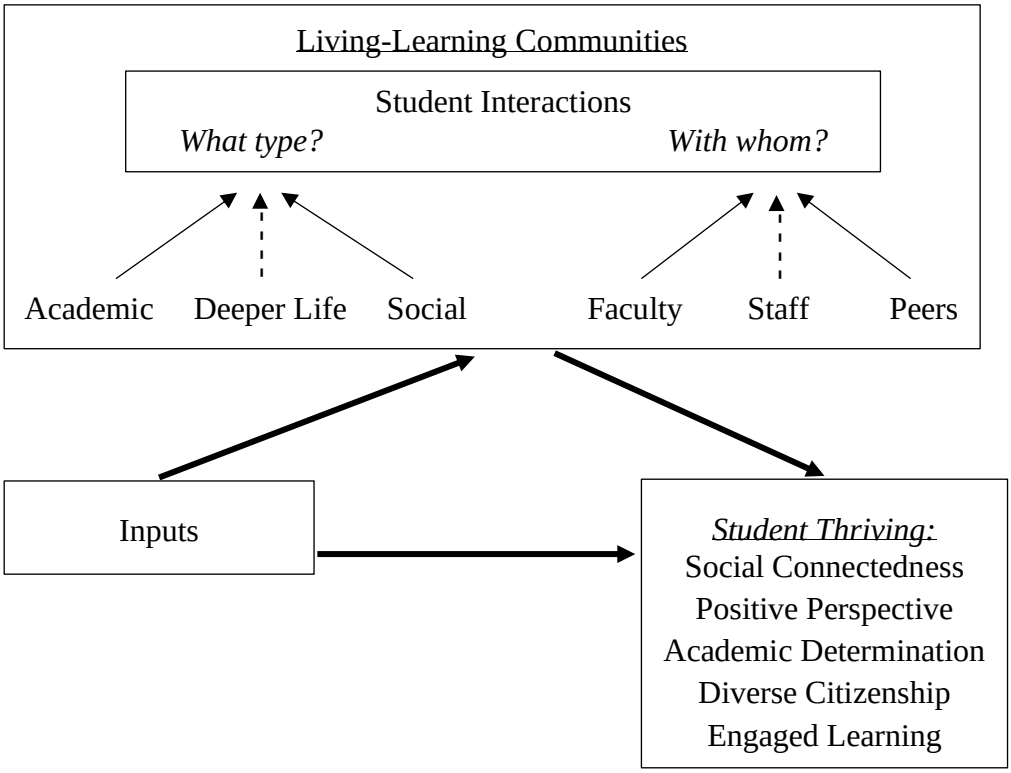

Figure 1.4. Conceptual Framework Represented Through the I-E-O Model

Purpose Statement

Kinzie and Kuh (2017) note that although there is a rich, still growing body of research and practice for advancing students' success in college, to realize the highest levels of student success, higher education institutions need more "know how." Clearly defining how certain campus environmental factors contribute to this success helps close this gap. In Seppelt's (2016) study of how living on campus influences thriving in college sophomores, he addresses various gaps in the literature while suggesting areas of future research. Specifically, he notes the need for scholarship that addresses how involvement in living-learning communities contributes to student thriving. Additionally, he poses the question of how students' frequency and satisfaction with interactions with other

residents, student leaders, and professional staff might coalesce into a latent variable representative of on-campus experiences. This study tries to implement these suggestions.

Although many studies on living-learning communities aim to assess direct benefits (e.g., critical thinking ability) associated with program participation, Inkelas and Soldner (2011), in echoing Pascarella and Terenzini's (1980) previous suggestion, advise researchers to consider not only direct relationships, but indirect relationships as well. This study tries to implement this recommendation. The principal inquiry was an evaluation of the direct relationship between interactions and thriving. Supplementing that inquiry is an investigation into how living-learning communities indirectly facilitate this process as well.

Understanding student interactions is a critical step in the direction of Kinzie and Kuh's (2017) "know how." As the fundamental outcome of college is student learning, this study helps discover and explain possible systems that impact students' success during the pursuance of such a goal. Thus, if faculty and administrators can confidently promote environments that not only lead to certain interactions, but also have evidence on how these interactions influence thriving, then the impetus for providing such environments rests in more than mere anecdotal accounts of popular programs and campus spaces.

Research Questions

This study researched the various interactions of college students. These interactions are quantified to predict thriving and its five interrelated factors (Engaged Learning, Academic Determination, Social Connectedness, Diverse Citizenship, and Positive Perspective). The participants in this study were actively part of a living-learning

community. Studies of living-learning communities typically address interventions or changes to variables as a result of participation. There is much scholarship on whether or not living-learning communities promote specific outcomes. However, this study aimed to supplement existing research by focusing on the interactions often facilitated by a living-learning experience and on the "*with whom?*" and "*what kind?*" types of questions. This was done through the following research questions: Do academic, social, and deeper life interactions with peers, faculty, and staff influence thriving for living-learning community students? If so, what is a model that can explain the relative strength of the effects on five thriving factors?

Further understanding the relationships amongst eight interaction variables and five thriving variables offers deeper insight into the processes for promoting student success. Additionally, this study contributes to the growing body of literature on living-learning communities. In order to examine the relationships among this group of variables, structural equation modeling (SEM) was utilized. Blunch (2013) describes SEM as a collection of tools for exploring the unique connections between various concepts in specific cases. In turn, SEM allowed for a more thorough approach to Mayhew et al.'s (2016) questions due to its ability to develop causal models that address *if* and *how* interaction and thriving relate. SEM was specifically chosen as it is noted as the "analytical method of choice for assessing direct and indirect effects" (Inkelas & Soldner, 2011, p. 49) when considering living-learning communities. Inkelas and Soldner (2011) argue that using a SEM approach when including living-learning communities as an environmental factor is superior to other techniques (e.g., *t*-tests, ANOVA) due to its ability to assess indirect effects, control for parameter invariance across groups, and

confirm validity and reduce measurement error in using scores from latent construct scales.

Definition of Terms

The following terms will be used throughout the remaining chapters:

Living-Learning Communities: programs in which undergraduate students live together in a discrete portion of a residence hall (or the entire hall) and participate in academic and/or extracurricular programming designed especially for them (Inkelas, Brower, & Associates, 2008). As Inkelas and Soldner (2011) stress how the definitions and terminology around these residential environments can be confusing and elusive, "living-learning communities" will be used in this study synonymously with alternative terminology in the literature (e.g., residential learning communities, living-learning programs, living-learning centers, residential colleges). As types of living-learning communities offered vary greatly, a typology framework (Inkelas, Soldner, Longerbeam, & Leonard, 2008) will be offered for clarification in the review of literature.

Social Interaction: a casual, light-hearted, and often informal interaction (e.g., social engagement with peers, greeting or spending social time with faculty or staff). These interactions are defined by their casual nature (Sriram & McLevain, 2016).

Academic Interaction: an interaction promoting intellectual stimulation, connections to other faculty, classes, major, or career (Sriram & McLevain, 2016). These interactions can occur with peers, faculty, or staff and are defined by their explicitly academic context.

Deeper Life Interaction: an interaction that reflects both a level of comfort and a relationship on a deeper, more personal level (e.g., conversations about meaning, value,

purpose, relationships, family, spirituality; Sriram & McLevain, 2016). These interactions can occur with peers, faculty, or staff.

Faculty-in-Residence: a faculty member who lives in a residential community full-time, with or without family, and seeks to actively contribute to the development of students within the community through formal and informal interactions (Healea, Scott, & Dhilla, 2015; Sriram & McLevain, 2016).

Thriving: the dependent variable in this study that was measured utilizing the items on the Thriving Quotient (TQ) scale ($\alpha = .89$; Schreiner, McIntosh, Kalinkewicz, & Cuevas, 2013). It is a latent variable in the structural model composed of five factors (academic determination, engaged learning, social connectedness, positive perspective, and diverse citizenship) that demonstrate student success through optimal functioning in academic engagement and performance, interpersonal relationships, and intrapersonal well-being (Schreiner, Pothoven, et al., 2009). Specific descriptions regarding each of the five factors comprising the construct of thriving will be detailed in the review of literature.

Significance of the Study

This study is important because it provides evidence to help college faculty, staff, and administrators understand how different interactions influence success in different ways. This understanding is imperative for planning programs and policies that maximize the processes leading to student success. Equipped with this knowledge, faculty and administrators can make better informed decisions about structuring campus environments and programs. By focusing on thriving as a central measure of success, this study utilized a framework for exploring the beliefs students hold regarding their

academic selves, interpersonal relationships, and personal well-being. As colleges continue to struggle with cultivating learning environments that blend in- and out-of-class experiences in an attempt to foster success (Cook & Lewis, 2007), this project examined the role of interactions and their predictive ability for these efforts.

This study also provides indirect evidence that contributes to discussions about the influence of residential environments on student success. This is beneficial in offering a more complex analysis of the assumption that living-learning communities promote success on college campuses. Furthermore, this evidence provides important information for student affairs administrators, and specifically campus residential professionals, as efforts to develop new living-learning communities and improvements to campus housing continue. The findings of this study supplement existing research on living-learning communities by providing a deeper and more nuanced perspective of how success is facilitated through participation. As housing and residence life departments continually update and construct new living environments and programs, connecting those efforts to empirically-based scholarship is critical to achieving the most fruitful outcomes.

Summary of Introduction

Traditionally, college student success is bifurcated into an occurrence within academic or social spheres. Although attention to academic and social engagement is crucial to understanding how students are successful, it is incomplete. College student thriving, a construct introduced through the work of Schreiner, Pothoven, et al. (2009), appropriately supplements the shortfalls of approaching student success through only two domains. With the addition of intrapersonal well-being, thriving enhances the existing two-sphere formula of student success to offer a more holistic view. Additionally, the

interactions students have are typically perceived as social or academic exchanges, and they are often only studied as connections between students and faculty or students and peers.

Sriram and McLevain (2016) extend this research to include *deeper life* interactions as an important and valid construct, offering a more complete picture of the various categories in which interactions occur. Sriram, Haynes, Cheatle, et al. (2020) also extend this research to include student and professional staff interactions as an important relational connection in assessing with whom interactions occur. This study intersects at these gaps in the literature by addressing the questions: Do social, academic, and deeper life interactions with peers, faculty, and staff influence thriving for living-learning community students? If so, what is a model that can relatively explain the strength of the effects on five thriving factors?

Living-learning communities provide a convenient context to study interactions. However, much remains to be learned about how these interactions might influence students' abilities to be successful. Chapter two explores existing literature relevant to the current study. Specifically, it reviews empirical research related to student success, student interactions, and living-learning communities.

CHAPTER TWO

Review of Literature

Overview of Chapter

This study examines unique forms of student interaction to understand how they influence student success. The students in this study all participate in living-learning communities because these environments are incubators for increased interaction due to their aim of increasing collaboration among faculty, staff, and peers. This chapter begins by analyzing the importance of student interactions, focusing on what types of interaction students have and with whom. A brief history of living-learning communities is then provided for context. The chapter then covers how these environments have been assessed against various student outcomes through multiple studies. Finally, the chapter concludes with an examination of multiple approaches to student success and arrives at thriving as a holistic measurement best suited to assess the student experience for this study.

Interactions and Student Success

Within higher education literature, numerous scholars have examined students' interactions with their environment. Cole and Griffin (2013) categorize four unique conceptual waves of research regarding student interactions based primarily around connections to faculty. First, researchers examined how faculty connect with and serve students in their college experience (Gamson, 1966; Snow, 1973; Wilson et al., 1975; Cole, 2010). Second, interaction was categorized as a critical element in the college

retention conversation (Spady, 1970, 1971; Tinto, 1975). Next, interactions were measured and defined in terms of frequency and the subsequent impact on outcomes such as involvement, sense of belonging, social capital, or racial climate perceptions (Astin, 1984; Coleman, 1988; Hurtado & Carter, 1997; Hurtado, Milem, Clayton-Pedersen & Allen, 1999). Finally, a fourth wave emerged that categorizes interaction in terms of contrasting points of contact, such as critique of academic work and encouragement (Cole, 2008; Suplee, Lachman, Siebert, & Anselmi, 2008).

Cole and Griffin (2013) connect 50 years of interaction research through these four movements (faculty roles, fostering retention, out-of-the-classroom interactions, and student-centered pedagogy). The current study conceptually connects these larger foci through the following three interaction categories: academic, social, and deeper life. Academic interactions involve students' intellectual stimulation, academic connections to faculty, classes, major, or career. Social interactions are casual and light-hearted, often reflecting elements of the social nature of a college student experience. Deeper life interactions occur around life's big questions and meaning making through role modeling and emotional and psychosocial support (Sriram & McLevain, 2016). Although academic interactions are often distinguished by their occurrence with faculty and social interactions with peers, this study adopts Sriram, Haynes, Cheatle, et al.'s (2020) framework of measuring these, in addition to deeper life, with faculty, peers, and staff.

Although academic and social interactions are prioritized in the higher education literature, largely resulting from Tinto's (1975) framework, this dual perspective fails to account for differences between deeper and more surface-level interactions. Collectively, these types of interactions embody the larger threads offered by Cole and Griffin (2013)

mentioned above. Measuring academic, social, and deeper life interactions allows for a comprehensive observation of interaction as informed by the larger areas of scholarship on the topic. As the concept of deeper life interactions has proven to be a valid and reliable construct (Beckowski & Gebauer, 2018; McLevain & Sriram, unpublished manuscript; Sriram, Haynes, Cheatle, et al., 2020; Sriram, Haynes, Weintraub, 2020; Sriram & McLevain, 2016), it is important to consider them alongside academic and social interactions. Overlooking them would not allow for a thorough observation of the ways students interact with their environment. Clydesdale (2015) advocates for such deeper life interactions by encouraging faculty and staff to have conversations with students about their life and purpose. This is also emphasized by Astin, Astin, and Lindholm (2011) depicting the importance of reflection through such interactions. However, in addition to the types of interactions, it is also critical to understand the people with whom students interact.

Student Interactions with Faculty

Research by Gaff (1973) extended early conversations of student-faculty interaction by Jacob (1957) and Feldman and Newcomb (1969). With longitudinal (1966-1970) survey data from students and faculty at nine institutions, Gaff's (1973) research is one of the earliest studies empirically demonstrating the importance of student-faculty interaction outside of the classroom. Results from students nominating "outstanding teachers" demonstrated that the most significant difference between faculty nominated and those not was the extent of outside-the-classroom interaction. Further, nominated faculty reported higher rates of meaningful interaction compared to colleagues who were not nominated. Prior to Gaff's (1973) research, virtually no studies contained evidence

drawing from *both* faculty and students concerning the amount, nature, and outcomes of their relationships. In fact, his work extended the line of inquiry on student-faculty interaction away from frequency and towards quality and predictors. This is continued in current research that connects opportunities for interaction to environments such as living-learning communities, finding that such a frequency of interaction helps faculty understand students (Cox & Orehovec, 2007; Lander, 2016; Sriram, Shushok, Perkins, & Scales, 2011). This, in turn, could facilitate more frequent student connection and interaction with faculty.

These interactions often connect to desirable student outcomes such as engagement or cognitive development (Astin, 1993; Kuh et al., 2010; Pascarella & Terenzini, 2005; Wilson et al., 1975). Romero (2016) summarizes this line of logic:

> Student-faculty interaction leads to student success because the increased communication helps direct students' focus on the subject matter, helps students gain understanding and comfort with the culture and norms of higher education, leads to an increased sense of accountability in students, and provides students with direction regarding life goals and personal decisions that facilitate success. (p. 109)

Cole and Griffin (2013) highlight that while many of these outcomes can be measured by interactions in the classroom, it is often those occurring outside the classroom that can account for the impact from such connections. For example, with civic engagement, Astin (1993) found conversations with faculty outside of class often help students develop agency thinking toward factors such as civic responsibility and engagement.

Utilizing data from 58,281 students who participated in the 2006 University of California Undergraduate Experience Survey (UCUES), Kim and Sax (2009) studied how student-faculty interaction might be conditional within certain student characteristics. This work emphasizes previous scholarship on the differences of student-

faculty interaction regarding race and gender (Sax, Bryant, & Harper, 2005; Kim, 2006). Although the authors focused on conditional effects (changes that might exist between different student sub-populations), their results revealed numerous general effects. These include higher GPAs, higher degree aspirations, and enhanced critical thinking and communication abilities. These findings were consistent with other research that highlights how student-faculty interaction can positively impact outcomes such as persistence to degree, career and educational goals (Lohr, 2004), and cultivation of a sense of community (Elkins, Forrester, & Noel-Elkins, 2011).

Research on student-faculty interaction shows how impactful this practice is in promoting intrapersonal outcomes during college. Schreiner, McIntosh, et al.'s (2013) study of 3,353 students from 13 institutions revealed that student-faculty interaction is a strong predictor of psychological sense of community, a finding consistent with previous scholarship (Fischer, 2007; Strayhorn, 2012). This is echoed in Hoffman, Richmond, Morrow, and Salomone's (2003) work highlighting the importance of both academic and social environments, identifying a positive relationship between faculty interactions and students' resulting sense of belonging.

A different study by Kim and Sax (2014) likewise demonstrates the importance of these interactions. With data from 11,202 students from 95 institutions, the authors found that academic self-concept (a measure of academic self-efficacy) was strongly associated with student-faculty interactions, such as being a guest in a professor's home, speaking with professors outside of class, or challenging professors inside the classroom (Kim & Sax, 2014). However, the results show that the strength of this relationship might vary depending on students' majors, with artistic fields (e.g., arts, language) showing more

frequency and satisfaction with interactions than enterprising majors (e.g., Journalism, Business). Delaney (2008) further showed how important the satisfaction from these interactions might be in her analysis of 1,500 freshman students focusing on the importance of interactions to the first-year experience. Regression results revealed that, after controlling for relevant factors, satisfaction with faculty contact significantly predicted overall satisfaction. Furthermore, interaction with faculty significantly predicted academic performance for first-year students (Delaney, 2008).

Though indirectly assessed, pertinent to this study is understanding how unique environments might facilitate interaction in different ways. A study by Borst (2011) assessing critical thinking as an outcome of a living-learning experience shows how residential learning communities might offer promising returns for student-faculty interaction. Although his measures of peer interaction and gains in critical thinking were not statistically different between groups (living-learning verses traditional residents hall students), Borst (2011) did find that students participating in living-learning communities were more likely to experience a greater degree of both quality and frequency of faculty interaction.

This phenomenon is also seen in a study by Bergman and Brower (2008) that highlights how one institution, the University of Wisconsin, improved faculty-student interactions in traditional residence halls by expanding the features of living-learning communities to other residential environments. Equipped with evidence that residential learning communities promote and facilitate interactions in ways that do not necessarily happen in traditional residence hall—such as through formal academic and informal mentor processes (Garrett & Zabriskie, 2003)—the authors contend that there is value in

spreading the model of living-learning communities to other on-campus living facilities. Though ambitious, the authors highlight the many benefits of such a process, such as students' academic and social gains.

For the total nationally represented sample in the 2007 NSLLP (Inkelas, Brower et al., 2008), study results demonstrated that living-learning students engaged in course-related faculty interactions (M = 1.96 vs. 1.92) and experienced faculty mentorship (M = 1.50 vs. 1.46) more often than students in traditional residence halls. While these differences between the groups were statistically significant, it is important to note that students generally (in both groups) received low levels of faculty mentorship and their engagement in course-related faculty interactions was only slightly higher (both variables were measured on a scale from 1 to 4). This is an observation consistent with Cox et al.'s (2010) notion that, as seen through "decades of previous research, faculty members appear to have relatively little contact with students outside of the classroom" (p. 783). Living-learning communities offer environments of increased interaction compared to other non-classroom spaces on campus. As is often the case in the literature, a slightly more positive relationship exists when observing these interactions in these communities. However, previous studies do little to assess how such interactions contribute to holistic success. The current study adds to this literature by taking into account interaction opportunities for living-learning students and measuring their predictive ability toward thriving.

Student Interactions with Staff

It is evident in the literature above that a vast amount of scholarship has been devoted to studying student-faculty interaction. However, student interactions with staff

have not been studied to the same depth. This is unfortunate because the genuine purpose of collaboration in living-learning communities is faculty and residence life staff joining forces to develop a true residential learning community (Bergman & Brower, 2008). Bergman and Brower highlight the importance of not only faculty, but also staff in this process as "it is through their shared vision of that residential learning environment and program that the individuals involved recognize that they need each other and the value of crossing into each other's culture" (p. 95).

Using NSSE data from 42,259 students and 14,336 faculty, Umbach and Wawrzynski (2005) found that faculty interactions can have a profound effect on student learning. However, when observing other outcome variables, the impact of student-faculty interaction was not as strong. In fact, Umbach and Wawrzynski (2005) note that, in terms of perceived care on campus, "students appear to seek their support from sources other than faculty" (p. 174), such as campus support staff. This reinforces the notion that, while interaction with faculty can be crucial to student success, a sole focus on these connections limits the complete picture of the influence of interactions.

The importance of student-staff interactions is reinforced in Pascarella and Terenzini's (1991) meta-analysis of college impact scholarship. They state that a large part of the impact of college is determined by "the extent and content of one's interactions with major agents of socialization on campus" (p. 620). Although Pascarella and Terenzini (1991, 2005) attribute much of this impact to faculty and peers, campus staff and administrators likewise play a role as agents of socialization for students. This is magnified in the context of a living-learning community because close partnerships between faculty and staff are consistently present. Graham et al.'s (2018) research posits

that “access to professional staff makes spontaneous conversation and emotional support available, benefits that are immeasurable but believed to add significant contributions to learning and development” (p. 256). However, such benefits can in fact be measured, albeit indirectly, through assessing student satisfaction with academic, social, and deeper life interactions with staff. This is echoed in Sax et al.’s (2004) recommendation that institutions can enhance students’ emotional health by orienting them to campus services and facilitating meaningful connections with staff. In addition to the intrapersonal impact, Nora, Kraemer, and Itzen (1997) found in a study of Hispanic students that encouragement from staff supports students’ social development.

Pike and Kuh (2005) posit that living on campus puts students in a position, due to their proximity, to engage academically and socially with staff and thus perceive greater gains in learning and intellectual development. Mayhew et al. (2016) reiterate this indirect effect in concluding from numerous studies that living on-campus has no significant influence on knowledge gained; however, interactions with staff that are engendered when living on campus are positively associated with student learning. Numerous other outcomes are also demonstrated in the literature on student-staff interaction, including perception of a supportive environment (Mayhew et al., 2016); women’s self-understanding and development of personal identity (Ropers-Huilman & Enke, 2010); religious commitment, religious engagement, and religious struggle (Astin et al., 2011); and men’s shaping of masculinity (Dancy, 2012).

Ewers’ (2007) research found that students’ interaction with staff was significantly different between groups classified as persisters and non-persisters (students who persisted or departed before graduation). Although this analysis focused on

frequency of interaction and situated retention as the outcome of interest, the current study supplements these findings by expanding outcome measures (thriving) and expanding interaction frequencies (by classifying types of interaction and measuring satisfaction with interactions). Similarly, Brophy's (1984) research found that relationships with staff positively strengthened retention through comprehensive student development programs that advanced a better student-institution fit.

Although it is important to emphasize how staff and faculty interaction might be different, students do not always distinguish between these two groupings. Sriram, Haynes, Cheatle, et al. (2020), in their creation of the Interactions instrument, noted that while students do distinguish between faculty and staff for academic interactions (which highlights distinct roles in this category), they do not distinguish between faculty and staff during social interactions or deeper life interactions. For this reason, the authors suggest staff and faculty can be equally important to student interactions depending on the type of connection occurring. This allows social and deeper life interactions to be measured together with faculty and staff.

In Martin and Seifert's (2011) research in this area, staff are clearly important to student learning. Controlling for students' background and precollege characteristics, the authors' found first-year students' interactions with student affairs professionals was associated positively with increases in students' need for cognition, positive attitude toward literacy, and academic motivation (Martin & Seifert, 2011). However, there is limited research on thriving related to the role of student-staff interactions. The current study both adds to the small existing literature on student-staff interactions and analyzes the role staff play in helping students thrive.

Student Interactions with Peers

Defined as a "collection of individuals with whom the individual identifies and affiliates and from whom the individual seeks acceptance or approval" (Astin, 1993, p. 400), peers are a valuable source for learning and development in college. Mayhew et al. (2016) posit that because peers are closer to a student's experience and stage development, students may listen to and learn more easily from peers. Some scholars emphasize that interaction with *diverse* peers extends the benefits of peer interaction to also include higher moral reasoning, increased cognitive development, leadership skills, and improved self-confidence (Antonio, 2001; Lopez, 2004; Denson & Chang, 2009). Peer interaction is at the heart of students' social integration into campus, a process defined by the extent students feel they belong in the college community (Hurtado & Carter, 1997).

When students interact with other students, they are more fully engaged in the learning process (Astin, 1993), which in turn is positively related to persistence (Nora, Cabrera, Hagedorn, & Pascarella, 1996). However, Tinto (1975) suggested that while lower peer interaction might negatively impact persistence, an over-abundance of such interaction might adversely impact academic achievement. Milem and Berger (1997) later concurred, stating that "going 'overboard' with involvement…has a detrimental effect on students" (p. 398). Further, some scholars highlight this "over-interaction" with peers as a potential unfavorable impact from a living-learning community experience (Henscheid, 1996).

Inkelas and Weisman (2003), however, measured how different environmental contexts, including frequent peer discussions involving both academic and social issues,

was different for living-learning community students compared to students in traditional residence halls. ANOVA data revealed that students in traditional halls were significantly less likely to engage in their environment compared to students in living-learning communities. Although a study of 1,717 students by Borst (2011) showed that living-learning students experienced *less* positive peer interaction than students in traditional residence halls, Inkelas and Weisman (2003) note that living-learning communities provide rich opportunities for students to interact with peers as a meaningful part of their learning experience. Similarly, Zaddach (2014) posits that, compared to students in traditional residence halls, students in living-learning communities demonstrate higher levels of interaction with peers, suggesting that significant differences in integration of material and greater gains in general education were best explained by higher levels of involvement/engagement and increased interaction with peers and faculty.

Milem and Berger (1997) find peer interaction as a significant positive predictor of institutional and peer support. These findings are reaffirmed in their later study offering a more parsimonious model on the role of how student involvement, including interactions with peers and faculty, impacts persistence (Berger & Milem, 1999). In this follow-up, Berger and Milem (1999) conducted a path analysis through a series of structural equations. Results indicated that student involvement with peers early (first semester) in the college experience strengthens students' perceptions of institutional support ($\beta = .09$) and peer support ($\beta = .29$). This is also suggested by Weidman (1989), who argues that formal and informal interactions with peers play a significant role in the undergraduate socialization process. This socialization occurs, Weidman (1989) notes, relative to the intensity and reoccurrence of interactions. In other words, peers are more

influential in predicting student success outcomes when interactions are more incorporative of intensity of feeling and occur more frequently. This also depends on the type of interaction occurring. Crimmin (2008) found, unlike students in living-learning environments, students in traditional residence halls feel their peer interactions are socially supportive, but not academically supportive.

Astin (1993) captures the power of peer interaction when observing that "students' values, beliefs, and aspirations tend to change in the direction of the dominant values, beliefs, and aspirations of the peer group" (p. 398). Some scholars have demonstrated how certain campus interventions, such as non-residential learning communities, can greatly integrate academic and social aspects of university life, leading to higher sense of belonging through increased interaction among peers around common challenges and stressors (Hoffman et al., 2003). However, peers can impact student success in a variety of ways when considering campus residency. Mayhew et al.'s (2016) summary of research indicates that on-campus living has no significant influence on knowledge acquisition; however, peer interactions that occur due to living on campus are positively associated with student learning. Kuh et al. (2008) posit the ease of access as the primary driver for this association. Similarly, Terenzini, Pascarella, and Blimling (1999) stress that the impact of out of class experiences can vary greatly, with residence halls offering an opportunity for student learning derived not from the residence itself, but from the opportunity for interaction with others, such as peers. Other scholars, however, present evidence that the *type* of residence does in fact play a role in the opportunity for interaction as well as the associated success outcomes.

Inkelas, Brower et al. (2008) presented evidence that living-learning students experience more positive interactions with peers and more positive peer diversity interactions than students in traditional residence halls. Other earlier studies drew similar findings (e.g., Newcomb, 1962; Newcomb, Brown, Kulik, Reimer, and Revelle, 1970). Similarly, Lacy's (1978) early research demonstrated differences between students in two distinct environments: a traditional, large liberal arts college at the University of Michigan (LS&A) and an innovative living-learning environment (RC) which was a sub-environment of LS&A. Students in the RC found fellow students more attractive (relationally, not physically) and generally more satisfactory than students in LS&A. The resulting causal model is noteworthy because it demonstrates that the college environment appears to influence the quality of student interaction with both faculty and peers. This evidence informs the current study as it establishes that, although frequency of interactions was similar between groups, types of interactions often differ based on topics (e.g., personal matters, coursework, basic values and philosophy, hobbies, public affairs).

Sriram, Haynes, Cheatle et al. (2020) posit that college campuses can promote academic interactions, social interactions, and deeper life interactions by creating environments that facilitate meaningful exchanges with faculty, staff, and peers. Astin (1991) cautions scholars to avoid the counterproductive risk of limiting investigations to the relationships between environments and outcomes as it "encourages causal interpretations of environmental effects when these may indeed be unwarranted" (p. 32). In other words, studying environments alone often limits observation of indirect effects. Studying what happens *within* certain environments tells a more accurate story. For this

reason, the current study assess how interactions might influence success, and effects are measured both directly and indirectly. These interactions are measured with living-learning community students because these living-learning environments are the spaces on college campuses that most strongly promote academic, social, and deeper life interactions with faculty, staff, and peers all in one place. Sriram, Haynes, Cheatle et al. (2020) describe living-learning communities as "an ideal environment for these relationships to flourish" (p. 241).

Feldman and Newcomb (1969) highlight that faculty do not appear to be responsible for campus-wide impact except in settings where the influence of student peers and faculty complement and reinforce one another. More recent research considers how staff might play a part in this influence. Central here, though, is how residential learning communities provide a setting for interactions to complement each other. The current study fills this void in the literature by assessing interactions with living-learning students and measures their predictive ability toward thriving.

Much of the literature on interactions and living environments stems from data collected at one institution, from one program, from one type of interaction, or seeks outcomes that measure one element of success. The present study, by contrast, collects data from multiple institutions, on many types of interactions, with multiple types of constituents, all measured against a holistically-representative outcome of student success (thriving). Research has yet to investigate the distinct ways thriving is facilitated through academic, social, and deeper life interactions with faculty, staff, and peers. As conceptualizations of student success have progressed to encompass more of the holistic college experience, campus programming has likewise advanced efforts to support

success in multiple domains. Living-learning communities are one example of these efforts. The following sections offer a history of these communities, discuss how they have been studied in relation to student success, and explain why they are the ideal environments to examine the influence of interactions on thriving.

Putting the "Living" into Learning Communities

It was not until the late 1990s when the appearance of a required residential component emerged as a distinct element in the learning community literature. However, the lineage of living-learning communities in operation can be traced back to post-secondary environments that pre-date the American colonial colleges. Oxford and Cambridge Universities provided much of the structural and environmental inspiration for the earliest American colleges (Rudolph, 1990). Thelin (2011) stressed that "the collegiate system of mixing living and learning was at the heart of the Oxford and Cambridge pedagogy, and this vision was seminal in the plan for higher education that college-founders pursued in the American colonies" (p. 8).

The Oxbridge (that is, Oxford and Cambridge) model included the elements characteristic of today's residential colleges (which are one variation of living-learning communities): a courtyard or commons, athletic fields, student union buildings, study space, and faculty in residence (Alexander, 1998). However, these early colonial colleges often had limited budgets and endured persistent financial strain. As such, campuses frequently functioned with limited housing options and occasionally none at all (Chaddock, 2008). Even though the result was typically a modified adaptation of the Oxbridge model that often downplayed the living component, the ideal of living and

learning together was present in the archetype of what many colonial colleges pursued (Lucas, 2006).

In the late nineteenth century, however, a shift occurred in American higher education from the pursuit of an English model to the pursuit of a German model. With a focus on increasing graduate studies and research, the Germanic model stood in stark contrast to the living-learning mission of the Oxbridge efforts. Fink and Inkelas (2015) identify this late-1800s shift as one that thwarted the reputation of residentially-based learning communities, particularly in regard to their acceptance amidst changing campus norms. Some institutions, Yale and Harvard as examples, still pursued the residential college model with sustained enthusiasm in the 1920s and 30s. Pierson (1976) discusses this movement in the mid-1930s as one aimed to "take in representatives from the Faculty, and members of the three upper classes - and each to have its own Master, its own dining hall, library, activities, and athletics" (p. 61). These models aimed to maintain a sliver of the Oxbridge model through "smaller collegiate units" (Pierson, 1976, p. 61) within the larger campus environment.

With the culmination of World War II around 1945, the Servicemen's Readjustment Act of 1944 was the primary driver for mushrooming enrollment. This Act, commonly known as the GI Bill, provided increased access to veterans returning from war. For the purpose of education, this was primarily in the form of tuition payments and living stipends. In 1939-40, total student enrollment at all colleges and universities was just under 1.5 million (Thelin, 2004). By 1949-50, total enrollments inflated to almost 2.7 million (an increase of 80 percent in the decade). In 1950, of the 14 million eligible veterans, more than two million, or 16 percent, had opted to enroll in postsecondary

education as part of the GI Bill (Thelin, 2004). This surge in enrollment, coupled with the emergence of distinct curricular majors, caused many institutions to abandon the pursuit of an adapted Oxbridge (Chaddock, 2008). Under the stress of increasing enrollment, universities found it necessary to create traditional "dorms" to contain the influx of students. Adequate housing was needed quickly and cheap bed space was pursued as the new standard procedure.

Pierson (1976) describes this as a "rush into higher education that filled dining halls and dormitories almost to suffocation" (p. 61). Amassing students in the higher education system eventually led to systemic curricular concerns that revamped the need for a living-learning model. Public outcry and the call to reform higher education starting in the mid-1980s stood in large part as the stimulus for resuscitating the living-learning vision. As learning communities in general had become normalized functions of the academy, the late 1990s brought more structure by infusing learning community ideals with on-campus student living.

Living-Learning Communities and Student Success

Although living-learning communities can vary depending on program or institution, most share a few defining characteristics. Namely, participants (1) live together on campus, (2) take part in a shared academic endeavor, (3) use resources in their residence environment specifically designed for them, and (4) engage in structured social activities in their residential environment that also emphasize academics (Inkelas, Zeller, Murphy & Hummell, 2006). The primary goal of living-learning communities is to foster a community of learners and help students develop smaller communities within the larger campus (Inkelas, Johnson et al., 2006). Schroeder and Mable (1994) convey the

benefits of campus residency to the mission of higher education by expressing that "the role of residence halls in educating students may ultimately be determined by how well the entire campus, not just the classroom, is understood as a student learning community" (p. 1). However, it is important to understand how different residential environments contribute to this mission in different ways. How do living-learning communities influence outcomes differently than traditional residence halls? Crimmin (2008) writes:

> Residency in a living-learning community presupposes certain conditions. It is believed, at some level, there will be a component to the living area that is different from that which exists in a traditional hall. Some examples are students enrolled in the same core classes or team-taught courses; participation in study groups; attending classes in their residence hall; or involvement in small group interest circles facilitated by faculty. (p. 8)

Living-learning communities are a distinct form of learning community that include a residential component. Unfortunately, many studies discuss living-learning outcomes through referencing scholarship that has examined learning communities *without* this residential requirement. Grouping together these related yet distinct experiences can be misleading due to the impact of residing on campus. Therefore, literature offered in this section will only focus on *residential* learning communities by highlighting research relevant to the current study.

Studies on living-learning communities often focus on a small group of outcomes related to student participation. These outcomes are often distinct and isolated as either academic, social, or psychological outcomes. Inkelas and Weisman's (2003) study of three communities to a control group (N = 2,833) revealed living-learning students felt more academically supported at the end of the academic year compared to peers in traditional halls. In addition to perceived support, living-learning students also discussed academic issues outside of class with peers more frequently than non-participating peers.

Other scholars also offer results that highlight how residential learning communities promote an increase in the intellectual content of interactions, indirectly affect the integration of information and student learning, and promote peer interactions (Inkelas, Vogt, Longerbeam, Owen, & Johnson, 2006; Pike, 1997).

The MANCOVA results, in a study by Jones (2000), demonstrated these communities had positive effects on participating students through higher frequencies of academic conversations (η^2 effect size = .003) and higher GPAs (η^2 effect size = .003). Although the results were statistically significant, Jones (2000) acknowledges that the small effect sizes minimize the actual contribution of these communities. Additionally, some scholars report smaller effect sizes or even an apparent near equivalence between living-learning and non-living-learning experiences for academic measures (Messina, 2011; Pasque & Murphy, 2005; Pike et al., 1997, Purdie, 2007, Stier, 2014). Many of these studies contain the same limitations widespread in the literature, including data from a single institution or even from a single program, the presence of self-selection bias, and less rigorous methodological procedures. Notwithstanding these commonly found restrictions, this scholarship is important to review in understanding the larger landscape of this research area.

Inkelas, Soldner, and Szelényi (2008) highlight the way these often-intimate environments create a climate that simultaneously welcomes and supports its students while challenging and stretching their social development. Further, the authors specify that when a community of peers forms in a living-learning community, students learn from one another in an interpersonal supportive environment. In a similar vein, Schussler and Fierros (2008) found that academic and social bonding occurred both for students

who *chose* to participate in a community and for students who were *assigned* to live in a community. This is important because it demonstrates living-learning students are not necessarily predisposed to achieve certain outcomes, as many critiques describe. Schussler and Fierros (2008) concluded that sense of community and positive relationships with peers and faculty are favorable benefits associated with living-learning communities.

Comparably, Wawrzynski and Jessup-Anger (2010) found that living-learning experiences have a large effect (Cohen, 1988) on students' peer interactions ($\eta^2 = .19$) and a moderate to large effect on students' enriching educational environment ($\eta^2 = .08$). These results demonstrate that students in larger communities are more likely to interact with peers and more likely to perceive their residence hall as socially supportive. This reiterates Brower, Inkelas, and Crawford's (2011) assertion that students in living-learning communities experience higher rates of social interaction with peers, fulfilling mentoring relationships with faculty, and greater perceptions of socially supportive environments in college. A study by Spanierman et al. (2013) also demonstrated that many living-learning students use their community as a means for social support and meeting people.

This brief survey of the literature on living-learning communities offers a snapshot of how they impact student interactions and the different domains of the student experience. Many studies in this area aim to assess academic, social, and psychological domains as distinct outcomes or, when accounting for student success, do not comprehensively cover these areas with enough attention. That said, two national studies on living-learning communities made great strides in collecting data from numerous areas

of student success—the National Study of Living-Learning Programs (NSLLP; Inkelas et al., 2004, 2008) and the Assessment of Collegiate Residential Environments and Outcomes (ACREO; Mayhew et al., 2018).

National Studies of Living-Learning Communities

Led by primary investigator Karen Inkelas and a number of other researchers, the NSLLP first collected data in 2004 from 34 U.S. colleges and universities (with national representation), garnering nearly 24,000 student responses (Inkelas & Associates, 2004). On each campus, all or a random sample of living-learning participants were surveyed, along with comparison samples of students who lived in traditional residence halls. The comparison students were matched as closely as possible to living-learning students by gender, race or ethnicity, and year in school (Brower & Inkelas, 2010). Three years later the authors followed up with respondents to provide longitudinal data. There were 49 participating schools in the 2007 NSLLP. Thirty-three schools participated in the baseline data collection, and 14 campuses participated in both the baseline and follow-up data collections with 22,000 participants (Brower & Inkelas, 2010). Collectively, the 2004 and 2007 NSLLP studies represent "the most comprehensive effort to understand the influence of living-learning communities on undergraduate students" (Inkelas, Brower et al., 2008, p. 6).

The NSLLP results revealed numerous positive outcomes associated with living-learning participation. For example, compared to peers in traditional residence halls, students in living-learning communities experienced (total sample mean comparison scores included in parenthesis for each variable when available): easier social (4.34 vs. 4.18) and academic (3.80 vs. 3.70) transitions to college; more growth in their critical

thinking/analysis abilities (2.93 vs. 2.89) and their ability to apply knowledge gained in one arena to another (3.12 vs. 3.10); higher rates of confidence in their ability to be successful in college (3.58 vs. 3.51) and their test-taking skills (2.83 vs. 2.76); less alcohol consumption and fewer binge drinking episodes; higher rates of civic engagement (2.93 vs. 2.86); and stronger sense of belonging to their campus (3.17 vs. 3.12).

Findings from the 2007 NSLLP echoed the positive link between most measured outcomes and living-learning participation, with Inkelas, Brower et al. (2008) noting "perhaps the most important finding…has shown that living-learning communities are thriving and popular institution innovations at the nation's colleges and universities" (p. vi-1). Part of the strength of the NSLLP stems from the living-learning and non-participant groups exhibiting comparable high school grades, ACT or SAT scores, or type of financial aid received. Additionally, the results represent the effect of living in a living-learning community averaged across the entire spectrum of communities—from those that were comprehensively resourced with very strong programming, to those with few resources and programs (Brower & Inkelas, 2010).

Of particular interest to this study is the data collected on interactions. Living-learning participants reported higher scores than traditional residence hall students in positive interactions with peers and faculty, use of residence hall resources, and positive peer diversity interactions. The NSLLP provided a much-needed national and widely-scoped understanding of how living -learning communities impact students' college going. Though some studies detailed above have referenced the NSLLP or utilized elements of the collected data, none aim to collectively assess how the outcomes holistically inform student success.

Following the foundational work of the NSLLP team, Mayhew and colleagues launched the second national study focusing on living-learning experiences and outcomes in 2015, the Study of Integrated Living-Learning Programs (SILLP). Employing a similar conceptual framework and longitudinal methodology as Inkelas, Brower et al. (2008), Mayhew, Dahl, Youngerman, and Duran (2016) aimed to further explore the influence of these communities as they continued to rise in popularity at colleges and universities across the nation. The initial SILLP study had nearly 1,500 responses from students at seven public and private institutions in seven states (Mayhew et al., 2016). The follow-up study in 2016 entailed data collection from 11 institutions and acquired a sample of over 2,500 student responses.

In 2017 the SILLP was re-established as the Assessment of Collegiate Residential Environments and Outcomes (ACREO). Results from the original SILLP analysis revealed that, when compared to peers not living in living-learning communities, living-learning students reported: higher likelihood of discussing academic learning experiences and sociocultural issues with peers; higher levels of engagement in cocurricular programming (though lower engagement with residence hall resources); greater perception of supportive residential environment; higher rates of campus belonging; higher rates of civic engagement; and lower rates of binge drinking. These outcomes are reinforced in the most recent version of ACREO (Mayhew, 2018). Additionally, through assessing multiple outcomes, Mayhew et al. (2016) demonstrated findings supportive of and fairly consistent with the NSLLP results. Although the SILLP/ACREO "furthers the conversation by assessing the influence of living-learning communities on the academic, intellectual, and social development of college students," (Mayhew et al., 2016, p. 2), the

authors do not define the characteristics of associated outcomes that underscore what a successful experience might entail beyond retention and graduation. Although some of the outcomes are related to the intrapersonal domain of student success (i.e., belonging), there is primarily a focus on academic and social measures. Further, though these studies contribute meaningfully to the literature on living-learning communities, they do not focus specifically on how interactions influence success.

Many studies of living-learning communities highlight their benefit to student success. However, Mayhew et al. (2016) distinguish how student success is clearly an indirect effect of any type of residency. Along these lines, I argue it is not merely living in these communities that make students successful, but rather through the interactions levied within. In this study, interactions are measured through students who occupy one of the most prominent places on a campus where connections to faculty, staff, and peers are jointly emphasized. The evidence provided, though helpful for stressing the mission of residential learning communities, can be applied to environments all over campus in order to foster interactions, and therefore success, for all students.

Student Success Theories

College student success is a complex, value-laden concept (Floyd, 1988). It is often contrarily conceptualized by parties within the academy, such as administrators, faculty, staff, and students. Further, external entities such as alumni, parents, educational associations, or even politicians often conflict in their approach to distinguishing the central aim of a successful college experience. A lack of agreement exists on articulating a consistent vision for success in college. With so many stakeholders often differing in their opinion, it is no surprise to see the research in this area following endless

trajectories with numerous definitions offered (e.g., Bean, 1980; Noel, Levitz, & Saluri, 1985; Cabrera, Castañeda, Nora, & Hengstler, 1992; Tinto, 1993).

Although student learning is arguably the predominant goal of higher education (Bok, 2006), understanding what a successful endeavor might encompass in journeying toward this goal includes a variety of theories. In student success scholarship, a handful of prominent researchers and theories are regularly cited for their contributions in framing student success as a concept. The following sections are categorized as areas of scholarship considered to be pillars of student success. Yet, even with the paradigmatic status of these theories, I argue that they are insufficient to fully measure success as an outcome. Therefore, I argue for the use of thriving as a construct to encapsulate student success in a truly holistic manner.

Persistence, Retention, and Completion

As societal access to higher education increases, the importance of obtaining a college degree also increases. With increased access comes increased pressure on colleges to retain the students they enroll (Berger, Ramírez, & Lyons, 2012). Much of the literature on college student success focuses on retention. Retention slowly emerged as a field of study in the 1930s through investigation of student "mortality," or the failure of students to graduate (Berger & Lyon, 2005). It was not until the 1960s, however, that more seminal works (Gekoski & Schwartz, 1961; Summerskill, 1962; Panos & Astin, 1968; Feldman & Newcomb, 1969) began to take root as a subfield of study in higher education scholarship. In the 1970s, two contributions from Spady (1970) and Tinto (1975) propelled research on retention forward.

Spady's (1970) sociological theory of student dropout was one of the first widely recognized models. Based in large part on Durkheim's (1951) model of identifiable factors contributing to suicide, Spady (1970) articulated five variables that contribute to student drop out: academic potential, normative congruence (or a student's orientation towards the goal of graduation), grade performance, intellectual development, and friendship support. These factors influence perceptions of social integration and, as Durkheim (1951) previously articulated in relation to suicide, lack of such integration largely contributes to student departure. In a longitudinal study of 683 first-year students with data first collected in 1965, Spady (1971) used multiple regression analysis to conclude that formal academic performance was the dominant factor in accounting for attrition in students.

Tinto (1975) expanded on Spady's (1971) efforts while drawing from Durkheim's (1951) notion of egoistic suicide. Tinto's (1975) sociological analysis stresses the importance of formal *and* informal academic experiences and social experiences. These factors then influence students' connection to their institution and their own academic and career goals, arriving at a decision to drop out or persist. Historical perceptions of student success prioritized how students excelled academically in the classroom. Tinto's (1975) theory set the ground work for later scholars to study both the academic *and* social domains of student life; the proverbial "two sides of the student success coin." Later renditions of Tinto's model emphasize interactions between students and their institutions (Melguizo, 2011). In fact, Tinto's original work and later revisions (*Leaving College*, 1987, 1993) have become some of the best known and most commonly cited theories in higher education (Berger et al., 2012; Melguizo, 2011). This paradigmatic status of

Tinto's work led to retention and student success becoming inseparably joined in the literature.

The most common measurement of retention and persistence is the percentage of full-time first-year students who re-enroll at the same institution in the fall of their sophomore year. Though often used interchangeably, persistence and retention approach a similar issue of student success through two distinct angles of agency: the student versus the institution (Mortenson, 2012). In short, students persist while institutions retain. As persistence and retention measure students' status of re-enrollment after an initial year of study, *completion* measures the percentage of these students who continue their studies through graduation, degree fulfilment, or certificate attainment (Tinto, 2012). Levitz (2001) defines completion as the outcome of how many students within a cohort complete and/or graduate from an institution, typically measured in 2-3 years for associate level programs and 4-6 years for bachelor level programs. Degree completion is often argued as a primary outcome of higher education and a culminating measure of student success (Tinto, 2012). However, it is vital to prioritize learning *and* completion as principal goals of higher education. By themselves, persistence, retention, or completion as measures of college student success are insufficient to holistically encompass what a successful experience entails.

Limitations of Persistence, Retention, and Completion

Student persistence, retention, and completion are not, by themselves, fundamentally problematic. In fact, every institution should seek these outcomes because a commitment to accept a student is also a commitment for an institution to support the student. Categorizing retention as the predominant measure of student success, however,

is a mistake because retention is deficit-based. The notion of retention as success emphasizes the prevention of a negative occurrence (departure) instead of capitalizing on the benefits students experience in college. Through this framework, if students earn a degree from the institution where they originally enrolled, they are successful. However, if they leave college after their first year or any time before completing a degree it is considered failure, even if those same students graduate from another institution. Demetriou and Schmitz-Sciborski (2011) echo this sentiment, lamenting how much research exists on why students fail to persist as opposed to why they succeed. The nature of this research also frequently dismisses the individual variables that lead to retention, focusing instead on the reasons students leave.

Because much of the scholarship exemplifies a deficit model, the onus to address issues of college student success falls on institutions to make up for the deficits of students and improve retention or completion rates. Overemphasizing retention, however, often results in an unsophisticated and incomplete approach to student success (Kinzie, 2012). This can lead to a lack of attention to uniquely individual characteristics, namely, student well-being in academic, social, and psychological domains of college life—the very constructs that lead to retention. Bean and Eaton (2000) discuss this holistic approach to an extent in their psychological model of student retention by highlighting how student entry characteristics shape the way the college environment is perceived. Nonetheless, their work is still aimed at retention as a final marker of success. This is evident in the final paragraph of Bean and Eaton's (2002) article identifying how their model (Bean & Eaton, 2000) undergirds successful retention practices: "Besides student success, which is a central focus of college and university missions, these outcomes

should help institutions increase rates of retention" (p. 87). Although this research gets closer to the individual student experience, it remains a model operating from a position of failure avoidance.

Aside from the ease with which it is measured, retention has also grown in popularity as a metric of student success due to its centrality in college ranking scores (U.S. News & World Report, 2019). In a consumeristic paradigm, college "shoppers" are seeking institutions that do what it takes to ensure their students are "successful" by persisting through their first year. Therefore, retention is part of the "product" offered by colleges. This paradigm has unfortunate consequences, including lower academic performance (Bunce, Baird, & Jones, 2017). In summary, although Bean and Eaton's (2000) model of retention moves beyond the work of Spady (1970) and Tinto (1975) to include the psychological processes that drive behaviors leading to dropout, it is inadequate to classify a student as successful merely through their decision to remain enrolled.

Involvement, Quality of Effort, and Engagement

Commenting on retention and graduation, Kinzie (2012) stresses how the meaning of student success should extend beyond these two well-recognized indicators. One area of study aiming to supplement this ill-structured problem of defining success (Braxton & Mundy, 2001) is centered on student involvement. Much of Astin's (1970, 1977) seminal research posits that the influences of a college experience extend across cognitive, affective, and behavioral dimensions. One of his works central to student success is his Theory of Involvement (Astin, 1984). Contained in this theory are clear

descriptors of successful and unsuccessful students, based primarily on how involved they are with the college experience.

The involvement theory is based on the central premise that college students learn from what they do in college. This accounts for many unique and continuous aspects of the student experience. As such, students might be highly involved in some areas of college life and less involved in others. The outcome of involvement as a factor contributing to success is student learning and development. As Astin (1985) puts it, "Stated simply: students learn by becoming involved" (p. 133). Mayhew et al. (2016) echo this sentiment in summarizing decades of research by concluding that the quality and quantity of effort or involvement play a large role in shaping student outcomes.

Involvement as a theoretical approach to student success also connects to the study of student effort. Pace's (1979, 1980) work on college student quality of effort was an attempt to discover how successful students could be identified based on the effort they put into their experience. This research thread takes a stark turn from the literature on student departure. Realizing the academy's preoccupation with retention and persistence at the time, Pace (1990) notes that "there are many questionable assumptions in this common rhetoric. It assumes that leaving college before getting a degree is a sign of failure when in many cases it may be a prudent and well-informed decision" (p. 6). Aiming for a new direction of investigation into student success, Pace (1979) developed a survey, The College Student Experiences Questionnaire (CSEQ, revised in 1983), to measure how students contribute to their success through their effort. Pace (1984) highlighted how all learning and development require an investment of time and effort by

the student. His instrument assessed the quality of undergraduate education and examined the sources of student progress toward the attainment of important goals in college.

By examining the degree to which students utilize campus resources, facilities, and services in their learning, Pace (1984) attempted to explain student learning and development in noting: "By measuring 'effort' we may have the key to judging the quality of the educational process" (p. 6). Using multiple regression analysis, Pace (1990) found that the quality of effort was the single best predictor (the highest R^2) of the "achievement" or success metrics explored (personal and social development; general education, literature, and arts; intellectual skills; and understanding science). This research promoted the idea that successful students tend to exhibit greater effort in striving toward certain achievement metrics while also using campus resources.

Derived from and similar to Pace's work on quality of effort, the concept of student engagement also focuses on the time and energy students spend, while adding that the activities inside and outside the classroom need to be educationally purposeful (Kuh, 2003). Kuh et al. (1991) preempted this attention to institutional involvement through their qualitative review of 14 diverse "involving" colleges and universities to discover institutional factors and conditions that promote student learning and personal development. The study of student engagement has risen quickly in prominence in the area of student success scholarship since the original edition of *Student Success in College: Creating Conditions that Matter* was released (Kuh et al., 2010). Since then, Kuh and colleagues have revised their work to establish engagement as a pillar of higher education research. The study of engagement was launched with a two-year study (the Documenting Effective Educational Practices—DEEP—project) of 20 strong-performing

colleges and universities that represent higher than projected student engagement (indicated by student responses on the National Survey of Student Engagement (NSSE)) and higher than predicted graduation rates (NSSE, 2000).

As evidenced through the DEEP project, higher education institutions with strong records of student success quickly lead students to supportive resources, connect students with faculty and staff, align their resources and practices to their mission and vision, and embody a culture of campus-wide improvement and success-orientation (Kuh et al., 2010). Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008) highlight the connection of engagement to the larger mission of higher education in noting how it positively relates to academic outcomes as represented by first-year student grades and by persistence between the first and second year of college. The construct of engagement is widely functional in applying to different domains outlined in success literature as it is consistent with theoretical models that feature the interplay between student behaviors and perceptions of the institution and psychosocial engagement (Kuh et al., 2008). Kuh (2001) personifies engagement in stating, "What students do during college counts more in terms of desired outcomes than who they are or even where they go to college" (p. 1). Although background characteristics are influential in their decision to persist, engagement in specific educational practices increases this probability of success (Kinzie, 2012).

Limitations of Engagement, Involvement, and Quality of Effort

Although research on engagement, involvement, and quality of effort provides further understanding of college student success, it does not paint a complete picture. Much of this literature focuses on behavior while omitting the psychological element, a

critical component in measuring holistic success. For example, students can devote ample time to organizations, academic study groups, or on-campus employment without ever focusing on their own development. It is limiting to classify a student as successful based merely on their behavior or actions without measuring the psychological drive behind these behaviors. For this reason, Romero (2016) suggests it necessary to reassess the methods by which researchers measure behaviors that might lead to learning and development. Metrics such as involvement, when isolated as measurement variables, are insufficient to adequately assess the complete domain of student success. Behavior, while important, falls short in measuring a more holistic experience. In addition, these behaviors are measured by self-reports, and students are more accurate conveying their attitudes and perceptions with self-reports than they are their behaviors.

Pascarella and Terenzini (2005) broadly categorize theory related to student growth and success in two ways. The first area is developmental theory, depicting how students progress through certain developmental stages. The second is college impact theory (often characterized as college impact models) that depicts student change relative to either the characteristics of their institution (between-college effects) or their experiences while enrolled (within-college effects). The primary difference between these areas lies in the attention given to what changes in students versus how these changes transpire. Although this study does not begin with a developmental theory and assess the way students move through phases in various domains, it does aim to take into consideration the underpinnings of many of these theories by measuring success as sourced from the academic, interpersonal, and intrapersonal domains of the student

experience. Further, with living-learning communities as an environmental factor under study, this study embraces perspectives from both developmental and impact theories.

In addition to engagement, involvement, and quality of effort, as well as persistence, retention, and completion, a multitude of other theoretical frameworks and models exist that comprise the foundation of student success literature. As a brief sample, see Holland (1973), Eccles et al. (1983), Weiner (1985), Chickering and Gamson (1987), Weidman (1989), Ethington (1990), Bandura (1977), Chickering and Reisser (1993), St. John, Paulsen and Starkey (1996), Braxton, Hirschy, and McClendon (2004), and Pike and Kuh (2005). Although these theories and frameworks and the multitude of others not included in this list add to the understanding of student success, the two groupings addressed above entail some of the more widely applied categories of theory. When combined, these theories demonstrate a holistic picture of a collegiate experience. However, separately they do not. One method to get closer to linking many of these outcomes is through using student thriving to measure success (Schreiner, McIntosh, Nelson, & Pothoven, 2009). Romero (2016) conveys that thriving improves upon many of the other student success models by moving beyond behavioral engagement to incorporate measures of psychological engagement and well-being. This is important because a "more holistic perspective of success provides greater opportunities for all students to succeed" (Schreiner, 2018, p. 12).

College Student Thriving

The study of success outcomes often entails a narrowed focus on grades, graduation, college rankings, or credentialing (Bok, 2006; Schreiner, 2013). Many important areas of study have emerged in the student success literature, but Benjamin

(2013) denotes thriving as representative of the next theoretical step. Although holistic development had been a preeminent focus of institutions in the past, the literature displays how such an emphasis has been fragmented, especially within the past century. Attempting to compensate for an overly-swung pendulum of research on student outcomes through these factors, some scholars started investigating psychosocial predictors of student success (Berger & Milem, 1999). A series of studies by Robbins and colleagues likewise aimed to determine the psychosocial components of a successful college experience that extended beyond prior academic achievement (Robbins et al., 2004; Robbins, Oh, Le, & Button, 2009; Robbins, Allen, Casillas, Peterson, & Le, 2006). Theoretical contributions around this time, such as Berger and Milem's (1999) work, prelude Bean and Eaton's (2000) similar psychological model in highlighting the factors that can be seen as predictive of college student retention. Specifically, Berger and Milem (1999) confirm the utility of using a combined model that accounts for both behavioral and psychological components to describe success. Representing the intersection of research on these psychological factors most predictive of retention, the expansion of the popular behavioral-oriented approach to studying students, the goals of higher education, and the principles of positive psychology, *thriving* emerges as an expanded view of student success (Schreiner, 2013).

Although success measures such as grades and graduation rates are important and needed for institutional accountability, the thriving construct was created in response to the need for a theory offering greater attention to the quality of students' experiences that foster such success. Thriving encourages thinking beyond simple and easily measured metrics. Specifically, it offers a holistic construct that incorporates both cognitive and

psychosocial components (Kinzie, 2012). It aims to fill the theoretical gap that occurs when a narrow focus is applied to the college student experience, namely, addressing whether students are vitally engaged in learning and making the most of their college education (Schreiner, 2013). A significant area of study from which thriving was derived is positive psychology.

The Influence of Positive Psychology

Martin Seligman, former president of the American Psychological Association (APA), identified "psychology's forgotten mission" as an over-abundance of research and practice related to curing mental illness and a dearth of research and practice related to the positive qualities of individuals, such as optimism, courage, relationships, well-being, strengths, and human development (Seligman, 1998). Although initially the field of positive psychology pursued such areas of study as happiness, Seligman (1999, 2011) defined the trajectory of research in this field as evolving to broader concepts of human well-being beyond the traditional "disease model." Seligman's (2011) well-being theory highlights a central goal of the positive psychology subfield: measuring and fostering human flourishing.

Considered optimal psychological and social functioning, flourishing individuals engage life with a sense of purpose and meaning (Seligman, 2011). Flourishing is positive emotions and optimal well-being and lies in direct opposition to languishing, or a state in which an individual is devoid of positive emotion toward life and is not functioning well psychologically or socially (Keyes, 2003). Gable and Haidt (2005) offer a three-pillared definition of positive psychology as the conditions and processes that contribute to the flourishing of people, groups, and institutions.

Keyes and Haidt (2003) articulate that positive psychology aims to help people live and flourish rather than merely exist. In this sense, narrowly focused approaches to student success do not holistically embody what it means for a student to live a life well lived (Keyes & Haidt, 2003). Recent research in the area of flourishing and college students shows that supportive college environments foster student flourishing (Fink, 2014), which in turn is predictive of positive mental health. Seligman (2011), in expanding his work on happiness (Seligman, 2002), presents five characteristics of holistic well-being: accomplishment, positive relationships, meaning, engagement, and positive emotions. Thriving mirrors this theory of well-being and expands the study of flourishing to consider the psychosocial processes predictive of student success. Schreiner (2013) highlights these processes in articulating thriving as more than just surviving in the college environment. Instead, a thriving student is "fully engaged intellectually, socially and emotionally, and is experiencing a sense of psychological well-being that contributes not only to his or her persistence to graduation, but also to success in life" (Schreiner, McIntosh et al., 2009, p. 4).

Similar to Seligman and Csikszentmihalyi's (2000) notion that positive psychology regards moving beyond enduring to flourishing, student success should move from surviving (persistence) to thriving (holistic success). This approach conceptualizes optimal functioning in three domains: (a) academic engagement and performance, (b) interpersonal relationships, and (c) intrapersonal well-being. These domains (academic, interpersonal, and intrapersonal) house five empirically demonstrated factors representing holistic success: (a) Engaged Learning, (b) Academic Determination, (c) Positive Perspective, (d) Social Connectedness, and (e) Diverse Citizenship (Schreiner, Pothoven

et al, 2009). Additionally, these factors are malleable and amenable to change (Robbins et al., 2004). This means all of the factors of thriving are responsive to pointed and purposeful interventions implemented by practitioners and administrators, such as opportunities for interactions in living-learning communities. As such, thriving provides a widely adopted and measurable approach to well-being that has the potential to greatly impact the work of higher education professionals.

Academic Thriving

Academic thriving comprises the curricular expanse of the college experience. This encompasses more than completing assignments or reaching certain GPA ranks. Students who thrive academically are psychologically engaged in learning and take charge of their own learning process (Schreiner, 2010c). This includes exhibiting behaviors such as determination and self-regulation, investment of effort, environmental mastery, and goal-directed thinking (Schreiner, 2010c). The academic domain of thriving emphasizes these components through two elements, academic determination and engaged learning, discussed below.

Engaged learning. By connecting previous and new knowledge, showing interest in the content and process of learning, and sharing what is learned with others, engaged learners are committed to the college academic pursuit psychologically, behaviorally, and socially. Engaged learning is defined as "a positive energy invested in one's own learning, evidenced by meaningful processing, attention to what is happening in the moment, and involvement in learning activities" (Schreiner & Louis, 2006, p. 9). It is more than an attempt to "get by" with minimal effort to earn a certain grade. These types

of learners notice the environment around them, pay attention to distinctions, appreciate multiple perspectives, process content meaningfully, get energized by ideas, and draw connections among content, their own lives, and other courses (Schreiner, 2013).

The focused attention often necessary for engaged learning is rooted in the notion of mindfulness (Langer, 1997), calling students to be psychologically present in order to notice what is new by seeing the world through perspectives different than their own. Active participation, therefore, is only a small part of engaged learning (Schreiner, 2010c). In other words, students can appear engaged in the classroom based on behaviors, but this does not mean they are engaging in deep and meaningful learning. Truly engaged learners exhibit self-determination, even if they do not all exhibit the visual signs of classroom engagement (Ryan & Deci, 2000). This self-determination leads to deep learning.

Marton and Säljö (1976) theorized that college students pursue one of two approaches to learning. The first, *surface learning*, embodies practices such as rote memorization to quickly amass information with a focus on what might be tested on exams. *Deep learning*, by contrast, describes comprehending how the big ideas of a topic connect together. While surface learning involves minimum task engagement aimed at a passing grade, Smith and Colby (2007) offer that a deep approach to learning involves an intention to understand and impose meaning. Here, students focus on relationships between various aspects of the content, formulate hypotheses about the structure of the problem or concept, and relate more to obtaining an intrinsic interest in learning and understanding. Tagg (2003) builds on this idea by remarking how deep learning is

fundamentally one of the larger goals of higher education and advocates for practices that foster this outcome.

Academic determination. Similar to Seligman's (2011) component of *accomplishment* in well-being theory, academic determination contains four aspects crucial to thriving academically: (1) investment of effort, (2) self-regulation, (3) environmental mastery, and (4) goal-directed thinking (Schreiner, 2010c). These processes encompass the attitudes and behaviors that empower students to persevere through difficult academic situations and endure challenges associated with attaining academic goals (Schreiner, 2010c). This is accomplished through students' emphasis on goal setting, their ability to regulate their own learning processes, and time and resource management (Schreiner, 2013). Self-regulated learning, hope, environmental mastery, and effort investment are the theoretical foundations of this area of thriving that, when applied, motivate students toward academic determination.

Self-regulated learning concerns the beliefs students have regarding their own ability to determine if academic material has been comprehended sufficiently, as well as strategies for actively constructing meaning out of material that was assigned (Schreiner, 2010c). Self-regulated learners understand how different learning strategies work better for some assignments than for others, set realistic academic goals, understand the effort required to reach such goals, and adapt their behavior to engage with and overcome academic obstacles in order to attain academic success (Lichtinger & Kaplan, 2011; Schreiner, 2010c; Pintrich, 2000, 2004; Pintrich, Marx & Boyle, 1993). Pintrich (2004) outlines four central assumptions of self-regulated learners that weave together to form this sub-element of academic determination: (1) learners can potentially monitor, control,

and regulate certain aspects of their own cognition, motivation, and behavior as well as some features of their environments; (2) learners are viewed as active participants in the learning process (they construct meaning from the external environment *and* their own minds); (3) there is some type of goal, criterion, or standard against which comparisons are made in order to assess whether the learning process should continue as is or if some type of change is necessary; and (4) learners' self-regulation of their cognition, motivation, and behavior that mediate the relations between the person, context, and eventual achievement directly influences achievement and learning. Because of these assumptions, self-regulated learners feel responsible and in control as they plan their academic goals, monitor their progress in this pursuit, adjust their effort if necessary, and determine efficient and effective strategies for realizing their curricular objectives.

Hope is described as "the process of thinking about one's goals, along with the motivation to move toward those goals (agency), and the ways to achieve those goals (pathways)" (Snyder, 1995, p. 355). Students with high levels of hope do not merely envision their goals, they employ agency thinking, or the belief that they can and will accomplish their goals, along with discerning what pathways or strategies might best get them there. As such, hope is a combination of *willpower* and *waypower* (Papantoniou, Moraitou, Dinou, & Katsadima, 2013). It is not as an emotion, but a dynamic cognitive motivation system (Snyder et al., 2002). Hope is a theme throughout a variety of student success outcomes. Snyder et al. (2002) demonstrated the impact on student success through a 6-year longitudinal study with 213 students. Their research showed that, even after controlling for academic admission scores, the level of hope students had predicted their cumulative GPA and graduation. Similarly, results from a study by Chang (1998)

indicated students with high levels of hope had higher problem-solving skills and less disengagement strategies (e.g., social withdrawal, self-criticism) than students with lower levels of hope when confronted with stressful academic situations.

Expressed as a sense of control and confidence over the events in one's life (Ryff, 1989), environmental mastery is also reflective of an academically thriving student. When facing challenges or academic obstacles, students experiencing high levels of environmental mastery feel confident in their ability to take the appropriate course of action to reach success. As the academic stresses of a college experience are often abundant, environmental mastery indicates an ability to cope with these trials (Ryff, 1989). A student's awareness of this ability draws on similarities to self-efficacy (Bandura, 1977). This can be seen in Chemers, Hu, and Garcia's (2001) study of 256 first-year students positing that high academic self-efficacy was strongly related to academic performance and adjustment to college. This reinforces Ryff's (1989) notion that individuals with high environmental mastery can manage their environment, control a complex array of activities, make effective use of surrounding opportunities, and have the ability to choose or create contexts suitable to personal needs and values. In comparison, individuals with low environmental mastery have difficulty managing everyday affairs, feel unable to change their surroundings, are unaware of opportunities, and lack a sense of external control (Ryff, 1989).

Finally, Schreiner (2010c) describes thriving college students as intentional in how they perceive and invest their effort. Similar to Dweck's (2006) idea of a growth mindset, thriving students learn to attribute their failure to a lack of effort or to effort expended on the wrong tasks, and they believe their hard work and determination can

ultimately impact their academic success (Schreiner, 2010c). This is evidenced in Robbins et al.'s (2004) meta-analysis aimed to determine the factors most predictive of GPA. Their results indicate that academic self-efficacy and achievement motivation are the two best predictors for increases in GPA (estimated true correlations (ρs) were .496 and .303, respectively). In opposition to students who learn what to do to "get the grade" by taking classes representing the path of least resistance toward a degree, academically thriving students engage in the learning process by understanding effort is not a sign of weakness, but of determination toward one's goals (Schreiner, 2010c).

Intrapersonal Thriving

The intrapersonal domain of thriving fills a void in the college student success literature by expanding upon the common academic and social paradigm of successful experiences. Though engagement in academic and social areas are vital, they omit a central element to holistic success: factors focusing on the inner development and well-being of students. Schreiner (2010a) posits that thriving requires the development of healthy attitudes toward self as well as toward the learning process. The inclusion of such elements addresses a need articulated by Astin et al. (2011) that, while higher education "continues to put a lot of emphasis on test scores, grades, credits, and degrees, it has increasingly come to neglect its students' 'inner' development—the sphere of values and beliefs, emotional maturity, moral development, spirituality, and of self-understanding" (p. 2). Positive perspective supplements this inattention toward the intrapersonal domain of success often seen in educational research.

Positive perspective. The positive perspective factor represents a thriving student's outlook on life. This outlook includes not merely an optimistic view, but viewing reality honestly in order to cope with what is real versus what is expected (Schreiner, 2010a). This factor is congruent with portions of Seligman's (2011) well-being theory, mainly the component of *positive emotion* representative of "the pleasant life" (p. 16). Students with positive perspective are able to observe life in a big picture way or with a long-term view, allowing them to experience positive emotions more frequently. This leads to higher levels of satisfaction with the college experience (Schreiner, Pothoven, et al., 2009). Optimism is a defining trait of positive perspective. Seligman (2011) articulates this disposition as an optimistic explanatory style, highlighting the learned ability to see bad events as temporary, changeable, and local.

Additional research on optimism by Carver, Scheier, Miller, and Fulford (2009) also forms the theoretical foundation for this factor by highlighting that optimism is an exertion of cognitive focus associated with developing well-being and coping skills, both elements predictive of positive mental health. Built from expectancy-value theories, optimism assumes behavior reflects the pursuit of goals. These goals are desired states or actions and people aim to fit their behaviors to what they see as desirable (Carver et al., 2009). In other words, the more important a goal, the greater its value and the stronger the related behavior will manifest to realize the goal.

Some scholars studied the role of optimism in higher education, discovering links to features of student success. In a study of 89 first-year students, Brissette, Scheier, and Carver (2002) found optimism interrelated to positive student outcomes in the form of adjustment and well-being. Their results indicated that greater optimism in students was

associated with smaller increases in stress and depression and greater perceived social support when compared with less optimistic students. Additionally, a study of 353 students by Burris, Brechting, Salsman, and Carlson (2009) found that optimism was one of the best predictors of psychological well-being and lower levels of psychological distress in college students.

Through an optimistic view, students with positive perspective keep trying and remain confident of their ability to achieve their goals and persevere in the face of challenges (Schreiner, 2010a). Similarly, thriving students expect good things to happen and reframe negative events into learning opportunities. As a result, they tend to be more satisfied with their lives and enjoy their college experience to a greater degree (Schreiner, 2013). Schreiner (2010a) sums up the idea in stressing that this perspective is not a "naïve worldview that expects everything to turn out okay, nor is it an overly optimistic view of self that is unrealistic or arrogant. Rather, a positive perspective is a way of viewing reality and proactively coping with it" (p. 5).

Interpersonal Thriving

The relationships students form in college have great influence on their success. Although friends play a valuable role in shaping positive life outcomes for students, the interpersonal domain of thriving extends beyond friendships to encompass a deeper connection to their college campus. Students who interpersonally thrive have the ability to envision new perspectives, appreciate differences, initiate relationships, and see their social milieu as an opportunity to learn from peers. This sense of community combined with a desire to make a difference in the world are encapsulated in the factors of social connectedness and diverse citizenship (Schreiner, 2010b).

Social connectedness. The social connectedness factor is an element of the student experience woven together by relationships and community. Similar to the *relationships* element of Seligman's (2011) well-being theory and the *positive relationships* element of authentic happiness theory (Seligman, 2002), social connectedness is influenced by the actions and emotions concentrated in students' relationships and social lives. Likewise, Ryff and Keyes's (1995) positive psychological functioning construct of *positive relations* describes social connectedness as the need students have to cultivate and maintain meaningful connections in college. Seligman (2011) noted this in identifying that positive human emotion is largely social and relationship oriented. This is evident in a portion of the qualitative interviews from the original national thriving study, where students might have been earning high grades, but if they did not have rewarding connections with others on campus they felt something was missing in their lives (Schreiner, 2010b). The presence of healthy relationships in students' lives is the first half of the social connectedness factor while sense of community on campus is the second half (Schreiner, 2010b).

Students' sense of community represents the feeling that they are part of the larger campus community (Lounsbury & DeNeui, 1995). They recognize that they are important to others on campus, they have the ability to contribute to a community of learners, and they can work with others on campus toward important goals (Schreiner, 2010b). In line with traditional social-academic models of student success, the more students recognize how they connect to the community, the higher their integration is into the fabric of campus (Braxton et al., 2004). This is a sentiment echoed in Bean's (2005) research that observed the need to recognize that social connectedness is important for

retention and the value of interventions that foster such connections. Developing a sense of community is also important for promoting sense of belonging in students, a factor predictive of student success based on environmental influences from a students' community (Strayhorn, 2012). The psychological effect of feeling like one belongs is perhaps more important for students than actually integrating into social spheres on campus (Hurtado & Carter, 1997). Together, relationships and community represent well what Braxton et al. (2004) labeled *communal potential*, a factor illustrative of students' beliefs that their community shares similar values, principles, and goals. Further, these elements can be impactful in sustaining students through difficult challenges associated with their college experience (Schreiner, 2010b).

Diverse citizenship. Schreiner (2010b) distinguishes an important component of thriving in stating it is not just about oneself, but what one does for others. In this regard, diverse citizenship is based on valuing the differences in others combined with active participation with others to make the world better. This factor of thriving joins together concepts of citizenship (Tyree, 1998), appreciation of differences in others (Fuertes et al., 2000), and a growth mindset (Dweck, 2006) that perceives human behavior as malleable with effort (Schreiner, McIntosh et al., 2009). Components from the Social Change Model of Leadership Development (Astin et al., 1996) and the Miville-Guzman Universality-Diversity Scale (Miville et al, 1999; Fuertes, et al., 2000) theoretically informed the construction of this factor. Measures related to citizenship and diversity have shown to positively predict certain college student outcomes. Schreiner, Pothoven, et al. (2009) provided evidence that higher diverse citizenship scores have the ability to predict a greater intent to persist in students. Similarly, a study by Gurin, Dey, Hurtado,

and Gurin (2002) shows that the actual experiences students have with diversity consistently and meaningfully affect important college learning and democracy-related outcomes (e.g., active thinking, intellectual engagement, citizenship engagement, perspective-taking). In sum, diverse citizenship is a "combination of openness and valuing of differences in others, along with a desire to make a contribution to one's community and the confidence to do so" (Schreiner et al., 2012, p. 8).

Unlike student success research that *singularly* underscores students' effort, cognitive investment, involvement with peers, time with friends, engagement with community, or academic engagement, thriving is an approach that simultaneously measures three central areas associated with the college student experience: academic engagement and performance, interpersonal relationships, and intrapersonal well-being. In this way, the thriving construct offers a holistic assessment of college student success. This is evident in Schreiner's (2018) depiction of how a thriving student is perceived:

> Thriving students are engaged in the learning process, invest effort to reach important educational goals, manage their time and commitments effectively, connect in healthy ways to other people, are optimistic about their future and positive about their present choices, are appreciative of differences in others, and are committed to enriching their community. Thriving students are functioning at optimal levels and are getting the most out of their college experience because they are psychologically engaged as well as engaged in educationally productive behaviors. (p. 12)

Thriving offers a framework of student success that takes into consideration numerous established student success theories. In doing so, it offers a well-rounded and more complete picture of college student success.

Summary of Literature Review

Student success, when taking into consideration students' holistic experience (academic, interpersonal, and intrapersonal factors), is encapsulated by the construct of thriving. Thriving also undergirds the mission of living-learning communities as evidenced in the literature. These communities offer a space where academic, social, and deeper life interactions with faculty, staff, and peers are zealously promoted. Measuring these interactions specifically with living-learning community students offers a more comprehensive understanding on how such interactions truly influence student success. Sriram, Haynes, Cheatle, et al. (2020) propose extending their research by examining how interactions impact outcome variables of interest. The current study takes up this charge. The next chapter covers the methodological procedures and details of how this study examines the influence of interactions on student thriving.

CHAPTER THREE

Methodology

Overview of Chapter

This chapter describes the methodological procedures used to investigate the role of various student interactions for college student thriving. Specifically, this study examines if and how academic, social, and deeper life interactions with peers, faculty, and staff influence thriving for college students in living-learning communities. Structural equation modeling (SEM) was utilized as the primary statistical technique due to its ability to test causal models that explain if and how the selected variables are in relationship with one another. SEM is also advantageous because it captures both indirect and direct relationships. This study used a non-experimental design, examining the relationships among variables rather than implementing a treatment or comparing groups (Sriram, 2017). This chapter offers methodological details of the study, including an initial theoretical path model, description of the instruments utilized, identification of the study's variables, justification for the use of SEM as an analytical procedure, and information regarding data collection and participants.

Population and Sample

The theoretical population for this study was undergraduate college students with experience in a living-learning community at a four-year institution of higher education. The utilized population—participants included after considering practical limitations—was undergraduate students in living-learning communities on eight large research

university campuses (N = 4,864) who were willing to participate in the study. All participants resided in an on-campus living-learning community during the fall 2019 semester in which data was collected. If a student did not live in a living-learning community during this time their data was not used in the final sample for analysis.

From the utilized population, 1,322 students returned survey data, a 27.2% response rate. This response rate is common for web-based and email surveys (Hamilton, 2009; Saldivar, 2012). Survey nonresponse, when occurring randomly in a sample, appears not to have a major impact on bias (Curtin, Presser & Singer, 2000). In fact, Groves (2006) acknowledges the lack of empirical support for the notion that lower response rates de facto produce estimates with high nonresponse bias. From the returned surveys, n = 903 observations were used in the final analysis. Additional information on how usable observations were obtained is in the Data Screening section below.

Participants were college students aged 18 to 30 years, predominately first-year classification (73.9%), female (70.3%), and White/Caucasian (64.4%). Table 3.1 below summarizes the demographic characteristics of the final sample. Wang and Wang (2012) highlight the lack of consensus in the literature regarding an appropriate sample size when using SEM for analytic procedures. With the suggestion of Tabachnick and Fidell (2013), the sample in this study was well above the minimum N = 150 level. A larger sample size, however, allowed for a more normal data structure which in turn lent itself to more generalizability (Sriram, 2017).

Table 3.1

Demographic Characteristics of Final Dataset (n = 903)[a]

Variable	Number	Total %
Gender		
Male	220	28.1%
Female	550	70.3%
Trans	1	0.1%
Prefer not to answer	11	1.4%
Classification		
First-year	579	73.9%
Sophomore	125	15.9%
Junior	49	6.3%
Senior	30	3.8%
Graduate Student	1	0.1%
Race/ Ethnicity		
American Indian/ Alaska Native/ Native Hawaiian	8	1.0%
Asian/ Asian American/ Pacific Islander/ South Asian	77	9.8%
Black/ African American	49	6.3%
Hispanic/ Latino(a)(x)	82	10.5%
Multiracial/ Multiethnic	42	5.4%
White/ Caucasian/ European American	505	64.4%
Other and No Answer	21	2.7%
First Gen Student		
First-Gen	116	14.8%
Transfer Student		
Transfer	54	6.9%
International Student		
International	16	2.0%

[a] *Based on participant information provided; therefore, totals do not sum to 100%*

Data Collection

This study utilized data from undergraduate students residing in living-learning communities during the fall of 2019. Two criteria were employed for this study's population parameters. The first criterion for data collection was limiting the scope to living-learning communities at research (doctoral) institutions. Two of the three Carnegie classifications for research status were used as delimiters: Very High Research (R1) and

High Research (R2). The second criterion for data collection consisted of sampling from institutions with more than 5,000 students enrolled. Regarding size, Carnegie classifications denote "medium" institutions as 3,000 – 10,000 students and "large" institutions as 10,000+ students. The parameter of 5,000 students ensured participants experience the effects of a relatively larger institution.

These controls were set for two reasons. First, similar to the "Rule of 150" by Dunbar (1992), the larger a campus is in terms of enrollment, the greater the need for students to adopt sensemaking practices. With a larger campus comes more complexity, and living-learning communities provide an incubator for sensemaking to be honed within the larger whole of these institutions. Second, research universities, and more specifically R1 and R2 institutions, offer a wider national representation of the living-learning community scene. The report of findings from the 2007 National Study of Living-Learning Programs (Inkelas, Brower, & Associates, 2008) signified that out of the 49 institutions included, 40 were considered research universities. As most programs are encompassed within these two groupings of institutional criteria, a focus on large R1 and R2 institutions offers the most comprehensive representation of the living-learning community experience.

Upon approval from the university's Institutional Review Board, I began solicitation of partners to aid in survey distribution. Through personal networks and connections from individuals in the field, I distributed a proposal to individuals at 40 universities fitting the above two criteria. Of those 40 recipients, eight agreed to distribute a survey measuring interactions and thriving to living-learning community students on their respective campuses. Institutional characteristics from these institutions

can be found in Table 3.2. The survey was distributed via email, with initial contact made in early November 2019. Follow-up reminder emails were sent to students in mid- and late-November. All communication was sent directly by individual partners to students, avoiding the need to send lists of email contacts and further protecting identities of participants. The survey was online and included a clear informed consent for participants. The survey instrument had a total of 69 items and was estimated to take less than 10 minutes to complete.

Table 3.2

Characteristics of Participating Institutions (n = 8)

Variable	Number	Total %
Carnegie Classification		
Doctorate-granting Research, R1 (very high research activity)	7	87.5%
Doctorate-granting Research, R2 (high research activity)	1	12.5%
Type of Institution		
Public	7	87.5%
Private	1	12.5%
Institutional Size (enrollment)		
Max	67,929	
Min	17,059	
Mean	36,239	

Personal identifying information such as participant names were not collected for this project. Data that was collected remained confidential and was not shared with anyone not associated with this project. Any publications from this study will reference group data and will not reveal information on individual respondents. Data was collected through an online survey only. A secure password-protected website was used to collect data and a password-protected online storage space was used to house data files. Data

was only downloaded onto the researcher's university computer for analysis and this computer was locked when not in use and was kept in an office with locked doors.

Data Screening

All participating students were asked to complete the online survey utilized in this study. Collected data was downloaded into Microsoft Excel spreadsheet format and then imported into IBM SPSS 26.0 for organization and variable analysis. Final SEM analysis was conducted through the SPSS AMOS software version 26.0. Per IRB stipulations for this study, if students were under the age of 18 years or if they did not give consent their cases were removed. The variables were appropriately coded once the data set was moved into SPSS, including necessary reverse scoring for variables (SC1, SC2, SC3, SC6). From there, the data screening process addressed issues related to missing data, outliers, and normality.

Missing Data

Allison (2003) notes that virtually all methods of statistical analysis are plagued by problems with missing data, and structural equation modeling is no exception. Conventional methods for handling missing data (e.g., listwise, pairwise deletion) leave much to be desired, such as biased estimates of parameters or their standard errors (or both). Per SEM requirements, complete data (i.e., no missing observations) is needed for all variables under study. Advanced or refined methods (e.g., maximum likelihood, multiple imputation) are more commonly used missingness algorithms applied when using SEM analysis.

Dong and Peng (2013) note, though the proportion of missing data is directly related to the quality of statistical inferences, there is no established cutoff from the literature regarding an acceptable percentage of missing data in a data set for valid statistical inferences. Schafer (1999) posits a 5% guideline, Bennett (2001) argues bias is introduced when above 10% missingness, and Tabachnick and Fidell (2013) maintain that missing data procedures and missing data patterns have greater impact on research results than does the proportion of missing data. As such, the amount of missing data is not the sole criterion by which a researcher assesses the missing data problem (Dong & Peng, 2013).

Exploration of the missing data for this study began with an initial sample size of 1,322 cases. This was reduced to 1,098 cases due to a nonresponse issue where no items were answered (the survey was closed after the informed consent page or the first page of questions). An additional 121 cases were removed because respondents did not answer enough items to warrant inclusion. This omission was necessary because missingness procedures would introduce an inappropriate amount of bias if included in final case counts. This resulted in a reduced sample size of 977 cases with sufficient item response totals to suitably impute missingness while also maintaining confidence intervals and appropriately preserving type I error rate.

An analysis of missing value patterns, descriptive statistics, and a Missing Value Analysis (MVA) were performed to identify the extent of missingness in the data set. First, Little's Missing Completely at Random (MCAR) test was conducted. Results ($\chi 2(2402, N=977) = 2293.082$, $p < .944$) indicate that data were missing at random. However, data output in SPSS from a Pattern Analysis verified that data was missing systematically

in some way. This was demonstrated through observing slight monotonicity, or a pattern of decreasing values across the sequence of variables, in the data set. The only pattern observed demonstrated a correlation between missingness and item location. Items toward the end of the survey were less likely to be answered by respondents, a strong indication of survey fatigue. This was pertinent for roughly 19% of the 977 cases available for missingness imputation. This missingness was observable for demographic variables, which were at the end of the survey. These variables cannot be imputed as, for example, gender and race cannot be predicted from the other variables in this study. However, as no demographic variables are used in the final analysis, cases with missing demographic information did not warrant omission. No other patterns were observed in the usable data, allowing missing data to be classified as missing at random (MAR). Missing at random indicates a systematic relationship between the propensity of missing values and the observed data, but *not* the missing data.

Meeting the assumption of MAR, the data was then ready for missingness procedures. Expectation Maximization (EM), a maximum-likelihood based missing data method (Dong & Peng, 2013) was applied to estimate parameters for missing values in the data set. The EM algorithm iteratively cycles the data between two alternating steps (Bishop, 2006). It first estimates the probability distribution over completions of missing or latent data, called the estimation (E) step. Next, it optimizes model parameters to best explain the data using these completions, called the maximization (M) step. The EM algorithm process is a suitable approach for missingness in the presence of latent variables (Bishop, 2006). It also consistently generates unbiased parameter estimates compared to traditional techniques (Cheema, 2014). Furthermore, the adequate sample

size in this study helps address bias in the variance of parameter estimates present when using a maximum likelihood process (Yuan, Yang-Wallentin, & Bentler, 2012). As demographic data is not used as input or environment variables in this study, missing values from these items did not warrant deletion.

Items from the same subscale typically have higher correlations and predictive values when using EM than items from different subscales. Therefore, new iterations of the data set were computed for each of the 13 subscales in this study during the procedure. Subscales were then coalesced into a final data set in SPSS that had no missingness and could be tested for normality and outliers.

Outliers and Normality Assumptions

SEM assumes multivariate normality (Ullman, 2013), and data was screened for multivariate outliers through a normality distribution examination based on Mahalanobis distance and *z*-scores. Allowing outliers to remain in a data set through analysis can lead to significant Type I and Type II errors. Per guidelines from Stevens (2002) and Mertler and Vannatta (2010), an absolute value of 4.0 was utilized as a *z*-score threshold. Utilizing this cutoff value, 21 univariate outliers were eliminated from the dataset. Mahalanobis distance was then calculated to detect outliers. Cases exceeding the chi-square critical value of $p < .001$ (Tabachnick & Fidell, 2013) were removed (n=53). Upon completion of outlier testing, n=903 cases remained. These cases were then assessed for appropriate skewness and kurtosis.

Scholars vary on their considerations of normality regarding distribution shape. Utilizing the recommendations from Byrne (2016) and Hair, Black, Babin, and Anderson (2010), skewness and kurtosis statistics were evaluated in SPSS under the conditions of -

2 to +2 values. Four variables (*SIP1, SIP2, AIP2,* and *DC6*) had mild negative skewness and severe positive kurtosis. One variable (*SIP3*) had mild negative skewness and slight positive kurtosis. Seven variables (*SIFSG2, SIFSG3, AIP1, AD1, AD3, AD5,* and *SC4*) had slight positive kurtosis (with acceptable skewness). Kolmogorov-Smirnov and Shapiro-Wilk tests of normality confirmed these deviations with significant *p*-values for the variables mentioned, suggesting departure from normality based on the data. Additionally, viewing histograms of response frequencies provided further confirmation.

All of these variables demonstrating skewness and kurtosis outside of the -2 to +2 range were transformed using natural log and square root methods. The variables were first reflected to create a constant. With 6 as the maximum response, this was done through the equation $(1 + 6 - x)$, where x represents each variable under consideration. A natural log formula, *Ln(k)*, and a square root formula, *Sqrt(k)*, was also applied, where *k* is the reflected variable. Both transformation techniques were used in order to choose the function that allowed results closest to normality (i.e., a value of 0).

The transformations were successful for all 12 of these variables in bringing the distribution into acceptable range. In all cases, the natural log function outperformed the square root function. All variables were re-reflected after these transformations to avoid being forced to reverse the sign value direction of interpretation in later analysis. As such, these variables were recoded as *log_SIP1_REF, log_SIP2_REF, log_AIP2_REF, log_DC6_REF*, *log_SIP3_REF*, *log_SIFSG2_REF, log_SIFSG3_REF, log_AIP1_REF, log_AD1_REF, log_AD3_REF, log_AD5_REF,* and *log_SC4_REF* for further analysis.

Collinearity, Homoscedasticity, and Variance Assumptions

Assumption tests for collinearity were conducted in SPSS using output levels of *Tolerance* < .01 and *Variance Inflation Factor (VIF)* > 10. No variables demonstrated violation of collinearity assumption based on these cutoffs. An assumption test demonstrating that the variance of any one variable was no more than 10 times the variance of any other variable was then ran. This assumption was not violated. Homoscedasticity tests also did not violate the assumption as shown in a scatterplot (residuals and predicted values) observation with a Loess line. No additional cases needed to be deleted after these assumption tests, leaving $n = 903$ for analysis.

Instrumentation

Two independent instruments were utilized for the current study. For each instrument, aspects of scale creation, background, and intended use will be discussed. Additionally, information on the validity and reliability of each scale will be covered in detail. The *Standards for Educational and Psychological Testing* manual (2014) describes validity as the degree to which evidence and theory support test score interpretation and usage through the process of accumulating verifiable proof to produce a sound scientific basis for such support. Essentially, validity is a body of evidence gathered to affirm or refute the interpretation and use of scales and their respective scores. Porter (2011) calls into question the validity of many college student surveys due to the reliance on self-reporting. In order to address the two larger critiques Porter (2011) raises, validity was established through assessing evidence in both *design* and *evaluation* of the instruments used and the interpretation of results.

As validity is a body of evidence, there are not *types* of validity, but rather aspects of evidence which can be assessed. Sriram (2017) highlights four central and common aspects of validity that can assist in this pursuit: Content validity, Criterion-related validity, Construct validity, and Conclusion validity. Sriram (2017) summarizes these in the following ways: *Content validity* is a facet of validity that focuses on whether items measure what they are supposed to measure; *Criterion-related validity* (also known as concurrent validity) is validity based on a comparison of items to other similar items; *Construct validity* is a more sophisticated and statistical form of validity that is concerned with the relationship of a variable to other variables; *Conclusion validity* is the extent to which the conclusions one draws from scale scores are logical and justifiable based upon the information gathered.

Academic, Social, and Deeper Life Interactions

Student interactions were examined using a series of scales created by Sriram, Haynes, Cheatle, et al. (2020) which were conceptually derived from the work of Sriram and McLevain (2016). Collectively referred to as *The Academic, Social, and Deeper Life Interactions Instrument*, each scale represents a quantified variable measuring students' satisfaction of interactions with different constituents by asking participants to rate, through a six-point Likert-type scale, their level of agreement with a declarative item. Within each interaction category of the instrument (academic, social, deeper life), distinct scales measure the extent of these interactions with three unique constituent groups: peers, faculty, and staff. Through an exploratory factor analysis, Sriram, Haynes, Cheatle, et al. (2020) culled the original list of variables down to the following eight factors: academic interactions with peers, academic interactions with faculty, academic

interactions with staff, social interactions with peers, social interactions—greetings with faculty/staff, social interactions—time with faculty/staff, deeper life interactions with peers, deeper life interactions with faculty/staff.

In Sriram, Haynes, Cheatle, et al.'s (2020) original study, the internal reliability of each scale (totaling 61 items) was deemed appropriate for usage as Cronbach's alpha produced scores above .7 for all scales. Re-testing on a sample of almost 1000 students, Sriram, Weintraub, Murray, Cheatle, Haynes, and Marquart (*in press*) found the instrument to have excellent reliability with alpha scores for each scale between .91 and .97. Using the same data set as Sriram et al. (*in press*), I performed a secondary analysis for the current study. The original 61 items were refactored for the purpose of achieving scale parsimony and clarifying interrelationships among interaction variables.

The first step in in this process was building a factor model using AMOS software and uploading Sriram et al.'s (*in press*) previously collected data (n = 951). I then conducted a confirmatory analysis to observe standardized regression weights and model fit, seeking thresholds of CFI > .95 and RMSEA < .06. All scales had reasonable parameters, and the model had a CFI = .829 and an RMSEA = .080. Initial removal of factor loadings below .80 resulted in a 41-item instrument with a CFI = .908 and an RMSEA = .072. I then altered item structure based on reliabilities (Cronbach's alpha scores) for each scale, omitting items where appropriate, and, in conjunction with theoretical agreement, that were above .95. Sriram (2017) notes that alphas this high are worthy of consideration for removal to shorten the scales. This process resulted in a 34-item instrument with decent model fit: CFI = .926 and RMSEA = .070.

As Sriram, Haynes, Cheatle, et al.'s (2020) previous study found that students' did not distinguish between faculty and staff when experiencing deeper life interactions, I combined faculty and staff variables for this factor. Students do not distinguish the differences because interactions with either constituent are influential in this area. In other words, while it matters that students have deeper life interactions, it does not matter with whom. Adjusting for reliability, this allowed for a final Interactions instrument with excellent model fit indices from the factor analysis (CFI = .957; RMSEA = .059). Reliability estimates for the shortened Interactions scale remained strong for use in the current study: social interactions with peers (3 items, α = .93), social interactions—greetings with faculty/staff (3 items, α = .86), social interaction—time with faculty/staff (2 items, α = .91), academic interactions with peers (4 items, α = .90), academic interactions with faculty (4 items, α = .93), academic interactions with staff (4 items, α = .95), deeper life interactions with peers (4 items, α = .92), deeper life interactions with faculty/staff (4 items, α = .90). Responses to each item for each scale are indicated on a 6-point Likert scale (1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = slightly agree, 5 = moderately agree, 6 = strongly agree). Complete scale items can be seen in the description of variable codes (see Table 3.3).

Validity of The Academic, Social, and Deeper Life Interactions Instrument

To measure content validity, Sriram, Haynes, Cheatle, et al. (2020) conducted a principal components analysis to determine if the interaction survey items constructed, based on their review of literature, were indeed measuring the list of latent variables related to academic, social, and deeper life interactions. Through this analysis, the authors measured shared variability through communalities (average value of .75), eigenvalues

(only retained if greater than one), and a rotated component matrix with an orthogonal rotation, determining sufficient evidence to move forward with the eight factors. Based on established literature and previously developed items capturing student interactions, the authors established criterion-related validity. This was achieved primarily through the consideration of Sriram and McLevain's (2016) previous work measuring interactions, in addition to earlier scholarship in the area of student interactions (e.g., Kuh & Hu, 2001; Cotten & Wilson, 2006; Soldner & Szelenyi, 2008). These works also served as a foundation that the authors built from in extending student–faculty interaction to include staff and peers. Construct validity was sought through assessing how the measured variables were in relation to one another. This resulted in certain variables coalescing in their final analysis. Namely, deeper life interactions with peers were an independent latent variable, but faculty and staff deeper life interactions were combined. Additionally, scales measuring social interactions with faculty and staff were not independent. Instead, Sriram, Haynes, Cheatle, et al. (2020) found in their factor analysis that faculty and staff were often blended together and then separated based upon the type of social interaction (indicated in the initial model by greetings versus time). Finally, conclusion validity was initially demonstrated by suggesting the importance to observe (and measure) academic interactions separately with peers, faculty, and staff, as well as to measure social interactions in ways that coalesce these groups depending on the types of interaction (i.e., greetings and time). Sriram et al. (*in press*) also found that these interactions predict a large portion of students' psychological sense of community. In sum, the validity evidence for the interactions instrument was sufficient for use in the current study.

College Student Thriving

As a student success outcome, college student thriving was examined using the *Thriving Quotient* ™ (TQ). Thriving was the central dependent variable in the study, but this study examined the five thriving factors instead of an overall thriving score. In short, specific student interactions were confirmed or rejected as having a significant relationship with the five factors of thriving through a structural model. Nelson (2015) noted that such an approach (parceling the thriving construct into its respective factors) reflects findings in the literature indicative of relationships between certain outcomes and the factors of thriving. Thriving is considered the ultimate endogenous latent variable in the model (Byrne, 2016). This implies that the initial model predicted thriving to be influenced either indirectly or directly by the independent or exogenous variables in the model (e.g., academic interactions with peers).

The TQ was originally developed as a 198-item instrument derived from over 10 existing instruments or scales (Schreiner, McIntosh, et al., 2009). After a 2008 pilot study of students from 13 institutions (N = 2,474), the authors eliminated 128 items leaving a 70-item consolidated TQ. After an exploratory factor analysis (to determine structure), focus groups on five campuses, and item rewording and restructuring, Schreiner, McIntosh, et al. (2009) conducted a national study (N = 6,617) at 27 public and private colleges across the United States with a refined, 32-item instrument (demonstrated internal reliability of $\alpha = .91$). Later revision yielded a 25-item instrument that kept its five-factor structure through another confirmatory factor analysis with demonstrated reliability of $\alpha = .89$ (Schreiner, Edens, & McIntosh, 2011). Numerous and ongoing

revisions of the TQ have transpired since its inception in 2008. For the current study, the 2018 rendition of the TQ will be used.

The TQ instrument (2018 version) used for this study was a 24-item measure with strong internal reliability (α = .89). Reliability estimates for each factor scale on the 2018 TQ are as follows: Engaged Learning (4 items, α = .87), Academic Determination (6 items, α = .82), Social Connectedness (6 items, α = .83), Diverse Citizenship (6 items, α = .79) and Positive Perspective (2 items, α = .78). Items utilize a 6-point Likert-type scale to measure responses (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, 6 = strongly agree). Complete factor items can be seen in the description of variable codes (see Table 3.3).

Validity of The Thriving Quotient ™

Content validity for the TQ has been obtained through the numerous studies appropriately connecting scores on the instrument to specific outcomes such as satisfaction or learning gains (Schreiner, Pothoven, et al., 2009). Items have consistently shown to measure flourishing in the academic, social, and intrapersonal domain of students. Criterion-related validity has been determined through the numerous scales and instruments consulted in creating items for the TQ. The list of scales informing item creation includes: Engaged Learning Index (Schreiner & Louis, 2011), Academic Hope Scale (Snyder, Lopez, Shorey, Rand, & Feldman, 2003), Academic Self-Efficacy Scale (Chemers, Hu, & Garcia, 2001), Perceived Academic Control scale (Perry, Hladkyi, Pekrun, & Pelletier, 2001), Dweck's (2006) mindset assessment, Psychological Well-Being Questionnaire (Ryff & Keyes, 1995), Psychological Sense of Community on Campus Index (Schreiner, 2006), citizenship subscale from the Socially Responsible

Leadership Scale (Tyree, 1998), Miville-Guzman Universality-Diversity Scale (Fuertes, Miville, Mohr, Sedlacek, & Gretchen, 2000), Subjective Well-Being Scale (Diener, Oishi, & Lucas, 2009), Life Orientation Scale (Scheier & Carver, 1985), Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006), and the metacognitive self-regulation subscale of the Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, & McKeachie, 1993). Schreiner, Vetter, Kammer, Primrose, and Quick (2011) distinguish this aspect of validity in noting how the TQ was "constructed from public domain instruments with proven validity and reliability that were adapted for college students after input from student focus groups" (p. 15).

Schreiner, McIntosh, et al. (2009) established construct validity through a confirmatory factor analysis (CFA) indicating that the five-factor model provided an adequate fit, with $\chi 2$ (447) = 12.30 ($p < .001$), CFI = .935, and RMSEA = .043 with 90% confidence intervals of .042 to .044. All observed variables loaded on their respective latent variables (β range = .44 to .85). Finally, conclusion validity has been determined through previous and ongoing research that positions thriving as a measure of student success. In particular, scholars studying this construct clearly emphasize what thriving is and what it is not by measuring thriving against additional elements of inquiry such as spirituality, campus involvement, GPA, or psychological sense of community. In sum, the validity evidence for the thriving instrument was demonstrated and sufficient for use in the current study.

Coding for Variables Under Consideration

Although both observed (directly measured) and unobserved (latent) variables were analyzed in this study, all factors are represented with a numeric designator as

needed for SEM analysis (Byrne, 2016). Codes for the variables in question in this study can be seen in Table 3.3.

Table 3.3

Latent Variable Coding

Variable Name	Variable Definition
Social Interactions with Peers	Includes the following 3 items: *There are other students at my institution I can hang out with (log_SIP1_REF); There are other students at my institution I have fun with (log_SIP2_REF); Other students at my institution are my friends (log_SIP3_REF). α = .93*
Social Interactions—Greetings with Faculty / Staff	Includes the following 3 items: *There are faculty or staff at my institution with whom I can have casual or light-hearted conversations (SIFSG1); I have positive or pleasant interactions with faculty or staff at my institution (log_SIFSG2_REF); I would feel very comfortable exchanging greetings (hello, goodbye, how are you?) with faculty or staff at my institution (log_SIFSG3_REF). α = .86*
Social Interactions—Time with Faculty / Staff	Includes the following 2 items: *I would not hesitate to hang out with faculty or staff at my institution (SIFST1); I would not hesitate to share a meal with faculty or staff at my institution (SIFST2). α = .91*
Academic Interactions with Peers	Includes the following 4 items: *There are other students at my institution I can study with (log_AIP1_REF); There are other students at my institution I can talk to about classes (log_AIP2_REF); Other students at my institution help me with my classes (AIP3); When I have a question relating to academics (course selection, resources, academic tips, etc.), I know students at my institution I can talk to (AIP4). α = .90*
Academic Interactions with Faculty	Includes the following 4 items: *There are faculty at my institution I can talk to about classes (AIF1); Faculty at my institution help me to be academically successful (AIF2); If I was struggling academically, there are faculty at my institution I can go to (AIF3); When I have a question relating to academics (course selection, resources, academic tips, etc.), there are faculty at my institution I can talk to (AIF4). α = .93*

(Continued)

Variable Name	Variable Definition
Academic Interactions with Staff	Includes the following 4 items: *There are staff at my institution with whom I can have academic conversations (AIS1); Staff at my institution help me to be academically successful (AIS2); If I was struggling academically, there are staff at my institution I can go to (AIS3); When I have a question relating to academics (course selection, resources, academic tips, etc.), there are staff at my institution I can talk to (AIS4). α = .95*
Deeper Life Interactions with Peers	Includes the following 4 items: *I feel very comfortable engaging in conversation with other students about my family and/or personal life (DLIP1); I feel very comfortable asking other students for personal advice (DLIP2); I feel very comfortable engaging in conversation with other students about what I should do with my life (DLIP3); If I was having a crisis, I know other students at my institution I can talk to (DLIP4). α = .92*
Deeper Life Interactions with Faculty / Staff	Includes the following 4 items: *I feel very comfortable engaging in conversation with faculty or staff about life's big questions (e.g., Who am I? Does God exist? What is the meaning of life? What is my purpose?) (DLIFS1); I feel very comfortable engaging in conversation with faculty or staff about what I should do with my life (DLIFS2); I have discussions with faculty or staff that cause me to examine or reflect on my own beliefs or values (DLIFS3); I have discussions with faculty or staff that cause me to examine or reflect on my role in society (DLIFS4). α = .90*
Engaged Learning (Thriving)	Includes the following 4 items: *I feel as though I am learning things in my classes that are worthwhile to me as a person (ELI1); I can usually find ways of applying what I'm learning in class to something else in my life (ELI2); I find myself thinking about what I'm learning in class even when I'm not in class (ELI3); I feel energized by the ideas I'm learning in most of my classes (ELI4). α = .87*
Academic Determination (Thriving)	Includes the following 6 items: *I am confident I will reach my educational goals (log_AD1_REF); Even if assignments are not interesting to me, I find a way to keep working on them until they are done well (AD2); I know how to apply my strengths to achieve academic success (log_AD3_REF); I am good at juggling all the demands of college life (AD4); Other people would say I'm a hard worker (log_AD5_REF); When I'm faced with a problem in my life, I can usually think of several ways to solve it (AD6). α = .82*

(Continued)

Variable Name	Variable Definition
Social Connectedness (Thriving)	Includes the following 6 items: **Other people seem to make friends more easily than I do (SC1_R); *I don't have as many close friends as I wish I had (SC2_R); *It's hard to make friends on this campus (SC3_R); I feel like my friends really care about me (log_SC4_REF); I feel content with the kinds of friendships I currently have (SC5); *I often feel lonely because I have few close friends with whom to share my concerns (SC6_R). α = .83 (*reverse scored)*
Diverse Citizenship (Thriving)	Includes the following 6 items: *I spend time making a difference in other people's lives (DC1); I know I can make a difference in my community (DC2); It's important for me to make a contribution to my community (DC3); I value interacting with people whose viewpoints are different from my own (DC4); My knowledge or opinions have been influenced or changed by becoming more aware of the perspectives of individual from different backgrounds (DC5); It is important to become aware of the perspectives of individual from different backgrounds (log_DC6_REF). α = .79*
Positive Perspective (Thriving)	Includes the following 2 items: *My perspective on life is that I tend to see the glass as "half full" rather than "half empty" (POS1); I look for the best in situations, even when things seem hopeless (POS2). α = .78*

Note. All variables assessed via the following rating scale: 1 = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = slightly agree, 5 = moderately agree, 6 = strongly agree.

Student and Institutional Variables

Specific student demographics were collected along with instrument responses. Though these are not utilized as observable variables in the initial model for this study, certain variables will be examined in later studies to determine any conditional effects in such factors (e.g., classification, race/ethnicity). These variables can be seen in Table 3.4.

Table 3.4

Observed Variable Coding

Item/Variable Name	Item/Variable Definition
Age	Slider feature in survey will allow input of exact age (18-50).
Student Classification	Includes the following options: First-year, Sophomore, Junior, Senior, Graduate Student. Coded as variable CLAS1 – CLAS5.
Transfer Status	Indicating if participant is a transfer student. Clarified in item as: *Someone who started at another college and transferred to this college?* Includes the following options: Yes, No. Coded as variable (*TRS*) - transfer: 1=yes, 0=no.
Sex	Indicating the sex of participant. Includes the following options: Man, Woman, Trans, Prefer not to answer. Coded as variable (*FEM*) - female: 1=yes, 0=no.
Race/Ethnicity	Includes the following options: American Indian/Alaska Native/Native Hawaiian, Asian/Asian American/Pacific Islander/South Asian, Black/African American, Hispanic/Latino(a)(x), Multiracial/Multiethnic, White/Caucasian/European American, Other, Prefer not to answer. Coded as variable (*WHT*) – white: 1=yes, 0=no.
First Gen	Indicating first generation student status. Clarified in item as: *Did either of your parents or guardians attend a college for any amount of time?* Includes the following options: Yes, at least one of my parents or guardians attended a college or university, No, Prefer not to answer. Coded as variable (*FGEN*) – first gen: 1=yes, 0=no.
LGBTQIA identity	Indicating LGBTQIA identification. Clarified in item as: *Do you identify yourself in the LGBTQIA community?* Includes the following options: Yes, No, Prefer not to answer. Coded as variable (LGBT) – LGBT: 1=yes, 0=no.
International Student	Indicating international status. Clarified in item as: *Are you an international student?* Includes the following options: Yes, No. Coded as variable (*INTST*) – international student: 1=yes, 0=no.

Initial Path Model

I developed an initial path model to explore how eight latent variables pertaining to student interactions contribute to thriving among students in living-learning communities. The hypothesized model illustrates the theoretical connections estimating statistically significant predictive relationships among variables derived from the scales utilized in this study. Specifically, the model represents how particular types of interactions with certain individuals might significantly influence thriving outcomes for college students. Although the thriving construct is the outcome of interest in this study, the second-order factors of thriving (Engaged Learning, Academic Determination, Social Connectedness, Diverse Citizenship, and Positive Perspective) were measured separately to more fully understand the nuances associated with the relationships among variables. The initial (hypothesized) path model is shown in Figure 3.5.

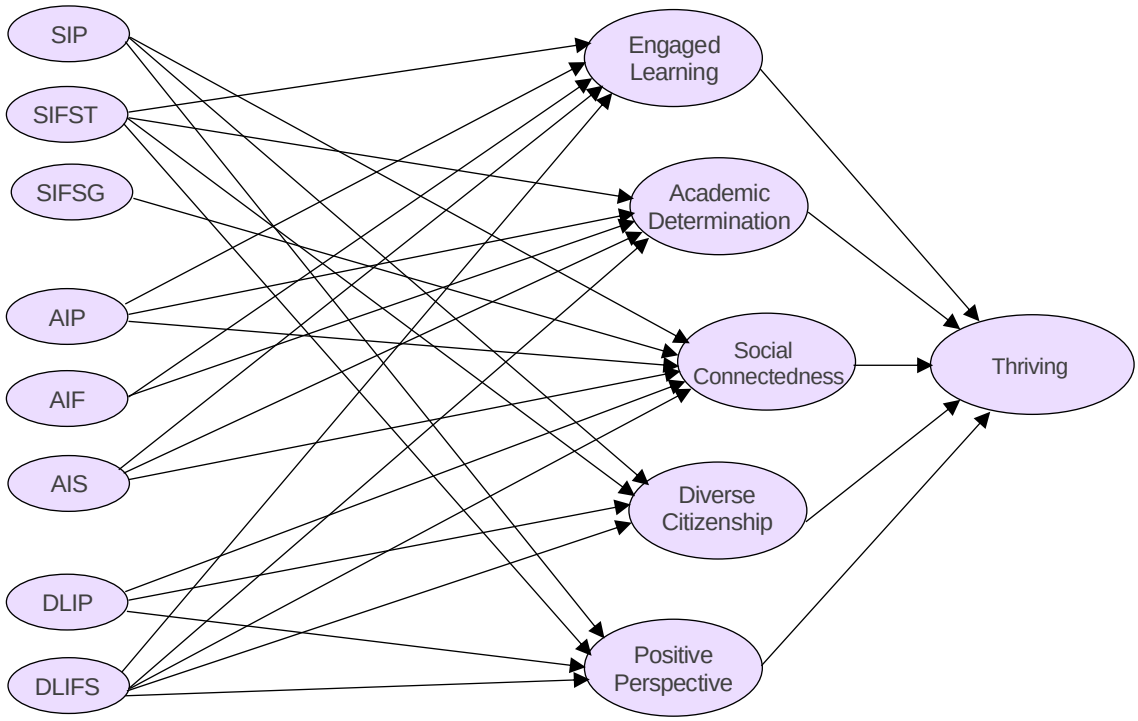

Figure 3.5. Initial Path Model

The model postulates that all eight interaction variables have a significant relationship to the thriving construct but in unique ways through its five distinct parts. These relationships were estimated based on theoretical connections from the literature covered in the previous chapter. Thoroughly reviewing existing scholarship on interactions and student success allowed me to create this empirically informed model which theorizes variable relationships through multiple pathways.

Epistemological and Ontological Assumptions

It is clarifying and helpful to preempt a conversation on procedures with a conversation on one's approach to discovering truth (Sriram, 2017). Also regarded as a philosophical worldview or research paradigm, an epistemology is concerned with providing a source for knowledge and an understanding for how legitimate and adequate that source may be. Creswell (2014) highlights an epistemological framework as a general philosophical orientation about the world and the nature of research that a researcher brings to a study. A postpositivist epistemological framework was employed for the current study. This epistemology assumes knowledge is conjectural and absolute truth can never actually be discovered; data and evidence shape the construction of knowledge; causal relationships determine the outcomes of knowledge; and, efforts for objectivity are essential to inquiry (Phillips & Burbules, 2000).

As epistemology is an understanding of what we know and how we know it, ontology regards the nature of what exists. Ontology is concerned with the nature of reality and what there is to know about the world. Essentially, one's ontology guides a response to the questions concerning whether or not there is a social reality existing independently of human conceptions and interpretations, and whether there is a shared

social reality or only multiple, context-specific ones (Ritchie, Lewis, Nicholls, & Ormston, 2013). This study assumed a realism position (as opposed to idealism) which claims an external reality exists independently of people's beliefs (Ritchie et al., 2013). Similar to the postpositivist stance taken in this study, Bryman (2016) highlights how such an ontological approach assumes that social phenomena have an existence that is independent or separate from the actors within it.

To better understand the phenomenon in question, the current study sought to test, verify, and refine the understanding of an objective reality that exists "out there" in the world regarding student interactions and the resulting impact on their success. Through the scientific method, this study started with a theory, data was collected to provide evidence to support or refute the theory, and necessary revisions were made to improve such theory (Creswell, 2014). Though this study was approached through a postpositivist lens, there is an acknowledgment that error and imperfection will always be involved with research (Creswell, 2014). In other words, it is impossible to completely separate my own researcher bias and interpretation. However, objectivity will be pursued as a central theme, as postpositivists believe in factual and objective truth and want to discover it as accurately as possible (Sriram, 2017).

Constructed through the above epistemological and ontological assumptions, this study adheres to a research philosophy that regards quantitative methods as suitable for the testing and acquisition of new knowledge. Creswell (2014) articulates that quantitative research is a valuable approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically with instruments, so that numbered data can be analyzed using statistical procedures. In

the case of this study, the principal analytic procedure used was structural equation modeling.

Analytic Procedures

Structural equation modeling (SEM) was the statistical methodology utilized for this study. As opposed to an exploratory method, SEM is a confirmatory (i.e., hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2016). This approach assumes two central procedural elements: (1) the causal processes under study are represented by a series of structural (regression) equations, and (2) these structural relationships can be modeled pictorially to enable a clearer conceptualization of the theory under study (Byrne, 2016). As a confirmatory technique, researchers use SEM to build initial models of inter-variable relationships derived from existing scholarship and theory. These models are then tested through the SEM analysis to determine how well the collected data demonstrate predictive relationships depicted in the initial model. These tests produce goodness-of-fit statistics that determine how accurately the proposed model reflects the data utilized (Byrne, 2016). SEM requires that the pattern of relationships among and between variables be specified a priori (i.e., my initial path model), and it is a recommended procedure for making inferences from a sample to a broader population (Sriram, 2017). In fact, Sriram (2017) notes that determining the relationship among variables is the foundation of inferential statistics.

Although many statistical procedures approach the measurement of variables without taking into consideration measurement error (Tabachnick & Fidell, 2013), SEM provides explicit estimates of these error variance parameters, therefore providing accuracy that is often ignored in alternative methods (Byrne, 2016). This accommodation

of error measurements allows for final SEM models to articulate the most accurate relationships among variables. Finally, SEM analysis allows for the measurement of relationships between not only observable variables, but unobservable or latent dimensions as well. These relationships are tested through the proposed model, which is derived from a theoretical conceptualization from literature (Blunch, 2013). Unlike other statistical approaches, the initial SEM model allows for a simultaneous testing of one or more dependent and one or more independent variables measuring direct, indirect, and total effects related to the outcome in question. In sum, these characteristics make SEM an ideal analytic procedure for investigating the impact of interactions on student success as the central focus in this study.

Though the latent constructs evaluated in this study have been previously validated through testing their respective scales (Sriram, Haynes, Cheatle, et al., 2020; Schreiner, McIntosh, et al., 2009), confirmatory factor analyses (CFA) were performed to ensure the relationships between latent variables were statistically valid with the applied sample collected for this study. CFA statistically assesses variables in the model to confirm their fit with each construct (Brown, 2006). After latent variables (e.g., academic interactions with staff) were reestablished through CFA with the final sample, second round CFAs were applied to identify higher level constructs related to the thriving constructs. These constructs were then used to build the structural models that tested Thriving and the five second order Thriving factors against the predicted pathways in the initial model.

These procedures were performed through AMOS statistical software. AMOS, or *Analysis of Moment Structures* software, is a program that allows for the visual testing of

models where a user can pictorially represent the multiple regression formulae performed within the SEM procedure (Ullman, 2013). This testing offered model fit indices (i.e., goodness-of-fit statistics) that were used for restructuring the final model to best reflect the relationships represented by the variables under consideration.

Model Fit Measures

The first goodness-of-fit statistic that was used to determine how well the initial model reflects the collected data is chi-squared (χ_2). This statistic measures the probability of whether or not the null hypothesis is rejected based on a *p*-value score of 0.05. Essentially, a non-significant value (above *p*-value = 0.05 cutoff) would demonstrate an adequately fitted model (i.e., not enough evidence exists to reject the null hypothesis, which is that the offered model is perfectly fitted). Though this measure is frequently used in the literature, larger samples, such as in the case with this study, call for more intricate fit indices. Samples over $n = 400$ almost always produce statistically significant chi square results (Byrne, 2016). Comparative fit index (CFI) and root mean square approximation (RMSEA) were also assessed as determiners of how well the final model fits the collected data in this study.

RMSEA, a measure of model fit frequently reported in scholarship employing SEM, compares the lack of fit in the actual model to a hypothetical model demonstrating "perfect" fit with all involved variables being in relationship. In this case, a score of 0.0 would indicate an exact fit and a score of 1.0 would indicate a complete lack of fit for the proposed model. Scholars differ in terms of suggestions for scores indicative of good fitting models, with Hu and Bentler (1999) offering the value 0.06, Steiger (2007) offering the value 0.07, and MacCallum, Browne, and Sugawara (1996) offering the

value 0.08. However, Hu and Bentler's (1999) value of 0.06, being widely accepted as a strong measurement of good fit, was employed in this study as the cut-off value for the RMSEA fit measure. As the lower the score the better the fit, efforts to get RMSEA values in the final model below .06 were made, as higher scores are considered "badness-of-fit" (Kline, 2015, p. 273) with greater incongruity between the hypothetical model and the population covariance matrix (Hooper, Coughlan, & Mullen, 2008). Though RMSEA is considered one of the most informative fit indices (Diamantopoulos & Siguaw, 2000), it is helpful to use it alongside other fit measures.

CFI is another fit index almost always reported with SEM results, as it is one of the measures least affected by sample size and therefore reliable under many research conditions (Fan, Thompson, & Wang, 1999). A CFI statistic assumes all latent variables are uncorrelated (producing a null model) and compares the study's sample covariance matrix with this null model (Hooper et al., 2008). The resulting values for this statistic range from 0.0 to 1.0, with higher values above certain thresholds indicating good fit and a value of 1.0 demonstrating a perfect fit (Kline, 2015). Specifically, a cut-off criterion denotes a value of 0.90 is needed in order to ensure mis-specified models are not accepted (Hu & Bentler, 1999). Further, CFI values equal to or greater than 0.95 indicate very good model fit (Hooper et al., 2008; Hu & Bentler, 1999). For this study, no model below 0.90 was accepted, and a CFI equal to or greater than .95 was the goal for model fit. Taken together, χ_2, RMSEA, and CFI fit indices collectively served as model fit measures to determine the acceptability of the initial model and second order Thriving outcome models, as seen in the Results chapter.

Summary of Methodology

This chapter outlined the research methodology used in this study. The procedures employed in collecting data, defining variables, and analyzing and interpreting results for this study were provided. The methodology will help guide this study in contributing to current literature by advancing a more nuanced model of the extent to which different student interactions impact success for students in living-learning communities. Structural equation modeling aided in developing this understanding by determining the predictive relationships between interaction and thriving variables. Results from these methods are in the proceeding chapter.

CHAPER FOUR

Results

Overview of Chapter

The purpose of this study was to investigate a theoretical model of the relationships between various interaction factors hypothesized to predict student success in college, as operationalized in the construct of thriving. Due to the complexity of latent variables in the initial model, I statistically analyzed these relationships using structural equation modeling (SEM). Specifically, I examined eight interaction variables to determine their predictive relationships with five variables that comprise thriving. The eight interaction variables in the model were: social interactions with peers, social interactions—greetings with faculty/staff, social interactions—time with faculty/staff, academic interactions with peers, academic interactions with faculty, academic interactions with staff, deeper life interactions with peers, and deeper life interactions with faculty/staff. The five thriving variables were: engaged learning, academic determination, diverse citizenship, social connectedness, and positive perspective.

I executed my analysis in two stages. The first involved construction of measurement models to appraise the integrity of all latent variables. This allowed verification that the indicator variables accurately represent the theoretical constructs measured in the final model. The second stage employed SEM to measure the extent of confirmability between the collected data and the proposed model. This was accomplished through an assessment of regression pathways quantifying the strength of

relationship between student interactions and thriving factors. In doing so, I attempted to answer the two research questions of this study: Do academic, social, and deeper life interactions with peers, faculty, and staff influence thriving for living-learning community students? If so, what is a model that can explain the relative strength of the effects on five thriving factors?

This chapter offers detail on the steps of model specification, the results of all measurement models, the fit of the structural modeling process, and the strength of relationships defined by effect sizes.

Confirmatory Factor Analyses

Prior to testing the proposed model, I assessed measurement models through confirmatory factor analysis (CFA) procedures. Latent variables represent variables that cannot be directly observed or measured. Instead, survey items are indirect observations or measurements of these theoretical constructs. A CFA explores the relationship between observed indicators (survey items quantified for analysis) and their respective constructs (unobserved or latent variables). Measuring the contribution of each indicator toward its construct helps verify that the data measures the latent construct it intends to measure. All of the variables in this study have been demonstrated to be validly and reliably measured through previous research (Schreiner, Pothoven, et al., 2009; Sriram, Haynes, Cheatle, et al., 2020). However, performing CFAs through the maximum likelihood method allowed me to confirm that these constructs met the level of statistical viability needed for inclusion in a structural equation model.

I created measurement models using AMOS (version 25) modeling software. Each model included latent variables (the ovals), indicators of that variable (the

rectangles), and error terms for indicators (the small circles on each indicator). The error terms are always unobserved and represent the impact of measurement error on each observed variable (Byrne, 2016). Correlations and covariances are seen as represented by bidirectional arrows, demonstrating relationships without an explicitly defined causal direction. Causal effects, representing regression equations, are signified by single-headed directional arrows. Additionally, certain path coefficients were fixed to 1.00, creating a measurement scale for the constructs and their residuals.

Definitions and descriptors of all coded variables can be found in Table 3.3 in the preceding Methodology chapter. When needed in model creation, I assessed modification indices to determine appropriate changes to the model. AMOS modifications provide statistical adjustments in order to allow researchers to properly identify models (Byrne, 2016). However, these modifications are always implemented after reflecting on the theoretical implications of such changes. Modifications are addressed in a sequential order, with model fit reevaluated after the proposed iteration. Unlike modifications in SEM where regression coefficient lines can be altered post hoc between independent and dependent variables, modifications in CFA typically include adding covariance between error terms. This modification takes the covariation between two items that is not adequately explained by the latent construct and cleans up unwanted residual variance. Additionally, this allows the model to reduce the redundancy of indicators measuring the same construct. Brown (2015) notes that error terms can be correlated due to issues such as acquiescent response (bias caused by agreement with statements regardless of question content), certain methods (survey questionnaires), or similarly worded items.

A summary of goodness-of-fit for all CFAs performed prior to analyzing the final model can be found in Table 4.1. When measuring chi-square (χ_2), non-significant *p*-values (> 0.05) demonstrate adequate fit. However, these results can be highly influenced by samples over *n* = 400 (Byrne, 2016). Therefore, CFI and RMSEA are the primary indices monitored in this study, with excellent fit considered at CFI > .95 and RMSEA < .06 thresholds (Byrne, 2016).

Table 4.1

CFA Goodness-of-Fit Statistics for Latent Constructs

Variable	CMIN (χ_2)	*df*	*p*	CFI	RMSEA
Social Interaction w/ Peers	2.660	1	.103	.999	.043
Social Interactions—Greetings *and* Time (covaried factors) with Faculty/Staff	2.847	3	.416	1.00	.003
Academic Interaction w/ Peers	0.143	1	.706	1.00	.003
Academic Interaction w/ Faculty	0.076	1	.782	1.00	.000
Academic Interaction w/ Staff	7.362	2	.025	.998	.055
Deeper Life Interaction w/ Peers	0.048	1	.827	1.00	.006
Deeper Life Interaction w/ Faculty/Staff	1.441	1	.230	1.00	.022
First Order Thriving Factor	889.005	223	<.001	.947	.058
Second Order Thriving Factor	911.337	227	<.001	.946	.058

Social Interaction with Peers

The latent variable of social interactions with peers (SIP) is comprised of three observed indicators (survey items). The initial factor structure was under identified. Unstandardized regression weights for two factors (log_SIP1_REF and log_SIP2_REF) were equally constrained via modification indices. Equalizing these parameter constraints allowed the model to be properly identified (Kline, 2005). The indices of the CFA

produced good fit measures, [χ_2 = 2.66 (*df* = 1, *p* = .103), CFI = .999, RMSEA = .043] as graphically represented in Figure 4.1.

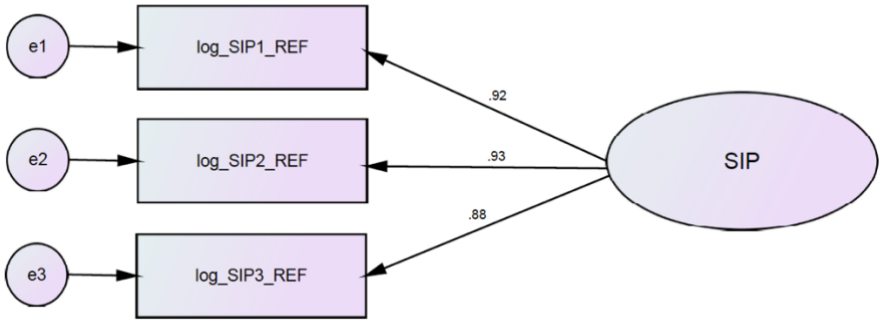

Figure 4.1. CFA Structure of SIP Construct

Social Interaction with F/S - Time and Greetings

For the two variables explaining social interactions with faculty and staff, a CFA was performed that included both latent variables (social interactions—greetings with faculty/staff and social interactions—time with faculty/staff). This was done for two theoretically justified reasons: (1) social interaction—time with faculty/staff only had two indicators, so it violated the three-indicator identification rule of CFA (Blunch, 2013) and (2) these factors measured the same interaction with students but parceled into two distinct groups (greetings and time).

The initial CFA demonstrated poor fit [χ_2 = 57.16 (*df* = 4, *p* < .001), CFI = .976, RMSEA = .121]. Modification indices suggesting the covariance of error terms between log_SIFSG2_REF and log_SIFSG3_REF were employed. These alterations resulted in excellent fit statistics [χ_2 = 2.847 (*df* = 3, *p* =.416), CFI = 1.00, RMSEA = .003] as graphically represented in Figure 4.2.

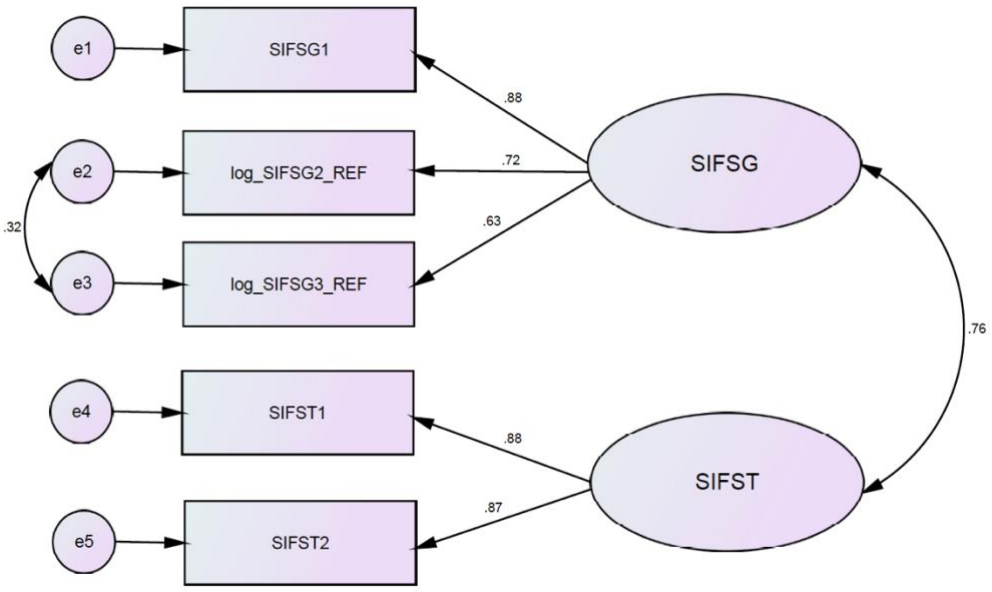

Figure 4.2. CFA Structure of SIFSG and SIFST Constructs

Academic Interactions with Peers

The latent variable academic interaction with peers (AIP) is comprised of four indicators. The initial CFA demonstrated a poor fit [χ^2 = 40.55 (*df* = 2, *p* < .001), CFI = .982, RMSEA = .146]. Multiple modification indices were suggested by AMOS. After employing the first modification, covarying the error terms between log_AIP1_REF and log_AIP2_REF, the model demonstrated much better fit [χ^2 = .143 (*df* = 1, *p* = .705), CFI = .994, RMSEA = .003]. The pictorial representation of this structure with factor loadings is presented in Figure 4.3.

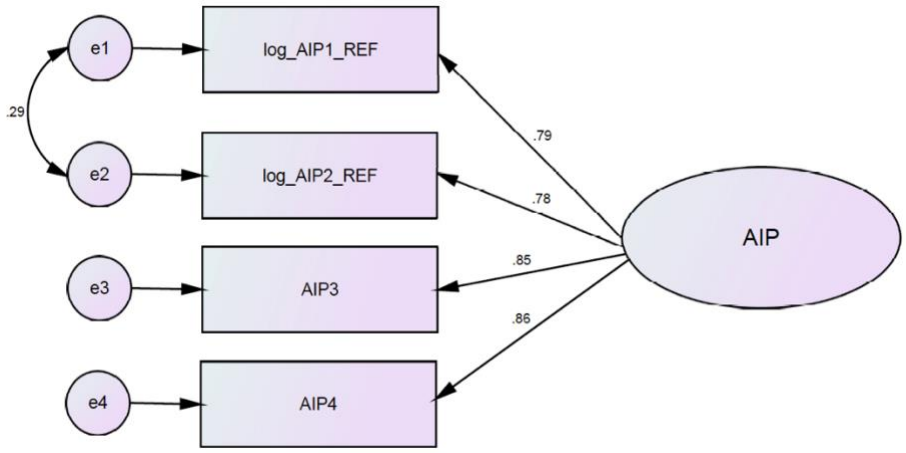

Figure 4.3. CFA Structure of AIP Construct

Academic Interactions with Faculty

Four indicators create the variable academic interactions with faculty. The results of a CFA indicated slightly inadequate fit [χ^2 = 16.78 (*df* = 2, *p* < .001), CFI = .994, RMSEA = .091]. As the RMSEA index was marginally above acceptable thresholds, modification indices were analyzed. Only two error term indices were offered. Testing the larger one, covarying error terms between AIF1 and AIF3, resulted in excellent fit of the model [χ^2 = .076 (*df* = 1, *p* = .782), CFI = 1.00, RMSEA = .000] as seen in Figure 4.4.

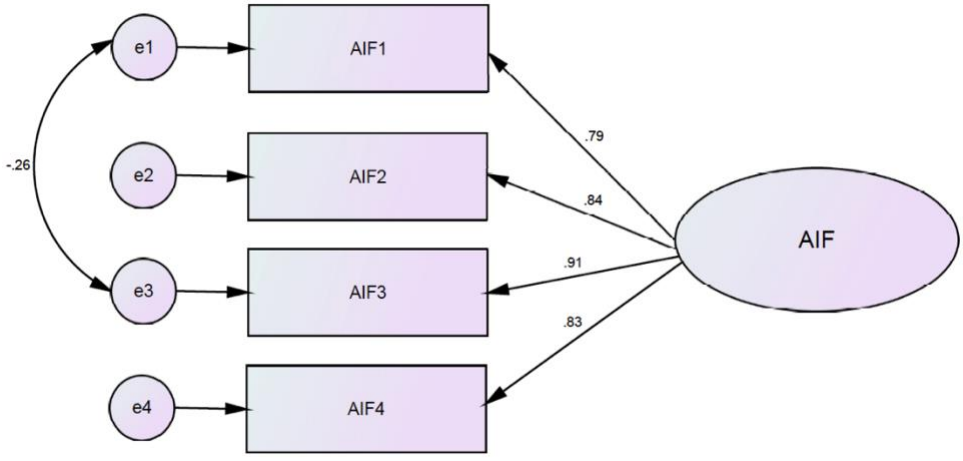

Figure 4.4. CFA Structure of AIF Construct

Academic Interactions with Staff

Academic interactions with staff was measured through a CFA of four observed variables. The initial analysis produced good model fit [χ_2 = 7.362 (*df* = 2, *p* = .025), CFI = .998, RMSEA = .055]. As such, no modifications to the model were necessary. This CFA is represented with factor loadings in Figure 4.5.

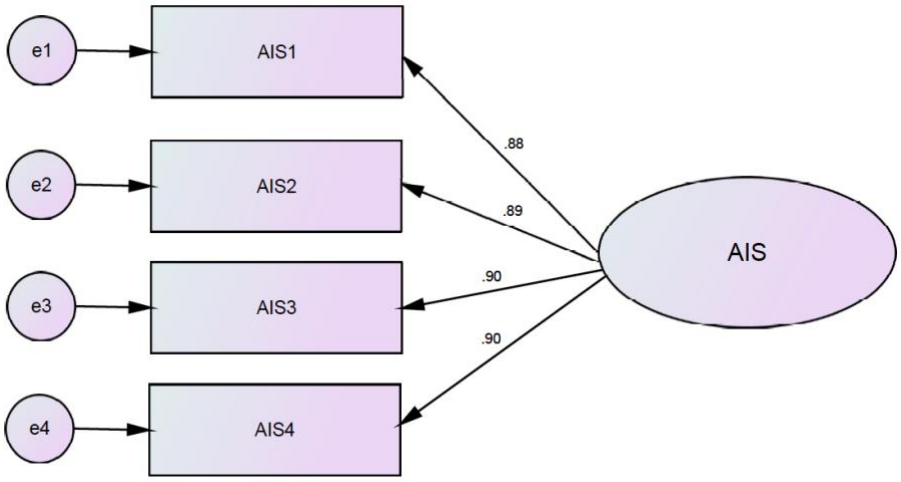

Figure 4.5. CFA Structure of AIS Construct

Deeper Life Interactions with Peers

Four indicator variables were hypothesized to comprise the latent variable deeper life_interactions with peers. The CFA goodness-of-fit statistics indicated a good fitting model [χ_2 = 9.320 (*df* = 2, *p* = .009), CFI = .997, RMSEA = .064]. However, to bring the RMSEA index below .06 (the threshold desired in this study), AMOS modification indices were consulted. Only a single modification was offered from the CFA output, suggesting covariance of error terms for DLIP2 and DLIP4. This modification resulted in an excellent fit of the model [χ_2 = .048 (*df* = 1, *p* = .827), CFI = 1.00, RMSEA = .006] as demonstrated in Figure 4.6 with associated factor loadings.

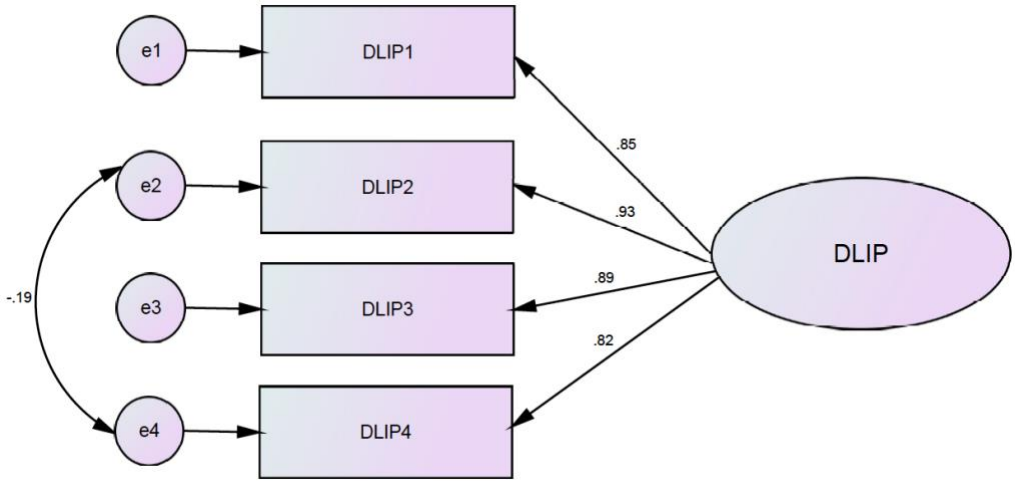

Figure 4.6. CFA Structure of DLIP Construct

Deeper Life Interactions with Faculty/Staff

The latent variable deeper life interactions with faculty/staff (DLIFS) is comprised of four indicators. An initial CFA demonstrated a poor fit [χ^2 = 177.445 (*df* = 2, *p* < .001), CFI = .926, RMSEA = .312]. Four modification indices were proposed by AMOS to address goodness-of-fit. After cycling through these modifications one at a time and compounding their individual and net effects, satisfactory improvements to model fit could not be reached.

A second regression weight was fixed to provide additional metrics for the variance scale baseline. However, model fit remained insufficient. Modification indices were reexplored, where error terms between DLSF2 and DLSF3 and between DLFS3 and DLFS4 were employed. These modifications produced excellent fit statistics [χ^2 = 1.441 (*df* = 1, *p* = .230), CFI = 1.00, RMSEA = .022]. This is pictorially represented with factor loadings in Figure 4.7.

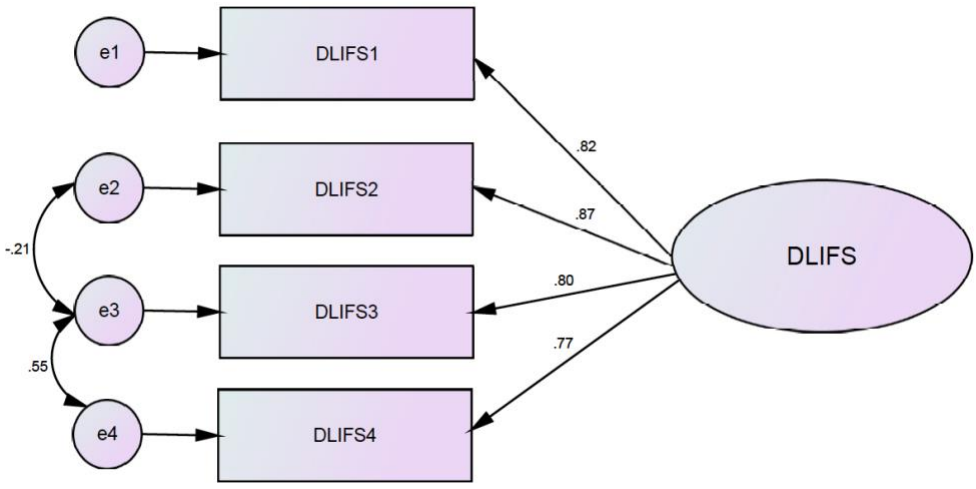

Figure 4.7. CFA Structure of DLIFS Construct

Factor loadings range from 0 to 1.0 in CFA. I considered factor loadings greater than .40 as sufficient to confirm the gathered data fit well for these individual subscales (Matsunaga, 2010; Walker & Maddan, 2019). Additionally, reliability measures (Cronbach's α) of all latent variables were acceptable (> .80) to confirm adequate psychometric properties, as shown below in Table 4.2.

Table 4.2.

Reliability, Indicators, and Factor Loadings for Latent Measurement Model Variables

Latent Variable Name	Reliabilities (α)	Indicator Variables [a]	Factor Loadings [b]
Social Interaction with Peers (SIP)	.94	log_SIP1_REF	.92
		log_SIP2_REF	.93
		log_SIP3_REF	.88
Social Interaction—Greetings with Faculty/Staff (SIFSG)	.80	SIFSG1	.88
		log_SIFSG2_REF	.72
		log_SIFSG3_REF	.63
Social Interaction—Time with Faculty/Staff (SIFST)	.88	SIFST1	.88
		SIFST2	.87
Academic Interactions with Peers (AIP)	.90	log_AIP1_REF	.79
		log_AIP2_REF	.78
		AIP3	.85
		AIP4	.86
Academic Interactions with Faculty (AIF)	.90	AIF1	.79
		AIF2	.84
		AIF3	.91
		AIF4	.83
Academic Interactions with Staff (AIS)	.94	AIS1	.88
		AIS2	.89
		AIS3	.90
		AIS4	.90
Deeper Life Interactions with Peers (DLIP)	.92	DLIP1	.85
		DLIP2	.93
		DLIP3	.89
		DLIP4	.82
Deeper Life Interactions with Faculty/Staff (DLIFS)	.90	DLIFS1	.82
		DLIFS2	.87
		DLIFS3	.80
		DLIFS4	.77

(Continued)

Latent Variable Name	Reliabilities (α)	Indicator Variables [a]	Factor Loadings [b]
Engaged Learning (ELI - 1st order)	.89	ELI1	.87
		ELI2	.88
		ELI3	.73
		ELI4	.83
Academic Determination (AD - 1st order)	.88	log_AD1_REF	.77
		AD2	.69
		log_AD3_REF	.81
		AD4	.76
		log_AD5_REF	.63
		AD6	.76
Social Connectedness (SC - 1st order)	.87	SC1_R	.64
		SC2_R	.83
		SC3_R	.82
		log_SC4_REF	.52
		SC5	.62
		SC6_R	.87
Diverse Citizenship (DC - 1st order)	.84	DC1	.71
		DC2	.88
		DC3	.77
		DC4	.69
		DC5	.51
		log_DC6_REF	.47
Positive perspective (POS - 1st order)	.88	POS1	.86
		POS2	.93

Note: [a] Variable codes and definitions found in Table 3.3; [b] Standardized values

Thriving as a First-Order Factor

Thriving is comprised of five latent factors (engaged learning, academic determination, social connectedness, diverse citizenship, and positive perspective). Prior to determining how these factors load onto an overall Thriving construct, I performed a factor analysis to observe how the indicators (items) load onto each latent factor. All five of the Thriving factors were assessed simultaneously in the CFA in order to allow their parameters to covary with each other. As the Positive Perspective variable only has two indicators, this also allowed for the model to fit properly within the CFA identification rules (Blunch, 2013).

Initial fit was just above the RMSEA threshold of .06. In order to improve the goodness-of-fit statistics, I respecified the model by implementing covariance modification indices (Byrne, 2016). Potential modifications were suggested among error terms for four of the factors. Where modifications could be theoretically justified due to similarly-worded items or potential for response bias, covariance arrows were added between error terms. Goodness-of-fit indices were checked after each iteration to determine model improvement. This helped to maximize how the data fit the Thriving scale as represented in satisfactory fit indices [χ_2 = 889.005 (*df* = 223, $p < .001$), CFI = .947, RMSEA = .058]. This model is graphically depicted in Figure 4.8. Factor loadings of individual latent factors in this model are also offered in Table 4.2.

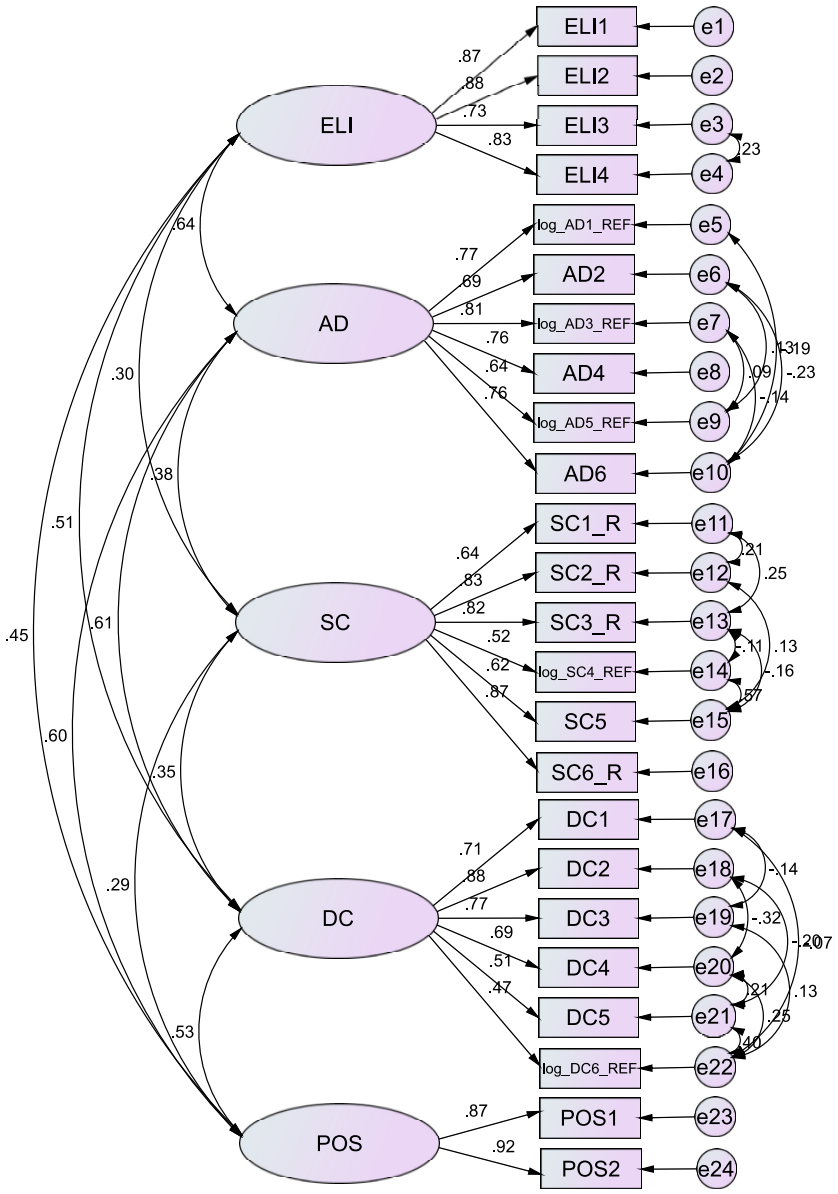

Figure 4.8. CFA Structure of Thriving First-Order Construct

Thriving as a Second-Order Factor

After confirming Thriving as a first-order construct, a five-factor model was tested to confirm Thriving as a second-order factor. Though verified through previous research (e.g., Schreiner, McIntosh, et al., 2009; Schreiner, Pothoven, et al., 2009), this five-factor model allowed the data from the current study to be assessed for proper fit

into a definitive student success variable. This second-order factor, displayed graphically in Figure 4.9, demonstrated excellent statistical fit, [χ^2 = 911.337 (*df* = 227, *p* < .001), CFI = .946, RMSEA = .058].

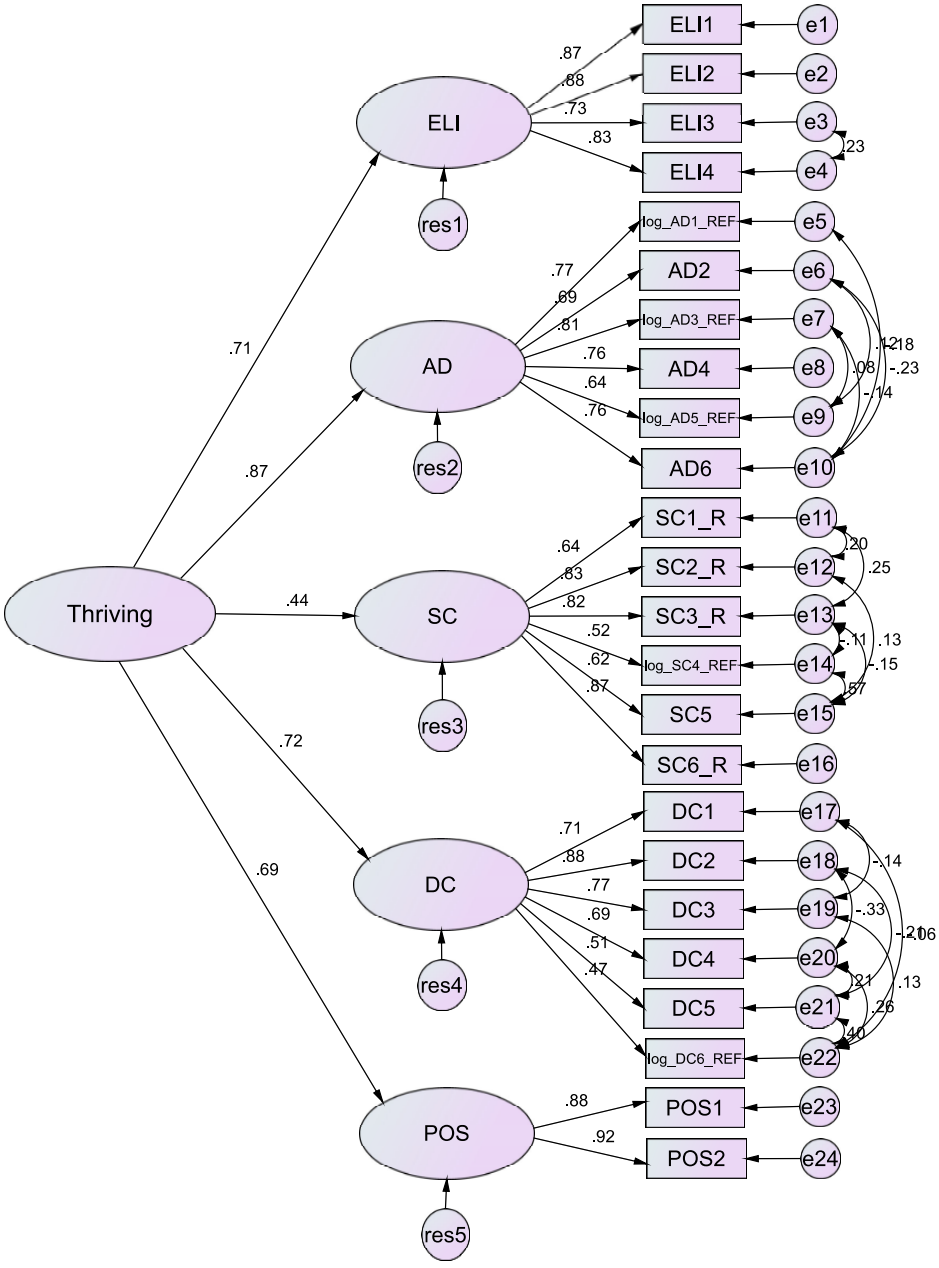

Figure 4.9. CFA structure of Thriving Second-Order Construct

Factor loadings of the five factors onto the Thriving construct were within acceptable range. These values are summarized in Table 4.3 below.

Table 4.3

Standardized Factor Loadings of Second-Order Thriving CFA

Variable	Factor Loading
Engaged Learning (ELI)	.71
Academic Determination (AD	.87
Social Connectedness (SC)	.44
Diverse Citizenship (DC)	.72
Positive Perspective (POS)	.69

Note: Standardized estimates of indicators onto these five Thriving factors were comparable to those offered in Table 4.2. For detailed differences of first-order loadings see *Figure* 4.9.

After running the CFAs for all latent constructs assessed in this study, I determined that the measurement models were a good fit, meaning that the data fit the constructs used for measurement in an appropriate way. With the measurements established for both observed and latent variables, I then proceeded to create a theoretical causal model that explained how these variables influence one another. This procedure is called structural equation modeling (SEM).

Structural Equation Modeling

I proposed a hypothesized structural model in the Methodology chapter of this study (Figure 3.5, also presented below) that theorized about the relationships between college student interactions and the factors of Thriving. This model was constructed in AMOS 25 and the screened data (n=903) was mapped onto the model within their respective variables. Constraints and error covariances from the measurement models

above were not transferred to the structural model in order to allow variables to interact with minimally-constrained variance and parameter estimates.

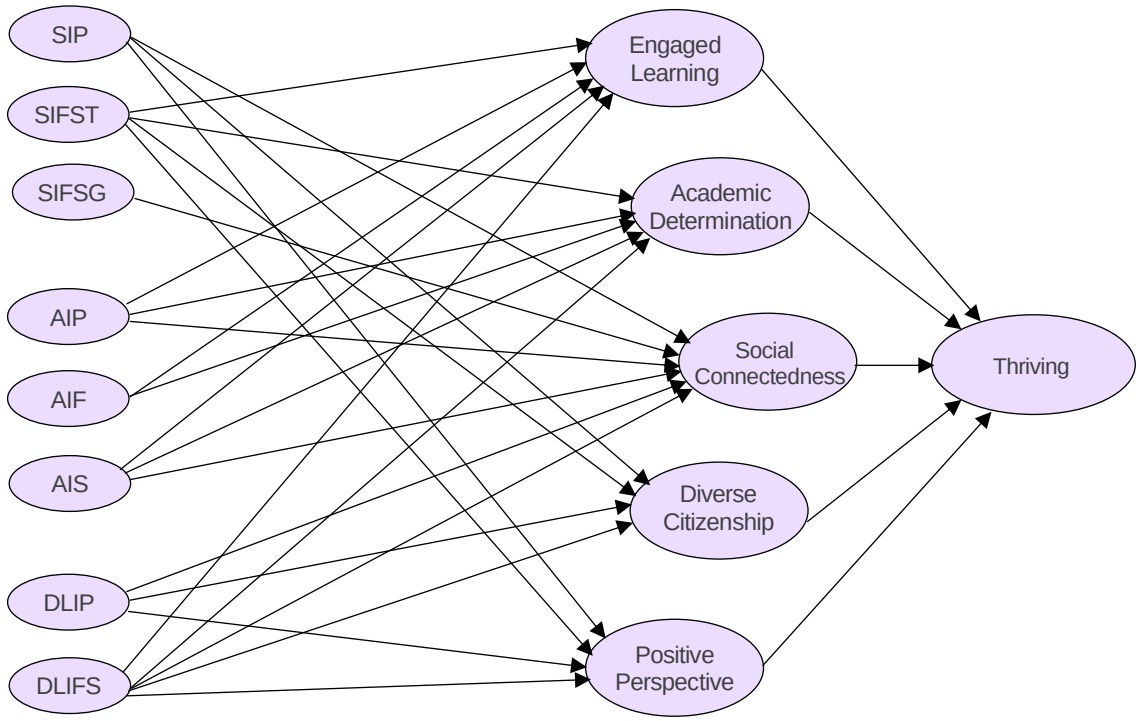

Figure 3.5. Initial Path Model

My thresholds for determining model fit were a CFI of at least .95 and an RMSEA below .06. Analysis of this initial model produced sub-standard fit within the sample [χ^2 = 5020.729 (*df* = 1222, *p* < .001), CFI = .895, RMSEA = .059]. The first assessment after under-identifying the model was to check the standardized residual covariances for any output that exceeds the +2 and -2 thresholds, as 95% of the data should fall within this range (Hoyle, 2011; Keith, 2014). Although a small number of residuals exceeded this range, modifying the model based on the violation of this assumption was delayed in order to check other output measures.

I assessed regression and covariance pathways for significance ($p < .05$). Although all covariances between latent predictor constructs (i.e., the interaction variables) were statistically significant, a small number of non-significant regression equation pathways were represented in the model. These signify predicted pathways that failed to meet the 95% confidence level of significance. Out of the 24 regression equations tested from the initial model, 10 were non-significant for the final model: academic interactions with peers did not significantly predict social connectedness; academic interactions with staff and social interactions—time with faculty/staff did not significantly predict academic determination; academic interactions with staff and deeper life interactions with peers did not significantly predict diverse citizenship; social interactions—time with faculty/staff, academic interactions with peers, and academic interactions with staff did not significantly predict engaged learning; and, social interactions with peers and social interactions—time with faculty/staff did not significantly predict positive perspective.

All non-statistically significant regression pathways were deleted sequentially, starting with the largest *p*-values, with a re-assessment of model fit after each step. Sriram (2017), for example, notes that if you have a moderate effect size but you do not have statistical significance, it means that there is a real difference found in your sample, but you cannot (with adequate confidence) infer that finding onto your population. Although these changes altered pathways from the proposed model, it is important to take effect sizes into account along with *p*-values.

After model fit was slightly improved, I consulted modification indices to explore additional model variations to increase goodness-of-fit. The strongest modifications

proposed regressing the five thriving factors onto themselves in a structured way. As a researcher it is important to not allow computer software to dictate how the theory under study is conceptualized. However, these changes were theoretically supported, as the five factors are conceptually driven derivations of the Thriving construct. Five equations were added between the following variables: positive perspective and academic determination, academic determination and diverse citizenship, academic determination and engaged learning, positive perspective and diverse citizenship, and academic determination and social connectedness. Adding these suggested paths between variables allowed certain Thriving factors to mediate the relationships between the interaction variables and other factors. This allowed indirect effects to be included as part of the results of this study and more fully utilized the SEM process.

Finally, an assessment of regression weights revealed the addition of two possible pathways as proposed by modification indices, one between academic interactions with staff and diverse citizenship and one between social interactions—greetings with faculty/staff and engaged learning. While helping with model fit, these relationships are also justified based on the review of literature (e.g., Astin et al., 2011; Cole & Griffin, 2013; Kim & Sax, 2014). Error terms between multiple variable pairs were then successively covaried as proposed modifications. After these adjustments, the final model was improved and remained parsimonious, demonstrated through satisfactory fit indices [χ_2 = 3147.083 (*df* = 1195, *p* < .001), CFI = .946, RMSEA = .043]. The final structural model is represented in Figure 4.10 (recreated in Word to allow clearer presentation).

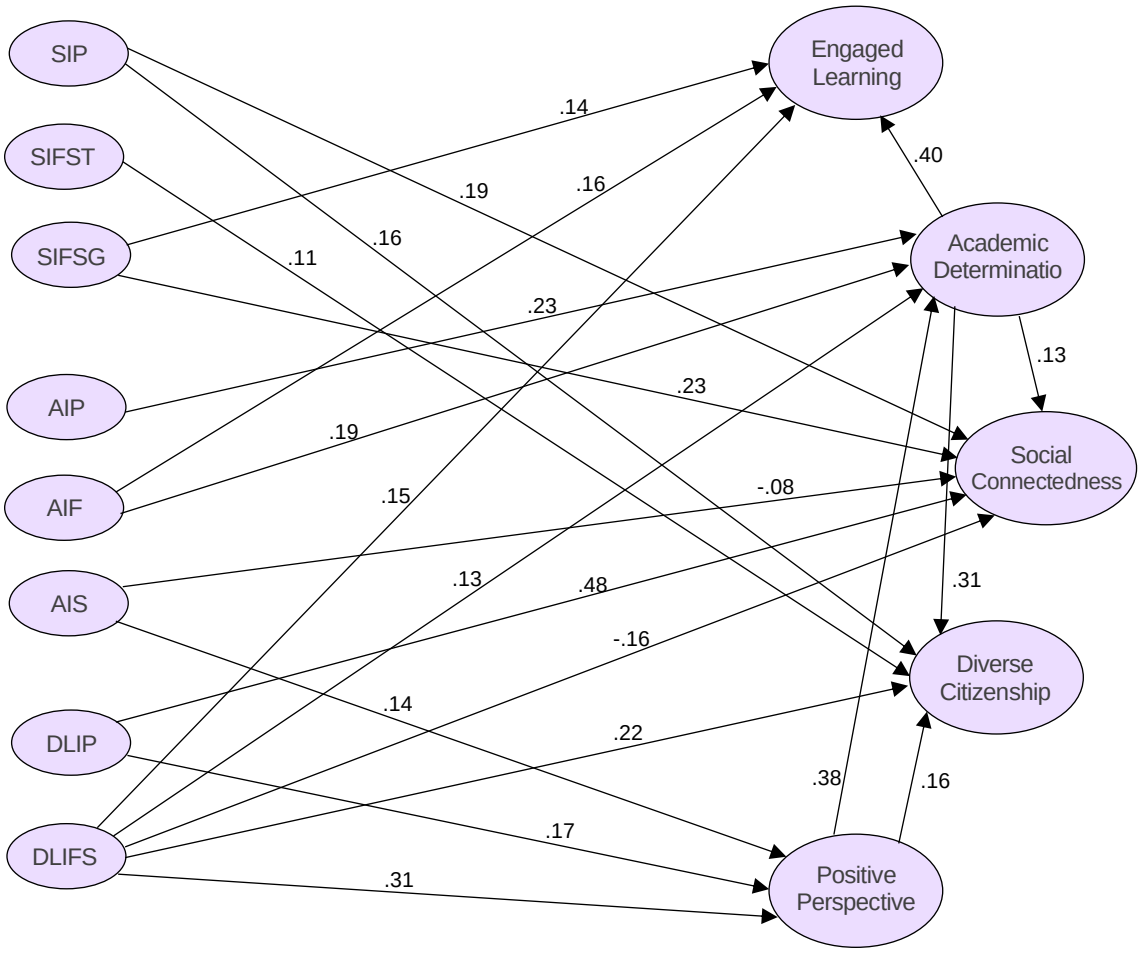

Figure 4.10. Final Full Structural Equation Model of Five Thriving Factors

Squared multiple correlations (R^2) correspond to the percentage of variance in the endogenous variables (Thriving) explained by the exogenous variables (Interactions). The squared multiple correlations of the endogenous variables under study are in Table 4.4.

Table 4.4

Squared Multiple Correlation (R^2) of Final SEM

Variable	Estimate
Engaged Learning	.510
Academic Determination	.512
Social Connectedness	.469
Diverse Citizenship	.537
Positive Perspective	.280

Direct effects, the equivalent of path coefficients (which indicate the effects of an assumed cause variable on an assumed effect variable) are offered in Table 4.5, along with indirect and total effects of the model (all standardized beta weights). For effect size thresholds, recommendations for higher education research from Mayhew et al. (2016) were used as follows: .06 as small, .12 as medium, and .20 as large. Factor loadings from indicators onto latent constructs in the SEM were all above an adequate threshold (> .40) and are tabled in the Appendix.

Table 4.5

Summary of Standardized Direct, Indirect, and Total Effects of Final SEM

Exogenous Variable	Direct	Indirect	Total
Engaged Learning			
Social Interactions with Peers	x	x	x
Social Interactions—Time with Faculty/Staff	--	--	--
Social Interactions—Greetings with Faculty/Staff	.142	x	.142
Academic Interactions with Peers	--	.091	.091
Academic Interactions with Faculty	.162	.075	.237
Academic Interactions with Staff	--	.020	.020
Deeper Life Interactions with Peers	x	.026	.026
Deeper Life Interactions with Faculty/Staff	.154	.099	.253
Academic Determination	.398	x	.398
Social Connectedness	x	x	x
Diverse Citizenship	x	x	x
Positive Perspective	x	.151	.151
Academic Determination			
Social Interactions with Peers	x	x	x
Social Interactions—Time with Faculty/Staff	--	--	--
Social Interactions—Greetings with Faculty/Staff	x	x	x
Academic Interactions with Peers	.229	--	.229
Academic Interactions with Faculty	.188	--	.188
Academic Interactions with Staff	--	.051	.051
Deeper Life Interactions with Peers	x	.064	.064
Deeper Life Interactions with Faculty/Staff	.130	.119	.249
Engaged Learning	x	x	x
Social Connectedness	x	x	x
Diverse Citizenship	x	x	x
Positive Perspective	.379	x	.379
Social Connectedness			
Social Interactions with Peers	.188	--	.188
Social Interactions—Time with Faculty/Staff	x	x	--x
Social Interactions—Greetings with Faculty/Staff	.232	--	.232
Academic Interactions with Peers	--	.029	.029
Academic Interactions with Faculty	x	.024	.024
Academic Interactions with Staff	-.078	.007	-.071
Deeper Life Interactions with Peers	.477	.008	.485
Deeper Life Interactions with Faculty/Staff	-.162	.032	-.130

(Continued)

Exogenous Variable	Direct	Indirect	Total
Engaged Learning	x	.048	.048
Academic Determination	.128	x	.128
Diverse Citizenship	x	x	x
Positive Perspective	x	x	x
Diverse Citizenship			
Social Interactions with Peers	.156	--	.156
Social Interactions—Time with Faculty/Staff	.105	--	.105
Social Interactions—Greetings with Faculty/Staff	x	x	x
Academic Interactions with Peers	x	.071	.071
Academic Interactions with Faculty	x	.058	.058
Academic Interactions with Staff	x	.038	.038
Deeper Life Interactions with Peers	--	.047	.047
Deeper Life Interactions with Faculty/Staff	.224	.127	.351
Engaged Learning	x	x	x
Academic Determination	.309	x	.309
Social Connectedness	x	x	x
Positive Perspective	.160	.117	.277
Positive Perspective			
Social Interactions with Peers	--	--	--
Social Interactions—Time with Faculty/Staff	--	--	--
Social Interactions—Greetings with Faculty/Staff	x	x	x
Academic Interactions with Peers	x	x	x
Academic Interactions with Faculty	x	x	x
Academic Interactions with Staff	.136	x	.136
Deeper Life Interactions with Peers	.169	--	.169
Deeper Life Interactions with Faculty/Staff	.313	--	.313
Engaged Learning	x	x	x
Academic Determination	x	x	x
Social Connectedness	x	x	x
Diverse Citizenship	x	x	x

Note. Effect size thresholds are .06 (small), .12 (medium), and .20 (large). Variables listed under endogenous factor groups only represent predictor variable pathways in the final model. Double dashes (--) represent non-significant pathways. The letter "x" represents interactions that were not theorized to predict individual thriving factors.

As seen in Table 4.5, results from the final model yielded many significant effects. With so many pathways in the model, deciphering the importance of these effects

can pose a challenge. For clearer interpretation of the most meaningful variable relationships, Table 4.6 concisely summarizes the strongest model contributions—from interaction variables specifically—for each thriving factor as standardized total effects. Standardized beta weights use standard deviations as their units, making their relative strength easily comparable to one another.

Table 4.6

Summary of Strongest Interaction Contributions in Final SEM

Exogenous Variable	Standardized Total Effect
Engaged Learning	
Academic Interactions with Faculty	.237
Deeper Life Interactions with Faculty/Staff	.253
Academic Determination	
Academic Interactions with Peers	.229
Academic Interactions with Faculty	.188
Deeper Life Interactions with Faculty/Staff	.249
Social Connectedness	
Social Interactions with Peers	.188
Social Interactions—Greetings with Faculty/Staff	.232
Deeper Life Interactions with Peers	.485
Diverse Citizenship	
Deeper Life Interactions with Faculty/Staff	.351
Positive Perspective	
Deeper Life Interactions with Peers	.169
Deeper Life Interactions with Faculty/Staff	.313

MIMIC Model

This concise summary of strong total effects is telling of the strength of interactions on thriving. However, in order to further understand this relationship, I conducted additional post hoc analyses through a Multiple Indicators–Multiple Causes

(MIMIC) model (Jöreskog & Goldberger, 1975). This type of model involves using latent variables that are predicted by observed variables (Schumacker & Lomax, 2004). In short, a latent variable measured by multiple indicators is in turn affected by multiple causes. Models with MIMIC factors are structural regression models, not measurement (CFA) models, because MIMIC factors are always endogenous (Kline, 2016). These factors also have at least one effect indicator (e.g., social interactions). To perform this analysis, I specified a measurement model by transforming the thriving factors into observed variables through mean scores. These composite variables represent the five factors as constituting the make-up of college student thriving. I then regressed the latent Thriving variable on the three interaction groupings. This analysis tests the combined prediction level of Thriving from the three general interaction groups (i.e., academic, social, deeper life), which is then quantified to predict the five Thriving factors. This model assumes interactions within general groupings will collectively affect certain thriving factors through a latent Thriving variable.

Initial MIMIC model fit was slightly below adequate thresholds. After sequentially running three modification indices (covarying three sets of error terms), the model, depicted in Figure 4.11, produced satisfactory goodness-of-fit [χ_2 = 56.989 (*df* = 14, $p < .001$), CFI = .986, RMSEA = .058].

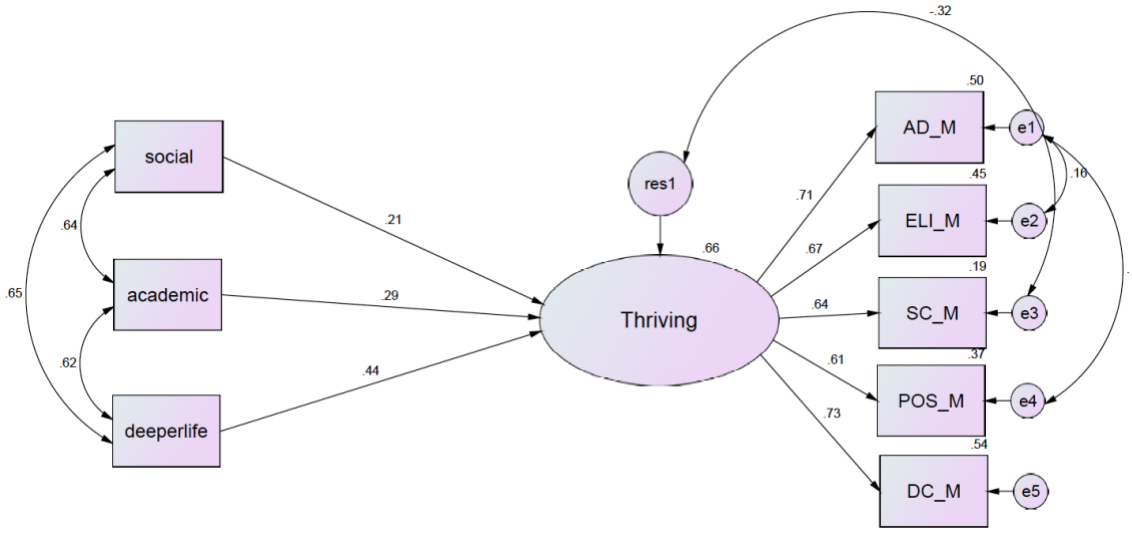

Figure 4.11. SEM MIMIC Model of General Interactions and Thriving

All pathways in the model were significant ($p < .001$) and are summarized in Table 4.7. Student interactions collectively accounted for 66.2% of the variance in college student Thriving. This SEM MIMIC model utilized composite variables of each interaction type to see the strength of general academic, social, and deeper life interactions on thriving. This allowed for a further exploration of the nuance between interactions and student success in the sample of living-learning community students (n = 903) in this study.

Table 4.7

MIMIC Model Standardized Path Coefficients

Composite General Interaction Indicator Variable	Estimate
Social	.206
Academic	.287
Deeper Life	.436

Summary of Results

These findings, conducted through SEM, showed that the living-learning community students in this study interact with faculty, staff, and peers in unique ways that can lead to five empirically validated factors of thriving. The initial model was specified in AMOS 25 by using conceptually driven connections from the literature review to predict how these relationships could occur. This model indicated sub-standard goodness-of-fit. Through modification indices and theoretically justified changes, the final structural model demonstrated excellent fit within RMSEA and CFI statistics.

The aim of this study was to validate a model that identifies how certain interaction variables contribute to college student thriving. The creation of this predictive structural equation model establishes the utility of using various student interactions with different constituents to predict factors of student success. Additionally, a MIMIC model was created to further understand how broad interaction groups influenced the five endogenous factors through a general latent thriving variable. Chapter 5 discusses the significant findings in this study, as well as limitations, implications for practice and theory, and suggestions for future research.

CHAPTER FIVE

Discussion

Overview of Chapter

This study examined the relationship between student interactions and thriving to develop a model that helps to explain college student success. Previous scholarship analyzing the importance of student interactions isolates one relationship at a time, such as students with faculty or students with peers (e.g., Astin, 1999; Cox & Orehovec, 2007; Domizi, 2008; Kuh & Hu, 2001). Such research does not combine faculty and peers into one model to compare and contrast the ways that these relationships influence student success. Moreover, these studies typically exclude how interactions with another significant campus constituent—professional staff—might influence college outcomes (Demetriou & Schmitz-Sciborski, 2011; Wyckoff, 1998).

In the research on student interactions, relationships typically are bifurcated into two primary categories: social interactions and academic interactions. Thinking of student interactions as either social or academic stems from the paradigmatic status of Tinto's (1975) research on retention. However, recent research highlights the need to assess an additional category of interactions: deeper life (Beckowski & Gebauer, 2018; Sriram, Haynes, Cheatle, et al., 2020; Sriram & McLevain, 2016). Deeper life interactions involve conversations about meaning, value, and purpose and are distinct from interactions that are social or academic in nature. Additionally, numerous scholars have explained how a living-learning community experience increases the opportunities

for such distinct interactions (Brower & Inkelas, 2010; Inkelas et al., 2018; Mayhew et al., 2016; Sriram, Haynes, Weintraub, et al., 2020).

When measuring student success as an outcome, much of the existing research argues for various and sometimes competing metrics (e.g., engagement, retention, involvement, GPA). Thriving offers a point of observation that moves beyond traditional perspectives to comprehensively include the academic, interpersonal, and intrapersonal domains of students' lives. Thriving is a holistic measure of success, embodying and supplementing many of the existing theories of how and why students succeed (Schriener, Pothoven et al., 2009).

The purpose of this study is to integrate varying types of student interactions with the campus constituents who matter most and determine how these relationships help foster holistic student success. As such, this study fills an important gap in the literature by addressing the following questions: Do academic, social, and deeper life interactions with peers, faculty, and staff influence thriving for living-learning community students? If so, what is a model that can explain the relative strength of the effects on five thriving factors? Through structural equation modeling (SEM), a visual model emerged explaining the contributions of significant pathways among interaction and student success variables. The findings in this study provide evidence to support the role of distinct interactions as predictors of college student thriving for living-learning community students. This chapter first discusses the details of these pathways, explaining the how the SEM results intersect with existing literature and why they are significant for understanding student success. Then, limitations are acknowledged and implications for theory, practice, and future research are discussed.

Discussion of Major Findings

The following sections unpack the pathways (regression coefficient paths) related to each thriving factor. Only significant contributions from interactions to thriving are discussed.

Pathways to Thriving: Engaged Learning

The model developed from this study explained 51% of the variance in engaged learning. Deeper life interactions with faculty and staff demonstrated strong total effects on engaged learning (β = .253). A sample item from this scale is: *I feel very comfortable engaging in conversation with faculty or staff about life's big questions (e.g., Who am I? Does God exist? What is the meaning of life? What is my purpose?).* This is telling of the power of deeper life interactions, and evidence that the connections students make with professors regarding their purpose and meaning in life is a strong motivator for learning. This is further explained by observing how a small portion of this variance (β = .10) was mediated directly through positive perspective and indirectly through academic determination. This is unsurprising, as deeper life interactions with faculty and staff would be expected to influence these outcomes due to the nature of construct indicators (i.e., *I feel very comfortable engaging in conversation with faculty or staff about what I should do with my life*; *I have discussions with faculty or staff that cause me to examine or reflect on my own beliefs or values*). Deeper life interactions occur around life's big questions and meaning making through role modeling and emotional and psychosocial support. The final model demonstrates that deeper life interactions with faculty and staff leads students to feel energized by their classes, to apply coursework to other areas of

life, and to reflect on their classes even when they are not in class (Schreiner & Louis, 2006).

The largest direct effect toward engaged learning came from another component of thriving: academic determination (β = .398). This connection aligns with previous studies on the importance of academic resiliency and academic self-efficacy (Chemers, Hu, & Garcia, 2001; Kamin, 2009; Morales, 2008). Academic interactions with faculty also had a large effect on engaged learning (β = .237). However, these interactions were indirectly mediated through academic determination, meaning that academic interactions with faculty influence academic determination which, in turn, promotes engaged learning. Further, and contradicting previous literature (Mayhew et al., 2016), academic interactions with peers did not significantly predict engaged learning. The reason for the lack of peer influence on engaged learning may be that these effects were subsumed by interactions with faculty, further justifying the need to study peer, faculty, and staff interactions together. This is counterintuitive at first glance, as it might be assumed that the academic atmosphere stressed in these environments would bolster the contributors of engaged learning. However, it should be noted that academic interactions with peers indirectly influenced engaged learning through academic determination (β = .091). In other words, academic interactions with peers positively influence students' academic determination, which then increases engaged learning. Though distinct, the academic domains of thriving are closely linked theoretically, which helps explain this result.

Another indirect effect on engaged learning occurred with positive perspective. Both academic interactions with staff and deeper life interactions with peers influenced positive perspective, but only through the mediating variable of academic determination

(β = .151). These relationships further reinforce the need to measure student success in ways beyond just academic performance. This finding also demonstrates that students can cultivate personal academic missions and grit toward their learning through the support offered from sources beyond their professors. This support gives students the space to observe life in a big-picture or long-term way, which has been shown to generate more positive emotions and higher levels of satisfaction with the college experience (Schreiner, Pothoven, et al., 2009).

Pathways to Thriving: Academic Determination

The final model explained 51.2% of the variance in the academic determination construct. Students that are academically determined embody the attitudes and behaviors that empower them to persevere through difficult academic situations and endure challenges associated with attaining academic goals (Schreiner, 2010c). Deeper life interactions with faculty or staff was the interaction variable with the strongest total effect (β = .249) on academic determination. The strength of this prediction offers insight into one of the central elements of academic determination, the concept of hope (Schreiner, 2013). Students exhibiting high levels of hope believe they can and will accomplish their goals and discern what strategies can help them get there (Papantoniou et al., 2013). Deeper life interactions, such as conversations about a student's value, can spur the hope that drives students toward achieving academically. Additionally, a moderate portion of the variance (β = .12) from deeper life interactions with faculty or staff was indirect, operating through positive perspective. This mediation reinforces the ways that such interactions influence hope and effort investment. In fact, the positive

perspective variable had the strongest overall total and direct effect (β = .379) on academic determination.

Academic interactions with peers was the second strongest direct predictor and the third strongest total predictor (β = .229). This finding confirms previous studies that highlight the academic value of living-learning communities in regard to peer proximity (Inkelas & Weisman, 2003; Mayhew et al., 2016). In the context of living-learning communities, this often occurs through peer study groups or programs in the residential environment that allow students to partner with each other on their academic journeys (Inkelas et al., 2018).

Academic interactions with faculty followed as the third strongest direct predictor (β = .188). These interactions have been shown in the literature to positively contribute to students' academic performance (Kuh & Hu, 2001). When students know there are professors at their institution they can speak to when struggling academically, or if they feel their faculty care about helping them to be academically successful, they develop the psychological confidence needed for environmental mastery (Ryff, 1980), which is one of the theoretical underpinnings for academic determination. In this way, their academic conversations with faculty not only help their performance in the classroom, but also help them to psychologically engage in learning and understand their effort as determination toward their course goals (Schreiner, 2010c).

Finally, academic interactions with staff and deeper life interactions with peers had no direct predictive variance toward academic determination. There were, however, small indirect effects of these interactions on academic determination through the positive perspective construct. Though somewhat contradictory to Pike and Kuh's (2005)

research, this is a logical finding, given that academic interactions with staff are often more predictive of interpersonal outcomes (Graham et al., 2018, Mayhew et al., 2016, Umbach & Wawrzynski, 2005) than academic outcomes.

Pathways to Thriving: Social Connectedness

The model explained 46.9% of the variance in the social connectedness construct. The pathway from deeper life interactions with peers to social connectedness was the strongest single predictor ($\beta = .477$) for any of the thriving variables in the model. In related research on thriving (Schreiner et al., 2013), social connectedness has often been presented as having the lowest mean score of all the thriving factors. Though this is confirmed in the second-order thriving CFA (Figure 4.9) and the MIMIC model (Figure 4.11), the strength of deeper life interactions with peers validates the importance of deeper life to thriving through social connections. The nearness of students to peers when residing together in living-learning communities provides opportunities for such interactions to regularly occur. These deeper life interactions reinforce friendships, but more so they help students feel psychologically connected to peers, which here manifests in high predictive variance toward the social connectedness element of thriving. Related to this, and counterintuitive to assumptions, it is interesting in this study how deeper life interactions have much more influence on social connectedness than social interactions with peers. This explains that the power of social interactions with peers is in the safety and friendships that allow for deeper life interactions with peers to occur.

Two negative relationships were reported in predicting social connectedness: academic interactions with staff and deeper life interactions with faculty and staff. These were the only negative predictors in the final model. Academic interactions with staff was

small in size (β = –.078). One explanation for this negative relationship relates to previous interaction research (Sriram, Haynes, Cheatle, et al., 2020). When students have academic interactions, they are keenly aware of when they are in conversation with faculty or when they are in conversation with staff. In this case, when students have academic interactions with staff they might not feel the same level of academic assistance that they feel with faculty, especially if the conversation regards course content. Moreover, student conversations that are academical in nature with staff may be punitive or remedial in content (e.g., academic probation, meeting academic requirements for scholarships, academic support services). As the thriving factors are interrelated, this could potentially lead to diminished feelings of support, as highlighted by items such as, *if I was struggling academically, there are staff at my institution I can go to*. Though the social connectedness items mainly refer to peers, sense of community (Lounsbury & DeNeui, 1995) and positive relationships (Ryff & Keyes, 1995) embody two of the primary underlying theories. In turn, if students do not feel the academic support needed in the moment through a conversation with a professional staff member, their sense of being a valued member of the community might be diminished.

The distinction between professors and professionals is also relevant to the deeper life interactions with faculty and staff that negatively predicts social connectedness. Deeper life interactions with faculty or staff had a moderate negative effect on social connectedness (β = –.162). All participants in this study were enrolled at high or very high research institutions with 5,000 or more students. Some scholarship highlights the lack of teacher training for tenure-track faculty (Brighouse, 2019) and the emphasis on research over teaching within research-heavy universities (Boyer, 1990). Though these

interactions were very strong for the academic outcomes of thriving, students might feel a lack of communal support as related to social connectedness.

A second reasonable explanation is that a possible suppression effect might be present. This is when a third variable increases the regression coefficient between an independent and dependent variable by its inclusion in a regression equation (Conger, 1974). When these effects are not controlled for, the relationship between the variables can appear to be smaller or even reflected to the opposite sign due to a mediating variable (Cheung & Lau, 2008; Cohen & Cohen, 1983). Mediating variables explain relationships between predictors and outcomes. In this case, both of these predictor variables are mediated (shown in their indirect effects) to social connectedness through positive perspective and academic determination. As described earlier, positive perspective strongly contributed ($\beta = .379$) to academic determination and, in turn, academic determination contributed moderately ($\beta = .128$) to social connectedness. Suppression is rarely examined in organizational and psychological research and, aside from adding a regression equation between the independent and mediating variable (which was tested through modification indices), few good techniques exist for measuring suppression effects (Cheung & Lau, 2008).

These explanations are partially reinforced by the fact that social interactions—time with faculty/staff did not significantly predict social connectedness. Spending quality time with faculty or staff increased diverse citizenship, but the greetings exchanged (social interactions—greetings with faculty/staff) were what strongly contributed to social connectedness ($\beta = .232$). It appears that while deep conversations helped students thrive in other domains, the casual greetings and light-hearted

conversations reinforced the community perceived through social connectedness. As demonstrated in the model, the social interactions students have with peers have a strong effect on thriving in regards to social connectedness (β = .188). This finding is reinforced by Chambliss and Takacs (2014), noting the importance of finding friends and "failing that, little else matters" (p. 3). Furthermore, students thriving socially see their social milieu as an opportunity to learn from peers (Schreiner, 2010b). Peer support networks cultivate this element of success. In the context of living-learning communities, students are exposed to myriad opportunities to engage in these networks that, as shown here, can predict their success.

Pathways to Thriving: Diverse Citizenship

The model explained 53.7% of the variance in the diverse citizenship construct. Diverse citizenship is a combination of openness toward others, valuing the differences in others, and a desire to make a contribution to one's community with the confidence to do so (Schreiner et al., 2012). Deeper life interactions with faculty/staff had a strong direct contribution (β = .224) to diverse citizenship. This result supports previous findings from Astin (1993) on how students' conversations with faculty in non-academic settings help them develop agency thinking toward civic mindedness and responsibility. These findings also corroborate results from Pascarella, Ethington, and Smart (1988) that highlight how students' familiarity with faculty and staff has a significant direct effect on the development of humanitarian/civic involvement values. In further stressing the importance of staff, these authors comment, "Of all constituencies on campus, student personnel professionals may be in the best position, both in terms of inclination and knowledge of student development, to speak to the issue" (Pascarella et al., 1988). They

note that the work staff engage with regarding the development of citizenship values critically determines the extent to which the institution influences student development in this area. Deeper life interactions with faculty/staff also had the strongest total effect on diverse citizenship (β = .351). Some of this predictive variance was indirect (β = .127), mediated through the positive perspective variable, which also moderately contributed (β = .16) to diverse citizenship.

Although none of the academic interaction variables directly predicted diverse citizenship, they all indirectly predicted this outcome. Much of this indirect variance was mediated through academic determination, which strongly explained (β = .309) the variable. This is important to note because it offers evidence that academic interactions did in fact contribute to diverse citizenship, albeit indirectly through the academic factors of thriving. This finding highlights the frequent blend of in- and out-of-class engagement students are exposed to in living-learning communities. Part of this could be derived from experiences often offered in living-learning communities, such as service-learning. A service-learning program embodies an initiative Inkelas et al. (2018) consider the pinnacle of living-learning communities: intentional integration. Moely, McFarland, Miron, Mercer, and Ilustre (2002) also offer evidence that students involved with service-learning demonstrate increased plans for future civic action.

Social interactions with peers had a moderate influence on diverse citizenship (β = .156). Previous studies have validated how interacting with peers influences value development, such as citizenship engagement (Astin, 1984; Gurin et al., 2002; Vreeland & Bidwell, 1966). However, Pascarella et al.'s (1988) study determined institutional size as negatively predictive of civic engagement. Their results convey that regardless of

academic selectivity or predominant race of the student body, attending a large (total student enrollment) institution had a significant negative influence on the development of humanitarian/civic involvement values (Pascarella et al., 1988). They note that "the interpersonal redundancy of large institutions tends to diminish the impact of college by inhibiting opportunities for social involvement and interactions with important agents of socialization on campus" (p. 431). Evidence from the current study contradicts these findings, as all students in the sample (n=903) attend a research university with 5,000+ students. These results may demonstrate the progress large institutions have made in fostering the holistic development of college students. For example, the living-learning communities established by these large institutions may have provided social interactions in a more psychologically safe environment. This environment, then, could have contributed to the levels of diverse citizenship found in this study.

Additionally, though some research stresses that "over-interaction" with peers might lead to unfavorable outcomes from living-learning communities (Henscheid, 1996), these findings tell a different story. This study cannot conclude that the living environment in which students participate causes diverse citizenship, but this study does conclude that the abundance of social interaction with peers that students are exposed to meaningfully contributes to this outcome.

Pathways to Thriving: Positive Perspective

The model explained 28% of the variance in the positive perspective construct. Positive perspective represents a student's outlook on life, embodying not merely an optimistic view, but viewing reality honestly to cope with what is real versus what is expected (Schreiner, 2010a). Students that foster positive perspective are confident in

their ability to achieve goals and persevere in the face of challenges (Schreiner, 2010a). Although the overall variance explained by interactions for this variable was the lowest of all thriving factors, the direct contributions were sizable. Academic interactions with staff moderately contributed (β = .136), as did deeper life interaction with peers (β = .169). Deeper life interactions with faculty/staff, however, was a large contributor to positive perspective (β = .313). Positive perspective is important for academic outcomes (Rice, Leever, Christopher, & Porter, 2006), and in this study's model positive perspective had a large influence on academic determination (β = .379).

None of the social interaction variables had a statistically significant effect on positive perspective. This contradicts previous literature that demonstrates positive perspective as aiding in the development of social networks (Brissette et al., 2002). However, participants in this study felt that deeper life interactions contributed more to their intrapersonal well-being and sense of optimism (Carver et al., 2009) than social interactions. The fact that deeper life interactions with faculty/staff was the strongest direct predictor (and the fourth strongest in the entire model) demonstrates that interactions beyond the academic and social realms of the student experience are important for intrapersonal and psychological thriving. Having an optimistic perspective on life or being able to look for the best in situations when things seem hopeless stems from conversations with faculty and staff that go deeper and address matters of meaning, value, and purpose.

General Interactions and Student Success

To view the data from a broader perspective, I tested the interaction groups (academic, social, and deeper life) against a composite thriving variable through a

Multiple Indicators—Multiple Causes (MIMIC) model (Jöreskog & Goldberger, 1975). This allowed me to investigate how observed variables (composite interaction groupings) predict a latent student success construct (thriving). Sriram (2017) notes that SEM does not offer a *yes or no* answer to how a model fits a data set. Rather, it explains *to what extent* the model fits the data. Constructing this MIMIC model helped further explore how well the theoretical assumptions and predictions in this study intersect with the utilized sample. SEM allowed for a detailed picture of the unique ways different types of interactions with different constituents relate to the five factors of student thriving. The MIMIC model, by contrast, provided insight into how general interaction groupings predict overall thriving. Student interactions, in the aggregate, accounted for 66.2% of the variance in college student Thriving.

In the MIMIC model, academic interactions strongly contribute to the variance in college student thriving ($\beta = .287$). These interactions, whether occurring with faculty, staff, or peers, offer evidence that interactions regarding course material, class schedules, academic tips, and resources are crucial to student success. However, this also demonstrates that the psychological assurance of having individuals on campus who are available to support the academic journey is an important contributor to this success.

Additionally, social interactions have a strong impact ($\beta = .206$) on college student thriving. Social interactions, though still strongly contributing to student success, was the lowest of the groups in predictive ability. This was interesting given that—of the direct interaction pathways to thriving in the structural model—the interpersonal variables (social connectedness and diverse citizenship) contained the majority of significant paths. Out of the 17 direct pathways from an interaction variable to a thriving

variable, eight of them predicted one of the two interpersonal thriving factors. Studying these pathways further in the SEM model, it was interesting to note how the interaction groups aligned with the thriving domains. In the academic domain (engaged learning and academic determination), academic interactions represented the highest number of direct pathways. In the interpersonal domain (social connectedness and diverse citizenship), social interactions represented the highest number of direct pathways. In the intrapersonal domain (positive perspective), deeper life interactions represented the highest number of direct pathways. In terms of quantity of pathways, there was alignment. In terms of quality and strength of pathways, however, deeper life interactions represented the strongest contribution to overall thriving, as described below.

In the MIMIC model, deeper life interactions offered the strongest contribution ($\beta = .436$) to the variance in college student thriving. This finding is evidence that interactions should not be limited in research to academic and social experiences. In fact, there were more deeper life direct pathways in the SEM model to all thriving variables than in any other group. These interactions, while representing the highest count regarding intrapersonal thriving, make up a total of seven of the 17 SEM pathways.

Social and academic interactions loom large in the literature because deeper life interactions are rarely measured. Cox (2011) highlights the importance of quality of interaction over quantity, stressing that even a single positive encounter with a professor can greatly inform a student's perception of the entire faculty. Beckowski and Gebauer's (2018) research on deeper life interactions demonstrates how this quality is brought to life. They noted in their study that deeper life interactions promoted student learning, using interpersonal connection and meaning-making as foundations for academic

productivity. This primarily occurred through the transparency brought forth in dialogue between students and faculty about their decision to attend college, life experiences that preceded their arrival on campus, and the identification of fears and opportunities. (Beckowski & Gebauer, 2018). When deeper life interactions are added to a model of social and academic interactions, it is clear that some of the greatest value from social and academic interactions is how they lead to deeper life interactions. The greatest contributor to holistic college student success are the interactions with peers, faculty, and staff that occur around meaning, value, and purpose.

Implications for Practice

The findings in this study provide several implications to improve practice in higher education. In an age of accountability, faculty, staff, and administrators are continually in search of empirically proven methods for helping their institutions and their students succeed. The implications I discuss here stem from the central research questions, the model developed from this study, and the supporting literature.

Foster Deeper Life Interactions

Most research on college student interactions highlights the academic and social nature of interactions. This is largely a result of Tinto's (1975) framework emphasizing these two areas as primary to the college experience and crucial for student success. However, research on deeper life interactions is a thread starting to gain traction for its significance to the college journey (Astin et al., 2011; Beckowski & Gebauer, 2018; Clydesdale, 2015; Sriram & McLevain, 2016; Sriram et al., *in press*). This valid and reliable construct helps account for differences between deeper and more surface-level

interactions. The results of this study demonstrate that deeper life interactions with peers, faculty, and staff is a powerful influence on holistic student success. Previous research (Sriram, Hayes, Cheatle, et al., 2020) measures deeper life interactions with faculty and staff together. I adopted the same approach for measurement purposes, but this is also theoretically supportable. Faculty and staff are grouped because it has been shown in Sriram, Hayes, Cheatle, et al.'s (2020) study that students having these interactions is more important than deciphering who they are having them with. Regardless of whether students engage in deeper life interactions with faculty or with staff, it is critical they are occurring with someone. And in this case, either faculty and staff were shown to be influential.

It is a relatively straightforward process for faculty or staff to exchange greetings with students, ask them about their day, or help them understand an assignment. And it should be noted that these are all important interactions that build sense of community and promote success. However, it is more challenging and time consuming to engage with students in interactions about meaning, value, and purpose. It takes intentional investment to have conversations about life's big questions or help students reflect on their beliefs. Nonetheless, deeper life interactions with faculty and staff was influential for the thriving factors.

With these results in mind, faculty, staff, and administrators should diligently seek ways to foster such interactions. How can institutions of higher education provide faculty and staff the time and resources to interact with students in deeper ways? This could take the form of examining whether typical structures for out-of-class interaction (e.g., office hours) are best suited for encouraging more meaningful interactions between faculty/staff

and students. For example, campus leaders could allow for faculty to take students to coffee or share a meal with students and count that time as office hours. Institutions could promote faculty-in-residence programs, where faculty and their families live in apartments located within student residential communities. Another possibility is to place faculty offices in places where students tend to gather, such as residential communities or student union buildings.

For student-staff deeper life interactions, colleges can be intentional about the mentoring role student affairs professionals can play (Martin & Seifert, 2011). Academic advisors can be encouraged to have conversations that allow students to verbally process their purpose for coming to college and how they hope to use this experience for the common good. Advising styles such as learning-centered advising (Reynolds, 2013) could help facilitate this. Additionally, programs designed to foster deeper life interaction could be influential in this area. Campus speaker series that help students reflect on their role in society would embody this from a broader perspective. On a more intimate level, faculty or staff mentoring programs are great areas to promote deeper life interactions. While guidance is provided in such relationships, the personal outlet for students and faculty or staff to engage in meaningful connection is ripe with opportunities for deeper discussion (Chambliss & Takacs, 2014).

Finally, campus programs such as living-learning communities possibly provide an environment for deeper life interactions to regularly occur. With faculty and staff often collaborating to support student success in these environments, it makes sense to meet students where they are. Partners in these communities, such as residence hall directors and faculty-in-residence, should be aware of how critical deeper life interactions are to

student thriving. They should also understand how their programs provide ample opportunities for these interactions to occur. With that knowledge they should be encouraged to think about how academic and social interactions can lead to conversations on a deeper level with students (McLevain & Sriram, unpublished manuscript). This environmental opportunity is discussed in more depth below.

Encourage Living-Learning Community Participation and Creation

Existing scholarship stresses the living-learning environment as conducive to increased interactions with faculty, staff, and peers (Inkelas et al., 2018, Mayhew et al., 2016). This study does not argue that these environments in themselves promote student success, but rather that the interactions in which students engage influences their success. Though clearly not all of the interactions a student has on campus are within a living-learning community, it is assumed these environments greatly promote interaction. Therefore, students should be encouraged to participate in such programs, as long as these programs continue to promote access to meaningful interaction.

Kuh et al. (2010) articulate that simply offering such programs and practices does not guarantee they will have the intended effects on student success. Rather, they must be of high quality, customized to meet the needs of students they are intended to reach, and firmly rooted in a student success-oriented campus culture. This is vital given that many living-learning communities are geared toward first-year students. Swail (2004) discusses the cumulative nature of effects on campus. To set students on a trajectory for success, starting their diverse interactions early is important. But, this is not just important for the students. Some scholars (Smith et al., 2004; Sriram et al., 2011) highlight that when

thoughtfully designed and implemented, these environments deepen the ways students *and* teachers learn.

Pascarella and Terenzini (2005) state that environments which facilitate frequent informal interaction are more likely at a small, residential college than at a large university. However, I would argue that living-learning communities make the expanse of space at large universities more digestible. This study demonstrates that interactions stimulate success, even at large research universities. Therefore, staff and administrators at any size institution need to consider how constructing living-learning communities, by utilizing existing residence halls or with building new facilities, might help kindle academic, social, and deeper life interactions with various constituents.

Smith et al. (2004) state that the future of learning communities, and I would add living-learning communities, is ours to construct. Administrators who are contemplating ways to position the environment for student success should take into consideration how interactions play a role, as this study demonstrates. However, not all students will participate in such programs, which is why such high level of exposure to interactions should be extended to more spaces across campus.

Create Opportunities for Interaction Across Campus

Kuh et al. (2010) identify interactions as conditions that matter strongly for student success. It is important that opportunities for interaction are pursued on all types of campuses for all students. Although living-learning communities were selected as an ideal choice for the context of this study, these programs may not be suitable for all campuses and do not serve all students. Campuses can invite non-residential students to have membership in these communities, and other programs can emulate the benefits of

living-learning communities for non-residential students. Due to the available evidence on how critical living-learning environments can be for student success, Inkelas and Weisman (2003) discuss the importance for campus leaders to create ways for students who are not in living-learning communities to access these environments without a program structure. Beckowski and Gebauer (2018) demonstrate that a community fostering faculty–student relationships that give rise to deeper life interactions can exist without a residential component. However, peer interactions are also important in considering opportunities for interaction.

This study contributes to the existing body of evidence (e.g., Antonio, 2001; Astin, 1993; Lopez, 2004; Weidman, 1989) outlining the powerful impact of peer interactions on student success. Campus leaders should promote interactions between students and their peers. This could include mixing student classifications in residential communities—as opposed to isolating first-year students—to get diverse inter-grouping interactions. In order to promote interaction on a micro scale, other opportunities could look like peer mentoring programs. On a macro scale, this could be placing peer tutoring offices in high-traffic areas such as residence halls or student union buildings. Increased peer traffic can provide increased opportunities. However, it is important to note that just because students are out and about on campus does not necessarily mean they are interacting. It is important for administrators to be intentional about generating occasions for peer interactions.

While reaching all students can be accomplished on a more visible programmatic or environmental level, it can also come through small yet significant changes to campus culture. For example, strategically thinking about space and place by arranging student

lounge and studying furniture near faculty offices is one way to get professors and their students to interact (Kuh et al., 2010). If students are the primary reason faculty and staff exist on campus, then work spaces for faculty and staff should be designed with student access and interaction in mind, rather than thinking of work spaces as places to escape the distractions of students.

Along these lines, faculty and staff should be intentional about getting in the way of students, in the most constructive manner (Light, 2001). This study emphasizes that the interactions students have with faculty and staff have a powerful impact on their holistic success in terms of their engaged learning, academic determination, social connectedness, diverse citizenship, and positive perspective. It is also important to note that even cordial greetings (i.e., asking students how they are doing) can go a long way. For example, the variable social interactions—greetings with faculty/staff significantly and positively predicted both engaged learning and social connectedness. Taking the time to greet students by name in passing increases their sense of connectedness to the campus and opens a door toward more meaningful interactions that can positively shape students' lives. On a practical level, this can look like learning students' names, putting an extra chair in offices, and leaving office doors open to welcome conversation. It takes a willingness from faculty and staff to be disrupted, but one that proves to benefit college student thriving.

Tailor Programming to Promote Interactions with Professional Staff

Tinto's (1975) research on academic and social experiences resulted in interaction research often focused around students' interactions with faculty and with peers. These are the two constituents most often referred to in discussions of academic or social

interactions. However, the results from this study confirm what other previous literature identifies: the powerful effects that staff interactions can have on student outcomes (Ewers, 2007; Graham et al., 2018; Martin & Seifert, 2011). Many professional staff members, especially in areas related to student affairs, aim to mentor students and connect them to support structures. In equal emphasis to student-faculty interaction, campus leaders should consider how to get students to engage with fellow staff members. These professionals have educational credentials and life experiences that provide value for students. Speaking at programs or facilitating workshops are two examples, but also getting professional staff to stop by programs to greet students could be beneficial for to the success of students.

The results of this study substantiated previous research (Sriram, Haynes, Cheatle, et al., 2020) observing that students do not necessarily differentiate between faculty and staff during social or deeper life interactions (students do make such a distinction in academic interactions). As such, campus leaders should consider how both faculty and staff can be involved with initiatives aimed to promote interaction. Faculty have different roles than professional staff members, and their reward structures allow them to participate in co-curricular programming in different ways. Staff should not be perceived as a second-best option to bringing faculty into program initiatives, but should be prioritized as an equally resourceful connection. This study showed that even in regard to academic outcomes, these professional staff, both directly and indirectly, can offer meaningful interactions that contribute positively to thriving.

Consider How Success Should Be Measured Holistically

One of the fundamental arguments of this research study is that college student success should be defined and measured beyond merely GPA or graduation. Student success is a holistic outcome, and the construct of thriving is an evidence-based way to measure that outcome. Thriving students experience optimal functioning in three areas: 1) academic engagement and performance, 2) interpersonal relationships, and 3) intrapersonal well-being (Schreiner, McIntosh, et al., 2009). Essentially, students who thrive are fully engaged in the college endeavor—intellectually, socially, and emotionally (Schreiner, Louis, & Nelson, 2012).

Faculty, staff, and administrators should consider these elements when determining what success for students entails in their respective areas. For the staff member, it might consist of asking what success means beyond program participation or attendance. How might co-curricular strategies reinforce the academic mission? For faculty members, course grades are a clear mark of success. But what would it look like to simultaneously encourage diverse citizenship or positive perspective? For the administrator, it could mean getting proactive with retention by strategically exploring what programs, policies, and places of the student experience contribute most to thriving—a precursor to student persistence. This could mean asking, for first-year students who persist, what does their success entail psychologically or socially?

Students who return for their second year and have a high GPA might actually be severely struggling. If success is limited to singular outcomes, the collective work of faculty, staff, and administrators might continue to be siloed. It might not be reaching its full holistic potential. Outlets such as The Chronicle highlight how some institutions are

taking proactive roles to help students consider what success means through teaching them about personal human flourishing (Supiano, 2018). This is important because it is a step toward giving students the opportunity to thrive and helping them learn *how* to thrive.

Implications for Theory

In addition to implications for practice, implications for current theory emerged. The first is that scholarship related to student interactions needs to be inclusive of the variety of constituents that contribute to success. Many scholars bifurcate interaction into academic and social categories (Cotten & Wilson, 2006; Garrett and Zabriskie, 2003; Kuh & Hu, 2001). Additionally, many scholars limit their studies to interactions occurring exclusively between students and faculty or students and peers (Umbach & Wawrzynski, 2005; Stassen, 2003; Domizi, 2008). The findings from this study demonstrate that inclusion of staff as a key campus constituent for students and the addition of deeper life interactions as an essential category of student interactions fills an important void in understanding the ways interactions influence college student success. This study also shows the importance of inclusivity from a measurement standpoint. Research cannot unearth the true effects of peer, faculty, and staff interactions unless all are measured and examined in the same model. Likewise, the importance of deeper life interactions has mostly gone undetected in prior research because of it has rarely been measured in prior literature (Astin et al., 2011).

It is also important to consider how different types interactions have different effects on students. For example, students are acutely aware of when they interact with faculty and when they interact with staff concerning their academics, but they do not

differentiate between faculty and staff in deeper life or social interactions. When it comes to peer interactions, students clearly distinguish academic, social, and deeper life interactions from one another. Parceling out the *what type* and *with whom* questions pursued in this study is critical for theorizing about interactions and student success. Research on the types and constituents involved in interactions needs to include the staff and deeper life elements.

When limiting the findings of this study's model to only the largest effects, interactions with faculty or staff positively influenced all five factors of thriving: engaged learning, academic determination, social connectedness, diverse citizenship, and positive perspective. Academic interactions with faculty contributed to engaged learning and academic determination. Social interactions with faculty or staff—greetings impacted social connectedness. Deeper life interactions with faculty or staff influenced engaged learning, academic determination, diverse citizenship, and positive perspective.

Likewise, interactions with peers positively contributed to three factors of thriving: academic determination, social connectedness, and positive perspective. Academic interactions with peers contributed to academic determination. Social interactions with peers impacted social connectedness. Deeper life interactions with peers influenced social connectedness and positive perspective. Figure 15.1 graphically illustrates these strongest model effects of interactions on thriving factors in a concise way.

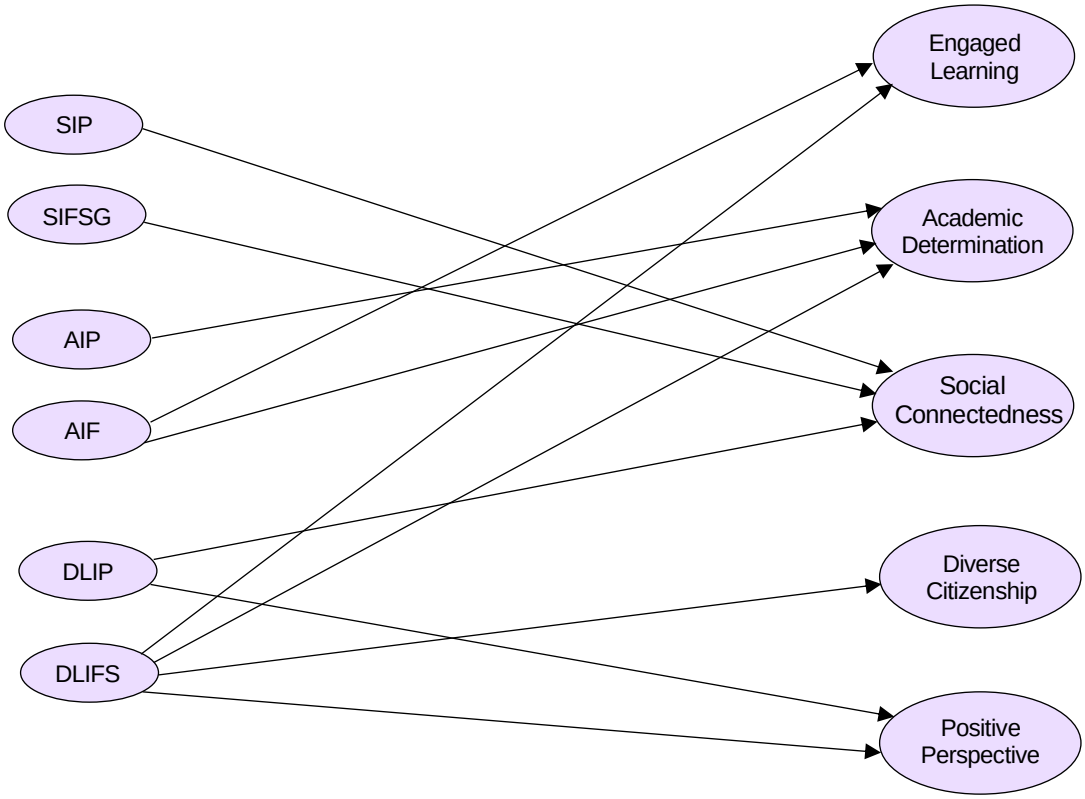

Figure 5.1. Concise Model of Strongest Interaction Pathways

Altogether, the model developed from this study helps to explain how certain types of interactions with particular campus constituents lead to holistic college student outcomes. The comparative strength of these effects is offered in Table 4.6 in the Results chapter.

Another implication for theory concerns living-learning and housing related scholarship. Many studies in these areas generally observe the distinction in certain on-campus and off-campus environments, comparing their differences to make a case for how they add value to the student experience. Though I agree with many of the conclusions from such studies, this study demonstrated the importance of focusing on causal pathways to success rather than correlated outcomes of success. Although it is helpful to show how students in living-learning communities score differently than off-

campus students on an instrument measuring an outcome of success, exploring the nuance of how and why that is the case allows for deeper insight into such differences, rather than speculation. In other words, this study sheds light on what campus environments like living-learning communities specifically do that leads to positive student outcomes. It is not so much whether or not an institution has a program with a particular label on campus. Instead, what matters is how campus programs, policies, and places help students interact with one another, with faculty, and with staff in academic, social, and deeper life ways.

It is difficult to make the claim that one's place of residence is the *cause* for changes to an outcome. By exploring the underlying processes (i.e., interactions) involved, this study makes the case that scholars theorizing about residential experiences and success should incorporate causal methodologies. Although comparing differences is helpful, understanding what caused such differences allows for a more complete picture of a phenomenon.

Limitations of the Study

Although this study successfully achieved its intended purpose of creating a structural model explaining predictive pathways from interactions to the factors of thriving, limitations exist. The first limitation concerns the sample. The usable dataset was large (n = 903) and included students from eight institutions, allowing results to be generalizable to undergraduates in living-learning communities. However, over 400 additional observations were not included due to incomplete surveys. Further, representation between institutions and within living-learning communities was not equitably distributed (some specific communities had low response rates), and only one

private institution was represented. Although intentionally set as a delimiter, the data only represents institutions with over 5,000 students. This omits a large number of institutions in the US, some of which indeed have living-learning communities. Enlarging the sample while including more private institutions, smaller institutions, and wider representation of living-learning communities among campuses would enhance the generalizability of the findings.

Second and also related to the sample, this study is limited by omitting inclusion of demographic characteristics into the analytic procedures. The conceptual framework and resulting hypothesized model did not account for conditional effects. Rather, an omnibus model was created to get a comprehensive understanding of universal interaction pathways predicting thriving. This also allowed the final model to be more parsimonious. Vetter (2018) explains that "most demographic characteristics are not theorized to produce isolated pathways to thriving…. Rather, students from minoritized communities experience the same set of college experiences and attitudes, but likely witness those experiences differently" (p. 136). Nonetheless, it should be noted that men were underrepresented (29.7%) in the sample and White students comprised the majority of responses (64.4%). The omnibus model established a baseline, and future research that explores conditional effects related to demographic variables should address this limitation.

A third limitation of this study is that it is non-experimental, meaning I attempted not to compare groups, but instead examine the relationships among variables (Sriram, 2017). Although this is advantageous to uncovering how interactions relate to student success, it does little to verify how students in living-learning communities, for example,

might interact with faculty, staff, peers differently than students living off-campus. Using additional data from off-campus students in a quasi-experimental design could address this limitation.

A fourth limitation concerns the use of self-reported data and student self-selection to the established groups utilized. Some scholars question the reliability of self-reported data that is behavioral in nature (Porter, 2011). Therefore, this study measured attitudes about interactions instead of attempting to measure the quantity of interactions. Quantity of interactions could be measured through additional data gathering methods (e.g., direct measures). There is also concern related to self-selection bias when observing students in living-learning communities (Inkelas & Soldner, 2011). This potentially leads to variable differences between communities. Do students who chose to live in these communities differ from students who did not? If so, were they preemptively inclined due to certain characteristics to engage in specific interactions? Such questions could pose limitations. Also, by not knowing if students who chose to participate in this study differ from students who did not, selection bias can likewise relate specifically to data gathering.

A final limitation of this study is the lack of exploration around suppressor effects related to social connectedness in the final model. Suppression can occur in SEM when several sources of variance exist. When a pathway is unobserved, error variance captures a portion of the suppressed regression. With this, the relationship can become diminished or yield the opposite sign. Although there are not many methods to account for suppression (Cheung & Lau, 2008), a regression line could be added to the mediating variable, even if it is not significant. However, this was not theoretically justified and was

avoided in this study. As such, suppressor effects were hypothesized as a justifiable assumption for the two negative pathways.

Suggestions for Future Research

The results of this study offer clarity to the strong connection between the interactions of students in living-learning communities and their success in the academic, interpersonal, and intrapersonal domains of the college experience. Multiple recommendations for scholars studying interactions, thriving, and living-learning communities might add to this clarity. The first recommendation concerns living-learning structures or spaces and their role in facilitating interactions. The communities surveyed in this study represented various hall structures (e.g., traditional, suite style, apartment style). Some scholars have stressed the need to further study the types of housing construction and their influences on students (Banning & Kuk, 2011; Bronkema & Bowman, 2017). Understanding the difference between these types of communities and how students experience interactions would enable researchers to have a better understanding of the environmental influence. Although the demand from students often drives construction of apartment and suite-style buildings (Cross et al., 2009), empirical research on how differently constructed communities facilitate opportunities of interaction could help administrators make informed decisions about construction that best benefit student success.

The qualitative experiences of students in regard to their interactions was not explored in this study, which is another area for future research. This study captures the collective voice of students through a survey research design. Unearthing individual voices to gather a more complete picture of how interactions inform success would be

valuable. Such research helps provide "greater power to explain the why of causal relationships" (Pascarella, 2006, p. 515). Although some research investigates faculty involvement in living-learning communities (Sriram et al., 2011), qualitative studies on faculty and staff perceptions of interactions would also elaborate on the power that interactions hold in relation to thriving. Additionally, most participants in this study were first-years students. How do students perceive interactions as their college career progresses? Longitudinal studies would help capture additional nuance to how interactions might change over the course of time (and between environments, as many first-year students move off-campus after an initial year).

Future research should explore the context beyond that offered in this study. Primarily, additional studies are needed to compare living-learning communities to other types of communities in relation to how interactions occur. As Beckowski and Gebauer (2018) demonstrated, this should also be applied to non-residential learning communities. Aside from environmental context, conditional effects also need to be explored. How do interactions influence thriving for different groups of students, such as first-generation, transfer, or students of color?

A final recommendation for research is related to interactions and their implications as technology advances. I am writing this dissertation during the global COVID-19 pandemic in which we are asked to socially distance ourselves from others. It makes me wonder how interactions are facilitated remotely or virtually. Can deeper life interactions be facilitated through video conferences? What happens to social connectedness when faculty and staff cannot greet students in passing? How do interactions with peers, faculty, or staff differ in online verses face-to-face environments?

Some studies have shown that students often prefer to connect with faculty over e-mail or social media, rather than visiting office hours (Cuevas, 2015). Further investigation into the implications of technology-facilitated interactions is warranted. Are online interactions the future of interactions?

Conclusions

The centerpiece of the college experience undoubtedly are the interactions between students, faculty, and staff. These interactions manifest in unique ways when considering both their substance (i.e., academic, social, deeper life) and their connections to student thriving. Further, living-learning communities are poised as environments that highly promote faculty and staff interaction for students (Inkelas et al., 2018). In current literature, there is limited empirical research on how different interactions with diverse constituents influence success for living-learning community students. By weaving together these research threads, this research filled a gap in the literature by developing a model explaining the relationship between interactions and college student success.

Asin's (1991) I-E-O model was used to construct a conceptual framework that embodied interactions for living-learning students to understand the unique pathways that could predict academic, social, and psychological success. Understanding the nature of these pathways is beneficial because interactions were shown to strongly predict factors of thriving in many areas. This study does not present a precise formula guaranteeing that when living-learning students interact in certain ways they will experience success; rather, it illuminates specific pathways that contribute to the variance in thriving factors for these students. As these factors of thriving are amenable to change through

institutional intervention, this study provides evidence to support efforts that promote academic, social, and deeper life interactions.

Scholars and practitioners alike can utilize the results and implications from this study. Whether researching the college student experience or creating programs to help facilitate it, the evidence offered here helps explain the power of different interactions in this process. As demonstrated in this study, academic, social, and deeper life interactions with faculty, staff, and peers do not merely help students to survive, but to thrive.

APPENDIX

APPENDIX

Table A.1

Factor Loadings for Final SEM

Latent Variable Name	Indicator Variables [a]	Factor Loadings [b]
Social Interaction with Peers (SIP)	log_SIP1_REF	.91
	log_SIP2_REF	.93
	log_SIP3_REF	.88
Social Interaction—Greetings with Faculty/Staff (SIFSG)	SIFSG1	.82
	log_SIFSG2_REF	.78
	log_SIFSG3_REF	.68
Social Interaction—Time with Faculty/Staff (SIFST)	SIFST1	.88
	SIFST2	.87
Academic Interactions with Peers (AIP)	log_AIP1_REF	.86
	log_AIP2_REF	.84
	AIP3	.78
	AIP4	.80
Academic Interactions with Faculty (AIF)	AIF1	.79
	AIF2	.85
	AIF3	.89
	AIF4	.83
Academic Interactions with Staff (AIS)	AIS1	.90
	AIS2	.88
	AIS3	.92
	AIS4	.89
Deeper Life Interactions with Peers (DLIP)	DLIP1	.86
	DLIP2	.84
	DLIP3	.86
	DLIP4	.86
Deeper Life Interactions with Faculty/Staff (DLIFS)	DLIFS1	.81
	DLIFS2	.90
	DLIFS3	.71
	DLIFS4	.74

(Continued)

Latent Variable Name	Indicator Variables [a]	Factor Loadings [b]
Engaged Learning	ELI1	.92
	ELI2	.84
	ELI3	.69
	ELI4	.87
Academic Determination	log_AD1_REF	.76
	AD2	.69
	log_AD3_REF	.81
	AD4	.78
	log_AD5_REF	.65
	AD6	.71
Social Connectedness	SC1_R	.71
	SC2_R	.72
	SC3_R	.92
	log_SC4_REF	.68
	SC5	.82
	SC6_R	.74
Diverse Citizenship	DC1	.72
	DC2	.86
	DC3	.71
	DC4	.71
	DC5	.52
	log_DC6_REF	.47
Positive perspective	POS1	.87
	POS2	.93

Notes. [a] Indicator variable codes and definitions offered in Table 3.3, [b] Standardized values

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