Measuring the Malleable: Expanding the Assessment of Student Success

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U.S. college student retention and persistence rates have remained stagnant over nearly the last half-century (Mortenson, 2012). Recently, President Obama set a goal: "By 2020, America will once again have the highest proportion of college graduates in the world" (Kanter, 2011, para 2). To accomplish this goal, faculty, staff, and administrators at institutions of higher learning will need to embrace new paradigms. Scholars (Habley, Bloom, & Robbins, 2012; Kinzie, 2012; Schreiner, 2010a) contend that an expanded version of student success that moves beyond traditional retention models is needed.

For decades, researchers have relied on cognitive measures such as high school grades and admission test scores to predict college student success (Braxton, Hirschy, & McClendon, 2004; Braxton, Sullivan, & Johnson, 1997). These traditional predictors of student success have long been solid predictors of student persistence and first-year GPA. However, critics have suggested that traditional cognitive predictors are inadequate measures for determining students' full potential because they cannot account for the motivational and psychological processes that contribute to and influence a student's behavioral engagement (Bean, 2005; Schreiner & Louis, 2011).

Within the last decade, researchers have called attention to the role that non-cognitive, psychosocial factors contribute to a host of important student success outcomes (Bowman, 2010; Palmer & Strayhorn, 2008; Pritchard & Wilson, 2003; Robbins, Lauver, Le, Langley, Davis, & Calstrom, 2004). Psychosocial factors are promising developments because they account for internal assets that can enhance predictions of students' college GPA and persistence to graduation, beyond what can be projected by pre-college preparation alone (Robbins, et al., 2004; Robbins, Oh, Le, & Button, 2009; Sedlacek, 2004). Importantly, these psychosocial factors are malleable (Robbins et al, 2004), meaning that strategically-developed interventions at

the individual, classroom, and programmatic levels could enable a greater percentage of entering students to succeed and thrive in the college environment. However, there is no coherent measurement model of these malleable factors that is readily available, nor is there a reliable and valid instrument that can be easily administered in a brief period of time to college students.

Purpose

The purpose of this study is to explore the psychometric properties of The Thriving Quotient (TQ),™ an instrument designed to measure malleable psychosocial factors predictive of student success. Developed deductively from psychological models of retention (Bean & Eaton, 2000) and theories of flourishing (Keyes & Haidt, 2003), as well as inductively from interviews and focus groups with college students, the TQ™ has been tested and refined across more than 100 institutions and 25,000 students over the past six years. Any construct considered for inclusion in the instrument met two criteria: (1) it must be measurable and supported by empirical research of its validity; and (2) it must be malleable through intervention. This paper presents the final version of the instrument, its reliability and construct validity within college student samples, and evidence of its predictive validity for student success outcomes such as intent to graduate, learning satisfaction, and perception of tuition as a worthwhile investment.

Conceptual Framework

The conceptual framework that guides this study represents an intersection of two disciplines: higher education and psychology. Within the discipline of higher education, the current study is grounded in models of student retention and success, specifically Astin's (1984) Input-Environment-Output (I-E-O) Model and Bean and Eaton's (2000) Psychological Model of College Student Retention. These models suggest that student entry characteristics and interactions with the college environment contribute to student success outcomes including GPA, retention, commitment to the institution, and graduation. Astin's (1984) I-E-O model outlines

the interconnected relationships between *input* variables, or the characteristics and experiences with which students enter college; *environmental* variables, or experiences students encounter in college; and *output* variables, or the results of students' interacting within and experiencing college. Furthermore, Bean and Eaton's (2000) model incorporates psychological processes and outcomes that in turn influence college students' attitudes and behaviors that directly impact persistence. Within psychology, the research on human flourishing that has arisen out of the positive psychology movement (Keyes & Haidt, 2003; Seligman, 2011) forms the basis for conceptualizing a holistic view of student success that incorporates psychosocial factors.

In their psychological model of retention, Bean and Eaton (2000) postulated that students enter college with psychosocial attributes shaped by their previous experiences, abilities, and self-assessment. The institutional environment then acts as a crucible in which psychological processes are influenced. As students interact with peers, faculty, staff, and others on campus, these psychosocial attributes affect how they interact as well as the way they process the interaction itself. Each interaction then shapes students' ongoing self-assessment and perceptions of whether the institution is a good fit for them. If the interactions are positive, the result is a greater sense of self-efficacy, an internal locus of control, proactive coping skills, and reduced stress levels. These positive effects then increase students' academic motivation and "lead to academic and social integration, institutional fit and loyalty, intent to persist, and…persistence itself" (p. 58). Such outcomes are invaluable catalysts for student success.

An examination of the psychological processes outlined in Bean and Eaton's (2000) model indicates that it may be useful to connect these processes theoretically to the construct of flourishing that has been well-researched in psychology (Keyes, 2003; Keyes & Haidt, 2003; Seligman, 2011). Keyes (2003) defines flourishing as emotional vitality and positive functioning

manifested through positive relationships, rising to meet personal challenges, and engagement with the world. Seligman (2011) adds that flourishing incorporates not only engagement and accomplishment in the context of healthy emotions and relationships, but also a sense of meaning and purpose in life. Although little research on flourishing has been conducted within higher education, one notable exception is Ambler's (2006) study of the contribution of student engagement to levels of flourishing in the college population. Her study highlighted the importance of a supportive campus environment as the largest contributor to students' psychological well-being.

Structural Model

In creating the hypothesized measurement and structural models for this study, Astin's (1984) I-E-O model and Bean and Eaton's (2000) Psychological Model of Student Retention served as the organizational framework. In placing thriving within the structural model as a significant predictor of student success outcomes, the concept of flourishing (Keyes, 2003; Keyes & Haidt, 2003; Seligman, 2011) was foundational to creating a measurement model of thriving and to placing it appropriately within the structural model. Each aspect of the structural model is presented below.

Entry and Institutional Characteristics

Student entry characteristics and demographic variables that have been consistently identified as predictors of such student success outcomes as college GPA and persistence to degree were included in our hypothesized model. For example, high school grades (ACT, 2008; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Pryor & Hurtado, 2012; Reason, 2009b; Robbins et al., 2004; Sawyer, 2010) and socio-economic status (Lotkowski, Robbins, & Loeth, 2004; Chen, 2012; Pascarella & Terenzini, 2005; Reason, 2009b; Walpole, 2003) are the top two entry characteristics predictive of student retention in the literature. Although some findings on gender

are mixed (Reason, 2009), most studies indicate that female students persist to degree at higher rates than male students (Peltier, Laden, & Matranga, 1999). Furthermore, Pryor and Hurtado (2012) identified race as a significant predictor of student success outcomes; however, Reason (2009b) cautioned that when socio-economic status is controlled, race may no longer serve as a significant predictor. Students' degree goals and aspirations are also significant predictors of persistence and graduation and motivate students to interact with faculty (Pascarella Wolniak, & Pierson, 2003). We also included first-generation status because of its impact on student success in previous studies (Pryor & Hurtado, 2012). Finally, the main institutional variable included in the model is institutional selectivity, given its direct impact on student success outcomes (Gansemer-Topf & Schuh, 2006; Pascarella & Terenzini, 2005). Despite scant research, we hypothesize that institutional selectivity is mediated through students' certainty of their major and student-faculty interaction, as more selective institutions generally offer features such as smaller class sizes and increased spending per student (Chen, 2012; Reason, 2009a).

Environmental Interactions

In addition to the characteristics that shape students prior to their arrival to campus, being certain of their major (Pascarella & Terenzini, 2005; Luke, 2009) and living on campus (Astin, 1984; Kuh, 2001; Pascarella & Terenzini, 2005; Pryor & Hurtado, 2012) are significantly correlated with intent to persist, as well as actual persistence. For example, Luke (2009) found that students who were more confident about their choice of major were more likely to reenroll at their institution. Pryor and Hurtado (2012) have noted that first-year students who live on campus are more likely to stay enrolled and graduate. Furthermore, students who live on campus are more likely to integrate socially, develop an appreciation for diversity, get involved in

campus activities, interact with faculty, and develop spiritually (Astin, Astin, & Lindholm, 2011; Pascarella & Terenzini, 2005).

Campus involvement. A significant body of literature supports the premise that involvement in campus activities increases academic and psychosocial engagement and subsequently influences persistence (Astin, 1984; Berger & Milem, 1999; Braxton, et al., 2004; Tinto, 1993). In their extensive review of involvement and engagement concepts in the literature, Wolf-Wendel, Ward, and Kinzie (2009) confirmed that student involvement in campus activities is "linked via research to almost every positive outcome of college" (p. 412). Specifically, student involvement in educationally purposeful activities is significantly predictive of cognitive skill and intellectual growth, as well as interaction with faculty (Pascarella & Terenzini, 2005) and persistence to degree (Berger & Milem, 1999; Reason, 2009b). Campus involvement among first-year students not only is correlated to gains in social and academic integration, institutional commitment, and future involvement in campus activities (Berger & Milem, 1999), but also is related to higher GPA (Kuh et al., 2008). Involvement in campus activities is also predicted to influence a sense of community on campus, as students who are involved "tend to feel a stronger connection with others on campus than those who are involved less, or not at all" (Strayhorn, 2012, p. 107). Therefore, because of its longstanding relationship to student success, campus involvement was tested as a major variable in this study.

Student-faculty interaction. Interaction with faculty is strongly associated with students' academic, psychological, and social development (Strong, 2007). Academically, students who interact with faculty report higher GPAs and degree aspirations, regardless of race (Kim, 2006; Kim & Sax, 2009), as well as increased overall satisfaction and learning gains despite institutional type or selectivity (Kuh & Hu, 2001; Lundberg & Schreiner, 2004).

Psychologically, student-faculty interaction not only has been linked to increased student motivation and self-worth (Strong, 2007), but also appears to motivate students to invest greater effort in other educationally purposeful activities (Kuh & Hu, 2001). Socially, Kim (2006) found that engaging with faculty increased racial tolerance across most groups, and encouraged students to discuss course content with their peers outside of class. Additionally, Cole's (2007) research supports the role that student-faculty interaction plays in students' intellectual self-concept. Positive interactions such as mentoring and course-related discussions with faculty were significant predictors of strong self-concept; however, interaction with faculty that focused on a critique of students' work was associated with negative self-concept. Because of the support in the literature for the influence of student-faculty interaction, a latent variable was created and placed within the structural model.

Psychosocial Influences

Psychosocial factors, identified as students' attitudes, behaviors, and motivations that impact college success outcomes (Habley, et al., 2012), have received greater attention by higher education scholars within the last decade, and are a central feature within this study. Three latent variables within our model that address psychosocial influences include a psychological sense of community, spirituality, and thriving. Each variable will be explored in greater detail in the following sections.

Psychological Sense of Community

The concept of a psychological sense of community (PSC) was first introduced in the field of community psychology (Sarason, 1974) and was later adapted to higher education (Lounsbury & DeNeui, 1995). College students experience a sense of community when they are a part of a dependable network of relationships to which they contribute, and feel as though they

fit, matter, and belong (Lounsbury & DeNeui, 1995). PSC is often enhanced by interaction with faculty (Fischer, 2007; Strayhorn, 2012) and participation in campus activities (DeNeui, 2003; Strayhorn, 2012).

One aspect of PSC is a sense of belonging, which is a critical predictor of college students' academic achievement, retention, and persistence (Hausmann, Ye, Schofield, & Woods, 2009). Although sense of belonging impacts the success of all students, numerous studies have emphasized the critical role it plays for students of color in particular (Hernandez, 2000; Hurtado & Carter, 1997; Maestas, Vaquera, & Zehr, 2007; McIntosh, 2012; Museus & Maramba, 2011; Strayhorn, 2012). Strayhorn (2012) recently noted that despite a growing body of literature on students' sense of belonging, little is known about "the malleable character and the complex integration of forces that give rise to it" (p. 13). Given the importance that students' sense of belonging and, more broadly, their sense of community contribute to student success, PSC is assigned as a latent variable within this study.

Spirituality

Spirituality is a multidimensional construct involving students' affective experiences that help formulate a personal understanding of their own meaning and purpose, as well as their connection to others and the world around them (Lindholm, 2013; Nash & Murray, 2009; Parks, 2011). College students' spiritual development has received far less attention by scholars compared to other student experiences (Lindholm, 2013); however, its benefits are not to be discounted. In their landmark study on college student spirituality, Astin, et al. (2011) found that students who reported higher spirituality scores demonstrated higher academic self-concepts and earned higher grades. Although research on spirituality is correlational rather than causal in nature, a number of multi-institutional longitudinal studies have supported the significant

connection between spirituality and such student success outcomes as learning gains, overall satisfaction with the university experience, and deep learning (Astin et al., 2011; Kuh & Gonyea, 2006). Spiritual development is fostered by interactions with diverse peers and involvement in campus activities, as well as engaging with faculty (Astin, et al., 2011; Bowman & Small, 2013; Dalton, 2006; Mayhew & Rockenbach, 2013). For example, students whose professors encourage conversations about meaning and purpose not only report significant increases in spiritual growth, but also value an ethic of care and connectedness to others to a greater extent (Astin, et al., 2011; Fleming, Purnell, & Wang, 2013). This ethic of care and concern for others, in turn, impacts involvement in civic engagement and service not only during college, but also after graduation (Dalton, 2006). Koenig, King, and Carson (2012) describe spirituality as an internal coping mechanism, enhancing students' positive perspective, and affecting their psychological well-being; thus, spirituality was included as a latent variable in the structural model in order to better understand its relationship to other psychosocial factors, as well as to student success outcomes.

Thriving

The final variable in the structural model, and the most unexplored psychosocial factor, combines Bean and Eaton's (2000) psychological contributors to retention with the levels of well-being implicit in the concept of flourishing (Keyes & Haidt, 2003). We have conceptualized *thriving* as optimal functioning in three key areas that are hypothesized to contribute to student success and persistence: academic engagement and performance, psychological well-being, and interpersonal relationships (Schreiner, McIntosh, Nelson, & Pothoven, 2009). Thriving students invest effort to reach important educational goals, manage their time and commitments effectively, are engaged in the learning process, are optimistic about

their future and positive about their present choices, are appreciative of differences in others, and are committed to enriching their community, and connect in healthy ways to other people (Schreiner, 2012a). Thriving students function at optimal levels and gain maximum benefits from their college experience because they are *psychologically engaged* as well as engaged in educationally productive behaviors. Each aspect of thriving is described below.

Academic thriving. Academic thriving encompasses psychological constructs that have been empirically linked to college GPA. Two factors comprise academic thriving: *Academic Determination* and *Engaged Learning*. These factors differ from academic discipline (Robbins et al., 2004) or grit (Duckworth, Peterson, Matthews, & Kelley, 2007), in that they are malleable through intervention, rather than relatively stable personality traits.

Students' motivation, investment of effort, self-efficacy, and ability to regulate their own learning often impact their academic accomplishments. These four elements combine in the *Academic Determination* factor of thriving. Hope theory (Snyder, 1995) provides key insights into student motivation, as it underscores the importance of agency and pathways to goal completion. A number of researchers have demonstrated that students' levels of hope are predictive of academic success, including grade point averages, persistence, and graduation (Chang, 1998; Curry, Snyder, Cook, Ruby, & Rehm, 1997; Davidson, Feldman, & Margalit, 2012; Snyder, Sympson, Michael, & Cheavens, 2001; Snyder, Lopez, Shorey, Rand, & Feldman, 2002).

Investment of effort also impacts a student's academic performance and persistence (Lichtinger & Kaplan, 2011; Robbins, et al., 2004). Students who believe that hard work, focus, and effort will positively affect their own success often effectively regulate their responses to the external environment. This practice of environmental mastery (Ryff, 1989) enables students to

feel a sense of control and engenders confidence when faced with academic challenges. Similarly, academic self-efficacy (Chemers, Hu, & Garcia, 2001), or "confidence in one's own abilities" (p. 55) directly impacts academic performance and expectations (Chemers, et al., 2001).

Self-regulated learning, the final component of academic determination, enables college students to take ownership of the diverse demands of their education by fostering the cognition, adaptability, and behaviors necessary to set and monitor progress towards achieving diverse goals (Lichtinger & Kaplan, 2011; Pintrich, 2000, 2004). As Pintrich and Zusho (2002) note, self-regulation, investment of effort, and academic motivation are often a reciprocal process. The degree to which students value educational goals influences their investment of effort and the amount of planning, monitoring, controlling, and reflection upon their own learning.

The concept of *Engaged Learning* encompasses not only behavioral participation, but also the psychological aspects of meaningful processing and focused attention (Schreiner & Louis, 2011). Much of the literature about student engagement in learning attends to observable behaviors in educational activities, such as classroom participation or interactions with faculty, that predict retention, GPA, and persistence to graduation (Bowman & Seifert, 2011; Kuh, et al. 2006, 2008; Kuh & Hu, 2001; Pascarella & Terenzini, 2005). However, observable behaviors may not necessarily account for cultural or gender differences in participation in the classroom, or indicate a student's level of cognition (McKeachie & Svinicki, 2009; Schreiner, 2010b). Therefore, the indirectly observable processes of focused attention, or mindfulness (Langer, 1997), and deep learning (Tagg, 2003) differentiate the concept of engaged learning from other conceptualizations of engagement in learning. Students who are engaged in learning are not only psychologically present and active in the learning process, but also make connections between

what they learn in class and their lives (Schreiner & Louis, 2011). The level of cognition engaged students attain is referred to as deep learning (Marton & Saljo, 1976; Tagg, 2003), a constructive meaning-making process that leads to higher-order thinking, academic performance, persistence, graduation, and post-collegiate success (Bain, 2012; Schreiner & Louis, 2011; Tagg, 2003).

Psychological thriving. Thriving in college requires the development of healthy attitudes toward self as well as toward the learning process. This psychological dimension of thriving is labeled *Positive Perspective* and is based on the construct of optimism (Carver, Scheier, Miller, & Fulford, 2009). Positive perspective reflects how students view life. Students with a positive perspective expect positive outcomes, view the future with confidence, and are able to reframe negative events into learning experiences (Carver, et al., 2009). This optimism is a predictor of psychological well-being and lower levels of psychological distress in college students (Burris, Brechting, Salsman, & Carlson, 2009). Optimism is also significantly predictive of greater development of social networks among college students (Brissette, Scheier, & Carter, 2002). Consequently, students who embrace an optimistic world view frequently feel positive emotions, a sense of support, and tend to report greater personal satisfaction with their college and life experiences overall (Carver, et al., 2009; Tucker, 1999; Schreiner, Pothoven, Nelson, & McIntosh, 2009; Schreiner, 2010a).

Interpersonal thriving. Thriving in college also encompasses healthy relationships, as well as academic engagement and optimism. *Diverse Citizenship* and *Social Connectedness* comprise the factors within interpersonal thriving that reflect two key dimensions of social relationships: connections to a broader community and connections to valued others. Thriving students cultivate a sense of meaning and agency from engaging as citizens within a broader

community (Schreiner, 2010c). The Diverse Citizenship scale incorporates the citizenship construct of the Social Change Model of Leadership Development (Astin et al., 1996; Tyree, 1998). This construct contains affective, behavioral, and cognitive aspects, as thriving students not only perceive themselves as capable of making a difference, but also desire to contribute and take action to do so. Higher scores on this factor are predictive of persistence in college and gains in critical thinking skills (Schreiner, et al., 2009).

Based on Ryff and Keyes' (1995) construct of positive relations, *Social Connectedness* reflects the presence of healthy relationships in students' lives. This factor is comprised of having sufficient friendships for support, being in relationship with others who listen to them, and feeling connected to others so that one does not feel alone. The ability to form satisfying, trusting, and intimate relationships with others is a central aspect of positive psychological functioning (Diener, Oishi, & Lucas, 2009; Ryff, 1989) and has been positively correlated to persistence in college (Allen, Robbins, Casillas, & Oh, 2008; Robbins et al. 2004). Feeling a sense of social connectedness or belonging on campus is especially beneficial for academic achievement and persistence among students of color (Hausmann, et al., 2009; Hurtado & Carter, 1997; Meeuwisse, Severiens, & Born, 2010; Museus & Maramba, 2010; Walton & Cohen, 2007).

The Thriving Quotient ™

Representing the intersection of student success and positive psychology, the Thriving Quotient ™ (Schreiner, 2012b) was developed to measure malleable psychosocial factors most predictive of student persistence and academic success. The intent was to design a brief yet valid instrument that assesses aspects of student functioning that can be changed with intervention so that more students can be successful. Most measures of student success are lengthy and do not

exclusively measure malleable psychosocial factors that the literature indicates are critical contributors to student success. The Thriving Quotient ™ offers an alternative instrument to specifically measure psychosocial factors that are predictors of student success.

Based on the current review of literature, we have developed a hypothesized model (see Figure 1), as well as measurement models (see Figures 2, 3, & 4) that position thriving as a mediating variable to such student success outcomes as GPA, retention, institutional commitment, and graduation. Utilizing Structural Equation Modeling (SEM), the following research questions guided this study:

(1) To what extent is the Thriving Quotient a valid and reliable measure of college student thriving?

(2) To what extent do the five factors of thriving predict students' academic success and intent to graduate?

(3) To what extent does thriving mediate the contribution of other established student success predictor variables to such outcomes as intent to graduate, college GPA, and perception of tuition as a worthwhile investment?

Methods

Because we sought to understand the multiple relationships that contribute to student success patterns, we selected a statistical technique that would enable us to assess both the direct and indirect predictive relationships among student entry characteristics, campus experiences, psychosocial factors, and student outcome variables while quantifying the amount of error variance. Therefore, structural equation modeling (SEM) was preferred to hierarchical multiple regression analyses and was employed in the study for its ability to assess both direct and mediating relationships within a model and determine how well the structural model fit the

sample data. Confirmatory factor analysis was utilized to establish the measurement models for the latent variables of student-faculty interaction, psychological sense of community, spirituality, and thriving (Byrne, 2010; Ullman, 2013).

Data and Sample

This study used data from the Thriving Quotient™ (Schreiner, 2012b), which was administered electronically in the spring of 2013 to 13 campuses in the American southeast, west, northeast, and Canada: one site offered two-year degrees, 10 were faith-based campuses, and 11 were private institutions. Within the four selectivity categories used by the National Association of College Admission Counseling (Clinedinst, Hurley, & Hawkins, 2012), participating institutions were somewhat evenly distributed. Table 1 displays the institutional characteristics of the sample. From the participating institutions, 3,353 students responded to the survey. However, not every student completed the entire survey, and therefore, some data were missing.

During the data screening phase, we performed Little's MCAR test using the Missing Values Analysis (MVA) tools in SPSS 21.0 and determined that data were missing at random (Mertler & Vannatta, 2013; Tabachnick & Fidell, 2013). The MVA Expectation Maximization process was conducted to predict and replace missing values among the continuous variables (Tabachnick & Fidell, 2013). Once all continuous variables had been estimated, remaining cases with missing data for categorical or dichotomous variables that were included in the initial hypothesized model were deleted. Thus, 2,889 students comprised the final sample used to estimate the measurement and structural models analyzed in this study. Given the 132 parameters in the final model, our sample size provides for a ratio well above the ideal 20:1 ratio

(Jackson, 2003; Kline, 2011) suggested for SEM. Table 2 displays information about the participants' characteristics.

Development of Measures

After theoretically deriving our conceptual measurement and structural models, we sought to operationalize the model using items from the TQ™ instrument. The survey has been refined among 25,000 students for concision and psychometric strength since the pilot version was administered in 2008. The current TQ™ instrument ($\alpha = .88$) contains 18 survey items that represent malleable psychosocial constructs predictive of student success, in addition to items that assess students' demographic information, satisfaction, campus experiences, and outcomes. Responses to most items are recorded using a 6-point Likert scale. Table 3 contains the individual Thriving Quotient items, scales, and codes used in the present study.

Variables. Our hypothesized model contains variables that represent traditional predictors of student success, including student-entry characteristics and experiences with the campus environment (Astin, 1993; Bean & Eaton, 2000; Tinto, 1993). Consistent with the emerging literature about the incremental value of psychosocial influences to student success predictions (Pritchard & Wilson, 2003; Robbins, et al., 2004; Robbins, Oh, Le, & Button, 2009), we also included such malleable variables in our model. Finally, we included outcomes representing three dimensions of student success ubiquitously valued in higher education: intent to graduate, college GPA, and satisfaction with the return on investment in tuition (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; Pascarella & Terenzini, 2005).

Dependent variables. We were interested in how well three different outcome variables—intent to graduate, college GPA, and satisfaction with the return on investment—could be predicted by the same set of mediating and control variables in three different structural

models. We used a unique item to operationalize each of these three endogenous variables. To assess intent to graduate, students were asked to respond on a 6-point Likert scale, with 1=*strongly disagree* to 6=*strongly agree*, to the statement, "I intend to graduate from this institution." To measure college GPA, students were asked to select a response on a scale, ranging from below C average to an A average, that "described [their] college grades so far." Students indicated satisfaction with their investment in college by expressing their degree of agreement on a 6-point Likert scale, with 1=*strongly disagree* to 6=*strongly agree*, to the statement, "I am confident the amount of money I'm paying for college is worth it in the long run."

Mediating variables. In addition to a unique, ultimate endogenous variable (dependent variable), each of the three models incorporated the same six mediating endogenous variables. Two of these six variables were represented by observable items. To capture students' degree of campus involvement, we used students' ratings on a Likert scale (1=*never,* 6=*frequently*) of their participation in campus events or activities. Students' certainty of their major was determined by scaling replies to the question, "How sure are you of your major?" on a continuum of "1=*very unsure* to 6=*very sure*.

The remaining four mediating variables were factor-derived latent constructs. Three of the four latent variables were confirmed as first-order factors, which had been created previously based on maximum likelihood factor analysis with varimax rotation (Schreiner, Kammer, Primrose, & Quick, 2011). Each demonstrated good statistical fit and reliability. The construct Psychological Sense of Community (PSC) consists of four items and measures students' psychosocial dimensions of belonging, agency, interrelatedness, and shared emotions within their communities (McIntosh, 2012; McMillan & Chavis, 1986). The measurement model for

PSC required covariance to be added between two error terms, which resulted in an acceptable fit to the sample data ($\chi^2_{(1)} = 11.21$, $p < .001$, CFI = .998; RMSEA =.059) and coefficient alpha of .85. Spirituality, adapted from the Religious Commitment scale of the College Students Beliefs and Values (CSBV) survey, was a three-item construct assessing students' sense of purpose and belief in a higher power. This latent variable also demonstrated excellent reliability ($\alpha = .95$) and fit the data well after a second path constraint was added to over-identify the model ($\chi^2_{(1)} = 8.53$, $p = .003$, CFI = .999; RMSEA =.051). Eight items assessing both the quality and quantity of students' experiences with faculty comprised Student-Faculty Interaction, an internally consistent ($\alpha = .86$) latent construct with excellent statistical fit after covariances were specified appropriately among error terms ($\chi^2_{(9)} = 47.52$, $p = .025$, CFI = .996; RMSEA =.038).

Confirmatory factor analysis of the measurement model of thriving indicated thriving as a second-order factor, with five first-order factors, fit the data well ($\chi^2_{(114)} = 1093.83$, $p < .001$, CFI = .954; RMSEA =.054 with 90% confidence intervals from .052 to .058). Engaged Learning ($\alpha = .88$) included four items and three covariances among error terms. Eight items and 11 covariances comprised Academic Determination ($\alpha = .81$). Three items and one covariance represented Diverse Citizenship ($\alpha = .78$). Neither Social Connectedness ($\alpha = .78$), a three-item construct nor Positive Perspective ($\alpha = .74$) required modifications to the initial models. As such, thriving was used as a mediating latent variable in each of the three structural models.

Exogenous variables. The hypothesized structural model contained nine exogenous variables, three of which were ordinal and six of which were nominal. To compute institutional selectivity, institutions were assigned a rating based on categories used by the National Association of College Admission Counseling (Clinedinst, et al., 2012), with

1=nonselective and 4=highly selective. Table 3 displays all operationalized variables with their item contents and coding schemes.

Analyses

For the SEM measurement and structural analyses, software program AMOS 21.0 was used. We first created the hypothesized measurement model for thriving from the student success and positive psychology literature as well as previous exploratory and confirmatory factor analyses (Schreiner, Kammer, Primrose, & Quick, 2011). Hypothesized measurement models were developed, estimated, and confirmed for all the other latent variables used in the structural model. Finally, we created a baseline structural model from the literature, which included student entry and institutional characteristics, campus experiences, psychosocial factors, and thriving as direct and mediating predictors of three different student success outcomes—intent to graduate, college GPA, and perception of tuition as a worthwhile investment (see Figure 1).

Once the measurement models for each of the latent constructs were confirmed to be a good fit to the data, we assessed the fit of the three hypothesized structural models, each with the same path structure but a different ultimate endogenous variable. To maintain rigor and to avoid a Type I error, modifications to the models were accepted only if two conditions were met: 1) fit or predictive statistics significantly improved, and 2) AMOS modifications indices were supported by higher education theoretical or empirical literature (Schreiber, Nora, Stage, Barlow & King, 2006; Ullman, 2013).

Results

Each of the three structural models fit the sample data relatively well and explained between 24% and 34% of the variance in student success outcomes. Due to our sample size and

the complexity of the hypothesized model, we considered and reported two fit statistics in addition to chi square, which is sensitive to and inflated by large sample size in SEM (Schumacker & Lomax, 2004). The root mean square error of approximation (RMSEA: Browne & Cudeck, 1993) is an absolute measure of fit that evaluates the difference between the proposed model and an optimized model. The comparative fix index (CFI: Bentler, 1990), a relative measure of goodness of fit, assumes no relationships among unobserved variables and compares the proposed model to the null model. Although debate about the appropriate use of minimum values for goodness-of-fit abounds (see Barrett, 2007; Hooper, Coughlan & Mullen, 2008; Hu & Bentler, 1999; Kenny, 2012), but fit indices for RMSEA < .06 and CFI >.90 are generally considered acceptable, with RMSEA <.05 and CFI >.95 indicating excellent fit. Thus, we used such standards in the testing of our models.

Although each model was modified individually, there were some common findings. In each model, the exogenous variables first generation and family income were ultimately eliminated due to insignificant pathway effects. Additionally, AMOS recommended a significant pathway to be added from the female variable to the latent construct of spirituality in each model. Because higher education literature has noted gender differences in the development of spirituality (Bryant, 2007; Myyry & Helkama, 2001) the modification was accepted. Thriving emerged as a significant mediating variable to each outcome variable, with its direct effects ranging from .20 on College GPA to .56 in students' belief that tuition is a worthwhile investment. Table 4 displays the total, direct, and indirect effects for each model. The unique significant results of each model are summarized in the following section.

Intent to Graduate Model

Our final Intent to Graduate model (see Figure 2) most closely mirrored the hypothesized model. The structural model explained 26% of the variation in students' intent to graduate and fit the sample data ($\chi^2_{(802)} = 6137.480$ $p < .001$; CFI=.902; RMSEA=.048 with 90% confidence intervals of .047 to .049). Six exogenous institutional and student entry characteristics contributed indirectly to intent to graduate, and two of these variables—first choice at enrollment and institutional selectivity—contributed directly to the outcome variable, as hypothesized. The other exogenous variable significant in the model, living on campus, was one of four related environmental variables that contributed indirectly to intent to graduate through its effects on campus involvement, spirituality, and PSC. Of the four campus experiences assessed in the model, major certainty was the only direct predictor of students' intent to graduate. However, student-faculty interaction had a direct effect on campus involvement, PSC, and thriving. Among the psychosocial variables, PSC strongly mediated effects from input and environmental variables to spirituality and thriving, and spirituality was predicted by students' involvement in campus activities and the entry characteristics of high school grades and being female. Thriving was the strongest direct predictor to intent to graduate, mediating the effects of campus involvement, faculty interaction, and sense of community. Table 5 displays the total effects for each variable in the model.

College GPA Model

After modifications, the model for predicting college GPA was a good fit to the sample data ($\chi^2_{(802)} = 6137.480$, $p < .0001$; CFI=.902; RMSEA=.048 with 90% confidence intervals of .047 to .049). This model predicted 24% of the variation in students' reported GPA. As Figure 3 displays, the direct path between high school GPA and college grades was the strongest in the

model (β =.40, $p < .0001$), with thriving also having a direct effect of .14 ($p < .0001$), suggesting that post-enrollment experiences also influenced students' grades. However, contrary to the hypothesized model and to the results of the two other models tested, institutional selectivity had no significant relationship to the outcome of self-reported college GPA. Table 6 displays the total effects for each variable in the model.

Tuition Worthwhile Model

Predicting 34% of the variation in students' agreement that tuition was a worthwhile investment, our third model was an acceptable fit to the data ($\chi^2_{(803)} = 6097.236$ $p < .0001$; CFI=.903; RMSEA=.048 with 90% confidence intervals of .047 to .049). As with the other models, we added covariances among exogenous variables, trimmed first generation and income variables, and added a path from female to spirituality in the tuition worthwhile model. Major certainty was deleted from the model, as it was not a significant predictor of the outcome variable (see Figure 4). The pathway between institutional selectivity and the perception of tuition as worthwhile was significant, but negative, possibly indicating that students who attend more selective colleges have higher expectations for the return on their investments. Of all the models tested, the contribution of thriving was strongest to the outcome of students' satisfaction with their investment in tuition. Table 7 displays the total effects for each variable in the model.

Discussion

We conducted this study to advance a picture of student success that cohesively incorporated psychosocial factors. This study allowed us to construct and test the fit of a psychosocial model of student success. Our findings add to the body of literature regarding the potential contribution of psychosocial factors to student success in several ways. By examining the mediating effects of psychosocial factors, we were able to determine that many established

campus environment predictors of student success, such as campus involvement and student-faculty interaction, contribute to student success to the extent that they enhance student thriving. Thus, assessments of students' success that rely solely on observable, behavioral, and environmental interactions are too narrowly calibrated to capture the full portrait of student success.

Our model suggests that psychosocial processes matter as much, if not more, than entering characteristics and campus experiences. In particular, we found thriving to be a psychometrically sound, multi-dimensional construct that contributes uniquely to the variation in student success outcomes, congruent with Robbins et al.'s (2004) meta-analysis of the incremental validity of psychosocial factors. Thriving also partially mediates the effects of student entry characteristics and campus experiences on student success outcomes.

The mediating capacity of thriving provides opportunities for institutions to focus on the types of experiences that students have once they are on campus, for their entering characteristics are no longer significant predictors of success once thriving is taken into account. Given the diversification of undergraduates in higher education, institutions can expect an influx of students whose entry characteristics may not be predictive of success (e.g., underprepared students, first-generation students, and students who compromised on their first choice institutions for financial motives). To enhance persistence rates and academic achievement for these students, institutions can benefit from designing campus experiences and services to enhance their intellectual, psychological, and interpersonal thriving. The brevity of the instrument allows institutions to capture students' thriving levels quickly and easily, enabling thriving to serve as one measure of the effectiveness of programs and services.

Student-faculty interaction, campus involvement, and other campus experiences were also partially mediated by the psychosocial variables of thriving and a psychological sense of community. This finding encourages a focus on the types of student-faculty interactions and campus involvement that lead students to report higher levels of thriving and a sense of community on campus.

Furthermore, as American higher education is increasingly scrutinized by the public and federal government for its affordability, graduation rates, and job placement after college (Berrett, Blumenstyk, Lipka, Parry, & Supiano, 2013; Field, 2013), the value of tuition as an investment becomes more important. Thriving had a significant direct effect on students' satisfaction with tuition as a worthwhile investment, signifying the potential of psychosocial factors to contribute positively to the clarification of the national narrative about the value of higher education. When students are engaged in the learning process, investing effort toward meaningful goals, connected to others in healthy ways, making a contribution to the world around them, and able to maintain a positive perspective on life, it appears that they perceive their college experience to be a worthwhile investment. Thus, the use of the TQ™ in assessment of institutional effectiveness could be an important development for anticipating government ratings of institutions for funding, students' sense of returns on investment, and eventually, alumni giving.

Limitations

Although our study adds to the higher education literature by offering thriving as an important component in developing a comprehensive framework of student success that includes malleable constructs, several limitations are worth considering. First, the CFI values were somewhat lower than the .95 threshold that Hu and Bentler (1999) have recommended as

descriptive of an "excellent" fitting model. However, considering the complexity of our model and the initial independent RMSEA statistic, we anticipated challenges with CFI. For the null model, RMSEA=.139; Kenny (2012) noted that when independent null models return RMSEA values <.158, CFI will be suppressed and is not a useful measure of fit. As such, we highlight our RMSEA value and the significance of chi square as superior fit measures for our models.

Second, homogeneity within our sample may have limited the power of this study. Women, faith-based institutions, and White students were over-represented in our sample, which could limit both the prediction power and generalizability of the findings. A greater variety of students and institutions in the sample would contribute greater variation in the responses; two of the outcome variables in particular (intent to graduate and self-reported college GPA) were negatively skewed.

Finally, this study utilized cross-sectional data to test the hypothesis; although SEM is conducted on the premise of causal relationships (Byrne, 2010; Ullman, 2013), and our model was theoretically driven, directional paths must be interpreted with caution. Longitudinal data collection could provide a richer understanding of the directional relationships among variables. Student success is a multifaceted, complex process with multiple, interrelated outcomes. In future models, exploration of a latent construct of student success—or longitudinal, objective outcomes such as actual rather than intended persistence—may be valuable.

Implications and Future Directions

The results of this study present encouraging implications for college and university educators. The most compelling finding in this study suggests that despite factors outside of the institution's control such as students' pre-entry characteristics, or whether or not students' have selected the institution as their first choice, institutions still have the opportunity to positively

impact the college student experience through the design of programs, services, and experiences that contribute to students' levels of thriving. Experiences that contribute to student thriving are also likely to lead to increased intent to persist, perception of the tuition as a worthwhile investment, and better grades. This study suggests that educators can intentionally bolster thriving through three key areas: (1) fostering a sense of community; (2) encouraging and rewarding student-faculty interaction; and (3) assisting students to determine a major that is a good fit for them.

First, fostering a sense of community on campus may be the most powerful means by which institutions can help a greater number of students thrive. A sense of community is comprised not only of a sense of belonging, but also feelings of ownership and mattering, as well as emotional connections and interdependence (Lounsbury & DeNeui, 1995; McMillan & Chavis, 1986). Braxton, Hirschy, and McClendon (2004) have noted that this type of positive campus climate that communicates institutional integrity and a commitment to student welfare is predictive of student persistence to graduation. Bloom and colleagues (Bloom, Hutson, & He, 2008; Bloom, Hutson, He, & Konkle, 2013) have posited that adopting an *appreciative mindset*, defined as a fundamental concern about and belief in the learning potential and contributions of each student, creates a campus climate where a strong sense of community is likely to develop. Authentic and congruent institutional messaging, policies, and action reflect institutional commitment to student success and contribute to an environment in which students' feel safe, secure, valued, and affirmed. Partnering with students to engage their creativity and input in a variety of experiences (e.g., service-learning, undergraduate research, campus programming) invites students to participate in and become an instrumental part of the campus community (Schreiner, 2013).

Second, encouraging specific types of student-faculty interaction that lead to engaged learning and meaningful educational goals may offer another powerful means by which to impact student thriving. Interacting with faculty not only was associated with higher levels of thriving, but also with greater participation in campus activities, a psychological sense of community, and spirituality in this study. Kim and Sax (2009) have found that academically-focused student-faculty interaction, in particular, is associated with higher GPAs, better communication and critical thinking skills, and higher degree aspirations. Cole (2007) and other researchers (Kim, 2010; Lundberg & Schreiner, 2004) have emphasized that the type of interaction students have with faculty must be validating and focused on educational goals, rather than on a personal critique of the student's work, in order for such interaction to lead to greater engagement in the learning process. Recognizing and rewarding effective student-faculty interaction as a central component of tenure and promotion measures can signal to faculty the critical importance of their role in promoting student thriving. Providing faculty with professional development opportunities that enhance their awareness of teaching and advising strategies that enhance student engagement in learning could be a beneficial practice on campuses that wish to increase student thriving (Schreiner, 2013).

The final implication of this study suggests that assisting students to select a major that is a good fit for them may influence student thriving and persistence. Although some students start college certain of their major, many students struggle with indecision (Gordon, 2007). Given the importance of major certainty to student thriving and success, a comprehensive review and assessment of campus procedures and programming with regard to student major declaration may illuminate ways to better facilitate this process for undecided students. Furthermore, campus conversations and workshops on advising undecided students would benefit those who

frequently interact with these students, including new student program directors, faculty and professional advisors, student success coaches, and career counselors.

Future research should further examine the role of thriving in promoting college student success. Although the results of this study are promising, studies testing thriving as the primary dependent variable would also provide insights into pathways that directly influence thriving, as well as a deeper understanding into how malleable psychosocial constructs interrelate to impact student success. Longitudinal studies that test the specific causal linkages in the model would enable researchers to have a clearer sense of what campus experiences precede thriving; qualitative studies of high-thriving students would also shed light on the types of experiences that contribute to students' perceptions of thriving. Finally, intervention studies that measure the impact of student services such as advising on thriving would offer invaluable insights into the potency of professional practice on student success outcomes.

Conclusion

The purpose of this study was to explore the psychometric properties of an instrument called The Thriving Quotient ™ that was designed to measure malleable psychosocial factors predictive of student success. Structural equation modeling results confirmed thriving as a mediating variable specifically to the following student success outcomes: students' belief that tuition is a worthwhile investment, college GPA, and intent to graduate. Furthermore, this study affirms a valid and reliable instrument to measure malleable psychosocial factors in college students. From these initial findings, college and university faculty, staff, and administrators can begin developing interventions through programming and services to intentionally bolster college student thriving, in a strategic effort to positively impact college student success outcomes.

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Table 1

Institutional Characteristics

	N	%
Institution Type		
Public	2	15.38
Private	11	84.62
Selectivity		
Nonselective (over 85% admit rate)	3	23.08
Somewhat selective (71-85% admit rate)	4	30.77
Selective (50-70% admit rate)	4	30.77
Highly selective (less than 50% admit rate)	2	15.38
Religious Affiliation		
No Religious Affiliation	3	23.08
Faith-Based	10	76.92

N = 13 institutions

Table 2

Entry and Demographic Characteristics of Student Sample

	N	*%*
Gender		
Male	905	31.3
Female	1984	68.7
First generation		
Yes	759	26.3
No	2130	73.7
First choice		
Yes	1997	69.1
No	892	30.9
Lives on campus		
Yes	1627	56.3
No	1262	43.7
Grad school goal		
Yes	1900	65.8
No	989	34.2
Race		
White	2000	69.2
Black	174	6.0
Asian/Asian American/Pacific Islander	190	6.6
Latino/a	309	10.7
American Indian/Alaska Native	23	0.8
Other	193	6.7

N=2889 students

Table 3

Description of Variables

Institutional Variables	**Definition**
Selectivity	Ordinal variable assessing the percentage of applicants admitted: (1) Nonselective--over 85% admit rate, (2) Somewhat selective--71-85% admit rate, (3) Selective--50-70% admit rate, and (4) Highly selective—less than 50% admit rate.
Input Variables	**Definition**
First-generation	First in immediate family to attend college = 1; not first to attend college = 0.
First choice	Dummy variable coded 1=yes 0=no for institution was first choice at enrollment.
Female	Female = 1, male = 0.
High school grades	Self-reported variable with response options on a 6-point scale where 1=mostly A's 2= A's and B's 3=mostly B's, 4= B's and C's 5=mostly C's 6=below a C average. Reverse scored.
Lives on campus	Live on campus, coded 1 = yes, 0 = no.
Graduate school goal	Student's degree aspirations beyond the Bachelor's degree. Dummy variable coded 1 = yes, 0 = no.
Income	Self-reported variable with response options on a 5-point scale where 1= less than $30,000 a year, 2= $30,000 to $59,999, 3=$60,000 to $89,999, 4=$90,000 to $119,999, and 5=$120,000 and over.
White	Dummy coded variable: 1=Caucasian/White; 0=not Caucasian/White
Environmental Variables	**Definition**
Major Certainty	Response to item: "How sure are you of major?" Measured with a 6-point scale: 1 = very unsure, 6 = very sure.
Campus Activities	Response to item: "How often do you participate in campus events or activities?" Measured with a 6-point scale: 1=never, 6=frequently.
Student-Faculty Interaction	Latent variable comprised of 8 items: (1) "How often do you interact with faculty outside of class?" Measured with a 6-point scale, 1=never, 6=frequently. (2) "Rate your satisfaction with the amount of contact you have had with faculty this semester." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied. (3) "Rate your satisfaction with the quality of the interaction you have with faculty on this campus so far this semester." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied. (4) "How often this year have you met with your academic advisor?" Measured with a 6-point scale, 1=never, 6=frequently. (5) "How often this year have you discussed career or grad school plans with faculty?" Measured with a 6-point scale, 1=never, 6=frequently. (6) "How often this year have you discussed academic issues with faculty?" Measured with a 6-point scale, 1=never, 6=frequently. (7) "How often this year have you met with faculty during office hours?" Measured with a 6-point scale, 1=never, 6=frequently. (8) "How often this year have you E-mailed, texted, or Facebooked faculty?" Measured with a 6-point scale, 1=never, 6=frequently.

Psychosocial Factors	**Definition**
Spirituality	Latent variable comprised of three items: (1) "My spiritual or religious beliefs provide me with a sense of strength when life is difficult," (2) "My spiritual or religious beliefs are the foundation of my approach to life," and (3) "I gain spiritual strength by trusting in a higher power beyond myself." Measured with a 6-point scale, 1=strongly disagree, 6=strongly agree.
Psychological Sense of Community	Latent variable comprised of four items: (1) "Being a student here fills an important need in my life," (2) "I feel like I belong here,".(3) "I feel proud of the college or university I have chosen to attend," and (4) "There is a strong sense of community on this campus." Measured with a 6-point scale, 1=strongly disagree, 6=strongly agree.
Thriving	Second-order construct composed of**:**
Academic Determination	Latent variable comprised of six items: (1) I am confident I will reach my educational goals, (2) Even if assignments are not interesting to me, I find a way to keep working at them until they are done well, (3) I know how to apply my strengths to achieve academic success, (4) I am good at juggling all the demands of college life, (5) Other people would say I'm a hard worker, and (6) When I'm faced with a problem in my life, I can usually think of several ways to solve it. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Diverse Citizenship	Latent variable comprised of three items: (1) I spend time making a difference in other people's lives, (2) I know I can make a difference in my community, and (3) It's important for me to make a contribution to my community. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Engaged Learning	Latent variable comprised of four items: (1) I feel as though I am learning things in my classes that are worthwhile to me as a person, (2) I can usually find ways of applying what I'm learning in class to something else in my life, (3) I find myself thinking about what I'm learning in class even when I'm not in class, and (4) I feel energized by the ideas I am learning in most of my classes. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Positive Perspective	Latent variable comprised of two items: (1) My perspective on life is that I tend to see the glass as "half full," and (2) I always look on the bright side of things. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Social Connectedness	Latent variable comprised of three items, all of which are reverse-scored: (1) Other people seem to make friends more easily than I do, (2) I don't have as many close friends as I wish I had, and (3) It's hard to make friends on this campus. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Dependent Variables	**Definition**
Intent to graduate	Response to item: "I intend to graduate from this institution." Measured with a 6-point scale: 1=strongly disagree, 6=strongly agree.
Tuition is worthwhile	Response to item: "I am confident that the amount of money I'm paying for college is worth it in the long run." Measured with a 6-point scale: 1=strongly disagree, 6=strongly agree.
College GPA	Self-reported item with response options on a 6-point scale where 1=mostly A's 2= A's and B's 3=mostly B's, 4= B's and C's 5=mostly C's 6=below a C average. Reverse scored.

Figure 1: Conceptual Psychosocial Model of Student Success

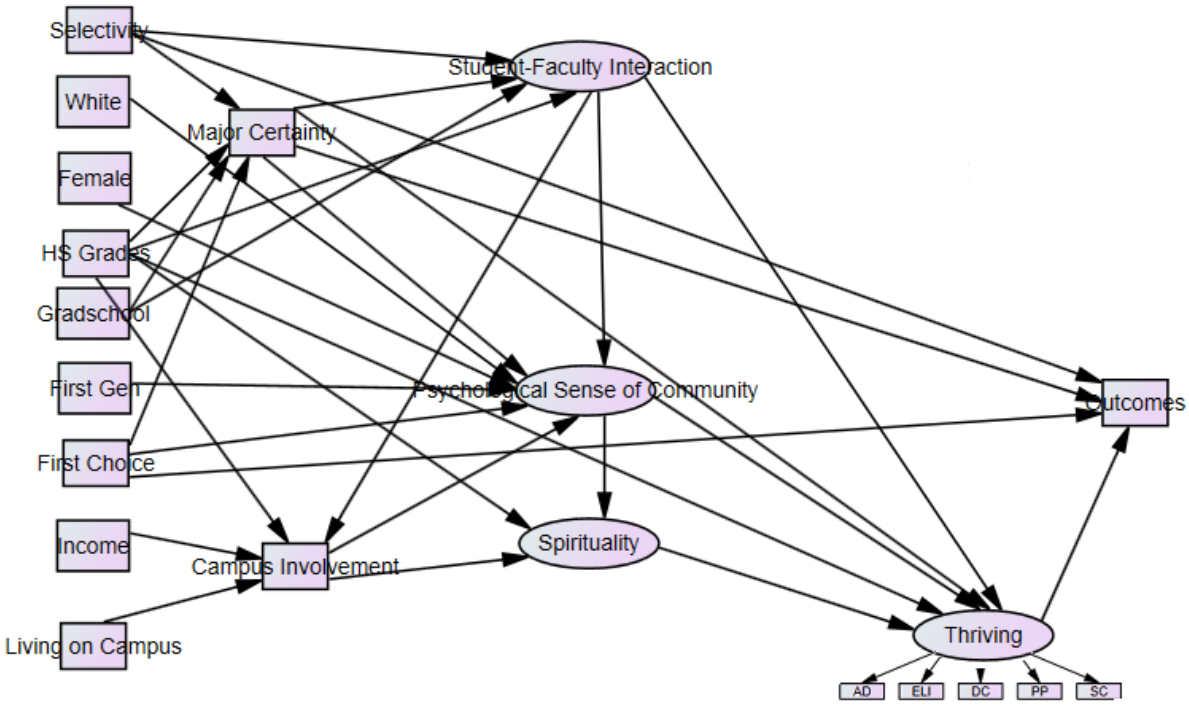

Table 4

Standardized Indirect, Direct, and Total Effects on Outcome Variables

	Tuition is Worthwhile			College GPA			Intent to Graduate		
	Indirect	Direct	Total	Indirect	Direct	Total	Indirect	Direct	Tota
Spirituality	.094		.094	.036		.036	.078		.078
PSC	.042		.402	.130		.130	.312		.312
Student-faculty interaction	.193		.193	.068		.068	.157		.151
Major certainty	.144		.144	.49	.039	.089	.112	.104	.216
Campus activities	.072		.072	.024		.024	.057		.051
Selectivity	.029	-.086	-.057	.012		.012	.029	.074	.103
High school grades	.084		.084	.37	.400	.436	.085		.085
Living on campus	.027		.027	.040		.040	.021		.021
First choice	.102	.064	.166	.036		.036	.087	.078	.165
Grad school goal	.031		.031	.014		.014	.033		.033
White	-.022		-.022	-.007		-.007	-.016		-.016
Female	.030		.030	.010		.010	.024		.024
Thriving		.564	.564		.196	.196		.442	.442

Figure 2: Intent to Graduate Structural Model

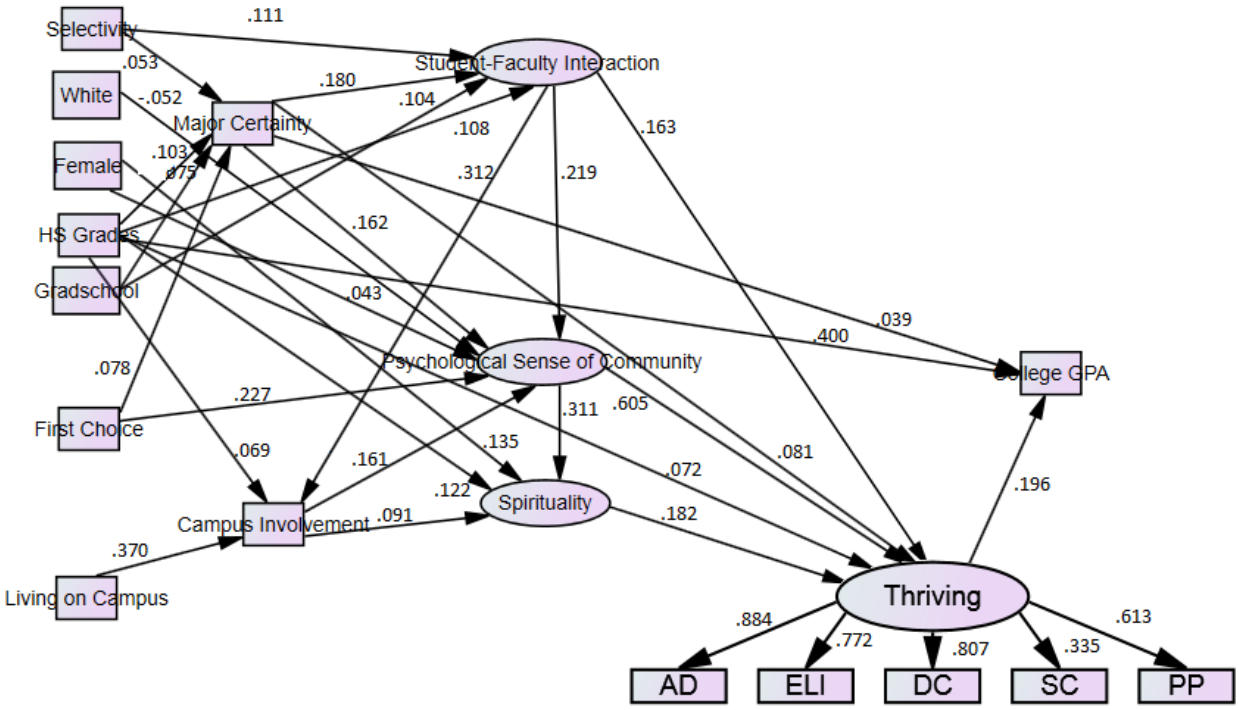

Figure 2. Final model for predicting intent to graduate using entry, institutional, environmental, and psychosocial variables ($\chi^2_{(802)}$ = 6137.480 p=.000; CFI=.902; RMSEA=.048 with 90% confidence intervals of .047 to .049). All effects are significant at p<.05.

Table 5: *Summary of total effects in Intent to Graduate Model*

	Spirituality	PSC	Student-faculty interaction	Major certainty	Campus activities	Thriving	Intent to Graduate
Spirituality						.176	.078
PSC	.311					.706	.312
Student-faculty interaction	.112	.269			.312	.355	.157
Major certainty	.070	.210	.180		.056	.254	.216
Campus activities	.141	.159				.129	.057
Selectivity	.151	.041	.120	.053	.038	.053	.103
High school grades	.016	.062	.127	.103	.108	.167	.085
Living on campus	.052	.059			.369	.047	.021
First choice	.075	.241	.014	.078	.004	.179	.165
Grad school goal	.017	.044	.118	.075	.037	.056	.033
White	-.016	-.051				.055	-.016
Female	.149	.044				-.036	.024
Thriving							.442

Figure 3: College GPA Structural Model

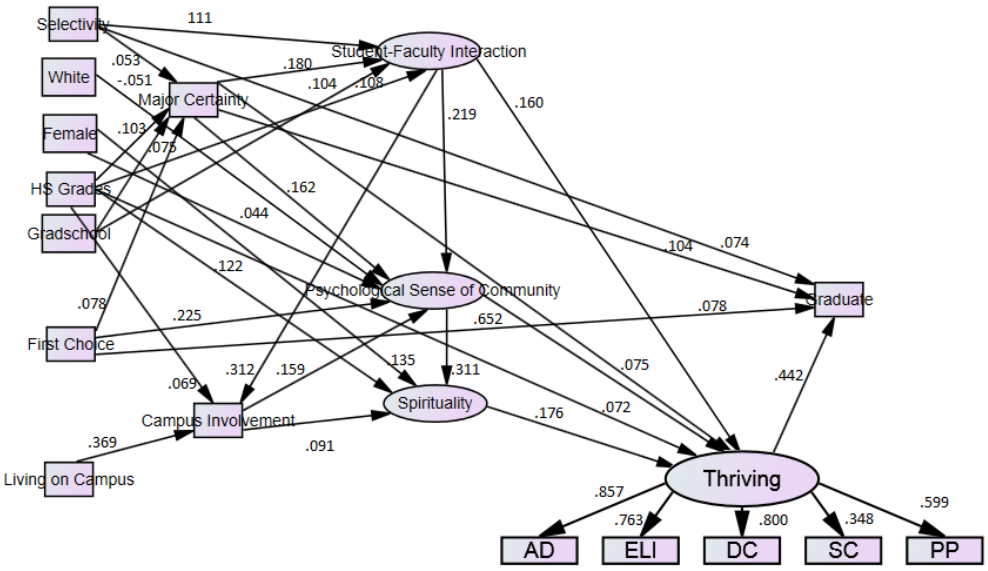

Figure 3. Final model for predicting college GPA using entry, institutional, environmental, and psychosocial variables $\chi 2(802) = 6137.480$, p=.000; CFI=.902; RMSEA=.048 with 90% confidence intervals of .047 to .049. All effects are significant at p<.05.

Table 6

Summary of standardized total effects on endogenous variables in College GPA Model

	Spirituality	PSC	Student-faculty interaction	Major certainty	Campus activities	Thriving	College GPA
Spirituality						.182	.036
PSC	.311					.662	.130
Student-faculty interaction	.112	.269			.312	.346	.068
Major certainty	.070	.210	.180		.056	.250	.089
Campus activities	.141	.161				.123	.024
Selectivity	.016	.041	.120	.053	.038	.052	.012
High school grades	.151	.062	.127	.103	.108	.166	.436
Living on campus	.052	.059			.370	.045	.009
First choice	.076	.243	.014	.078	.004	.170	.036
Grad school goal	.017	.044	.118	.075	.037	.055	.014
White	-.016	-.016				.053	.010
Female	.149	.043				-.034	-.007
Thriving							

Figure 4: Tuition is Worthwhile Structural Model

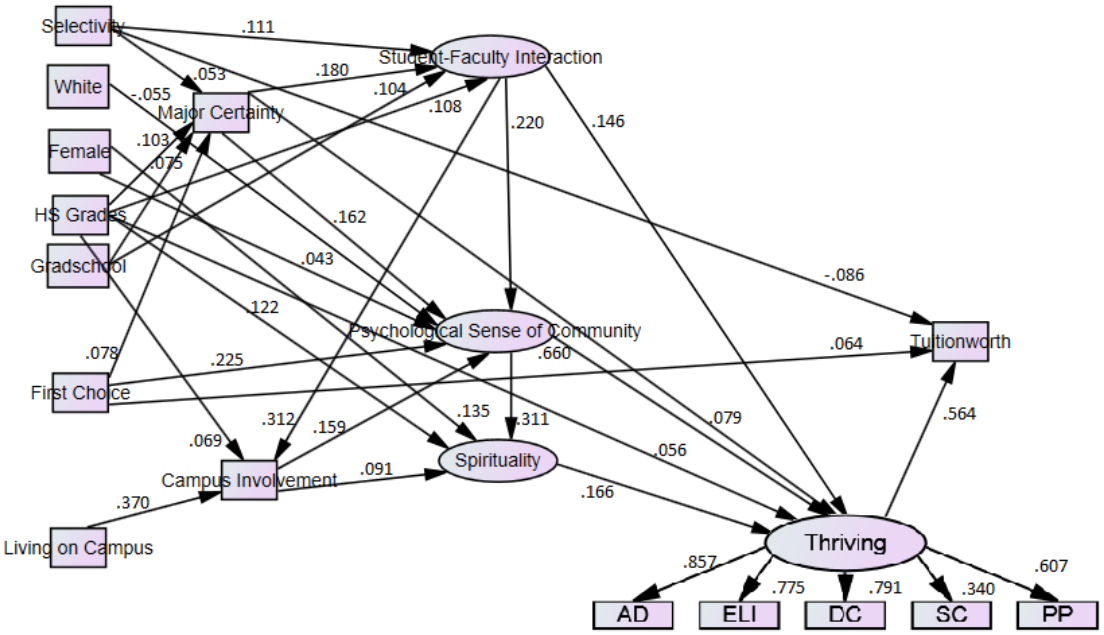

Figure 4. Final model for predicting students' belief that tuition is a worthwhile investment using entry, institutional, environmental, and psychosocial variables $\chi 2(803) = 6097.236$ p=.000; CFI=.903; RMSEA=.048 with 90% confidence intervals of .047 to .049. All effects are significant at p<.05.

Table 7

Summary of Total Effects in Tuition is Worthwhile Model

	Spirituality	PSC	Student-faculty interaction	Major certainty	Campus activities	Thriving	Tuition is Worth-while
Spirituality						.166	.094
PSC	.311					.712	.402
Student-faculty interaction	.112	.269			.312	.342	.193
Major certainty	.071	.210	.180		.056	.256	.144
Campus activities	.141	.159				.128	.072
Selectivity	.016	.041	.121	.053	.038	.052	-.057
High school grades	.016	.062	.126	.103	.108	.149	.084
Living on campus	.052	.059			.370	.047	.027
First choice	.076	.242	.014	.078	.004	.180	.166
Grad school goal	.017	.044	.118	.075	.037	.055	.031
White	-.017	-.055				.050	-.022
Female	.149	.043				-.039	.030
Thriving							.564