

The Thriving Quotient: Advancing the Assessment of Student Success

Laurie A. Schreiner
Azusa Pacific University

Eric J. McIntosh
Azusa Pacific University

Denise Nelson
Point Loma Nazarene University

Shannon Pothoven
Baker College of Muskegon

In the face of economic challenges in higher education, institutions are increasingly interested in research and interventions that can enhance student success. As the statistics collected by the American Council on Education and the National Center for Educational Statistics continue to demonstrate (Choy, 2002; Horn, 2006), the loss of human potential that is represented in the 48-54% percent of college students who do not complete their degrees is a reminder that much remains to be done to ensure that access to higher education is translated into success.

Recent approaches to student success have tended to focus on the behaviors that lead to learning outcomes (NSSE, 2006), the institutional supports for engagement in those behaviors (Kuh, Kinzie, Schuh, & Whitt, 2005), the programs and services that are available to students (Kramer, 2007), or the entering student characteristics that are predictive of success and persistence. Although such research has significantly advanced higher education's understanding of the overall picture of student success, contributors to individual motivation and the psychological processes that lead students to engage in and fully benefit from the college environment have been largely missing from the literature (Bean, 2005). Such processes are

malleable (Robbins, Lauver, Le, Langley, Davis, & Carlstrom, 2004), meaning that strategically-developed interventions at the individual, classroom, and programmatic levels could enable a greater percentage of entering students to not only survive, but thrive in the college environment. As higher education researchers seek to advance the next generation of scholarship on student success and retention, attention to malleable processes within students and the differential effects of such processes on student success offers opportunities for new insights into the “ill-structured problem of student departure” (Braxton, 2000, p. vii).

In an effort to measure these malleable psychosocial processes that enable students to succeed in college, the Thriving Quotient was developed as an instrument designed to measure students’ positive functioning in three key areas: academically, interpersonally, and intrapersonally. Although there are commercially-available instruments that are designed to predict first-year student success and retention, such as the Student Readiness Inventory (Le, Casillas, Robbins, & Langley, 2005; available through ACT) and the College Student Inventory (Stratil, 2006; available from Noel-Levitz), brief but reliable and valid measures are not readily available to campus personnel who are tasked with designing programs and services to enable all students to succeed. Thus, the purpose of this study is to explore the psychometric properties of the Thriving Quotient, particularly its construct validity through confirmatory factor analysis.

Conceptual Framework

The field of positive psychology, with its emphasis on “fulfilled individuals and thriving communities,” (Seligman & Csikzentmihalyi, 2000, p. 5) has called for research focusing on mental health and well-being rather than on mental illness. Keyes (2003) presents the concept of *flourishing* as emotional vitality and positive functioning manifest through positive relationships, rising to meet personal challenges, and engagement with the world. The state of flourishing

reflects a life lived with high levels of emotional well-being (Keyes, 2002; Keyes & Haidt, 2003). Flourishing individuals have an enthusiasm for life and are actively and productively engaged with others and in society (Keyes, 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, interpersonal relationships, and intrapersonal well-being. Thus this construct builds on the psychological well-being implied in flourishing, but also encompasses elements critical to college students' success: academic engagement, self-regulated learning, goal-setting, effort regulation, openness to differences, citizenship, and the experience of a psychological sense of community on campus.

The concept of thriving is not only linked to models of psychological well-being, but is also linked to models of student retention in higher education. Bean and Eaton's (2000) psychological model of retention holds that an individual brings to campus psychological attributes shaped by past experiences, abilities, and self-assessments; the student then interacts with individuals at the institution on a variety of levels (e.g., bureaucratic, social, academic). From there, students self-assess using a variety of psychological processes, resulting in a psychological response to the various interactions with the college environment. The psychological response is a sense of academic and social integration, which leads to institutional fit, institutional loyalty, retention, and graduation. An examination of the psychological processes outlined in Bean and Eaton's model indicates that it may be useful to connect those processes theoretically to the construct of flourishing that has been well-researched in psychology (Keyes, 2003), as it is beginning to receive attention in higher education (Ambler, 2006).

College student thriving is defined in this study as students fulfilling their goals in the context of a healthy community. The definition implies student thriving in three main areas: academics, interpersonal relationships, and intrapersonal well-being. Each area of thriving consists of multiple psychological constructs that combine to characterize a well-rounded, high-functioning individual.

Academic Thriving

Academic thriving encompasses psychological constructs that have been linked to student success as defined by cumulative GPA in college. Engaged learning (Schreiner & Louis, 2006), self-regulation and effort regulation (Pintrich, 2000), environmental mastery (Ryff, 1989), and hope (Snyder, 1995) collectively inform the academic component of thriving among college students. Engagement in learning requires both behavioral and cognitive commitments: ability to focus attention, willingness to actively participate, and desire to process information meaningfully (Schreiner & Louis). Behavioral evidence of engagement, such as completion of assignments and participation in class, is easily observable. The cognitive portion of this equation is often unseen, however—in part because this deeper approach to learning focuses attention on the content itself and its integration into the thought life of the learner (Marton & Saljo, 1976).

Self-regulation (Pintrich, 2000) also includes both cognitive and behavioral components that comprise the regulated effort required for persistence in the presence of challenges. The ability to self-regulate effort and learning can help students effectively set goals, monitor their progress, and adapt their behavior to achieve those goals (Pintrich, 2004). Regulated interaction with external circumstances is vital, as well. Environmental mastery (Ryff, 1989) relies on the cognitive capacities inherent in other forms of regulation, equipping students to interact

confidently with the environment, making choices within a given context and shaping it as required to meet individual needs. A similar combination of determination and decision-making is associated with hope (Snyder, 1995), which consists of the desire to achieve a goal and the ability to envision various options to attain it. High levels of hope have been correlated to higher semester and overall grade point averages for college students (Chang, 1998; Curry, Snyder, Cook, Ruby, & Rehm, 1997; Snyder, Sympson, Michael, & Cheavens, 2001). Further, hope scores correlate positively with college completion and negatively with academic dismissal rates (Snyder, Shorey, et al., 2002).

Interpersonal Thriving

Although academic thriving could justifiably be considered a central measure of student success in college—as well as one indicator of the success of the institution—it cannot on its own differentiate between languishing and flourishing (Keyes, 2002). Academic success in the absence of positive relationships and a healthy community may not lead to student persistence or to the longer-term goals of higher education to develop contributing citizens who have a positive influence on the world. Interpersonal success in the higher education context comprises several factors, all of which demonstrate positive relational functioning between the student and other individuals or between the student and the institution. The attitudes students hold toward those with whom they interact, their perceptions of the quantity and quality of their own social relationships (Ryff, 1989), and their sense of belonging to a greater campus community (Lounsbury & DeNeui, 1995; Schreiner, 2006) all contribute to interpersonal thriving. If colleges and universities are “experiments in community,” where all members “...experience together the consequences—both positive and negative—of each other’s actions” (Swaner, 2007,

p. 23), healthy identification with the community benefits both the individual student and others who play a role in the life of the institution.

Among the attitudes evident in thriving students is the belief that peer relationships are enriched by understanding and appreciating the diverse contributions of all individuals, including oneself (Fuentes, Miville, Mohr, Sedlacek, & Gretchen, 2000; Tyree, 1998). More specifically, citizenship (Tyree, 1998) encompasses individuals' willingness to consider viewpoints other than their own and to positively influence the lives of those around them. This openness to others' perspectives may reflect a mindset that accepts the possibility of growth (Dweck, 2006; Dweck, Mangels, & Good, 2004) and change.

Intrapersonal Thriving

Interpersonal relationships and the attitudes that fuel them combine with academic thriving to support overall student success, but the inner life of the student merits attention, as well. Defined as "a person's cognitive and affective evaluations of his or her life as a whole," (Diener, Oishi, & Lucas, 2009, p. 187), subjective well-being relies upon congruency between expectation and outcome in the life of the individual (Ryan & Deci, 2001). It reflects high levels of positive emotions, low levels of negative affect, and a pervasive sense of satisfaction with one's life. Brissette, Scheier, and Carver (2002) have observed that such well-being at the end of the first year of college is higher in students who entered college with a sense of optimism. Optimism, conceptualized as the expectation of positive outcomes in spite of difficulties (Carver, Scheier, Miller, & Fulford, 2009), is also significantly predictive of greater development of social networks among college students (Brissette et al.). Thus, intrapersonal thriving is intimately connected to the interpersonal aspect of thriving, as one's sense of self and satisfaction with life both affect the development of positive relationships and are impacted by

those relationships. Tucker (1999) bridges interpersonal and intrapersonal contributors to student success by describing social support systems in expansive terms that incorporate the intrapersonal characteristics of subjective well-being (Diener et al.) and optimism (Carver et al.). This description suggests that, although well-being and optimism are distinctly intrapersonal, positive personal functioning is necessary for the formation of the mutually supportive relationships that facilitate thriving.

Purpose of the Study

The purpose of the present study is to explore a measurement model of college student thriving. The Thriving Quotient was developed to measure aspects of college student thriving that are amenable to intervention and are predictive of academic success and/or persistence. The research questions that guided this study were:

- (1) To what extent is the Thriving Quotient a valid and reliable measure of college student thriving?
- (2) What are the first- and second-order factors of the Thriving Quotient?
- (3) To what extent does a five-factor model of thriving fit the data collected from a national sample of students in four-year colleges?
- (4) To what extent does a higher-order factor of *thriving* fit the data from the national sample of students in four-year colleges?

Method

Measures

The Thriving Quotient (TQ) began as a 198-item instrument derived from scales on the following instruments: the Engaged Learning Index (Schreiner & Louis, 2006), the Academic Hope Scale (Snyder, Lopez, Shorey, Rand, & Feldman, 2003), the Academic Self-Efficacy Scale

(Chemers, Hu, & Garcia, 2001), the Perceived Academic Control scale (Perry, Hladkyi, Pekrun, & Pelletier, 2001), Dweck's (2006) mindset assessment, the Psychological Well-Being Questionnaire (Ryff & Keyes, 1995), the Psychological Sense of Community on Campus Index (Schreiner, 2006), the citizenship subscale from the Socially Responsible Leadership Scale (Tyree, 1998), the Miville-Guzman Universality-Diversity Scale (Fuentes, Miville, Mohr, Sedlacek, & Gretchen, 2000) the Subjective Well-Being Scale (Diener, et al., 1999), the Life Orientation Scale (Scheier & Carver, 1985), the 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).

In the spring of 2008, a pilot study involving 2,474 students from 13 institutions allowed us to eliminate items that did not contribute to the internal consistency or factor structure of the instrument. Cronbach's alpha coefficients were calculated within each scale to test for reliability; items that did not contribute to the internal consistency of a scale were eliminated. A principal components analysis with varimax rotation identified items for elimination based on low factor loadings or cross-loadings. Multiple regression analyses were conducted on the resulting factors to determine their ability to predict self-reported learning gains, intent to persist, and institutional fit. Scales were removed that were not significantly predictive of these student success outcomes. After eliminating 128 items, the total coefficient alpha for the final version of the instrument was $\alpha = .86$.

The resulting analysis consolidated the Thriving Quotient to 70 items. All items were reworded to best suit the target audience of college students. Focus groups conducted on five campuses sought student input on the questions. Further revision of item wording was conducted from the focus group results. Based upon the results and analysis of the pilot study, we crafted a

national study and collected data in the spring of 2009. It is this study that is described in more detail in the remainder of this paper.

The final version of the Thriving Quotient that was subjected to confirmatory factor analysis for this study is a 32-item instrument that measures college students' academic engagement, interpersonal relationships, and intrapersonal well-being, aspects of the hypothetical construct of thriving that were observed in the pilot study to significantly predict students' academic performance and intent to persist. Each item is expressed as a positive or negative statement to which the student responds on a 6-point Likert-type scale ranging from *strongly disagree* to *strongly agree*.

An exploratory factor analysis had been conducted on the pilot version of the instrument to determine the structure of the TQ. This principal components analysis with varimax rotation resulted in seven factors with eigenvalues over 1.0 that accounted for 59.6% of the variance. New scales were created based on these components and Cronbach's alpha was calculated for each scale. Because one of our goals was to design an instrument that was brief yet reliable and valid, items were deleted from their respective scale if they had a negative effect on the alpha estimate, had an item-total correlation less than $r = .40$, had a factor loading below .40, or loaded at the .40 level on more than one factor. That iterative process reduced the items to 32. These 32 items were again subjected to a principal components analysis with varimax rotation, resulting in five factors that accounted for 51.6% of the variance. The five factors include Engaged Learning ($\alpha = .85$), Diverse Citizenship ($\alpha = .80$), Academic Determination ($\alpha = .83$), Positive Perspective ($\alpha = .83$), and Social Connectedness ($\alpha = .81$). The instrument as a whole has an internal consistency estimate of $\alpha = .91$.

In addition to the TQ items, each participant responded to a variety of items indicative of desired outcomes of the postsecondary educational experience, including self-reported college grades, intent to graduate from their institution, degree of fit within the institution, satisfaction levels, and intent to choose the institution again if they had it to do over. Students also responded to a number of demographic items and items regarding their college involvement and use of time. Table 1 outlines all the variables in the TQ along with their corresponding response scales and coding strategies.

Data Source and Sample

In the spring of 2009 the Thriving Quotient was administered to 6,617 undergraduate students representing the full range of class levels at 27 public and private colleges and universities across the United States. Institutional participation was solicited through personal contacts at universities and through online higher education listservs. Eighteen institutions were private and nine were public; the institutions represented a broad range of Carnegie classifications, but most were moderately to highly selective. Eleven of the institutions were baccalaureate colleges, nine were master's level institutions, and seven of the institutions were research-high or very high institutions. Five of the institutions were relatively small (student population under 1500) and eight of the institutions were moderately large, with student populations above 10,000.

Responses were collected via online surveys administered to students through a contact on each campus, after the institutional review board on the campus approved the study. An online informed consent document was required before participation. Answers to the survey remained anonymous and confidential, protected by encrypted password available only to the researchers. Each campus utilized its own method of sampling students via e-mail contacts, with

response rates that ranged from 7% to 37% and averaged 18%. Incentives were provided to each campus in the form of a lottery drawing for \$25 gift cards.

After deleting students over the age of 25, the sample contained 6,375 traditional-aged undergraduate students. One or more missing values were present in 1327 respondent cases. While missing values in social science surveying is an expected phenomenon, we needed to establish if any relevant patterns were present within the missing values (Tabachnick & Fidell, 2007). The predictability of missing values through a Separate Variance *t*-test determined missing data were not correlated to any of the dependent variables (Tabachnick & Fidell, 2007). Subsequent analysis of the missing data, including Little's MCAR test $\chi^2(5109.215) = 4419, p < .001$, led the researchers to conclude that the data were missing at random (MAR). Because the missing data were missing at random we used SPSS Missing Value Analysis version 18 to replace missing values with Expectation Maximization as recommended by Tabachnick and Fidell (2007). This process provided a complete data set of 6,374 cases. Data were screened for outliers using Mahalanobis distance and 343 sets were identified as statistical outliers. Comprising only 5.4 percent of the dataset, the identified outliers were deleted. After outlier deletion, 6,031 complete datasets were utilized for further analysis. As can be seen in Table 2, 70.3% of the students in this final sample were women. The sample included 20.9% first-generation students, and 70.5% of the sample was Caucasian. Two-thirds of the sample lived on campus.

Data Analysis

Prior to creation of the measurement model for confirmatory factor analysis, all variables were analyzed for assumptions of normality. Moderate to substantial negative skew was

identified in 17 variables. As a result, three variables (*opt3*, *div1*, *hope2*) were transformed using the square root log function of SPSS, while 14 variables (*opt4*, *swb1*, *em1*, *eli3*, *eli1*, *srls4*, *srls3*, *srls2*, *div2*, *posrel3r*, *er1r*, *eli2*, *swb2*, *em3*) were transformed using the log and reflect function of SPSS. The means and standard deviations of all items on the Thriving Quotient are outlined in Table 3.

Using the maximum likelihood estimation procedure in AMOS 16.0, the five-factor model derived from the exploratory principal components analysis was tested for its fit with the current sample of 6,031 students in four-year colleges and universities. Initial confirmatory factor analysis identified seven pairs of variables with correlated error variance. Adjustments were made in the graphical model to account for these correlations (see Figure 1). The quality of the model's fit was assessed using two criteria in addition to the traditional chi-square goodness-of-fit, which was highly inflated due to the large sample size. The comparative fit index (CFI; Bentler, 1990) compares the improved fit of the hypothesized model to a null model that assumes the model's observed variables are not correlated; this null model is also known as the *independence model*. CFI values can range from 0 to 1, with 1 indicating a perfect fit. Values greater than .95 are considered to represent a well-fitting model (Thompson, 2004). The second criterion for fit, the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993), is a parsimony-adjusted index that indicates the fit between the implied and the population covariance matrix. In contrast to the CFI, lower RMSEA levels are indicative of a better fit, with values closer to 0 being more desirable. A commonly accepted standard is that RMSEA values of less than .06 represent a well-fitting model (Thompson, 2004).

The CFA indicated that the five-factor model provided an excellent 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). The model is depicted in Figure 2. As outlined in Table 4, the five-factor model of *thriving* comprises the following scales: Engaged Learning (9 items, $\alpha = .85$), Diverse Citizenship (8 items, $\alpha = .80$), Academic Determination (7 items, $\alpha = .83$), Positive Perspective (5 items, $\alpha = .83$), and Social Connectedness (3 items, $\alpha = .81$).

Because more than three first-order factors existed in the model, we explored the potential existence of a second-order factor (Kline, 2005). Exploration of the second-order factor *thriving* (See Figure 3) provided model fit indices as follows: $\chi^2/(452) = 13.70$ ($p < .001$), CFI = .927, and RMSEA = .046, with 90% confidence intervals of .045 to .047. The model fit indicators affirm that conceptualizing *thriving* as a second-order factor fits the data equally well as the five-factor model (see Figure 4).

Discussion

This study makes two notable contributions to the conceptualization and measurement of student success. First, it confirms that the Thriving Quotient is a brief, but reliable and valid tool for assessing students' academic engagement, psychological well-being, and interpersonal relationships that are predictive of their further success and persistence. The TQ consists of only 32 items, yet is internally consistent ($\alpha = .91$) with a robust factor structure containing five components that are indicative of a higher-order factor we have labeled *thriving*. Thus, total TQ scores can be utilized meaningfully for a quick snapshot of students' welfare. As Braxton, Hirschy, and McClendon (2004) encourage an institutional commitment to student welfare for its salutary effects on student persistence, the TQ provides a brief and easily-administered mechanism for determining the current status of student welfare for not only individual students, but also sub-populations within the student body and the student population as a whole.

Second, this study adds to the current understanding of student success by viewing it holistically as a combination of academic and psychosocial factors. Although total TQ scores can be utilized in meaningful ways, the five-factor model also provided a good fit for the student data. The breadth of the student experience that is encapsulated within the five factors allows campus personnel to note variations in a student's reports of success among these components. This capacity encourages faculty and student development professionals to attend to the student whose academic experience seems generally positive, but who feels socially isolated or is having difficulty setting and achieving goals. Having the opportunity to intervene on behalf of students on the margin—those who are not high risk, but who may not be thriving—not only improves the college experience for the individual student, but may increase the likelihood of his or her persistence. As noted by other authors exploring thriving within middle-school and high-school students (Benson & Scales, 2009), different dimensions of thriving may be present to varying degrees across social class, ethnicity, and phases of life. The total measure of thriving provides an indicator of the general trajectory of a student's college experience, but the individual components allow for the design and implementation of interventions that may increase the likelihood of a student being successful and graduating from college. The five components of the TQ were intentionally selected for their malleability as well as their ability to predict academic success and student persistence. Thus, targeting these particular areas for intervention at both the individual student level through advising or counseling as well as at the student population or subpopulation level through programs and services can enable a greater number of students to succeed who may not have otherwise.

Factor Structure of the Thriving Quotient

First-Order Factors. The original Thriving Quotient contained items from 13 scales. An exploratory factor analysis reduced the instrument to 32 items on five scales. The CFA determined that this five-factor model was indeed a good fit for the data collected on this larger sample of college students. The seven pairs of variables with correlated error variance were explored further, as Joreskog (as cited in Byrne, 2001) notes that “every correlation between error terms must be justified and interpreted substantively” (p. 134). Such correlations often indicate item redundancy; that was indeed the case in these instances. Each item pair whose error terms were correlated were from the same original subscales; for instance, two of the Engaged Learning items were the only remaining items on the TQ from an original Focused Attention subscale of the Engaged Learning Index. Thus the modifications made to the model based on these correlated error terms were all able to be substantiated as due to item redundancy.

The five factors that comprise a well-fitting model for the current data include Engaged Learning, Diverse Citizenship, Academic Determination, Positive Perspective, and Social Connectedness. Engaged Learning represents the meaningful processing, focused attention, and active participation in the learning process that Tagg (2003) describes as *deep learning* that leads to both academic success and persistence to graduation. Academic Determination represents the necessary goal-setting, motivation, and self-regulated investment of effort in the academic experience that also leads not only to academic success, but persistence to graduation and a sense that the college experience has been fulfilling. As Robbins and colleagues have demonstrated (2004), this psychosocial construct predicts success beyond what the traditional measures of student characteristics are able to predict. Unlike Le, Casillas, Robbins, and Langley (2005)’s Academic Discipline scale of the Student Readiness Inventory, however, Academic

Determination is comprised of more than conscientiousness and discipline; it contains an important element of goal-setting and motivation to reach academic goals, as well as key strategies to persevere.

Positive Perspective is a combination of optimism (Carver et al., 2009) and subjective well-being (Diener et al., 1999) and is indicative of an orientation toward life characterized by a pervasive satisfaction and an expectation of positive outcomes despite difficult circumstances. Students' positive perspective toward their college experience may reflect a motivational dimension that contributes to institutional commitment and loyalty, important constructs within most retention models (Bean & Eaton, 2000; Tinto, 1993). This intrapersonal dimension of thriving represents an attitude toward oneself, toward life, and toward current circumstances that can bolster a student's motivation to engage academically.

Social Connectedness and Diverse Citizenship represent the two interpersonal dimensions of thriving on the Thriving Quotient. Social Connectedness draws entirely upon students' perceptions of their interpersonal connections with others (Ryff, 1989), and this factor connects theoretically with Tinto's (1993) construct of social integration that has been revised most recently by Braxton, Hirschy, and McClendon (2004). Students' sense of belonging (DeNeui, 2003; Hurtado & Ponjuan, 2005) and of mattering to others (Rayle & Chung, 2007-08; Schlossberg, 1989) are indicators of levels of social support and have been demonstrated in numerous studies to be important factors in their success in the college environment. Because social support from one's family is also considered an important dimension for success, particularly among historically under-represented students (Rayle & Chung; Tinto, 2005), items to consider for inclusion in future revisions of the instrument might include a broader measure of social support that includes family.

The items that are indicators of Diverse Citizenship combine the concepts of citizenship (Tyree, 1998), an appreciation of differences in others (Fuertes et al., 2000), and a growth mindset (Dweck, 2006) that perceives human behavior as malleable with effort. Thus, students' interest in making a difference in others' lives and appreciating what others have to offer may enable them to remain in college and gain the full benefit of their college experience.

Thriving as a second-order factor. Although the five-factor model of thriving represented in the Thriving Quotient was a good fit for the data we collected, we had hypothesized that there was a second-order factor labeled *thriving* that was more than just a combination of the five scales. Accordingly, a confirmatory factor analysis was conducted to determine whether a second-order factor model might be a better fit for the data. The results indicated that both models fit the data similarly, with the five-factor model being negligibly better than the second-order model. However, the finding that the second-order model also fit the data well indicates that it is possible to conceptualize college student thriving holistically. It is this notion of a holistic construct that holds appeal, for a number of reasons.

As Kuh, Kinzie, Buckley, Bridges, and Hayek (2007) note, “no one theoretical perspective can adequately account for all the factors that influence student success in college” (p. 19). Yet in their comprehensive *Piecing Together the Student Success Puzzle*, these authors devote less than five pages to students' psychological processes that may affect their ability or willingness to engage in the academic tasks necessary to succeed. Current theories and research on student success and retention tend to emphasize student background characteristics, engagement in effective educational practices, and institutional practices and conditions associated with student success, without a concomitant exploration of the psychological processes that contribute to such engagement and are in turn affected by that engagement.

Although Le and colleagues (2005) have begun an exploration of some of the psychosocial factors that may contribute to student success, much of their work has focused on the factors most associated with academic performance, notably academic discipline, academic self-confidence, commitment to college, goal striving, study skills, and communication skills. They include social activity and social connection, but do not include the constructs involved in Positive Perspective (optimism and well-being) or in Diverse Citizenship (appreciation of differences, a growth mindset, and a desire to make a contribution to the world). By viewing student success holistically as a unified construct that incorporates both cognitive and psychosocial components whose whole is greater than the sum of its parts, researchers and campus personnel can begin to design and assess interventions that can directly address students' needs. Knowing that each component of thriving is amenable to intervention and is predictive of student success, targeting programs and services toward the area where the student is languishing may result in impacting the whole student experience of thriving in college.

Limitations and Areas for Future Research

The primary limitation of the study is that the sample, although large and indicative of acceptable response rates on each campus, was not random. It was also disproportionately white and female, a common weakness in current online survey research (Pike, 2008). The institutions who elected to survey their students are not necessarily representative of institutions nationally; they were entirely comprised of four-year institutions that were mostly of a moderate to high selectivity. Thus the Thriving Quotient needs to be validated on a more diverse sample from a wider variety of institutional types, including within the community college setting.

In addition to the preliminary construct validity indicated by this study of the Thriving Quotient, there is a need to explore the concurrent and predictive validity of the instrument. Do

students' scores on the TQ predict their academic success or persistence in college longitudinally? Discriminant validity is also a necessary next step. Students who are currently perceived by others or are judged by external standards as succeeding in college should theoretically have higher scores on the Thriving Quotient than those who are not succeeding, for example. Additionally, students' scores on the TQ should not correlate positively with their scores on measures of alienation or emotional distress, constructs which are theoretically incongruent with thriving.

Finally, further research is needed to explore both the college experiences that affect thriving and the degree to which specific interventions are able to positively impact any of the components of thriving. When students from all backgrounds are able to fulfill their goals in the context of a healthy community, greater levels of success are possible. Strategically-developed interventions at both the individual and the institutional level could enable a greater percentage of students to not only survive, but thrive in the college environment.

References

- Bean, J. P., & Eaton, S. B. (2000). A psychological model of college student retention. In J. M. Braxton (Ed.), *Reworking the departure puzzle* (pp. 48–61). Nashville: Vanderbilt University Press.
- Brissette, I., Scheier, M. F., & Carver, C. S. (2002). The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of Personality and Social Psychology*, 82, 102-111.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822-848.
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: The Guilford Press.
- Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Carver, C. S., Scheier, M. F., Miller, C. J., & Fulford, D. (2009). Optimism. In S. J. Lopez & C. R. Snyder (Eds.), *Oxford Handbook of Positive Psychology*, 2nd edition (pp. 303-312). Oxford, England: Oxford University Press.
- Chang, E. C. (1998). Hope, problem-solving ability, and coping in a college student population: Some implications for theory and practice. *Journal of Clinical Psychology*, 54(7), 953-962.
- Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology*, 93(1), 55-64.

- Curry, L. A., Snyder, C. R., Cook, D. L., Ruby, B. C., & Rehm, M. (1997). Role of hope in academic and sport achievement. *Journal of Personality and Social Psychology*, 73(6), 1257-1267.
- DeNeui, D. L. C. (2003). An investigation of first-year college students' psychological sense of community on campus. *College Student Journal*, 37, 224-235.
- Diener, E., Oishi, S., & Lucas, R. E. (2009). Subjective well-being: The science of happiness and life satisfaction. In S. J. Lopez & C. R. Snyder (Eds.), *Oxford Handbook of Positive Psychology*, 2nd edition (pp. 187-194). Oxford, England: Oxford University Press.
- Dweck, C. S. (2006). *Mindset: The new psychology of success* (1st ed.). New York: Random House.
- Dweck, C. S., Mangels, J. A., & Good, C. (2004). Motivational effects on attention, cognition, and performance. In D. Y. Dai & R. J. Sternberg (Eds.), *Motivation, Emotion, and Cognition: Integrative Perspectives on Intellectual Functioning and Development* (pp. 41-55). Mahwah, NJ: Lawrence Erlbaum Associates.
- Fuertes, J. N., Miville, M. L., Mohr, J. J., Sedlacek, W. E., & Gretchen, D. (2000). Factor structure and short form of the Miville-Guzman Universality-Diversity Scale. *Measurement & Evaluation in Counseling & Development*, 33(3), 157.
- Hurtado, S., & Ponjuan, L. (2005). Latino educational outcomes and the campus climate. *Journal of Hispanic Higher Education*, 4(3), 235-251.
- Keyes, C.L.M. (2002). The mental health continuum: From languishing to flourishing in life [Electronic version]. *Journal of Health and Social Behavior*, 43(2), 207-222.

- Keyes, C.L.M. (2003). Complete mental health: An agenda for the 21st century. In C.L.M. Keyes & J. Haidt (Eds.), *Flourishing: Positive Psychology and the Life Well-Lived* (pp. 293-309). Washington, D.C.: American Psychiatric Association.
- Keyes, C.L.M, & Haidt, J. (Eds.). (2003). *Flourishing: Positive Psychology and the Life Well-Lived*. Washington, D.C.: American Psychiatric Association.
- Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling* (2nd ed.). New York: The Guilford Press.
- Le, H., Casillas, A., Robbins, S. B., & Langley, R. (2005). Motivational and skills, social, and self-management predictors of college outcomes: Constructing the Student Readiness Inventory. *Educational and Psychological Measurement*, 65(3), 482-508.
- Marton, F., & Saljo, R. (1976). On qualitative differences in learning: I—Outcome and process. *British Journal of Educational Psychology*, 46, 4-11.
- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14, 6-23.
- Perry, R. P., Hladkyj, S., Pekrun, R. H., & Pelletier, S. T. (2001). Academic control and action control in the achievement of college students: A longitudinal field study. *Journal of Educational Psychology*, 93(4), 776.
- Pike, G. R. (2008). Using weighting adjustments to compensate for survey nonresponse. *Research in Higher Education*, 49, 153-171. doi:10.1007/s11162-007-9069-0
- Pintrich, P. R. (2000). The role of goal orientation in self-regulated learning. In M. Boekaerts, P. R. Pintrich, and M. Zeidner (Eds.). *Handbook of self-regulation* (pp. 451-502). San Diego: Academic Press.

- Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review*, 16(4), 385-407.
- Rayle, A. D., & Chung, K. (2007-08). Revisiting first-year college students' mattering: Social support, academic stress, and the mattering experience. *Journal of College Student Retention*, 9(1), 21-37.
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081.
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality & Social Psychology*, 69(4), 719-727.
- Ryff, C. D., & Singer, B. (1998). The contours of positive human health. *Psychological Inquiry*, 9(1), 1-28.
- Sarason, S. B. (1974). *The psychological sense of community: Prospects for a community psychology*. San Francisco: Jossey-Bass.
- Schlossberg, N. K. (1989). Marginality and mattering: Key issues in building community. *New Directions for Student Services*, 48, 5-15.
- Schreiner, L. A. (2006). [Psychological sense of community on campus index]. Unpublished raw data.
- Schreiner, L. A., & Louis, M. (2006, November). *Measuring engaged learning in college students: Beyond the borders of NSSE*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Anaheim, CA.
- Seligman, M.E.P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14.

- Snyder, C. R. (1995). Conceptualizing, measuring, and nurturing hope. *Journal of Counseling & Development, 73*(3), 355-360.
- Snyder, C. R., Lopez, S. J., Shorey, H. S., Rand, K. L., & Feldman, D. B. (2003). Hope theory, measurements, and applications to school psychology. *School Psychology Quarterly, 18*(2), 122-139.
- Snyder, C. R., Shorey, H. S., Cheavens, J., Pulvers, K. M., Adams, V. H., & Wiklund, C. (2002). Hope and academic success in college. *Journal of Educational Psychology, 94*(4), 820-826.
- Snyder, C. R., Sympson, S. C., Michael, S. T., & Cheavens, J. (2001). Optimism and hope constructs: Variants on a positive expectancy theme. In E. C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research, and practice* (pp. 101-123). Washington, DC: American Psychological Association.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The Meaning in Life Questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*(1), 80-93.
- Stratil, M. L. (2006). *Getting the most out of your college experience: College Student Inventory Form A*. Iowa City, IA: Noel-Levitz, Inc.
- Swaner, L. E. (2007). Linking engaged learning, student mental health and well-being, and civic development: A review of the literature. *Liberal Education, 93*(1), 16-25.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). Boston: Pearson Education Inc.
- Tagg, J. (2003). *The learning paradigm college*. Bolton, MA: Anker Publishing.

Tinto, V. (2005). Moving from theory to action. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 317-334). Westport, CT: Praeger Publishers.

Tucker, J. E. (1999). Tinto's model and successful college transitions. *Journal of College Student Retention, 1*(2), 163-175.

Tyree, T. M. (1998). Designing an instrument to measure the socially responsible leadership using the social change model of leadership development. *Dissertation Abstracts International, 59* (06), 1945. (UMI No. 9836493).

Table 1

Description of Variables

Dependent Variables:	Definition
College 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.
Institutional Fit	Response to item: "Given my current goals, this institution is a good fit for me." Measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Intent to Graduate	Response to item: "I intend to graduate from this university." Measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Re-choose Institution	Response to item: "If I had it to do over again, I would choose a different college/university to attend." (Reverse-scored). Measured on a 6-point scale: 1=strongly disagree, 6=strongly agree.
Institutional Variables	Definition
Carnegie classification	Categorical variable coded 1=baccalaureate, 2=master's, and 3=doctoral
Institutional control	Dummy variable coded 0=no, 1=yes for private universities.
Percent female	The percentage of female students in the undergraduate student body
Percent white	The percentage of Caucasian students in the undergraduate student body
Selectivity	Categorical variable assessing the percentage of the entering class with high school GPA in the bottom 75% (1), bottom 50% (2), top 25% (3), or top 10% (4)
Student Background Variables	Definition
First-generation	First in immediate family to attend college=1; not first to attend college=0
First choice of college	Dummy variable coded 1=yes 0=no for institution was first choice at enrollment
Gender	Female=1, male=0
Graduate school plans	Dummy variable. Plan to attain an advanced degree at any point in life, coded 0=no, 1=yes.
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.
On-campus	Live on campus, coded 1=yes, 0=no
Race/ethnicity	Dummy variable coded 1=student of color, 0=white
Independent Variables	Definition
Academic Determination	Factor score of seven items: (1) When course work is difficult, I give up or only study the easy parts (reverse scored), (2) Even when course materials are dull and boring, I manage to keep working until I finish, (3) I am good at managing the many responsibilities of my daily life, (4) I am good at managing my time so that I can fit everything in that needs to be done, (5) I am motivated to do well in school, (6) I actively pursue my educational goals, (7) When I become confused

	about something I'm reading for class, I go back and try to figure it out. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree. ($\alpha = .83$)
Diverse Citizenship	Factor score of eight items: (1) I give time to making a difference for someone else, (2) I have the power to make a difference in my community, (3) I value opportunities that allow me to contribute to my community, (4) I am willing to act for the rights of others, (5) Knowing how a person differs from me greatly enhances our friendship, (6) I can best understand someone after I get to know how he/she is both similar and different from me, (7) I would like to join an organization that emphasizes getting to know people from different cultures, and (8) No matter what kind of person you are, you can always change substantially. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree. ($\alpha = .80$).
Engaged Learning	Factor score of nine items: (1) I often discuss with my friends what I'm learning in class, (2) I regularly participate in class discussions, (3) I feel as though I am learning things in my classes that are worthwhile to me as a person, (4) It's hard to pay attention in many of my classes (reverse scored), (5) I can usually find ways of applying what I'm learning in class to something else in my life, (6) I ask my professors questions during class if I do not understand something, (7) I am bored in class a lot of the time (reverse scored), (8) I find myself thinking about what I'm learning in class even when I'm not in class, and (9) I feel energized by the ideas I'm learning in most of my classes. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree. ($\alpha = .85$).
Positive Perspective	Factor score of five items: (1) When things are uncertain for me, I usually expect the best, (2) I always look on the bright side of things, (3) I'm optimistic about what will happen to me in the future, (4) I am satisfied with my life, and (5) The conditions of my life are excellent. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree. ($\alpha = .83$).
Social Connectedness	Factor score of three items, all of which are reverse-scored: (1) Other people seem to have more friends than I do, (2) I often feel lonely because I have few close friends with whom to share my concerns, and (3) I don't have many people who want to listen when I need to talk. Each item is measured on a 6-point scale: 1=strongly disagree, 6=strongly agree. ($\alpha = .81$).
Call home/study	Factor score of two items: (1) How often do you call or text home while you are on campus? (1=never, 2=once a week or less, 3=two to three times a week or so, 4=about once a day, 5=two to three times a day, 6=four or more times a day) and (2) How much time per week do you spend studying for classes? (1=never, 2=less than one hour per week, 3=one to seven hours per week, 4=8-14 hours per week, 5=15-21 hours per week, 6=more than 21 hours per week).
Campus Involvement	Factor score of five items: How often do you participate in (1) student organizations on campus, (2) campus events or activities, (3) fraternities or sororities, (4) community service, (5) leadership responsibilities in student organizations. Each item is scored on a 6-point scale: 1=never, 6=frequently.
Computer/TV time	Factor score of three items: How much time each week do you spend on (1) online social networking (Facebook, etc.), (2) internet or video games, (3) watching TV or movies. Each item is scored on a 6-point scale: 1=never, 2=less than one hour per week, 3=one to seven hours per week, 4=8-14 hours per week, 5=15-21 hours per week, 6=more than 21 hours per week.
Work/Sleep	Factor score of three items: How much time each week do you spend (1) working for pay off campus, (2) working for pay on campus (1=never, 2=less than one hour per week, 3=one to seven hours per week, 4=8-14 hours per week, 5=15-21 hours per week, 6=more than 21 hours per week), and (3) How often do

	you get less than four hours of sleep in a night? (1=never, 2=rarely, 3=occasionally, 4=fairly often, 5=frequently, 6=almost always).
Faculty Interaction	Response to the item: "How often do you interact with faculty outside of class?" Measured with a 6-point scale, 1=never, 6=frequently.
Major Certainty	Response to item "How sure are you of major?" Measured with a 6-point scale: 1=very unsure, 6=very sure.
Academic Advising Satisfaction	Response to the item: "Rate your satisfaction with the academic advising you have received on this campus." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied.
Faculty Satisfaction	Response to the item: "Rate your satisfaction with the kinds of interaction you have had with faculty on this campus." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied.
Grade Satisfaction	Response to the item: "Rate your satisfaction with the grades you are earning in college." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied.
Health Satisfaction	Response to the item: "Rate your satisfaction with your current level of physical health." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied.
Living Situation Satisfaction	Response to the item: "Rate your satisfaction with your current living situation." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied.
Peer Satisfaction	Response to the item: "Rate your satisfaction with the kinds of interaction you have with other students on this campus." Measured with a 6-point scale, 1=very dissatisfied, 6=very satisfied.

Table 2

Demographic Characteristics of Participants

Characteristic	<u>n</u>	%
Gender (n=6031)		
Female	3623	70.3
Male	1532	29.7
Institution was first choice at enrollment		
Yes	3509	68.4
No	1624	31.6
Generation		
First generation	1079	20.9
Not first generation	4073	79.1
High School Grades		
Mostly A's	2357	45.7
A's and B's	1928	37.4
Mostly B's	451	8.8
B's and C's	327	6.3
Mostly C's	69	1.3
C's and D's	21	.4
Hours worked off campus per week		
None	3453	67.5
Less than 5	276	5.4
6-10	360	7.0
11-15	320	6.3
16-20	340	6.6
21-25	296	5.8
26-30	37	.7
More than 30	37	.7
Hours worked on campus per week		
None	3026	59.0
Less than 5	298	5.8
6-10	851	16.6
11-15	603	11.7
16-20	222	4.3
21-25	66	1.3
26-30	17	.3
More than 30	49	1.0
Housing*		
On-campus	3322	66.9
Off-campus	1610	32.4

Race/Ethnicity		
African-American	93	1.8
American Indian/Alaska Native	25	.4
Asian American/Pacific Islander	283	4.7
Caucasian	4252	70.5
Hispanic	248	4.1
Multiracial	139	2.6
International	20	.3

Note: N = 6,031

* 33 respondents indicated other

Table 3

Means and Standard Deviations for Items Used in Analysis

Item	Question	Mean	SD
div1	Knowing how a person differs from me greatly enhances our friendship.	4.50	0.87
div2	I can best understand someone after I know how he/she is both similar and different from me.	4.66	0.77
div3	I would like to join an organization that emphasizes getting to know people from different cultures.	3.91	1.15
eli1	I often discuss with my friends what I'm learning in class.	4.59	1.02
eli2	I regularly participate in class discussions in most of my classes.	4.33	1.22
eli3	I feel as though I am learning things in my classes that are worthwhile to me as a person.	4.72	1.01
eli4r	It's hard to pay attention in many of my classes.	3.87	1.21
eli5	I find ways of applying what I'm learning in class to something else in my life	4.41	0.99
eli6	I ask my professors questions during class if I do not understand something.	4.21	1.21
eli7	In the last week, I've been bored in class most of the time.	3.74	1.26
eli8	I find myself thinking about what I'm learning in class even when I'm not in class.	4.30	1.09
eli9	I feel energized by the ideas that I am learning in most of my classes.	4.08	1.08
em1	I am good at managing the many responsibilities of my daily life.	4.66	0.93
em3	I am good at managing my time so that I can fit everything in that needs to be done.	4.28	1.10
er1r	When course work is difficult, I give up or only study the easy parts.	4.57	1.04
er3	Even when course materials are dull/uninteresting, I manage to keep working until I finish.	4.33	1.01
hope2	I am motivated to do well in school.	5.20	0.91
hope6	I actively pursue my educational goals.	4.84	0.88
mindset2	No matter what kind of person you are, you can always change substantially.	4.46	0.97
optimism2	When things are uncertain for me, I usually expect the best.	3.77	1.05
optimism3	I always look on the bright side of things.	4.16	1.00
optimism4	I'm optimistic about what will happen to me in the future.	4.73	0.92
posrel1r	Other people seem to have more friends than I do.	3.53	1.35
posrel2r	I often feel lonely because I have few close friends with whom to share my concerns.	4.17	1.41
posrel3r	I don't have many people who want to listen when I need to talk.	4.43	1.19
sr2	When confused about something I'm reading for class, I go back and try to figure it out.	4.61	0.88
srls2	I give time to making a difference for someone else.	4.64	0.90
srls3	I have the power to make a difference in my community.	4.69	0.91
srls4	I value opportunities that allow me to contribute to my community.	4.63	0.90
srls5	I am willing to act for the rights of others.	4.82	0.80
swb1	I am satisfied with my life.	4.63	0.94
swb2	The conditions of my life right now are excellent.	4.26	1.06

Note: N = 6,031; Variable names ending in "r" were reversed scored

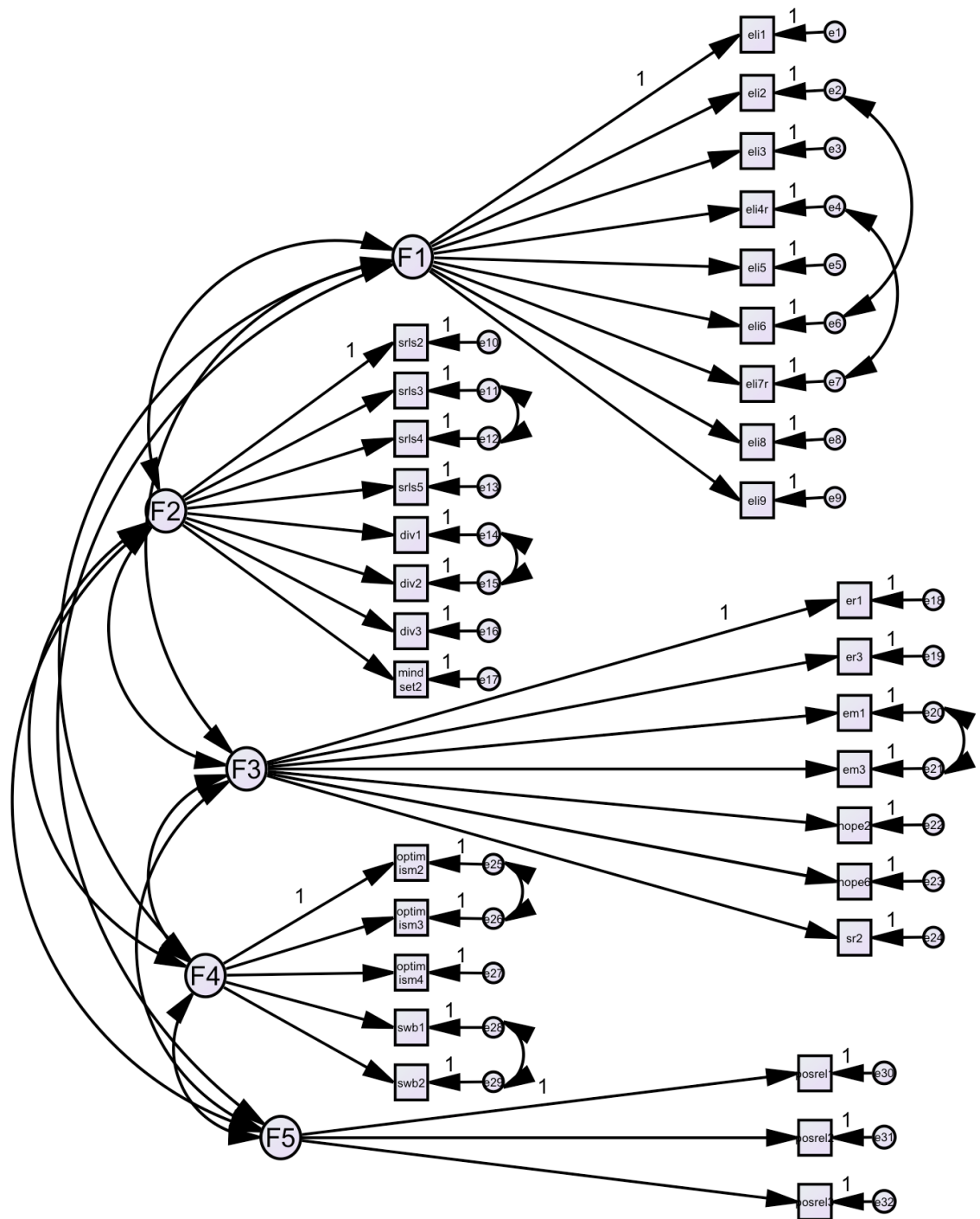


Figure 1: First order factor diagram of Thriving Quotient

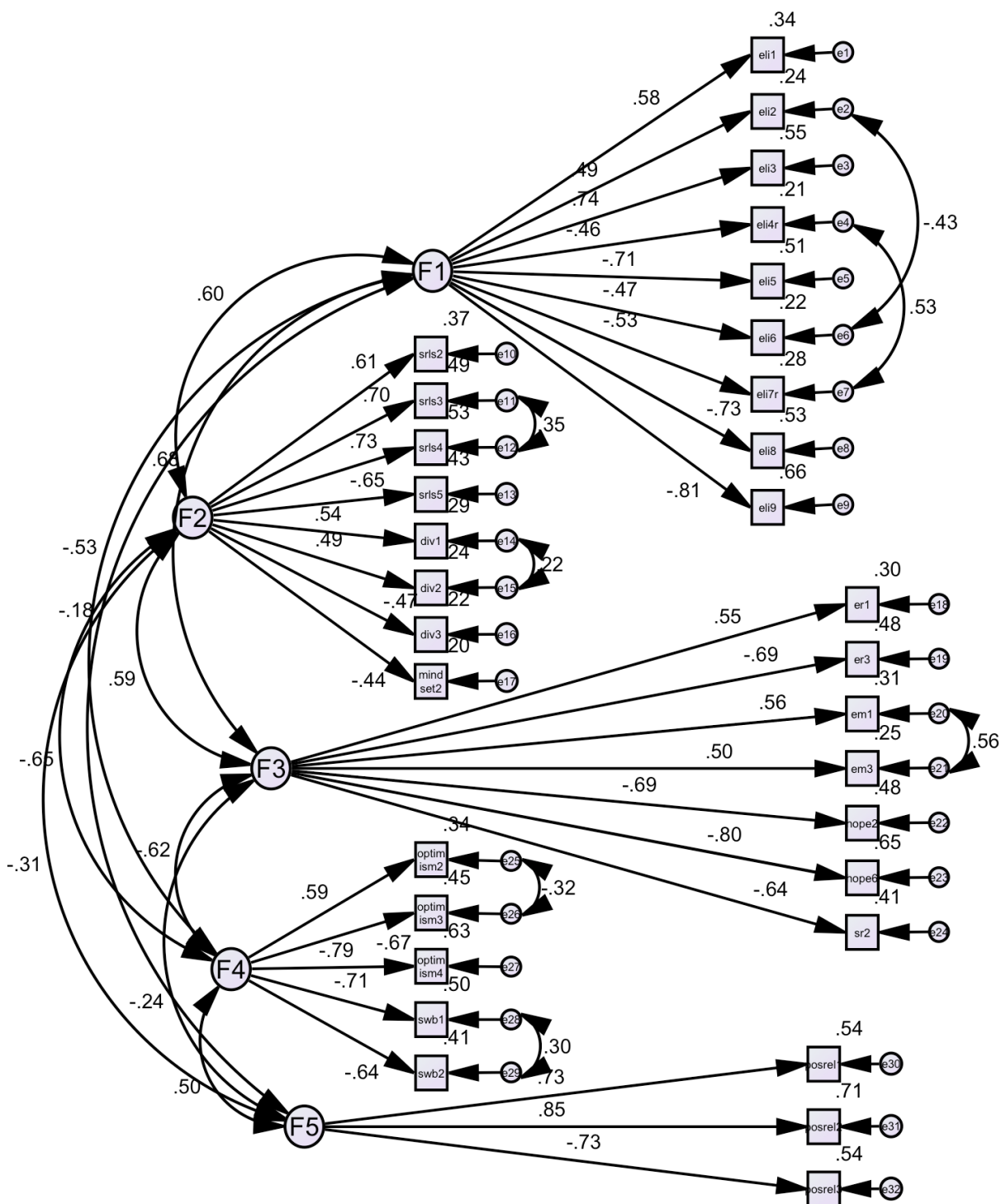


Figure 2: First order confirmatory factor analysis of Thriving Quotient

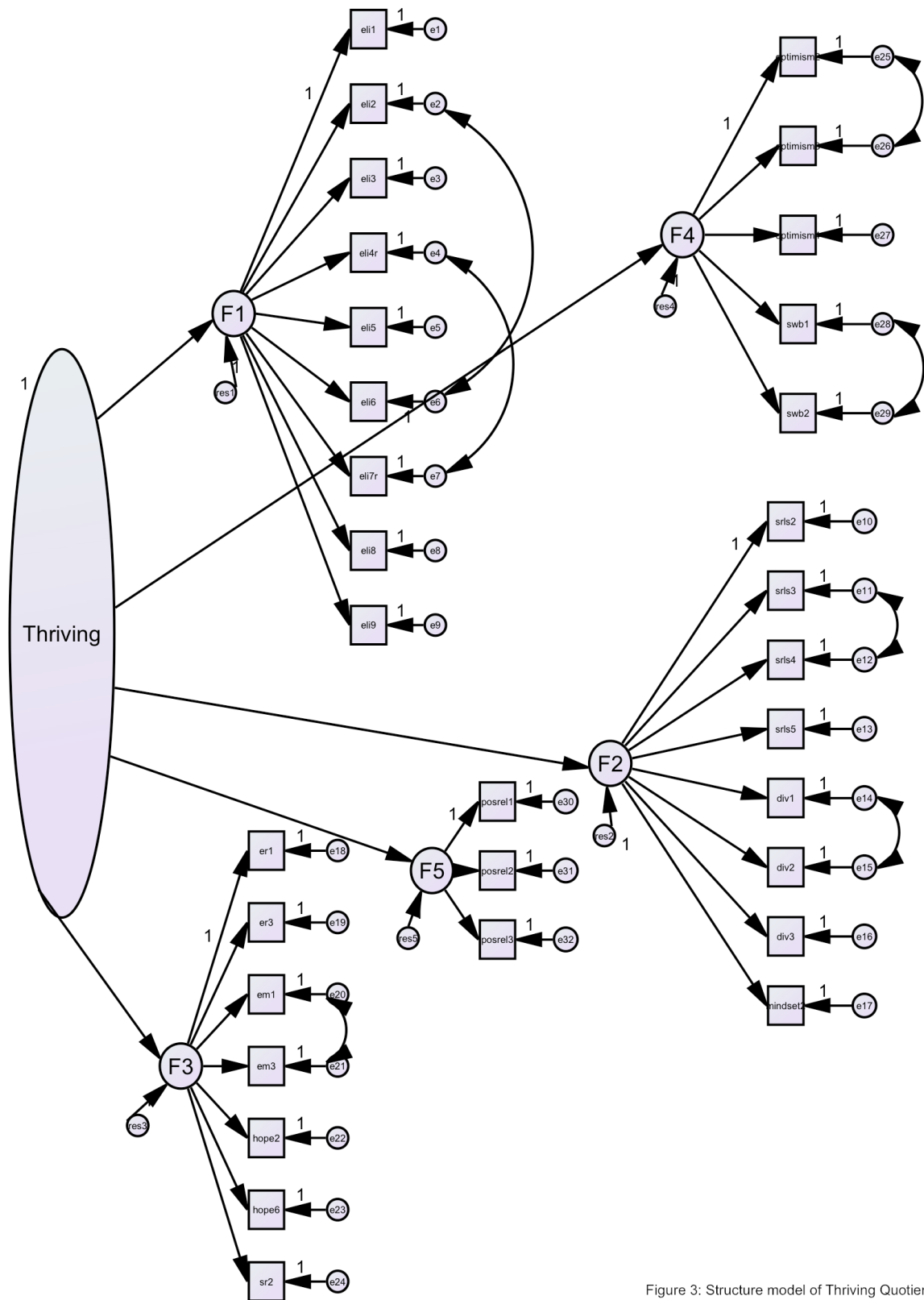


Figure 3: Structure model of Thriving Quotient

Figure 4: Structure model loading of Thriving Quotient

Table 4

Loading and Variance Accounted for by the Five Factor Model

Thriving Quotient Dimension	Measure	Loading	Variance		Reliability of the scale
			Explained	Error	
Engaged Learning	ELI1	0.58	0.34	0.66	0.85
	ELI2	0.49	0.24	0.76	
	ELI3	0.74	0.55	0.45	
	ELI4	0.46	0.21	0.79	
	ELI5	0.71	0.51	0.49	
	ELI6	0.47	0.22	0.78	
	ELI7	0.53	0.28	0.72	
	ELI8	0.73	0.53	0.47	
	ELI9	0.81	0.66	0.34	
Diverse Citizenship	SRLS2	0.61	0.37	0.63	0.80
	SRLS3	0.70	0.49	0.51	
	SRLS4	0.73	0.53	0.47	
	SRLS5	0.65	0.43	0.57	
	DIV1	0.54	0.29	0.71	
	DIV2	0.49	0.24	0.76	
	DIV3	0.47	0.22	0.78	
	MINDSET2	0.44	0.20	0.80	
Academic Determination	ER1	0.55	0.30	0.70	0.83
	ER3	0.69	0.48	0.52	
	EM1	0.56	0.31	0.69	
	EM3	0.50	0.25	0.75	
	Hope2	0.69	0.48	0.52	
	Hope6	0.80	0.65	0.35	
	SR2	0.64	0.41	0.59	
	Optimism2	0.59	0.34	0.66	
Positive Perspective	Optimism3	0.67	0.45	0.55	0.83
	Optimism4	0.79	0.63	0.37	
	SWB1	0.71	0.50	0.50	
	SWB2	0.64	0.41	0.59	
Social Connectedness	POSREL1	0.73	0.54	0.46	0.81
	POSREL2	0.85	0.71	0.29	
	POSREL3	0.73	0.54	0.46	