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Identifying predictors of social functioning in college students : a meta-analysis.

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IDENTIFYING PREDICTORS OF SOCIAL FUNCTIONING IN COLLEGE STUDENTS: A META-ANALYSIS

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A Dissertation Approved on

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DEDICATION

This dissertation is dedicated to the best copy editor/data monkey/husband I know.

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The completion of my dissertation has been a long journey. On the many occasions when I lost confidence and threatened to just get a job at The Gap (you get big discounts on clothes as an employee), lovely people encouraged me, and they deserve due appreciation. Dr. Jeff Valentine may be the most patient man I have ever met. I sincerely thank him for his steadfast and straightforward support of the project and of my sanity. I would also like to thank Dr. Amy Hirschy for her fantastic ideas and contributions to the project, as well as her mentorship throughout my doctoral process. Thank you to my other committee members: Dr. Sam Stringfield, Dr. Linda Shapiro, and Dr. Mark Leach.

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ABSTRACT

IDENTIFYING PREDICTORS OF SOCIAL FUNCTIONING IN COLLEGE STUDENTS: A META-ANALYSIS

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This meta-analysis draws studies from the literature on college student persistence, need theories, and positive psychology in investigating the strongest predictors of social functioning in college students in the United States and Canada. The predictor categories included background characteristics, measures of personality, mental health symptomology, coping style, and academic predictors. The results indicated that an individual's level of extraversion (a personality predictor), level of institutional commitment (an academic predictor), and levels of anxiety and depression (mental health predictors) are the strongest predictors of social functioning in college. The moderator analyses revealed that these effects are even stronger in public institutions and with samples from the last 15 years. Included is a discussion of the implications of these results for theory and practice, and recommendations for future research.

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INTRODUCTION

For the past decade, attrition rates from institutions of higher education in the United States have equaled or exceeded graduation rates. Recent estimates are that almost half (44%) of all students enrolled in four-year colleges fail to graduate within six years of enrolling. Attrition is even higher at two-year colleges, with 72% of those students failing to graduate within three years of first enrolling (U.S. Department of Education, 2007). College administrators are therefore faced with how to improve retention and graduation rates. Increasing the retention rate of college students is a very complex issue involving both voluntary and external factors for students (Pan, Guo, Alikonis, & Bai, 2008).

The predominant theory in the field of college student persistence points to the importance of the overlapping constructs of both academic functioning and social functioning in preventing student drop-out (Tinto, 1975). Academic integration has been conceptualized by Tinto (1993) as the normative congruence that a student feels with his or her academic experiences in college, often measured by both the student's academic performance (formal integration) as well as the quality of their interactions with faculty and staff (informal integration). Tinto defined a student's social integration as a function of both formal (e.g., participation in campus clubs, group work with others students) and informal (e.g., quality of social interactions with peers outside of the classroom) social experiences at college (Tinto, 1993). Research supports the importance of both academic

functioning and social integration in predicting retention (Braxton, Sullivan, & Johnson, 1997; Robbins et al., 2004; Tinto, 1993), but also suggests these two factors may not be equally important for all student populations. Specifically, academic integration and social integration have been found to have differential effects on adult versus traditionally-aged college students (Sorey & Duggan, 2008); residential versus commuter students (Peltier, Laden, & Matranga, 1999); two-year versus four-year college students (Tinto, 1993; Wortman & Napoli, 1996); and students enrolled in public versus private institutions (Beil, Reisen, Zea & Caplan, 1999). The current meta-analysis aimed to include moderator analyses for these variables where there was sufficient data available to do so, in order to inform how interventions might best be applied with different college populations and in different settings.

Current interventions to improve academic functioning include career advising programs, tutoring, summer bridge programs, and orientation to campus educational resources. Social interventions for college students include student organizations, social activities on campus, and residential learning communities. Although research indicates that academic interventions can be effective in improving retention, researchers have paid less attention to interventions focused on addressing the social adjustment of college students (Pan, et al., 2008). Even if the primary focus of higher education is on academic training, students may be successful academically but still drop out due to a lack of social integration on the campus (Tinto, 1975). For individuals who leave as a result of poor academic integration, records of their performance before their departure are available to the school administration. However, for those who experience poor social integration, school officials are less likely to recognize what specific factors contributed to their

departure. Research is needed that will assist both scholarly and practice-based (i.e., college faculty, staff, and administrators) efforts to develop interventions addressing particular factors leading to better social integration of college students. The focus of the current study was to conduct a meta-analysis to determine what the existing literature shows as the strongest predictors of students' social functioning in college. In addition to the potential practical implications of this study, the researcher also sees an opportunity to contribute to our understanding of concepts and theories of social functioning in the college student population.

Examining the Relevant Theory

Controversy exists within the discipline of psychology over the lack of clarity and precision in the concepts and theories which we study. Henriques (2004) points to the existence of social structures (e.g., academic departments, professional organizations) which would indicate that the field of psychology is a cohesive entity, but that a review of the status of theory illustrates the amount of disorder in the field. The ideological disagreements in the field of psychology have led to numerous theories, studying overlapping topics, and using redundant terms. This fragmentation interferes with the fields' ability to make cumulative advances, but few researchers are attending to the challenge of conceptual integration (Henriques, 2003). These researchers advocate for the importance of guiding paradigms within fields of study. A guiding paradigm "serves an important organizing function; it provides a consistent account of most of the phenomena of interest in the area, and, at the same time, serves to define those problems which require further research" (Biglan, 1973, pp. 201-202). The study of college student adjustment is no exception to this problem as there has been little integration or

research synthesis in the study of college outcomes (Robbins et al., 2004). Research in the study of college students has demonstrated the need for integrative approaches (Braxton, 2000; Tinto, 1986), as well as demonstrating that Tinto's paradigmatic theory is not absolute and is one that should be continually refined and updated as time goes on (Braxton & Hirschy, 2004).

With regard to theory, the aim of this study is to contribute to the general understanding of social functioning among college students, by considering the contributions of multiple theories and models from subfields of both psychology and education. Within the particular fields of *well-being*, *motivation theory,* and *college student persistence*, multiple models exist which consider the importance of social functioning in the human condition, and search terms were used in the current meta-analysis to yield results from each of these models. Within the current meta-analysis, the term social functioning refers to an umbrella used to describe the multiple operational definitions of the importance of social interactions with others to the individual. The term social functioning is used with the intention of avoiding an allegiance to a particular theory. Although certainly not an exhaustive list of all of the theories which address social functioning, Ryff's Theory of Psychological Well-Being (1989); Baumeister's Belongingness Hypothesis (1995); and Tinto's Theory of College Student Departure (1975) are highlighted below. These three theories were chosen as they are arguably the most prominent and widely accepted in their respective fields, and are overarching theories which focus on the fundamental importance of social functioning to human health as a primary aspect of their theory.

Ryff's theory of psychological well-being. Positive Psychology is a recently emerging movement in the field of psychology which seeks to shift the focus of applied fields in psychology from treating pathology to enhancing positive qualities and help individuals to thrive (Seligman & Csikszentmihalyi, 2000). When operating within the traditional disease model of human functioning, practitioners focus on "treating the mental illnesses of patients within a disease framework by repairing damage: damaged habits, damaged drives, damaged childhoods, and damaged brains" (Seligman & Csikszentmihalyi, 2000, p. 6). Seligman and others believe that although the study and understanding of human suffering and disorder is important (Seligman, Steen, Park, & Peterson, 2005), to be psychologically well requires more than just the absence of mental illness (Ryan & Deci, 2001). Positive psychologists were not the first to suggest that the well-being of an individual may be more than a lack of sickness. The 1948 constitution of the World Health Organization defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (p. 28). In studying the qualities present in the life experience of those who are well, two competing theories emerged: Subjective Well-Being, and Psychological Well-Being.

The construct of Subjective Well-Being (SWB; sometimes termed hedonic well-being) defines "wellness" in terms of individuals' perception of his or her happiness (Deiner, 2000). Their perception of happiness include both affective (e.g., how often do I feel happy? how often sad?), and cognitive (e.g., how satisfied do I feel with my life?) elements. Individuals who rate themselves high in SWB feel pleasant emotions more often than unpleasant (i.e., ratio of positive to negative affect), and have a sense of satisfaction in their life as a whole (Deiner, 2000).

Numerous philosophers and researchers have dismissed the SWB conceptualization of happiness or well-being as superficial (Lent, 2004). For example, Aristotle considered a pleasure view of happiness as vulgar and offered that a good life requires activity which expresses an individual's best qualities and helps them reach their underlying potential. This perspective is currently known as Psychological Well-Being (PWB), and rejects the SWB perspective for two reasons. First, they posit that "not all outcomes that a person might value would yield well-being when achieved. Even though they are pleasure producing, some outcomes are not good for people and would not promote wellness" (Ryan, & Deci, 2001, pp. 145-146). According to PWB researchers, operationalizing well-being in terms of whether the individual is experiencing pleasure, excludes the importance of positive functioning (Ryff, 1989). Secondly, they argue the literature on SWB does not contain strong theoretical grounding, often measuring affect and life satisfaction with instruments that were originally developed for other purposes (Ryff, 1989). Alternatively, PWB emphasizes well-being as a process instead of a distinct end state. "That is, human well-being is ultimately an issue of engagement in living, involving expression of a broad range of human potentialities: intellectual, social, emotional, and physical" (Ryff & Singer, 1998, p. 2). The most prominent research in the area of PWB is conducted based on Ryff's (1989) theory. Ryff has demonstrated that there are six dimensions of PWB: (a) self-acceptance; (b) autonomy; (c) environmental mastery; (d) purpose in life; (e) personal growth; and (f) positive relations with others. The first five dimensions of PWB are briefly described below, and the sixth dimension, positive relations with others (PR), was one of the terms used in this meta-analysis as this dimension is specific to social functioning.

Ryff (1989) described self-acceptance as the existence of a positive attitude toward the self, which includes both past behavior and the ability to make choices. Autonomy exists in those who are self-determining and independent, and who are relatively resistant to social pressure and manipulation. Someone who scores high in environmental mastery perceives themselves as effective in completing tasks, as well as their ability to manage multiple responsibilities. According to Ryff, purpose in life is achieved through the presence of life goals and objectives, and a sense of directedness. Personal growth scores are reflective of someone who sees oneself developing over time toward his or her potential, and who is open to new experiences (Ryff, 1989).

Ryff describes the sixth dimension of PWB as the capacity to give and receive love, and has termed with positive relations with others (PR). Ryff views PR as integral to the psychological well-being of an individual. Ryff asserts that our positive connections to others become the means for achieving satisfaction in life (Ryff & Singer, 1998). An individual who possesses these positive connections is described as having warm, satisfying, and trusting relationships with others. According to Ryff (1989), this person is typically concerned about the welfare of others and is capable of strong empathy, affection, and intimacy. An individual lacking in positive relationships has few close and trusting relationships with others and finds it difficult to be warm, open, and concerned about others. They are often more isolated and frustrated in interpersonal relationships, which results in an unwillingness to compromise and eventually the loss of the relationship (Ryff, 1989). Other theorists have spoken to the importance of positive social health and well-being (Keyes, 1998), developing a capacity for interpersonal intimacy in the course of normal development (Erikson, 1959), or the importance of

forming healthy relationships in order to be a fully functioning person (Rogers, 1961), and terms from these theories were also used in the current analysis.

Research has suggested that SWB and PWB are related but distinct constructs. For example, when comparing measures of both PWB and SWB, Gallagher, Lopez, and Preacher (2009) found moderate positive correlations exist between overall scores of PWB with positive affect and life satisfaction (constructs of SWB). These researchers found moderate negative correlations between overall scores of PWB and negative affect (a construct of SWB).

Research supports the importance of PWB, and specifically PR, for many aspects of human functioning. For example, in regard to physical health, those who scored higher on the PR subscale experienced longer periods of REM sleep (Ryff & Singer, 2008), better functioning of their cardiovascular, endocrine, and immune systems (Uchino, Cacioppo, & Kiecolt-Glaser, 1996), and lower rates of mortality (Berkman, 1995). Higher scores on PR were also related to positive emotional experiences (Ryff & Singer, 1998), self-efficacy levels (Lent, 2004), levels of agreeableness and extraversion (Schmutte & Ryff, 1997), and the ability to make progress on personal goals (Ryan & Deci, 2001). Although results have been inconsistent as to whether there is an increase in PR with age (Ryff, 1995), the literature is consistent that women score higher on PR than men (Ryff, 1989). Interestingly, an individual's level of educational attainment is positively related to their PR scores (Ryff & Singer, 2008). Therefore, PR is likely an important construct to examine among individuals transitioning into the college environment in order to foster social functioning and retention in college students. The

second theory highlighted in this discussion has its foundation in the field of social psychology and the study of human motivation.

Baumeister's belongingness hypothesis. Baumeister postulates that the need to belong is a fundamental motivation and that human beings have a drive to form and maintain lasting and positive relationships (Baumeister & Leary, 1995). Baumeister primarily attributes the foundation of this theory to Bowlby's Attachment Theory (Bowlby, 1973), and Maslow's Hierarchy of Needs (Maslow, 1943). Although not a motivation or need theory per se, Bowlby's research on primary attachments between children and caregivers has relevant implications for Baumeister's belongingness hypothesis.

Bowlby (1988) defined attachment as "any form of behavior that results in a person attaining or maintaining proximity to some other clearly identified individual who is conceived of as better able to cope with the world" (pp. 26-27). In his research, he observed that infants form attachments to caregivers very early in life, and can maintain those connections in spite of tremendous barriers (Bowlby, 1973). The biological function of such a need is not only for survival and genetic replication, but is the foundation of an individual's sense of security and psychological functioning (Bowlby, 1973). He further suggests that although most of the research on his theory focuses on children, attachment is actually a fundamental and life-long need to connect with others (Bowlby, 1988).

Although not specifically identified by Baumeister as a theoretical foundation of the belongingness hypothesis, Bartholomew has conducted extensive research on the study of attachment in adulthood, based on Bowlby's model of childhood attachment

(Bartholomew & Horowitz, 1991). Bartholomew's model supports the importance of attachment relationships over the life span, and their important in the social adaptation of adults (Bartholomew & Horowitz). Both Bowlby and Bartholomew's theories advocate that social needs are important beyond childhood and across the lifespan, much as Baumeister argues for the importance of belonging as a lifelong need to fulfill.

Baumeister's theory draws from Maslow's hierarchical structure in that both recognize the importance of social connections in fulfilling basic human needs. Maslow constructed a hierarchical structure of human needs, which indentifies five primary areas. Beginning with base needs and working up the hierarchy, he identifies human needs as physiological needs (e.g., food, water, sleep), safety needs (e.g., shelter, security), love/belongingness needs (e.g., friendship, family), esteem needs (e.g., confidence, respect of others), and ultimately self-actualization (e.g., creativity, spontaneity). Maslow's needs build upon each other, such that belongingness needs are not of chief concern until basic physiological needs and safety needs have been met. In describing the priorities which humans have in meeting their needs, Maslow stated when humans have their physiological and safety needs met, they want to belong "more than anything else in the world and may even forget that once, when [they] was hungry, [they] sneered at love" (1943, p. 381). Maslow believed that many forms of psychopathology were caused by the failure to meet belongingness needs (1943), and also recognized that individuals are not focused on their belongingness needs when their physiological and safety needs have not yet been met.

Drawing upon, Maslow's and Bowlby's theories, Baumeister posited that two things must occur in order for an individual's belongingness needs to be met. First,

individuals need frequent and personal contacts with others. This requirement is distinct from a simplistic need for social contact with others and would ideally be affectively positive or pleasant (Baumeister & Leary, 1995). Second, individuals must be able to experience relationships which are characterized by stability and concern for each other's welfare. Baumeister suggests here that societies will be stable and successful only if individuals are able to meet their basic human needs, including a need for a stable and confident network of social relationships (Baumeister, Dale, & Muraven, 2000). Using the language of positive psychology, there is an obvious distinction to be made between one who is having his or her minimum social/belongingness needs met, and one who is actually thriving in the social environment. Studying this same fundamental need, but terming it "relatedness," Deci and Ryan (2000) also theorized that it is in people's nature to assimilate and integrate into a social community..

Across different cultures and across the age span, there is a tendency for human beings to respond with distress to the end of a relationship (Baumeister & Leary, 1995). The transition to college exemplifies a time when individuals move into new social groups and away from old relationships. Thus, if the need to belong is even more salient in stressful situations such as the transition to college (Baumeister & Leary), then it is important for college student personnel to assess this and learn how to predict who will struggle in that social transition. When students are entering college already distressed by the termination of old relationships, and without a new social network established, it is also important to then intervene with those students who appear to be at risk for poor social functioning in college.

In identifying what the consequences of not belonging are, researchers have conducted experiments where the degree of social exclusion was manipulated. Excluded participants were subsequently more aggressive, less helpful, and experienced a decrease in emotional sensitivity (Baumeister, Brewer, Tice, & Twenge, 2007). Individuals who report a high sense of belongingness have lower rates of both mental health problems (e.g., anxiety, depression, eating disorders) and physical health problems (e.g., mortality, cancer, immunity deficiency) than those who sense they are isolated and alone (Baumeister & Leary, 1995). Those who experience a sense of belongingness are less likely to commit crimes, and are more resilient in the face of crises (Baumeister & Leary). According to Baumeister, deficits in belongingness lead to a variety of ill effects which is further support for the view that belongingness is a need, as opposed to merely a want (Baumeister & Leary). The third and final theory highlighted in this discussion has its foundation in the field of sociology and is utilized primarily in the field of college student persistence.

Tinto's interactionist theory. Tinto's theory (1975) is specific to the study of college student persistence and is based on the work of Émile Durkheim, a founder of the field of sociology. Durkheim proposed a theory of suicide that argues the decision to commit suicide results from a lack of moral or value integration, coupled with an inadequate sense of affiliation with the collective society (Durkheim, 1951). Durkheim hypothesized that when individuals are not sufficiently bound to a social group through traditions, values, and norms, they are left with insufficient social support and they commit suicide at higher rates than others.

In developing the Interactionist Theory, Tinto (1975) likened dropping out of college to committing social suicide as the student is voluntarily withdrawing from both the academic and social systems of their community. In Tinto's words, "social conditions affecting dropout from the social system of the college [can] resemble those resulting in suicide in the wider society; namely, insufficient interactions with others in the college and insufficient congruency with the prevailing value patterns of the college collectivity" (Tinto, 1975, pp. 91-92). Tinto pointed to a lack of social integration (also termed social isolation) as a primary determinant of students' commitment to both their educational goals and to the institution itself. Therefore subsequent decisions as to whether to persist in college are directly related to social integration.

Tinto (1993) posited that students arrive at college with a multitude of background factors which influence their experience in the college environment. These include: family background (e.g., SES, parental education levels); prior education (e.g., GPA, high school climate); and individual skills and abilities (e.g., intelligence level). These characteristics influence the levels of commitment that the student brings to college, both in terms of commitment to his or her educational goals, and in terms of his or her commitment to the particular institution. All these factors combine to establish the initial conditions for the student's interactions with peers, faculty, and other members of the academic community, and for his or her level of both academic and social integration.

Academic integration has been conceptualized by Tinto (1993) as the normative congruence that a student feels with his or her academic experiences in college, often measured by both the student's academic performance (formal integration) as well as the quality of their interactions with faculty and staff (informal integration). More relevant to

this study, Tinto (1993) proposed that college students' social integration is a function of both their formal social experiences within the system (e.g., extracurricular activities, group work in classes), and of more informal interactions with peers (e.g., getting along with one's roommate). Tinto demonstrated that in order for students to feel a sense of social integration, they need not fit in with the campus community at large, so long as they feel a fit within a particular subculture or "niche" (Tinto, 1993). Kuh and Love (2000, p. 201) referred to this as the students' "cultural enclave." A student's pre-mature departure from a particular college or university may be partially attributable to the degree of difference between that student's culture of origin, and the dominant culture of the institution they are attending. Much like Baumeister's concept of belongingness, they state that incongruence between an individual and their broader environment can be remedied when a student finds and joins his or her niche.

In regard to social integration, a recently proposed addition to Tinto's theory specifies five factors deemed critical for a student to feel socially integrated (Braxton, Hirschy, & McClendon, 2004). First, Braxton et al. offered that two characteristics of the college or university are critical: the students' perceptions of institutional commitment to the welfare of students, and institutional integrity. Institutional commitment to student welfare is reflected through a concern for student learning as well as respecting and valuing the student body (Braxton & Hirschy, 2004). Institutional integrity refers to the student's perception of whether the college or university policies and procedures are congruent with the goals of the institution, and are echoed in the students' levels of expectation that they will be able to fulfill their goals for college (Braxton & Hirschy).

Second, Braxton and Hirschy (2004) described three characteristics of the student that are critical to social integration: perceptions of communal potential, proactive social integration, and psychosocial engagement. A student's perceptions of communal potential are described as the degree to which he or she perceives an opportunity to fit in at the college or university (Braxton & Hirschy, 2004). This has less to do with the overall climate of the university, and more to do with whether there appears to be a specific subgroup of students with similar ideals and objectives. Proactive student integration is a function of the student's willingness to acknowledge their social needs to make the efforts necessary to meet those needs (Braxton et al.). Psychosocial engagement refers to the level of psychological energy which the student puts into their social interactions at college (Braxton et al.). Research supports the importance of student's perceptions of support from peers (Berger & Milem, 1999), participation in extracurricular activities (Christie & Dinham, 1991), and social approach behaviors (Eaton & Bean, 1995).

However, even if a student has found a niche, he or she may continue to have a low sense of commitment to the institution at large, but feel connected and understood within his or her group. An individual student may achieve satisfactory integration in either social or academic domains without doing so in the other. Tinto's (1993) research indicates a lack of either (or both) academic or social integration in the college environment as a primary determinant in college students' voluntary withdrawal from the institution (see Cabrera, Nora, & Castaneda, 1993, for a detailed model and empirical test of the relationships among academic integration, social integration, and college student persistence).

Summary of relevant theories. Emerging from the study of well-being and positive psychological functioning, Ryff's theory of Psychological Well-Being plainly considers the impact of social functioning. Among the six dimensions that Ryff posits as necessary for being "well", one is positive relationships with others. Ryff (1989, p. 1072) defines this as a capacity for "warm, satisfying, and trusting relationships with others...[and a concern for] the welfare of others." Baumeister's belongingness hypothesis is strongly rooted in social psychology's investigation of motivation and needs. Baumeister (1995, p. 497) indicates that our fundamental need to belong is met when we are experiencing "lasting, positive and significant interpersonal relationships" which include both "frequent and personal contacts with others...[and] concern for each other's welfare" (p. 500). Tinto's theory of College Student Departure has its theoretical roots in sociology, and is used in education today to partially explain voluntary withdrawal from college. Within this model, social integration is essentially the degree of fit between an individual and a particular social sub-culture within the campus community.

The present meta-analysis examined predictors of social functioning which have been operationalized in subfields of psychology as (a) positive relations with others: (b) belonging; (c) social integration; and other similar terms. Moderator analyses illustrated whether these constructs are in fact conceptually distinct, or are instead highly overlapping terms which are the result of a fragmented field. With the synthesis and conceptual clarification among the terminology and the constructs of these three theories, the findings of this study contribute to a more complete and specific understanding of the social functioning of college students, and perhaps provide some insight into the broader

social functioning of adults in the United States. Next, previous meta-analyses within these fields are reviewed to clarify work to date towards this end.

Prior Meta-Analyses

Given the importance of social functioning (i.e., positive relations with others, belongingness, and social integration) to the retention of college students, it is perhaps surprising that a meta-analysis of the salient predictors of social functioning in college students has not already been conducted. However, the four available meta-analyses on related topics are reviewed below.

Robbins et al. (2004) sought to identify the salient predictors of academic integration. Specifically, they conducted a meta-analysis of 109 studies which examined the relationship between various psychosocial predictors and their influence on both academic GPA and retention. Two of these psychosocial predictors are related to social functioning, perceived social support and social involvement. Robbins et al. defined perceived social support as the "students' perception of the availability of the social networks that support them in college" (p. 267). Likewise, social involvement was defined as: "the extent that students feel connected to the college environment; the quality of students' relationships with peers, faculty, and others in the college; [and] the extent that students are involved in campus activities" (p. 267). After correcting for measurement error, Robbins et al. reported true correlation estimates of 0.11 between social support and GPA, and 0.14 between social involvement and GPA. When examining the relationship of these variables to student retention, Robbins et al. found correlations of 0.26 with social support and 0.22 with social involvement. These findings reflect small but consistent relationships between social functioning variables and

students' academic integration. Although attendance at a two-year college was not an exclusion criteria in the literature search for this study, no study conducted at a two-year college was included in the final analysis. In contrast to the Robbins et al. study, the current meta-analysis focused on predictors of social functioning instead of academic functioning. Additionally, because of the search strategy of the current meta-analysis, I was able to compare the relationship between academic achievement and social functioning to other correlates of social functioning to determine which relationships are strongest.

A second meta-analysis examined the impact of both academic and social integration on student retention at two-year colleges (Wortman & Napoli, 1996). However, although the Robbins et al. (2004) study effectively operationalized the academic integration construct as student GPA and retention, Wortman and Napoli utilized academic integration as a possible predictor of student retention. Their study did not include definitions for academic and social integration. Meta-analyzing the results of only six studies, the researchers found a correlation of 0.34 between academic integration and persistence, and 0.22 between social integration and persistence. The findings of Wortman and Napoli's study indicate that the relationship between social integration and persistence to graduation is also present in two-year college settings.

A third meta-analysis extended the findings of the Wortman and Napoli study by testing a path model and finding support for various aspects of Tinto's (1975) model. With regard to social integration specifically, Pan (2010) investigated the relationship of social integration with three other factors of Tinto's model: academic integration, commitment (goal and institutional), and student success outcomes such as persistence to

graduation and academic performance. Eighty-four studies were included in the analysis of the relationship between social and academic integration, and an average correlation of 0.26 was found in the meta-analysis. Seventy-five studies investigated the relationship between social integration and a student's commitment (both to his or her goals and to the institution) and found an average correlation of 0.23. Finally, 79 studies measured the relationship between social integration and student success outcomes, and the meta-analysis produced an average correlation coefficient of 0.14.

Though not focused on a college student population, a fourth meta-analysis is discussed here because of its relevance to the study of social functioning. The meta-analysis (Haber, Cohen, Lucas, & Baltes, 2007) included 23 studies to identify the relationship between received social support and perceived social support. For the purposes of their meta-analysis, Haber et al. defined received social support as an assessment of the "specific supportive behaviors that are provided to recipients by their support networks" (p. 133). In contrast, perceived social support is the "recipients' perceptions concerning the general availability of support and/or global satisfaction with support provided" (p. 133). Practically, this distinction means that on measures of received support participants must recall specific examples of support they have received, instead of reflecting on a global assessment of the quality of their social support network. The results of the meta-analysis reflect a reliability corrected correlation of 0.35 between received and perceived social support. Haber et al. established that received social support and perceptions of social support are related but distinct constructs, and should be treated as such. To illustrate this point, Berkman (1995) stated that social support is only efficacious when the individual has a sense of both belongingness and intimacy. The

Haber et al. study reflects an important distinction between the quantity and quality of individual's social interactions (Ryan & Deci, 2001).

The Current Study

The current meta-analysis was designed to use a systematic review of the literature and a meta-analysis in order to determine the strongest predictors of social functioning in college students. As indicated, there were two primary reasons for this type of study. First, nationwide attrition rates point to the need for effective interventions which address the social functioning of college students. This study provided evidence of the most important areas to address with college students in order to facilitate their social functioning (and thus promote persistence in educational goals). Second, Braxton and Hirschy's (2004) updates to the Tinto theory also support the investigation of the moderating influence of publication year within the data for the current meta-analysis, essentially an external validity check to investigate the fit of the Tinto theory over time. Third, the relevant theory for these constructs is currently being studied in multiple fields, with overlapping terminology. By conducting this study and parsing out which social functioning measures do or do not perform differently from each other, the researcher was able to make generalizations about how distinct the underlying constructs of these measures are. The current meta-analysis aimed to more comprehensively study the current relevant predictors of social functioning in college students than any previous meta-analysis has done, and allowed for statistical comparisons of the relative strength of the predictors.

Research questions. Research Question 1 – What are the strongest predictors of social functioning in college students? Research Question 2 – What are the relevant

moderators of these relationships? Research Question 3 – What constructs of the social functioning perform differently from each other?

METHODS

Study Inclusion Criteria

To be included in this review, studies had to meet six criteria (see Appendix B). First, the study results must have been presented in the English language. Second, the document needed to include the quantitative results of a study (i.e., all reviews, opinion pieces, and qualitative studies were excluded). Third, the population under study must have been identified as college or university students at either 2-year or 4-year colleges. Fourth, the study participants needed to be at United States or Canadian higher education institutions. Fifth, the study needed to include a measure of social functioning, either as a primary measure (e.g., UCLA Loneliness Scale) or as a subscale of a broader measure (e.g., the Social Adjustment subscale of the Student Adaptation to College Questionnaire). Finally, in order to be included in the meta-analysis the study had to report the relation between the measure of social functioning and other variables as a correlation coefficient.

Although studies exist which report relationships between some measure of social functioning and other constructs with an effect size metric other than a correlation coefficient (e.g., *t*-test, Cohen's *d*), I choose to limit the studies included in this meta-analysis to those reporting a correlation coefficient in order to avoid outcome reporting bias. Namely, this is the idea that study authors may selectively report the outcomes of their study, electing to only report outcomes for the analyses which were statistically

significant (Turner, Matthews, Linardatos, Tell, & Rosenthal, 2008). Outcome reporting bias creates a bias against the null hypothesis and can make effect size estimates look larger than they actually are because reported effects represent only a portion of the observed effects. Under the presumption that a correlation matrix is a full reporting of study effects (i.e., both statistically significant and statistically non-significant), I addressed outcome reporting bias in the current meta-analysis by only using studies that reported a correlation matrix.

Literature Search Strategy

Multi-pronged strategies were used to retrieve studies which met the inclusion criteria. First, the following computerized databases related to the educational and psychological sciences were searched: (a) PsycInfo, (b) Educational Resources Information Clearinghouse (ERIC), (c) Medline, (d) Social Science Citation Index, (e) the Sociological Collection, and (f) Dissertation Abstracts International. These databases were searched for records that contained at least one term to reflect whether a study was conducted (e.g., *empirical, findings*), at least one population term (e.g., *college student* or *university student*), and at least one social functioning term (*e.g., social skills* or *adjustment*) in the document title or abstract (see Appendix A for a full listing of search terms). After running this search in the six databases indicated above, duplicate results were removed using reference management software, and, based on information available in the titles and abstracts, documents were evaluated for potential relevance using the study inclusion criteria mentioned above.

Secondly, two different strategies were utilized to address the problem of publication bias. Dickersin and Min (1992) demonstrated that studies with non-

statistically significant results are 60-80% less likely to be published than those with statistically significant results. This means that when a meta-analysis is restricted to only published studies, then effect sizes can appear to be larger than they actually are. The best defense against this bias is not restricting the studies used in the meta-analysis to published studies, so the strategies listed below address how unpublished relevant studies were retrieved. Furthermore, the results of a trim-and-fill analysis are reported in the results section which evaluates the data for the existence of publication bias.

As the electronic search yielded primarily journal articles, dissertations, and theses, these additional search methods focused on identifying unpublished studies such as those frequently found in ERIC documents, conference papers, and government reports. I identified relevant seminal theoretical works (i.e., Baumeister & Leary, 1995; Ryan & Deci, 2001; Ryff, 1989; Tinto, 1975, 1993) in the respective fields of *motivation theory, college student persistence*, and *well-being,* and then conducted a forward citation search to identify unpublished documents which cited these seminal works. In a further effort to examine the "gray literature," I screened conference proceedings from the meetings of the American Educational Research Association (AERA), the Positive Psychology Summit (PPS), the American College Counseling Association (ACCA), and the Association for the Study of Higher Education (ASHE) for the years 2006 to 2011.

Power in Meta-Analysis

As the scope of the current study includes studies in psychology, education, and sociology, almost 39,000 studies were retrieved following the electronic literature search referred to above. In part, the large number of studies is attributable to the search being intentionally overly inclusive in order to address the research question of whether these

fields are studying overlapping constructs. It is also true that this is a broad research question that is relatively easy for researchers to study, which leads to a large number of studies that could meet the inclusion criteria for this review. As a review of all of these citations was not practical for the current study, I conducted a power analysis to determine how many studies would be "enough," with "enough" being operationally defined as meeting a priori criteria for statistical power. The procedures for carrying out statistical power analyses in a meta-analysis are outlined elsewhere (Hedges & Pigott, 2001; Valentine, Pigott, & Rothstein, 2010). Based on preliminary analyses of power, I determined that I would need approximately 88 studies for the meta-analysis.

Coding Framework

Once the relevant reports and studies were collected, the next step was coding the pertinent information in each study. For many characteristics (e.g., sample size), this required little inference on the part of the researcher. In cases where coding research data required more inference, pre-established definitions (e.g., listing a variety of types of research designs that a given study could fall under) were utilized to categorize options. When available, the study characteristics to be coded included: (a) *report characteristics* (e.g., author, publication year); (b) *study design* (e.g., design type, selection procedures); (c) *institutional information* based on the classification system of the Carnegie Foundation (e.g., type of school, size of school; Carnegie Foundation for the Advancement of Teaching, 2000); (d) *sample demographics* (e.g., average age, gender distribution); (e) *characteristics of the social functioning measures* (e.g., construct, source of information, reliability); and (f) *characteristics of the predictor measures* (e.g.,

construct, source of information, reliability, correlation coefficient; see Appendix C for a full listing of information to be coded).

As an aside, in categorizing the social functioning measures, I first created categorizes based on the theories discussed in the introduction (i.e., categories for social integration, belongingness, and social well-being/positive relations with others). Further categories emerged as I coded studies and discovered what other constructs researchers were using to study college student's social functioning (e.g., loneliness, social support). These measures were categorized based on the terms used in the name of the measure itself, as opposed to author's claims about what construct they were measuring with that given instrument (e.g, if an author used the UCLA Loneliness Scale but stated that they were using it to measure students' social integration, that study was categorized under "loneliness" for the purposes of the current meta-analysis). Please see Appendix C and item number 25 for a full listing of the social functioning constructs used in the studies included in this meta-analysis.

In categorizing the predictor variables, the same strategy was used in large part. Predictor categories were not determined before the data was collected, though I suspected I would find predictors under the general categories of demographics/background characteristics, personality characteristics, and academic functioning. As this examination into the most important predictors of social functioning was not limited to a particular theory or model, casting a "wide net" and categorizing the predictors after the data was collected was a better fit for my intentions for the project. There were multiple and many different types of predictor variables which were included in the studies I coded. I next reviewed the lists of predictors for each of these studies, and

categorized them into logical classes (e.g., "academic achievement" includes measures of GPA and results on academic achievement measures, "depression" includes measures of depression, suicidality, and hopelessness). In order to be included in the current meta-analysis, I searched through the list of predictors for constructs which were measured in at least five different independent samples. Please see Appendix C and item number 34 for a full listing of the predictor constructs used in the studies included in this meta-analysis.

Effect Size Metric

The Pearson correlation coefficient (r) was used as the primary metric of effect size. All included studies reported a correlation matrix with estimates of the correlation between measure(s) of social functioning and other variables. The bounded nature of correlation coefficients makes them less desirable for meta-analysis. The usual solution for this problem is to transform the correlation coefficients to Fisher's z, which is centered at zero and is normally distributed. The formula for this transformation is:

$$z_r = .5[\ln(1+r)-\ln(1-r)] \quad (1)$$

In this equation, *ln* is the natural log and r is the Pearson correlation coefficient. Meta-analysis is carried out on the Fisher's z transformed correlations, and then the Fisher's z's are transformed back to correlation coefficients for presentation purposes, using the following formula:

$$r = \frac{e^{2z_r} - 1}{e^{2z_r} + 1} \quad (2)$$

Meta-Analytic Procedures

In conducting a meta-analysis, researchers must choose whether to use a weighting procedure in determining the average effect size of all of the included studies.

The procedure most commonly used gives weight to each effect size by the inverse of the sampling variance, consequently giving more influence in the final analysis to studies with larger sample sizes. For example, instead of averaging the effect sizes for two studies of the correlation between high school GPA and social functioning in college [$z_r(20)=0.20$ $z_r(100)=0.60$] and arriving at an average unweighted estimate of 0.40, the study with the larger sample is given more weight, for a final estimate of $z_r = 0.53$. According to best practice in conducting meta-analyses, weighted analyses are preferred over unweighted analyses (Lipsey & Wilson, 2001), so this meta-analysis utilized weighted analyses.

Next, a choice of error models is available in meta-analysis: fixed effects models, and random effects models. When using a fixed effects model, the underlying assumption is that all the included studies are estimating the same population value. In other words, the fixed effects model assumes that a group of studies that are exact replications of each other would yield effect size estimates that vary from each other only as a result of sampling error. When the random effects model is utilized, the assumption is that there is variance in study results attributable to both random sampling error and study-level variability. Additionally, the fixed effects model only allows for inferences to be made to studies very similar to the ones included in the meta-analysis, while the random effects model allows for broader generalizations (Hedges & Vevea, 1998). The random effects model allows for inferences beyond the conditions of the individual studies observed. Typically, random effects models yield wider confidence intervals and have lower statistical power relative to fixed effects models, and they can overestimate the presence of error (Lipsey & Wilson, 2001). Despite the potential disadvantages, the

random effects model was used because it is a better conceptual fit considering the wide diversity in both institutional and student characteristics in the studies included in this meta-analysis.

In a meta-analysis, researchers must choose what to use as the unit of analysis. Primarily, the unit of analysis utilized was the independent sample. In most studies, an effect size was reported for the overall sample of the study, thus the study contributed one independent sample to the meta-analysis. However, if a given study reported two or more subsamples of results (e.g., males versus females) then this report contributed two independent samples to the analysis.

The researcher used the shifting unit of analysis method recommended by Cooper (2010) to determine what counted as an independent effect. For example, study authors could operationalize social functioning in two ways: a self-report survey, and the researcher's observation of the participant. When estimating the overall effect size in the meta-analysis, these values would be averaged to arrive at a single effect size estimate which this study would contribute to the meta-analysis procedure. However, when testing whether the type of measures (e.g., self-report or observation) moderated the effect size, this same study would contribute two effect sizes, one to each level of that moderating variable.

Moderator Analysis

Homogeneity analysis (Lipsey & Wilson, 2001) was used to determine whether the individual effect sizes that are averaged for the meta-analysis all estimate the same population effect size. That is to say, does sampling error alone account for variation in the estimates, or are other characteristics of the study (e.g., sample size, research design,

type of outcome measures) also creating variance in the estimate? The homogeneity test is the Q statistic, which approximately follows a chi-square distribution (Lipsey & Wilson, 2001) with k-1 degrees of freedom. To compute this test, I used the following formula:

$$Q=\Sigma w_i(ES_i-\overline{ES})^2 \quad (3)$$

when w_i is the weight for study i, ES_i is the mean effect size for study i, and $\overline{ES}$ is the overall average effect size for the studies included in the meta-analysis. In this study, tests of homogeneity revealed effect size estimates varied beyond that which could be attributed to sampling error (indicating that the random effect model of error was a good pick). As a result, moderator tests were conducted.

Example Study

As an example of the type of study included in this meta-analysis, Pittman and Richmond's 2008 study titled *University Belonging, Friendship Quality, and Psychological Adjustment during the Transition to College* is described here. Pittman and Richmond administered a series of self-report measures to a group of college freshman during the fall, and then again during the spring semester of the participants' freshman year of college in the United States. For the measure of social functioning, the authors used the Psychological Sense of School Membership measure (Goodenow, 1993), and reported that it was "designed to measure psychological belongingness and school membership" (Pittman & Richmond, 2008, p. 348). For the purposes of the meta-analysis, then, this measure of social functioning was classified as a "belongingness" measure. The authors also obtained information of participant demographics (e.g., age and gender); academic characteristics (e.g., grades); and mental health functioning (e.g.,

anxiety and depression). The study results included a correlation matrix which reported the Pearson correlation coefficient between belongingness and each other variable at both data collection points. For the purposes of the meta-analysis, these estimates were averaged across the two time points.

RESULTS

Search Outcomes

As mentioned above, the electronic literature search yielded almost 39,000 results. Neither the forward citation search nor the search of conference proceedings yielded any additional relevant unpublished studies. Also, the power analysis detailed above led to a goal of finding 88 usable independent samples for the meta-analysis. To reach this number, I used Excel to randomly divide the 38,660 electronic search results into 387 sub-samples of approximately 100 studies each. All of the studies in a sub-sample were evaluated against the inclusion criteria, and a total of sixteen sub-samples were screened. Of the 1,532 studies screened, 1,210 were clearly ineligible based on the information available in their titles and abstracts. The remaining 322 studies were sought for further investigation; however, one could not be obtained through inter-library loan, and a second was so damaged that it was illegible. Therefore, 320 studies were obtained and assessed a second time against the six exclusion criteria mentioned above, with the judgments this time based on the full article (instead of just the titles and abstracts). Of the 320 studies that were subject to the second screening, 80 ultimately were included in this meta-analysis. The results of this screening process are summarized in Appendix D.

The 80 studies included evaluations of 90 independent samples. Among the 90 independent samples that were coded, there were many different types of predictor variables which were studied. After categorizing the predictors by measured construct, I

determined which predictors were measured in at least five different independent samples. All but 17 of the independent samples coded contributed to at least one of the final meta-analyses; the predictors measured in those 17 samples were not also measured in at least four other included samples. Some examples of predictors measured in those 17 samples are parental marital status, disability status, optimism, and satisfaction with college. Consequently, 63 studies (yielding 73 independent samples and 735 separate effect size estimates) contributed to the final meta-analyses.

Out of the 73 independent samples used, 18 were published in journals, 48 were doctoral dissertations, six were Master's theses, and one was a summary of a paper presentation at a conference. The studies were published or appeared between 1978 and 2010. The studies included in this meta-analysis are summarized in Table 1.

Main Analyses

In addressing the first research question (i.e., What are the strongest predictors of social functioning in college students?), I first investigated the relationships between social functioning and multiple measures of the student's background characteristics, personality characteristics, mental health symptoms, and academic functioning. This amounted to conducting 16 different meta-analyses, between social functioning and predictors ranging from extraversion to institutional commitment. The results of these 16 main analyses are described below and summarized in Table 2.

Background predictors.

Relationships with parents. Nine independent samples included in the current investigation examined the relationship between a student's report regarding the quality of his or her relationship with his or her parents and measures of social functioning. The

total sample size across these 9 studies was 1690 participants. The included studies measured the quality of the student's relationship with his or her parents with instruments such as the Perceptions of Parental Reciprocity Scale, the Lum Emotional Availability of Parents Scale, and the Parental Bonding Instrument. The overall average effect size was $r(8) = 0.18, p < .001$. The confidence interval for the effect size estimate ranged from 0.09 to 0.27. This indicates that there is a statistically significant and small effect (Cohen, 1988) between social functioning and the students' report of the quality of his or her parental relationship, such that as the reported quality of the parental relationship increased so did the quality of the student's social functioning. The test for homogeneity of effect sizes was statistically significant $Q(8) = 32.2, p < .001, I^2 = 68.9\%$, indicating a moderate degree of heterogeneity between studies (Higgins, Thompson, Deeks, & Altman, 2003).

Socioeconomic status. Seven independent samples included in the current investigation looked at the relationship between socioeconomic status (SES) and measures of social functioning. The total sample size across these 7 studies was 3420 participants. The included studies measured the construct of SES with students' self-report of parental annual income, and/or parental education level. The overall average effect size was $r(6) = 0.06, p < .05$. The confidence interval for the effect size estimate ranged from 0.01 to 0.10. This indicates that there is a statistically significant and very small effect between social functioning and SES, such that students with higher levels of SES reported higher levels of social functioning. The test for homogeneity of effect sizes was not statistically significant $Q(6) = 9.8, p = .13, I^2 = 18.3\%$, indicating a very small degree of heterogeneity between studies.

Gender. Nine independent samples included in the current investigation looked at the relationship between gender and measures of social functioning. Four additional studies were excluded from this analysis as they reported an effect size estimate of the relationship between gender and measures of social functioning, but did not report coding (e.g., whether males or females were coded as 0), and thus could not be averaged with the other studies included in this analysis. The total sample size across these 9 studies was 4597 participants. The included studies all measured the predictor of gender via self-report demographic questionnaires. The overall average effect size was $r(8) = 0.05$, $p = .08$, with the trend suggesting that (females) might report slightly higher degrees of social functioning. The confidence interval for the effect size estimate ranged from -0.01 to 0.10. This indicates that the relationship between social functioning and gender is not statistically significant. The test for homogeneity of effect sizes was statistically significant $Q(8) = 21.8$, $p < .01$, $I^2 = 54.1\%$, indicating a moderate degree of heterogeneity between studies.

Age. Seven independent samples included in the current investigation looked at the relationship between a student's reported age and measures of social functioning. As most of the studies involved included primarily traditionally-aged college students, the relationship between social functioning and age can also be viewed as roughly equivalent to an estimate of social functioning and year in school. The total sample size across these 7 studies was 1697 participants. The included studies all measured the predictor of age via self-report demographic questionnaires. The overall average effect size was $r(6) = -0.02$, $p = .74$. The confidence interval for the effect size estimate ranged from -0.11 to 0.08. This indicates that the relationship between social functioning and age of the

student is not statistically significant. The test for homogeneity of effect sizes was statistically significant $Q(6) = 19.8, p < .01, I^2 = 59.6\%$, indicating a moderate degree of heterogeneity between studies.

Personality predictors.

Extraversion. Five independent samples included in the current investigation looked at the relationship between a student's level of extraversion and measures of social functioning. The total sample size across these 5 studies was 858 participants. The included studies measured the construct of extraversion with instruments such as the extraversion subscales of the Eysneck Personality Inventory and the Big Five Inventory. The overall average effect size was $r(4) = 0.32, p < .001$. The confidence interval for the effect size estimate ranged from 0.25 to 0.39. This indicates that there is a statistically significant and medium sized effect between social functioning and extraversion, with more extraverted students reporting higher levels of social functioning. The test for homogeneity of effect sizes was not statistically significant $Q(4) = 6.7, p = .15, I^2 = 10.5\%$, indicating a very small degree of heterogeneity between studies.

Autonomy. Twelve independent samples included in the current investigation looked at the relationship between his or her level of autonomy and measures of social functioning. The total sample size across these 12 studies was 3,238 participants. The included studies measured the construct of autonomy with instruments such as the autonomy subscales of the Psychosocial Maturity Inventory and Student Development Task and Lifestyle Inventory. The overall average effect size was $r(11) = 0.27, p < .001$. The confidence interval for the effect size estimate ranged from 0.13 to 0.40. This indicates that there is a statistically significant and medium sized effect between social

functioning and autonomy, with more autonomous students reporting higher levels of social functioning. The test for homogeneity of effect sizes was statistically significant $Q(11) = 175.3, p < .001, I^2 = 92.6\%$, indicating a large degree of heterogeneity between studies.

Neuroticism. Seven independent samples included in the current investigation looked at the relationship between a student's level of neuroticism and measures of social functioning. The total sample size across these 7 studies was 1359 participants. The included studies measured the construct of neuroticism with instruments such as the neuroticism subscales of the Eysneck Personality Inventory and the Big Five Inventory. The overall average effect size was $r(6) = -0.24, p < .001$. The confidence interval for the effect size estimate ranged from -0.36 to -0.11. This indicates that there is a statistically significant, negative, and small-to-medium sized effect between social functioning and neuroticism, with more neurotic students reporting lower levels of social functioning. The test for homogeneity of effect sizes was statistically significant $Q(6) = 36.1, p < .001$, $I^2 = 77.9\%$, indicating a large degree of heterogeneity between studies.

Agreeableness. Five independent samples included in the current investigation looked at the relationship between a student's level of agreeableness and measures of social functioning. The total sample size across these 5 studies is 993 participants. The included studies measured the construct of agreeableness with instruments such as the agreeableness subscales of the Big Five Inventory and the NEO Five Factor Inventory. The overall average effect size was $r(4) = 0.19, p < .001$. The confidence interval for the effect size estimate ranged from 0.14 to 0.23. This indicates that there is a statistically significant and small sized effect between social functioning and agreeableness, with

more agreeable students reporting higher levels of social functioning. The test for homogeneity of effect sizes was not statistically significant $Q(4) = 1.7$, $p = 0.79$, $I^2 = 0\%$, indicating no heterogeneity between studies.

Mental health predictors.

Anxiety. Seventeen independent samples included in the current investigation looked at the relationship between a student's level of anxious symptoms and measures of social functioning. The total sample size across these 17 studies was 3100 participants. The included studies measured the construct of anxiety with instruments such as the Beck Anxiety Inventory, the Fear of Negative Evaluation Scale, and the Penn State Worry Questionnaire. The overall average effect size was $r(16) = -0.32$, $p < .001$. The confidence interval for the effect size estimate ranged from -0.41 to -0.22. This indicates that there is a statistically significant, negative, and medium sized effect between social functioning and anxiety symptoms, with more anxious students reporting lower levels of social functioning. The test for homogeneity of effect sizes was statistically significant $Q(16) = 137.9$, $p < .001$, $I^2 = 87.0\%$, indicating a large degree of heterogeneity between studies.

Depression. Thirty independent samples included in the current investigation looked at the relationship between a student's level of depressive symptoms and measures of social functioning. The total sample size across these 30 studies was 4559 participants. The included studies measured the construct of depression with instruments such as the Beck Depression Inventory, the Difficulties in Emotion Regulation Scale, and the Negative Automatic Thoughts subscale of the Automatic Thoughts Questionnaire. The overall average effect size was $r(29) = -0.35$, $p < .001$. The confidence interval for

the effect size estimate ranged from -0.43 to -0.27. This indicates that there is a statistically significant, negative, and medium sized effect between social functioning and depression, with more depressed students reporting lower levels of social functioning. The test for homogeneity of effect sizes was statistically significant $Q(29) = 299.6$, $p < .001$, $I^2 = 89.7\%$, indicating a large degree of heterogeneity between studies.

Emotional adjustment. Five independent samples included in the current investigation looked at the relationship between a student's emotional adjustment (physical, cognitive, and emotional symptoms of both depression and anxiety) and measures of social functioning. The total sample size across these 5 studies was 788 participants. All of the included studies measured the construct of emotional adjustment with the personal/emotional adjustment subscale of the Student Adaptation to College Questionnaire. The overall average effect size was $r(4) = 0.22$, $p = 0.07$. The confidence interval for the effect size estimate ranged from -0.01 to 0.43. This indicates that the relationship between social functioning and emotional adjustment is not statistically significant, but the trend suggests that students reporting better emotional adjustment also report better social functioning. The test for homogeneity of effect sizes was statistically significant $Q(4) = 40.9$, $p < .001$, $I^2 = 85.3\%$, indicating a large degree of heterogeneity between studies.

Coping predictors.

Self-beliefs. Twenty-eight independent samples included in the current investigation looked at the relationship between beliefs about the self and measures of social functioning. The total sample size across these 28 studies was 14,709 participants. The included studies measured the construct of self-beliefs with instruments such as the

Rosenberg Self-Esteem Scale, the Unconditional Self-Regard Scale, and the Social Efficacy Subscale of the College Self-Efficacy Instrument. The overall average effect size was $r(27) = 0.26, p < .001$. The confidence interval for the effect size estimate ranged from 0.16 to 0.35. This indicates that there is a statistically significant and small-to-medium sized effect between social functioning and self-beliefs, such that as the student's level of belief in self increased so did the quality of the student's social functioning. The test for homogeneity of effect sizes was statistically significant $Q(27) = 751.7, p < .001, I^2 = 96.1\%$, indicating a large degree of heterogeneity between studies.

Problem-solving style. Eight independent samples included in the current investigation looked at the relationship between a student's problem-solving and measures of social functioning. The total sample size across these 8 studies was 1157 participants. The included studies measured the construct of problem-solving style with instruments such as the Coping in Stressful Situations Scale, the Problem Solving Scale, and the Resource Use Scale. The overall average effect size was $r(7) \approx .00, p > 0.99$. The confidence interval for the effect size estimate ranged from -0.18 to 0.17. This indicates that the relationship between social functioning and problem solving style is not statistically significant. The test for homogeneity of effect sizes was statistically significant $Q(7) = 57.9, p < .001, I^2 = 84.5\%$, indicating a large degree of heterogeneity between studies.

Academic predictors.

Academic achievement. Twenty-two independent samples included in the current investigation looked at the relationship between a student's academic achievement level and measures of social functioning. The total sample size across these 22 studies was

15,163 participants. The included studies measured the construct of academic achievement with instruments such as the Academic Adjustment subscale of the Student Adaptation to College Questionnaire and measures of grade point average (GPA) and standardized test scores. The overall average effect size was $r(21) = 0.13, p < .001$. The confidence interval for the effect size estimate ranged from 0.07 to 0.18. This indicates that there is a statistically significant and small sized effect between social functioning and academic achievement, with higher achieving students reporting higher levels of social functioning. The test for homogeneity of effect sizes was statistically significant $Q(21) = 169.1, p < .001, I^2 = 86.4\%$, indicating a large degree of heterogeneity between studies.

Institutional commitment. Nine independent samples included in the current investigation looked at the relationship between a student's report regarding his or her commitment to the current institution of higher education which he or she is attending and measures of social functioning. The total sample size across these 9 studies was 4071 participants. The included studies measured the construct of institutional commitment with instruments such as the Institutional Attachment subscale of the Student Adaptation to College Questionnaire or responses to a single item measure regarding the student's confidence that he or she made the right choice with his or her college or university. The overall average effect size was $r(8) = 0.30, p < .001$. The confidence interval for the effect size estimate ranged from 0.14 to 0.45. This indicates that there is a statistically significant and medium sized effect between social functioning and institutional commitment, such that as the student's level of institutional commitment increased so did the quality of the student's social functioning. The test for homogeneity

of effect sizes was statistically significant Q(8) = 200.5, $p < .001$, $I^2 = 95.0\%$, indicating a large degree of heterogeneity between studies.

Goal commitment. Eleven independent samples included in the current investigation looked at the relationship between a student's goal focus and measures of social functioning. The total sample size across these 11 studies was 11,753 participants. The included studies typically measured the construct of goal commitment with single items regarding the student's commitment to graduation or highest degree sought. The overall average effect size was $r(10) = 0.09$, $p < .01$. The confidence interval for the effect size estimate ranged from 0.03 to 0.14. This indicates that the relationship between social functioning and a student's goal focus is statistically significant and small, such that students who are more goal-focused reported higher levels of social functioning. The test for homogeneity of effect sizes was statistically significant Q(10) = 64.4, $p < .001$, $I^2 = 81.4\%$, indicating a large degree of heterogeneity between studies.

Analyses for Publication Bias

In order to examine the studies contributing to the meta-analysis for the possibility of publication bias, I conducted a trim and fill procedure. Three of the main analyses listed above (depression, academics, and self-beliefs) contained over 20 studies in their analyses, thus lending a sufficient number to enable a trim-and-fill procedure to be conducted.

Academic achievement. For the 22 samples included in the analysis for the relationship between academic achievement and measures of social functioning, the trim and fill procedure (Figure 1) resulted in the imputation of no studies. In other words, the

analysis for publication bias suggests that there are not any problems in the data which would be caused by publication bias.

Depression. For the 30 samples included in the analysis for the relationship between academic achievement and measures of social functioning, the trim and fill procedure (Figure 2) resulted in the imputation of no studies. In other words, the analysis for publication bias suggests that there are not any problems in the data which would be caused by publication bias.

Self-beliefs. For the 28 samples included in the analysis for the relationship between self-beliefs and measures of social functioning, the trim and fill procedure resulted in the imputation of six studies due to funnel plot asymmetry. However, even with those studies imputed to balance the data, the point estimate of the relationship between self-beliefs and social functioning remains positive and statistically significantly different from zero. In a related analysis, the effects are heterogeneous when comparing samples from published and unpublished sources, $Q(1) = 6.89$, $p<.01$. Namely, for the published studies on the relationship between self-beliefs and social functioning, the average was essentially zero $r(5) = -0.01$, but interestingly all six sample effects were statistically significant on their own (three were negative and three were positive). For the unpublished studies the average $r(21) = 0.33$, with 17 of these samples reporting statistically significant effect sizes.

Moderator Analyses

In order to investigate the second research question, (i.e., What are the relevant moderators of these relationships?) I performed moderator analyses for publication year as well as school type (i.e., public or private). To address the third research question

(What measures of social functioning perform differently from each other?), I performed moderator analyses comparing the utilized measures of social functioning. Three of the main analyses listed above (depression, academics, and self-beliefs) contained over 20 studies in their analyses, thus lending a sufficient number to enable moderator analyses to be conducted.

Publication year. In order to examine whether the strength of the relationships between the predictors of academic achievement, depression, and self-beliefs with social functioning have changed over time, I conducted a moderator analysis for year of publication. In other words, I separated the independent samples for each of those three predictors into two groups, those published in 1995 or prior, and those published in 1996 to present.

For the relationship between academic achievement and social functioning, the moderator test for publication year was non-significant $Q(1) = 2.00$, $p = 0.16$. Overall, the newer studies $r(8) = 0.18$ have a slightly stronger relationship with social functioning than is present in the older studies $r(12) = 0.09$, but these categories are not statistically significantly different from one another.

For the relationship between depression and social functioning, the moderator test for publication year was non-significant $Q(1) = 0.38$, $p = 0.54$. Overall, the newer studies $r(19) = -0.37$ have a slightly stronger relationship with social functioning than is present in the older studies $r(9) = -0.31$, but again this difference is not statistically significant.

For the relationship between self-beliefs and social functioning, the moderator test for publication year was statistically significant $Q(1) = 12.20$, $p < .001$. Overall, the

newer studies $r(14) = 0.37$ have a stronger relationship with social functioning than is present in the older studies $r(12) = 0.12$.

School type. In order to examine whether the strength of the relationships between the predictors of academic achievement, depression, and self-beliefs with social functioning are different in public versus private colleges or universities, I conducted a moderator analysis for school type. In other words, I separated the independent samples for each of those three predictors into two groups: those where the data was collected at public institutions, and those where the data was collected at private institutions.

For the relationship between academic achievement and social functioning, the moderator test for school type was non-significant $Q(1) = 2.72$, $p = 0.10$. Overall, the public school samples $r(12) = 0.16$ have a slightly stronger relationship with social functioning than is present in the private school samples $r(5) = 0.05$, though this trend is not statistically significant.

For the relationship between depression and social functioning, the moderator test for school type was statistically significant $Q(1) = 11.88$, $p < .001$. Overall, the public school samples $r(14) = -0.45$ have a slightly stronger relationship with social functioning than is present in the private school samples $r(6) = -0.21$.

For the relationship between self-beliefs and social functioning, the moderator test for school type was non-significant $Q(1) = 0$, $p > .99$. Overall, there was no difference between the public school samples $r(14) = 0.21$ and the private school samples $r(5) = 0.20$ with regard to their relationship with social functioning.

Measures of social functioning. In order to examine whether the strength of the relationships between the predictors of academic achievement, depression, and self-

beliefs with social functioning varies for different measures of social functioning, I conducted a moderator analysis for social functioning type. In other words, I examined the lists of social functioning measures used in these three analyses, and categorized them into groups (see Appendix C, item number 25). I set out to investigate the constructs emerging from the three theories discussed in the introduction (i.e., social integration from Tinto's Interactionist Theory, belongingness from Baumeister's Belongingness Hypothesis, and positive relations with others from Ryff's Theory of Psychological Well-Being). Unfortunately, there were only a limited number of studies using measures of belongingness and positive relations with others which contributed to the final analyses. In part, this may be because Tinto's theory is specific to the college student population, and there may not be as many available studies in the other two areas that are specific to college student samples. Instead of comparing constructs from these three different theories, I instead compared different measures of social functioning based on which constructs were measured in enough independent samples in order to be able to make comparisons.

For the relationship between academic achievement and social functioning, the moderator test for measured construct of social functioning (social integration vs. social support) was significant $Q(1) = 4.98$, $p < 0.05$. Overall, the samples measuring social integration $r(8) = 0.15$ have a slightly stronger relationship with academic achievement than is present in samples measuring social support $r(8) = 0.06$.

For the relationship between self-beliefs and social functioning, the moderator test for the measured construct of social functioning (social integration vs. social support) nearly reached traditional levels of significance, $Q(1) = 3.65$, $p = 0.06$. Overall, the

samples measuring social integration $r(4) = 0.09$ have a somewhat weaker relationship with self-beliefs than is present in samples measuring social support $r(10) = 0.30$, though again this trend is not statistically significant.

For the relationship between depression and social functioning, the moderator test for measured construct of social functioning (attachment vs. social support) was non-significant $Q(1) = 1.21, p = 0.27$. Overall, the samples measuring attachment $r(4) = -0.22$ have a slightly weaker relationship with measures of depression than is present in samples measuring social support $r(11) = -0.32$, though this difference is not statistically significant.

DISCUSSION

Major Findings

Overall, available findings suggest that there are important correlates of social functioning in college students that can inform both theory and practice. Below is a summary of the relationships between social functioning and each of the five areas of predictors: background, personality, mental health, coping, and academics. Following this section, I offer implications for theory and practice, as well as a discussion of the limitations of the current meta-analysis and suggestions for future research.

Background predictors. These analyses found a small positive relationship between the quality of a student's relationship with their parents and their social functioning in college. This result suggests that students who have more satisfying and mutual relationships with their parents before attending college also tend to have more satisfying relationships with other individuals when they get to college. Although a small effect, this result highlights the important impact which parents can have on an individual student's social functioning in college, an issue that will be explored further in the implications for practice section. Congruent with Tinto's theory, I found a very small effect of socioeconomic status (SES) on the social functioning of college students. This means that higher SES students report marginally higher social functioning, though this relationship may have been attenuated by range restriction. For the relationship of gender and social functioning, there was a trend towards females reporting higher levels of social

functioning, though this relationship did not reach conventional levels of statistical significance. There was a non-significant relationship between a student's age and his or her social functioning.

Personality predictors. The construct of extraversion exhibited a medium-sized and positive relationship with the social functioning of college students. Extraversion is one of the facets of both the five and the three factor models of personality (Costa & McCrae, 1992; Eysenck, 1994), and is both conceptually and empirically distinct from social functioning. Extraversion is a global measure of where an individual gets his or her energy from (e.g., do you become energized by being around others? Or do you become energized by spending time alone?), whereas social functioning is defined by measures of perceived social support, belongingness, integration, and so forth. Individuals who are low in extraversion tend to be more independent, reserved, and even-keeled (Costa & McCrae). The results indicate that extraverted individuals report higher levels of social functioning, and that introverted individuals may be at higher risk for problems with their social functioning in college.

The construct of autonomy had a medium-sized and positive relationship with the social functioning of college students in this meta-analysis. Since a student's degree of autonomy is positively related to his or her social functioning in college, more autonomous college students generally perform better socially. For traditionally-aged college students, the adjustment to college is often one's first experience completing many of the ordinary tasks of adulthood (e.g., living outside of the childhood home, managing both personal finances and time, and making decisions about health care and nutrition), and more autonomous individuals may feel more comfortable with these tasks.

In addition, a student's level of autonomy can influence his or her sense of readiness to take on more demanding academic responsibilities, which this analysis also reveals to be connected to social functioning.

The construct of neuroticism demonstrated a small-to-medium sized and negative relationship with social functioning. Like extraversion, neuroticism is a facet of the five and the three factor models of personality (Costa & McCrae, 1992; Eysenck, 1994), Neuroticism is the tendency of an individual to experience negative affect, psychological distress, irrational thoughts, and impulsivity. Individuals high in neuroticism generally cope with stress more poorly than others (Costa & McCrae). This neuroticism scale is distinct from state measures of depression and anxiety, in that an individual's degree of neuroticism is thought to be a stable and pervasive aspect of their personality, rather than an acute measure of whether someone is feeling depressed or anxious in that moment. These results suggest that individuals high in neuroticism are more likely to have poor social functioning in college.

There is a small positive relationship between agreeableness and social functioning; agreeableness is a facet of the five factor model of personality (Costa & McCrae, 1992). Agreeableness is a measure of someone's altruism, flexibility, helpfulness, and sympathy towards others. On the more extreme end, individuals very high in agreeableness tend to be dependent, and have extreme difficulties with asserting themselves. More disagreeable individuals are competitive instead of cooperative, skeptical of others, and self-focused (Costa & McCrae). The results discussed here suggest that there are strong relationships between social functioning and various measures of pervasive personality characteristics.

Mental health predictors. The constructs of both anxiety and depression have medium-sized and negative relationships with the social functioning of college students. These results are not surprising, as mental health concerns are often linked to problems in multiple areas of functioning. Although correlations do not indicate causality, it seems important to investigate the relationship of social functioning and mental health using longitudinal designs in order to investigate causality. Additionally, it is likely that the strength of this relationship is partially a reflection of item overlap between these measures, as most mood and anxiety disorder diagnoses include diagnostic criteria relevant to social functioning (e.g., social withdrawal for unipolar depression, and agoraphobia as an aspect of multiple anxiety disorders). These results suggest that incoming freshman who have already struggled with clinically-significant levels of depression and anxiety may benefit from additional intervention and education in the transition to college. Additionally, this meta-analysis revealed a non-significant trend towards individuals reporting more problems with emotional adjustment also reporting lower levels of social functioning. This is consistent with the findings above as the construct of emotional adjustment measures both mood and anxiety symptoms.

Coping predictors. There is a small-to-medium sized positive relationship between a student's self-beliefs and social functioning at college. This relationship reflects the important impact that individual students can have on their own experience of adjusting to college by shifting the ways that they think about themselves, and the ways that they expect to succeed in college. As one of the few significant predictors mentioned so far that a student can personally influence, self-beliefs will be discussed further in the discussion of implications for practice. Secondary to this, the meta-analysis revealed a

non-significant relationship between the quality of a student's problem solving and his or her social functioning.

Academic predictors. First, congruent with Tinto's Interactionist Theory, there is a medium-sized positive relationship between institutional commitment and social functioning. Institutional commitment is defined as a student's reported sense that he or she made the "right" choice to attend college, and his or her commitment to persist at a particular chosen institution (Tinto, 1986). This result suggests that students who are less likely to feel a strong sense of belongingness and "fit" on their college campus (e.g., non-traditionally aged students, online students) are also likely to report lower levels of social functioning during their college experiences. Second, and also congruent with Tinto's (1986) model, there is a small-sized positive relationship between a student's level of social functioning and his or her academic achievement. As mentioned earlier, although Tinto's model speaks to the interplay of academic and social integration on college campuses, most interventions conducted by higher education faculty, staff, and administrators are aimed at improving academic integration, but do not pay sufficient attention to students' struggles with social functioning or social integration. This analysis reflects the notion that academic and social functioning are interdependent constructs, and that interventions which fail to address social functioning are decidedly incomplete. The third and final finding congruent with Tinto's model is a very small positive relationship between a student's goal commitment (e.g., commitment to complete college, highest degree sought) and his or her social functioning. The results of this meta-analysis regarding the relationships of academic predictors and social functioning serve to confirm multiple aspects of Tinto's model. These results also reinforce Pan's (2010) findings of

positive relationships between social functioning and various aspects of the academic experience.

Moderators. For the relationships of academic achievement, depression, and self-beliefs with social functioning, there appears to be evidence for a stronger relationship between these variables among the newer (i.e., published in the last 15 years) studies. This suggests that the three predictors listed above are stronger predictors of social functioning now than they were in the 1980's and early 1990's, which could partially be a result of improved measurement properties. At least with regard to Tinto's theory (1975), the greater importance of the influence of academic achievement on social functioning found in more recent studies could indicate that the model is fitting better over time, as opposed to becoming outdated. The second two results listed above indicate that for college student personnel working with the current generation of incoming freshman, it is becoming even more important to assess and address the mental health and self-beliefs of students.

As mentioned earlier, research indicates that the Tinto construct of social integration has differential effects in private versus public institutions of higher education (Beil, Reisen, Zea & Caplan, 1999). For the relationships of both academic achievement and depression with social functioning, there appears to be a stronger relationship between these variables within public colleges and universities, than within private colleges and universities. This means that the predictors of academic achievement and depression are stronger predictors of social functioning in college students when considering a public college or university sample. This result could be an effect of the

restricted range within the hypothetically more homogenous population of a private school sample.

First, for the relationships of both academic achievement and self-beliefs with social functioning, the current meta-analysis determined that there are slight differences in the size of the effect when comparing measures of social support and social integration. A student's report of both perceived and received social support appears to be at least slightly distinct from the Tinto construct of social integration. Second, for the relationship of depression and social functioning, the current meta-analysis revealed no significant differences between measures of social support and of the Baumeister-related construct of attachment. These results suggest that some constructs under the umbrella of social functioning are distinct and some are not. However, further data is required in order to more fully investigate the argument presented in the introduction that the various constructs under this umbrella are in fact overlapping and often indistinct when measured.

Implications

Theory. In this meta-analysis I have sought to compare measures of social functioning derived from fields of college student persistence, need theories, and positive psychology, and provide empirical evidence that these fields are studying overlapping constructs which fall under the umbrella term of social functioning. Since sufficient data were not obtained from the second two fields in order to make such a comparison, the current meta-analysis was not able to address this, and the underlying question of whether these three theories are addressing the same underlying construct but calling it different things. These findings do not confirm or refute the argument that these constructs are

overlapping, but instead suggest that more studies of college students using measures from the later two fields would provide sufficient data to re-address this question.

The results of the meta-analysis provide evidence for multiple aspects of both the Tinto (1993) and Ryff (1989) models of social functioning. The third theory discussed in the introduction, Baumeister's Belongingness Hypothesis, primarily served to inform the literature search for this meta-analysis. However, even though this meta-analysis was not designed as a test of Baumeister's theory, there is some support for his position that areas of functioning are interrelated (e.g., a small positive relationship between social functioning and academic functioning via academic achievement). The relevance of the findings to Tinto's and Ryff's theories are stronger and are presented in detail below, as well as a discussion of which important predictors of social functioning are not currently accounted for by these models.

Tinto's interactionist theory. The current results provide support for several different aspects of Tinto's Interactionist Theory (1993). First, Tinto recognized the interactive effect of social and academic integration (a.k.a., functioning) in the college student experience. The current meta-analysis supports that there is a small positive relationship between academic achievement (both during and before college) and social functioning in college, but that they are distinct constructs given the small size of their relationship. This finding lends evidence to the argument in the introduction for the importance of both academic and social functioning in college, and that interventions which only address academic functioning are incomplete. Following this discussion of implications for theory are suggestions for interventions into social functioning that could

address the needs of college student personnel to more intentionally address social functioning as a distinct and important aspect of the college student's transition.

Tinto (1993) posited that students arrive at college with a multitude of background factors which influence their experience in the college environment. He reported that these can include family background characteristics (e.g., SES) and characteristics of the individual (e.g., gender). The current meta-analysis found that a student's report of the quality of his or her relationship with his or her parents had a small positive relationship with social functioning, and that a student's socioeconomic status had a very small positive relationship with social functioning. However, this meta-analysis also found that the predictors of gender and age did not have statistically significant relationships with social functioning, with average effect sizes close to zero between these two constructs and social functioning. This provides some support for Tinto's model and his meta-message that some aspects of a student's family and personal characteristics prior to college can have important influences on their social functioning in college.

Tinto (1993) stated that a student's family and personal characteristics, as well as his or her academic functioning prior to college, influence the levels of commitment that the student brings to college, both in terms of commitment to his or her educational goals, and in terms of his or her commitment to the particular institution. The findings of this meta-analysis provide strong support for a positive relationship between social functioning in college and institutional commitment, as well as a smaller and positive relationship between a student's goal commitment and his or her social functioning in college. Although Tinto's model (1986) would suggest that both institutional and goal

commitment are equally important in influencing the student's academic and social integration into the college environment, the results of this meta-analysis would suggest that, at least for social integration, the construct of institutional commitment is a more important predictor than goal commitment.

Ryff's theory of psychological well-being. Ryff (1989) described six facets of positive psychological well-being, and one of these is positive relations with others, a construct related to the quality of an individual's relationships. The five other facets are: self-acceptance, autonomy, environmental mastery, purpose in life, and personal growth. First, the current meta-analysis revealed a significant relationship between an individual's self-beliefs (e.g., self-esteem, self-efficacy) and his or her social functioning in college. This finding is related to Ryff's constructs of both self-acceptance and environmental mastery. Ryff described the facet of self-acceptance as the existence of a positive attitude towards the self, including past behavior and the ability to make choices, and described environmental mastery as being present in individuals who perceive themselves as effective in completing tasks and managing responsibilities. Second, the current meta-analysis provides support for an equally strong and positive relationship between a student's level of autonomy and his or her social functioning. Ryff proposed that autonomy exists in those who are self-determined and independent, and who are relatively resistant to social pressure and manipulation. Third, as described above in relation to Tinto's model, the current meta-analysis found a very small but significant relationship between a student's level of goal commitment and his or her social functioning in college. A final facet of Ryff's model is purpose in life which is defined by an individual's sense of directedness and presence of life goals. These results serve to

confirm the interrelated importance of the various facets of Ryff's model, and provide a framework for understanding how a lack of "wellness" in one of these six areas can impact the others.

Finally, some of the strongest and most important predictors of social functioning discovered in the current meta-analysis were not accounted for by any of these models. Namely, the three predictors with the strongest relationships with social functioning (i.e., depression, anxiety, and extraversion) are not accounted for either in the prominent theories presented above (i.e., Ryff 1989; Tinto, 1975) or in other psychological models of college student retention (e.g., Eaton & Bean, 1995). The predictors of neuroticism and agreeableness are also statistically significant and are not accounted for by these theories. This calls for a revision to our theoretical understanding of social functioning in college students, with a better understanding of how an individual's personality and mental health characteristics influence their social functioning in college.

Practice. These results have many implications for the ways that college student personnel, college counseling centers, high school guidance counselors, etc. can help students improve their social functioning in college. Below is a description of some of the most recent theoretical models and intervention programs for the predictors in the current meta-analysis. These implications for practice focus on the predictors that the current meta-analysis found to be most important in determining who does and does not succeed in their social functioning at college.

Mental health. These results highlighted the importance of depressive and anxious symptomology as the strongest predictors of social functioning college students. The current literature supports the effectiveness of psychotherapy groups taking place in

university counseling centers for reducing the presence of depressive (Hogg & Deffenbacher, 1988) and anxious (Peng, Yan, Ma, & Wu, 2003) symptoms in traditionally-aged college students. An existing meta-analysis certainly support the effectiveness of individual therapy in addressing these same symptoms (Butler, Chapman, Forman, & Beck, 2006). University counseling centers can serve as important resources for students who are struggling with mental health concerns which are impacting their social functioning as well as their functioning in other areas of life. Furthermore, therapy groups which are specialized to particular student groups (e.g., freshman or transfer student groups, ethnic minority student groups, LGBT groups, etc.) can serve both the students' mental health symptomology and their social functioning, by encouraging them to be open and share what they are struggling with, and allowing them to gain feedback, normalization, and validation from their alike peers. If such groups also include a psychoeducational component designed to challenge group members' unhealthy self-beliefs or level of autonomy, then the groups can simultaneously address multiple correlates of social functioning.

In addition to psychotherapy and psychoeducation aimed at treating psychological concerns that are already in place, university counseling center staff can play a role in student orientation efforts by assisting in the development of orientation programming, and providing information to students and parents about fostering autonomy, about what to expect in the transition, and about how to tell whether one's child is experiencing the "normal" growing pains of adjusting to college, or is instead experiencing extraordinary distress and needs help from a professional in addressing their mental health. There is evidence to suggest that outreach efforts such as participating in orientation, and

providing information through presentations to student groups or residence halls can be assistive in decreasing the stigma associated with receiving mental health treatment (Cronin, 1991) thus making the university counseling center more accessible as another resource students can use if they are struggling in their social functioning in college.

Additionally, campus counseling centers can aide in the administration of "gatekeeper" training programs which educate campus staff, faculty, and administrators as well as student peer leaders regarding warning signs for mental health concerns in students, and how to speak with students about this concerns. Programs such as QPR (Question-Persuade-Refer) instruct lay-persons on how to discuss these difficult issues with students, and are based on educating the campus community on how to reach out to students of concern, and refer them to the university counseling center as necessary. Research supports the effectiveness of these training programs in educating college student personnel staff (Tompkins & Witt, 2009).

Personality. Also relevant to university counseling centers, another strong correlate of social functioning found in this meta-analysis were trait (neuroticism) measures of mental health functioning. As mentioned above, interventions are important to help both students and parents identify what constitutes "normal" growing pains of adjustment, as opposed to extraordinary distress that merits professional counseling and/or psychiatric services. Extraversion is another primary aspect of personality (Costa & McCrae, 1992) that has a strong relationship with a student's social functioning. As neuroticism and extraversion are both considered stable measures of personality which are reported as fairly consistent across decades-long longitudinal studies (Roberts & DelVecchio, 2000), interventions to change the traits of neuroticism and extraversion are

not indicated. However, these results indicate that screenings could be used with entering students to identify those who may be more at-risk for problems with poor social functioning, and could inform college student personnel regarding at-risk students who could benefit from additional support. My search of the literature did not reveal any studies which have used measures of neuroticism or extraversion as a screening tool with college students. Additionally, these results with regard to neuroticism and extraversion could be used to help inform at-risk students to choose college or university environments where they might feel more comfortable from the start (e.g., a school with options of smaller residence hall communities), and maximize their chances of a successful adjustment to the social environment of the college.

One of other findings of the current meta-analysis is that a student's level of autonomy is an important correlate of social functioning. Fostering autonomy in college students could enhance their college transition and enable healthy social functioning as well. My literature search did not reveal any interventions with college students where autonomy was used as an outcome, suggesting that studies that test interventions to improve autonomy are needed in the literature.

Self-beliefs. Traditionally-aged college students often face a variety of new academic challenges in college, including heightened expectations of critical thinking, more work outside of class, courses that do not meet every day, determining a major, following a syllabus, making decisions about what courses to take, and the varying teaching styles of a number of professors. Outside of the classroom, new challenges include: developing, managing, and maintaining old and new relationships, managing finances, sustaining health and wellness, perhaps living in a small space with an

unfamiliar roommate, and challenges with time management and setting priorities. Research supports the importance of self-beliefs (e.g., self-esteem, self-efficacy) to individuals' academic functioning (Valentine, DuBois, & Cooper, 2004), in addition to the finding of the current meta-analysis regarding the importance of self-beliefs in influencing social functioning. However, Guindon's (2010) review on the effectiveness of interventions into self-beliefs revealed "inconsistent, mixed, or inconsequential results" (p. 25), and stated that there is tremendous controversy in the area of self-belief interventions. Regardless of the effectiveness of interventions to date, the current meta-analysis suggests that students with lower self-beliefs are at higher risk for poor social functioning, and that effective interventions to improve self-beliefs could ameliorate these effects.

Institutional commitment. The results of this meta-analysis suggest that institutional commitment is an important predictor of a student's social functioning in college. College student personnel professionals can be instrumental in fostering a strong commitment on the part of the student to their university. Before the new students even arrive at the institution, college student personnel can help students to be thoughtful about what school would be a good match. In her discussion of the cost/benefit analysis which students make in their college decision-making process, Perna (2006) points to the importance of both characteristics of the individual (e.g., gender, value placed on college attainment), and institutional characteristics (e.g., location, resources, and barriers in place, marketing/recruitment of the institution) to the student's choice. This model also utilizes economic terminology to describe the supply (e.g., financial resources, support resources) and demand (e.g., academic preparation) for higher education. All of these

factors converge to influence a student's college choice and commitment to that choice (Perna, 2006).

Interventions which partner university admissions staff and student development personnel partner with high school counselors and teachers can educate students about institutional characteristics and help them to increase their financial and support resources in order to improve the fit of their college choice and thus their institutional commitment. Although admissions personnel routinely visit high schools to speak about the particular college they represent, these are typically just "marketing" visits, as opposed to seminars intended to help prospective students carefully evaluate all their options in order to find the best school to meet the students' individual needs. Research suggests that partnering programs utilized in the past have worked to improve students' preparedness for and success in college (U.S. Department of Education, 2011). The function of this partnership would be to empower high school students to take ownership over the decision-making process, make an "adult" decision by thinking through the implications of the different colleges he or she is considering, and improve the quality of the students' college choice and institutional commitment.

Limitations and Directions for Future Research

The electronic literature search for the current meta-analysis yielded almost 39,000 citations which could be relevant to the current study. Since reviewing this number of studies was beyond the scope and resources available for the study, I conducted a power analysis to determine how many studies would be "enough" to make reasonable conclusions from, and reviewed citations until I had a sufficient number to pass that threshold. This amounted to examining about 1,500 studies or about 4% of the

total citation results. One obvious step for future research would be to engage in a fully comprehensive meta-analysis and examine all citation results returned in the electronic search. In addition, an interested researcher could survey the 80 relevant studies which provided the 90 samples relevant for the current meta-analysis, and then revise the electronic search terms based on the types of terms utilized in the abstracts and titles of these 90 studies in order to conduct a more efficient electronic literature search.

Another limitation of the current study is the studies' quality. In order to address the problem of outcome reporting bias, this meta-analysis only included the results of studies which reported correlations between the study variables, thus providing information on both significant and non-significant results. However, although data were collected from the included studies on the psychometric evidence for the measures included and sampling procedures, it was not one of the primary research questions of this study to look at the interactive effects of study quality on the outcome of the meta-analysis. In the 73 samples used in the current meta-analysis, 58.9% reported a reliability coefficient based on their sample, and 60.3% provided any information about validity (though most validity evidence consisted of a reference to another study). As the quality of a given meta-analysis is inherently a reflection of the quality of the included studies (Lipsey & Wilson, 2001), future research could investigate the moderating influence of evidence of study quality on the outcome of the meta-analysis.

The current meta-analysis revealed differential effects for samples surveyed in the last 15 years and for samples collected at public universities, suggesting that at least three of the predictors studied in the current meta-analysis have even stronger effects in more recent and public institution samples. Further research could explore this phenomena

further, examining the fit of the Tinto model over time and its relevance to the Millenials that make up today's traditionally-aged college student population (Elam, Stratton, & Gibson, 2007; Howe & Strauss, 2000). As diversity increases at institutions across the country (U.S. Department of Education, 2010), especially in public institutions (Hu & Kuh, 2003), increased investigation into the differential effects of institution type on the predictors of social functioning in college students, could help college student personnel tailor interventions to their institution type.

Since for some of the relations observed in this study (e.g., the positive relationship between social functioning and autonomy) both direction of causality are plausible (as is reciprocal causation), the field would benefit from more longitudinal studies. These longitudinal studies could serve to isolate the direction of the effects and inform analyses of the predictors of social functioning in college that occur before college. These might be factors such as size of the student's high school, social functioning in high school, high school class size, diversity characteristics, and other predictors that might better inform how high schools and colleges can intervene and better prepare students for good social functioning in college.

The current meta-analysis sought to compare measures of social functioning derived from fields of college student persistence, need theories, and positive psychology, and provide empirical evidence that these fields are studying overlapping constructs which fall under the umbrella term of social functioning. Since sufficient data were not obtained from the second two fields in order to make such a comparison, the current meta-analysis was not able to address this comparison. A recommendation based on these findings is that researchers in the fields of need theories and positive psychology be

more intentional about studying the social functioning of college students, as social functioning is a fundamental piece of their conceptualizations of human health, and a population which needs further study in the fast-changing environment of today's college campuses.

Finally, some of the strongest and most important predictors of social functioning discovered in the current meta-analysis (i.e., personality and mental health predictors) are not accounted for by any of these models. This calls for a revision to our theoretical understanding of social functioning in college students, with a better understanding of how an individual's personality and mental health characteristics influence their social (and academic) functioning in college.

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Table 1.

Summary of Studies Included in the Meta-Analysis

Author	Year	N	% Female	% Caucasian	School Type	Social Functioning Construct	Predictor Construct
Adler	2003	103	-	78.6	Private	Attachment	Depression
Allen	1992	1800	-	0.0	Public	Relations with others	Academic achievement Self-beliefs Goal-focus SES Gender Institutional commitment
Allen	2008	236	57.6	92.4	Public	Interpersonal conflicts	Depression
Amin	2000	199	46.2	54.0	Public	Social adjustment	SES Age
Anderson	1993	93	57.6	-	Public	Support	Academic achievement Gender Age
Anthony	2002a	111	52.3	-	-	Social hopelessness Positive relations with others	Self-beliefs Autonomy Neuroticism Extraversion Agreeableness
Anthony	2002b	150	60.0	-	-	Positive relations with others	Self-beliefs Depression Anxiety Autonomy
Asiamah	2010	158	66.5	0.0	Public	Support Belongingness	Self-beliefs
Becker	2008	211	81.8	64.5	Private	Loneliness Attachment & Integration	Academic achievement Self-beliefs Depression Neuroticism Problem-solving style Extraversion

(continued)

Author	Year	N	% Female	% Caucasian	School Type	Social Functioning Construct	Predictor Construct
Beltzer	1984	399	57.1	48.4	Public	Integration	Academic achievement Goal-focus Institutional commitment
Blaustein	1999a	136	73.0	75.0	Private	Attachment Support	Self-beliefs Depression Autonomy
Blaustein	1999b	79	59.5	77.2	Private	Interpersonal dependency Support	Self-beliefs Depression Autonomy
Bonner	1987	158	63.3	-	Public	Loneliness Cohesiveness	Depression Problem-solving
Brookings	1997	133	66.2	98.0	Private	Support	Depression
Bruch	1999a	292	55.1	-	Public	Sociability Loneliness	Self-beliefs Gender Extraversion
Cashion	1990	279	100.0	77.8	-	Social satisfaction Social integration Social self-esteem	Academic achievement Self-beliefs Goal-focus SES
Chavous	1998	359	76.0	40.1	Public	Attachment & Belongingness	Academic achievement
Cheng	2007	52	50.0	40.0	-	Social status	Neuroticism Extraversion Agreeableness
Clark	1995a	944	58.5	-	Public	Sociotropy	Autonomy
Clark	1995b	494	60.3	-	Public	Loneliness	Autonomy
Clum	1994	59	57.6	74.1	Public	Loneliness	Self-beliefs Depression Problem-solving
Coleman	1992	57	-	29.8	Private	Support Belongingness	Academic achievement Self-beliefs Emotional adjustment
Craig	1996b	48	64.6	-	-	Support Attachment & Integration	Depression

(continued)

Author	Year	N	% Female	% Caucasian	School Type	Social Functioning Construct	Predictor Construct
Deidan	1992	100	62.0	77.0	Public	Attachment	Parental relationship
Dennis	2005	100	70.0	0.0	Public	Support	Academic achievement Goal-focus Institutional commitment
Diyankova	2008	114	61.4	93.0	Public	Attachment	Depression
Dotzenroth	1978	254	0.0	-	-	Social self-esteem Avoidance	Anxiety Goal-focus
Feldman	1990	304	66.1	85.2	Public	Loneliness Intimacy	Self-beliefs Parental relationship
Felsman	1995	147	67.3	65.0	Public	Intimacy Attachment	Goal-focus Gender Age
Gloria	1999	98	72.4	0.0	Public	Support	Self-beliefs Anxiety
Heris	1987	142	50.0	-	Public	Support	Depression
Hermann	2005a	350	100.0	82.5	Public	Social self-efficacy Loneliness	Self-beliefs Depression Autonomy
Hermann	2005b	346	0.0	82.5	Public	Social self-efficacy Loneliness	Self-beliefs Depression Autonomy
Jiang	2002	168	36.9	-	-	Social integration	Autonomy
Johnson	2001	153	67.3	64.7	Public	Attachment	Anxiety Parental relationship
Johnson	2002	181	0.0	0.0	Public	Intimacy	Autonomy
Krones	2009	172	100.0	66.3	Public	Network of relationships	Self-beliefs Depression
Lavine	1992	278	-	71.6	Public	Integration Support	Academic achievement Goal-focus Institutional commitment

(continued)

Author	Year	N	% Female	% Caucasian	School Type	Social Functioning Construct	Predictor Construct
Levine	2006	41	53.7	65.9	Public	Avoidance	Depression Anxiety SES Gender Age
Ling	2006	163	57.7	50.9	Public	Integration	Academic achievement Self-beliefs Depression Anxiety Goal-focus
Lowry	2008	138	78.3	80.0	Public	Attachment	Depression Anxiety
Mahoney	2005	192	66.6	57.0	Public	Inclusion	Neuroticism Extraversion Agreeableness
Maise	1988	265	50.6	-	Public	Loneliness	Depression Anxiety Parental relationship
Malone Ruby	2006	80	51.3	86.3	Public	Support	Self-beliefs Depression
Matthews	1998	266	-	-	Private	Attachment Support Social adjustment	Academic achievement Institutional commitment Problem-solving Emotional adjustment
McHugh	1993a	87	100.0	-	-	Sociotropy	Depression Autonomy Problem-solving
McHugh	1993b	43	0.0	-	-	Sociotropy	Depression Autonomy Problem-solving
McHugh	1993c	109	82.6	-	-	Sociotropy	Anxiety
Miller	1987	356	62.4	88.5	Public	Integration	Academic achievement Gender Age

(continued)

Author	Year	N	% Female	% Caucasian	School Type	Social Functioning Construct	Predictor Construct
Miller	1988	1340	75.5	87.0	Private	Involvement	Academic achievement
Miner	1988	155	64.0	75.5	-	Social interest	Age Neuroticism
Mohamed	1991	278	-	0.0	-	Social adjustment Loneliness Isolation Social difficulties	Academic achievement
Okazaki	1994	390	53.8	46.9	Public	Avoidance Interpersonal sensitivity	Self-beliefs Depression Anxiety
Pascarella	1986	763	-	-	Private	Integration	Academic achievement Goal-focus SES Institutional commitment Gender
Peterson	1992	706	48.8	71.4	Public	Integration	Academic achievement Self-beliefs Goal-focus Institutional commitment Gender Age
Robbins	1984	100	55.0	-	Private	Loneliness Pleasure in social interactions	Depression
Robinson	1995	306	100.0	90.0	Public	Interpersonal relationship quality	Self-beliefs Anxiety Problem-solving
Sanders	1996	29	58.6	86.2	Public	Support Social adjustment	Academic achievement Institutional commitment Problem-solving Emotional adjustment

(continued)

Author	Year	N	% Female	% Caucasian	School Type	Social Functioning Construct	Predictor Construct
Scarbro	2002	264	73.1	-	Private	Social adjustment Support	Academic achievement Self-beliefs Depression Anxiety Parental relationship Goal-focus Autonomy Emotional adjustment
Shean	1991a	51	56.9	-	Public	Intimacy Enmeshment	Anxiety
Shean	1991b	68	70.6	-	Public	Enmeshment	Anxiety
Slattery	1999	102	51.0	95.0	Public	Attachment Support	Depression SES Autonomy
Stewart	2008	99	63.7	81.8	Private	Support	Depression
Strage	1999	236	83.4	30.9	Public	Support	Academic achievement Self-beliefs Autonomy Parental relationship SES
Trueblood	1984	101	57.4	-	Public	Social competence Support	Self-beliefs Depression
Turkson	2003	399	57.4	49.9	Public	Intimacy Attachment	Anxiety Gender
Warka	2001a	278	80.9	53.2	-	Attachment Support	Self-beliefs Neuroticism Agreeableness
Warka	2001b	360	71.2	45.7	-	Attachment Support	Self-beliefs Neuroticism Agreeableness
Webb	1991	6864	56.0	87.0	-	Integration	Academic achievement Self-beliefs Goal-focus

Author	Year	N	% Female	% Caucasian	School Type	Social Functioning Construct	Predictor Construct
Weber	1993	150	59.0	64.0	Public	Support	Academic achievement Depression Anxiety
West	2000	172	64.0	48.3	Public	Social adjustment	Academic achievement Institutional commitment Emotional adjustment
Willingham	2007	153	58.2	-	-	Social adjustment	Parental relationship
Yang	1995	101	27.8	0.0	Public	Loneliness Support	Depression Anxiety

Note: dash marks indicate that the data is unknown for that cell.

Table 2.

Summary of Main Analyses

Predictor Domain	Predictor	*n*	*r*	I^2
Background				
	Relationship with Parents	9	0.18***	68.9
	Socioeconomic Status	7	0.06*	18.3
	Gender	9	0.05	54.1
	Age	7	-0.02	59.6
Personality				
	Extraversion	5	0.32***	10.5
	Autonomy	12	0.27***	92.6
	Neuroticism	7	-0.24***	77.9
	Agreeableness	5	0.19***	0
Mental Health				
	Anxiety	17	-0.32***	87.0
	Depression	30	-0.35***	89.7
	Emotional Adjustment	5	0.22	85.3
Coping				
	Self-Beliefs	28	0.26***	96.1
	Problem-Solving Style	8	0	84.5
Academic				
	Academic Achievement	22	0.13***	86.4
	Institutional Commitment	9	0.30***	95.0
	Goal Commitment	11	0.09**	81.4

Note. * is $p < .05$. ** is $p < .01$. *** is $p < .001$.

Figure 1.

Trim-and-Fill Funnel Plot for Academic Achievement and Social Functioning

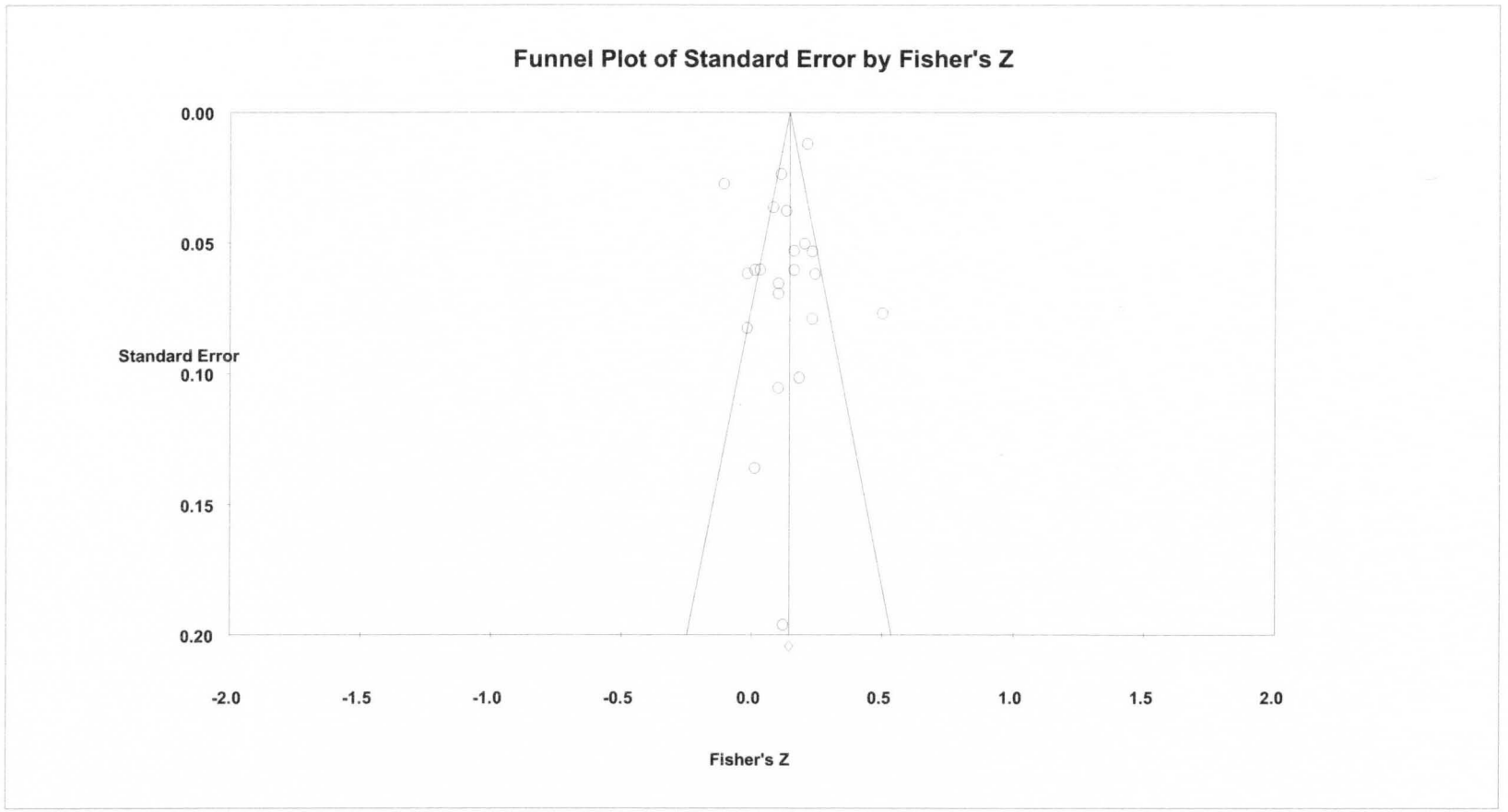


Figure 2.

Trim-and-Fill Funnel Plot for Depression and Social Functioning

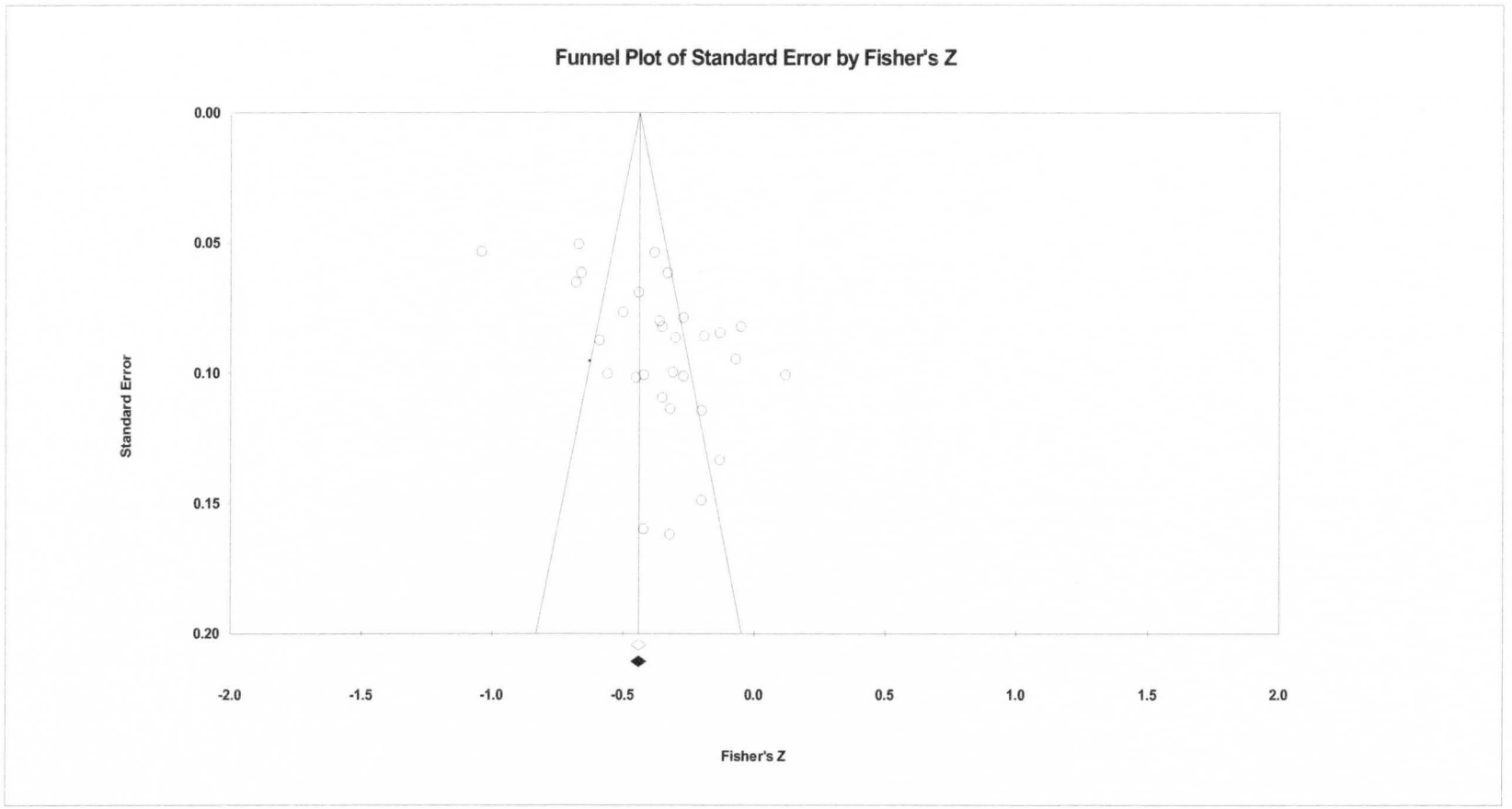


Figure 3.

Trim-and-Fill Funnel Plot for Self-Beliefs and Social Functioning

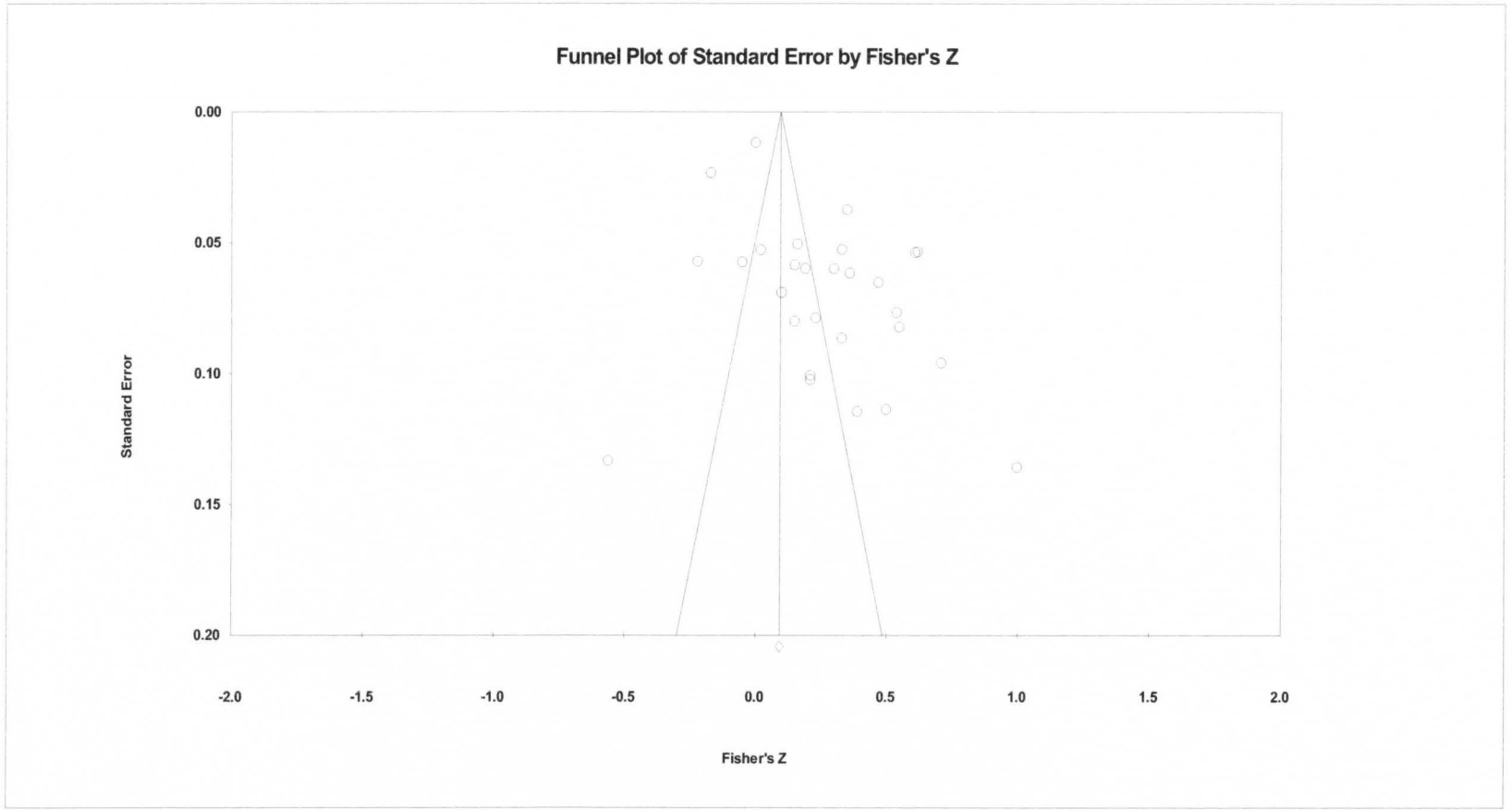
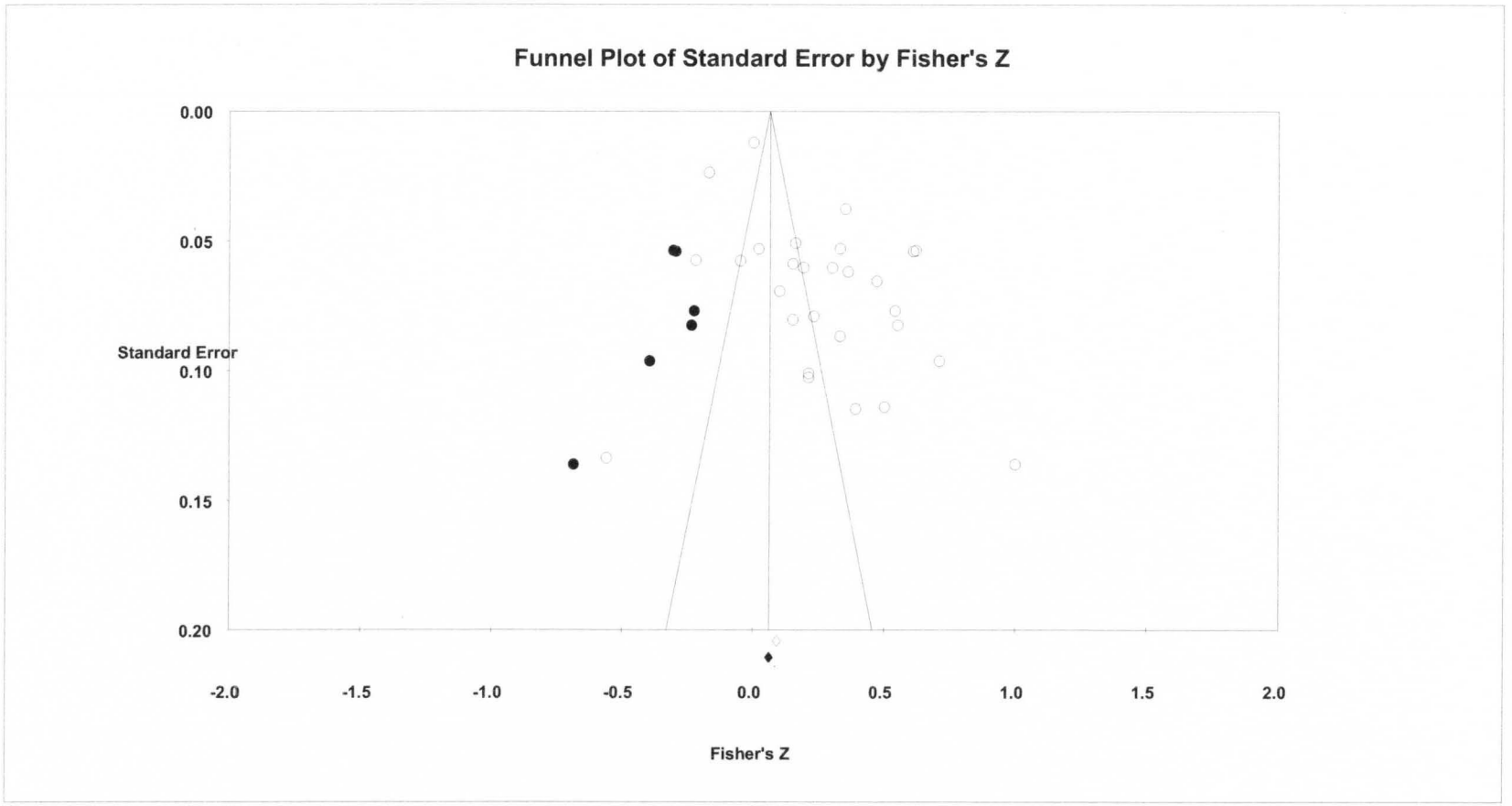


Figure 4.

Trim-and-Fill Funnel Plot for Self-Beliefs and Social Functioning With Imputed Studies



Appendix A

Electronic Search Strategy

1) To search for articles that reported on an empirical study:

Result* or empirical or statistical or significan* or predict or correlate* or relationship or finding* or found or survey or longitudinal

2) To search for articles reporting on a college student population:

College or universit* or higher education or postsecondary) and student

3) To search for articles utilizing a measure of social functioning:

Positive relations with others or adjust* or adapt* or well-being or social functioning or eudemonia or cope or coping or belong* or attach* or relatedness* or social integration or social transition or involvement or engagement or student success or social competence or social skill* or social connect* or social support or social network* or social isolation or psychosocial or sociable or socializing agents or interpersonal or interdependence or peer connection* or peer interaction* or conflict or loneliness

This search was conducted in the following databases: PsycInfo, ERIC, Dissertation Abstracts, Social Science Citation Index, Medline, and the Sociological Collection. The databases were used to search for the above terms in the titles or abstracts of papers.

Appendix B

Screening Guide for Social Functioning Meta-Analysis (Titles and Abstracts) 3.0

Study Inclusion Criteria	
1. Are the study results available in the English language?	0. No 1. Yes 2. Can't tell/not sure **IF NO THEN STOP**
2. Does the document report on an empirical study with quantitative results? NOTE: Answer "No" if the document is a literature review, opinion piece, or qualitative study	0. No 1. Yes 2. Can't tell/not sure **IF NO THEN STOP**
3. Are undergraduate on-campus 2-year or 4-year college students included in the sample? NOTE: Answer "Yes" if the study includes both 2-year AND 4-year college students. Answer "No" if students are in online courses only.	0. No 1. Yes 2. Can't tell/not sure **IF NO THEN STOP**
4. Are the college students studying in the U.S. or Canada?	0. No 1. Yes 2. Can't tell/not sure **IF NO THEN STOP**
5. Does the study include a measure of social functioning that was taken while the student was in college? NOTE: Answer "Yes" for studies which include a measure of social functioning as a subscale of a broader measure	0. No 1. Yes 2. Can't tell/not sure **IF NO THEN STOP**
6. Does the study measure the relation between the measure of social functioning and other variables as a correlation?	0. No 1. Yes 2. Can't tell/not sure **IF NO THEN STOP**

Appendix C

Coding Guide for Social Functioning Meta-Analysis 3.0

Report Characteristics	
1. Report ID	
2. First page number	
3. First author last name	
4. Publication year	
5. Study source	0 = electronic search 1 = researcher 2 = index tree
6. Type of publication	0 = journal article 1 = dissertation/thesis 2 = conference presentation or poster 3 = agency report 4 = other 99 = unknown
Study Design	
7. Research design	0 = experimental 1 = quasi-experimental 2 = correlational 3 = cross-sectional 4 = longitudinal 5 = other 99 = unknown
8. Participant selection	0 = random from local population 1 = convenience 2 = current symptoms 3 = other 99 = unknown
Institution Information (based on Carnegie Classifications)	
9. Type of school	0 = public 1 = private 99 = unknown
10. Length of schooling	0 = two-year 1 = four-year 99 = unknown
11. Resident status	0 = primarily nonresidential 1 = primarily residential 99 = unknown

12. Institution's country	0 = U.S. 1 = other
Sample Demographics	
13. Target sample size	
14. Actual sample size	
15. Average or median age at study start *NOTE: Age = Grade + 5.5 if mean not given)*	
16. Grade level at study start	0 = freshman 1 = sophomore 2 = junior 3 = senior 4 = freshman & sophomores 5 = juniors & seniors 6 = all years 7 = other 99 = unknown
17. Gender (% female)	
18. Special characteristics	0 = none 1 = transfer students 2 = international students 3 = graduate students 4 = other 99 = other
19. Sample ethnicity % White % Hispanic % African-American % Asian American % Other % Mixed % Native American	 ___ ___ ___ . ___ ___ ___ ___ . ___ ___ ___ ___ . ___ ___ ___ ___ . ___ ___ ___ ___ . ___ ___ ___ ___ . ___ ___ ___ ___ . ___
20. Sample SES	0 = low 1 = lower middle 2 = middle 3 = upper middle

	4 = upper 5 = mixed (unspecified) 6 = mixed (middle and upper) 7 = mixed (middle and lower) 99 = unknown
21. Achievement label applied to students	0 = "average" achieving 1 = under-achieving 2 = high achieving 3 = mixed 4 = special education, LD, etc. 99 = unknown
22. Were students described as "at-risk"?	0 = yes 1 = no
23. If yes, what was the source of the risk?	0 = n/a, not at-risk 1 = at-risk due to behavior 2 = at-risk due to SES 3 = at-risk due to other demographics 4 = at-risk due to prior achievement 5 = mixed 6 = other 99 = unknown
Social Functioning Measure	# ___ of ___
24. Name of measure	
25. Social term used *NOTE: code the term best captured by measure name*	0=adjustment 1 = intimacy 2 = competence 3 = sociability 4 = belongingness 5 = support 6 = loneliness 7 = integration 8 = cohesiveness 9 = attachment 10 = inclusion 11 = social satisfaction 12 = well being 13 = social self-beliefs 14 = social status 15 = social network 16 = involvement 17 = social interest 18 = pleasure in social interactions 19 = interpersonal relationship quality 20 = interpersonal conflicts

	21 = interpersonal dependency 22 = social hopelessness 23 = sociotropy 24 = avoidance 25 = social difficulties 26 = interpersonal sensitivity 99 = unknown
26. Functioning domain	0 = overall 1 = family 2 = peers 3 = other 4 = faculty 99 = unknown
27. Measure type	0 = rating scale 1 = behavioral observation 2 = interview 3 = other 4 = demographic 5 = true/false 6 = open-ended 99 = unknown
28. Source/Informant of social functioning data	0 = participant 1 = parent 2 = faculty 3 = multiple sources 4 = other 5 = school 99 = unknown
29. Evidenced cited regarding validity	0 = no 1 = yes, from evidence generated in this study 2 = yes, from another study
30. What was the reliability estimate? *NOTE: prefer estimate from the sample over estimate from another source if both are given. If multiple estimates are available – e.g., males and females – average the estimates.* *If a study presents multiple types of reliability estimates, then use in this order: 1. internal consistency 2. split half 3. test-retest*	. —— —— 0 = not given/unknown

31. Reliability type	0 = N/A, no reliability estimate 1 = coefficient alpha or KR- ## or internal consistency or Cronbach's alpha 2 = split-half 3 = test-retest 4 = interrater/intercoder 99 = unknown
32. Source of reliability estimates	0 = N/A, no reliability estimate 1 = participants in this study 2 = cited from another study 99 = unknown
Predictor Variable	# ___ of ___ for SFM # ___
33. Name of measure	
34. Predictor type *NOTE: code the term best captured by measure name*	101 = high school GPA 102 = college GPA 103 = high school Percentile Rank 104 = SAT Scores 105 = time spent studying per week 106 = years of geometry 107 = courses (load, attempted, completed) 108 = prior education level 109 = other test scores 110 = academic adjustment 111 = academic/intellectual development 112 = hours of academic interaction with faculty outside of class 199 = combination of academic variables above 201 = self-confidence 202 = self-acceptance 203 = self-esteem 204 = self-concept 205 = self-worth 206 = mastery 207 = self-statements 208 = competence 209 = self-regard 210 = self-efficacy 211 = negative self-beliefs (actual/ideal discrepancy, self-consciousness, external self-esteem) 299 = combination of self-belief variables above 301 = affect dysregulation

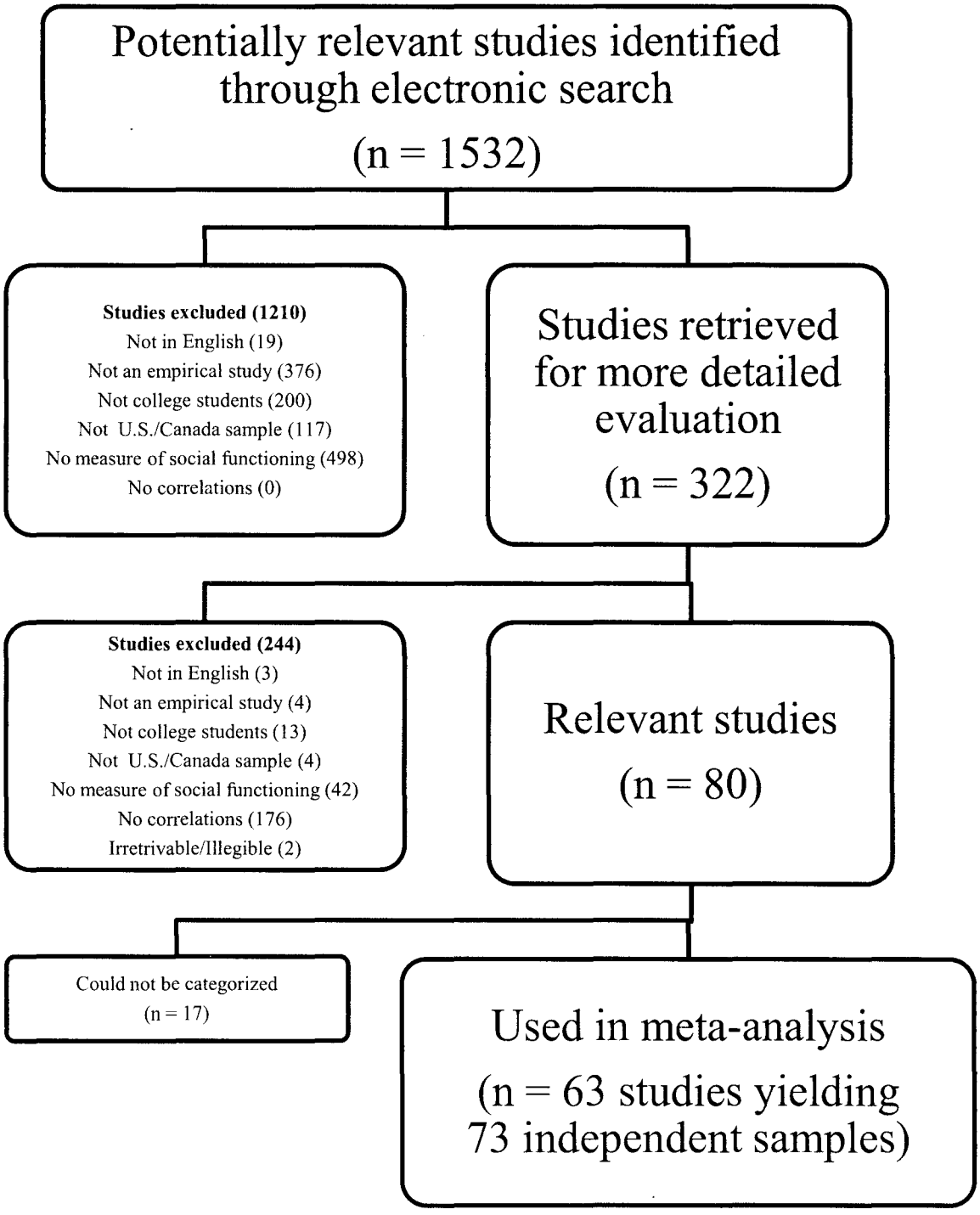
	302 = suicidal ideation/behaviors 303 = depression 304 = negative thoughts/affect 305 = hopelessness 306 = dysphoria 307 = positive affect/thoughts 308 = distress 309 = number of concerns 399 = combination of depression variables above 401 = state anxiety 402 = trait anxiety 403 = fear of negative evaluation 404 = career choice anxiety 405 = agoraphobia 406 = fear of anxiety symptoms 407 = worry 408 = stress 499 = combination of anxiety variables above 501 = highest degree sought 502 = occupational aspirations 503 = commitment to complete college 504 = intention to persist 505 = hope for success 506 = vocational exploration and commitment 507 = parental aspirations 599 = combined goal variables above 601 = authoritative 602 = perception of parental reciprocity 603 = care mother 604 = care father 605 = emotional independence mother 606 = emotional independence father 607 = low conflict mother 608 = low conflict father 609 = cohesion mother 610 = cohesion father 611 = discussion with parents 612 = emotional avaliability 613 = autonomy granting 614 = childhood supportiveness 620 = overprotection/enmeshment mother 621 = overprotection/enmeshment father 622 = authoritarian

	623 = permissive 624 = demandingness 701 = parent education level 702 = parent income 799 = combination of SES variables above 801 = confident that made right choice of institution 802 = institutional attachment/commitment 803 = confident that will earn degree from this institution 901 = autonomy 902 = independence 903 = self-reliance/assertiveness 1001 = active coping 1002 = passive coping 1003 = perceived problem-solving effectiveness 1004 = cognitive coping 1005 = conflict resolution in close relationships 1006 = problem-solving inventory 1007 = resource use scale 1008 = awareness of alternatives 1009 = approach avoidance factor 1010 = personal control factor1=Gender 2 = age 3 = neuroticism 4 = extraversion 5 = agreeableness 6 = emotional adjustment (anxiety & depression)
35. Measure type	0 = rating scale 1 = behavioral observation 2 = interview 3 = other 4 = demographic 5 = true/false 6 = open-ended 99 = unknown
36. Source/Informant of predictor data	0 = participant 1 = parent 2 = faculty 3 = multiple sources 4 = other

	5 = school 99 = unknown
37. Evidenced cited regarding validity	0 = no 1 = yes, from evidence generated in this study 2 = yes, from another study
38. What was the reliability estimate? *NOTE: see item #30*	. ___ ___ 0 = not given/unknown
39. Reliability type	0 = N/A, no reliability estimate 1 = coefficient alpha or KR- ## or internal consistency or Cronbach's alpha 2 = split-half 3 = test-retest 4 = interrater/intercoder 99 = unknown
40. Source of reliability estimates	0 = N/A, no reliability estimate 1 = participants in this study 2 = cited from another study 99 = unknown
41. Effect size estimate/correlation coefficient	. ___ ___
42. Estimate type	0 = correlation coefficient
43. Estimate direction	0 = negative 1 = positive 2 = zero 99 = unknown
44. Estimate statistically significant?	0 = yes 1 = no 99 = unknown

Appendix D

Screening Results Flowchart



Appendix E

References for Studies Used in the Meta-Analysis

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CURRICULUM VITAE

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EDUCATION:

August 2011 (expected)
PhD, Counseling and Personnel Services
University of Louisville, Louisville, KY
Concentration: Counseling Psychology
Minor: College Student Development
Dissertation: *Identifying Predictors of Social Adjustment in College Students: A Meta-Analysis*

August 2007
MA, Psychological Sciences
James Madison University, Harrisonburg, VA
Concentration: Pre-Clinical Studies
Thesis: *Well-Being: An Application of the Tree of Knowledge System*

May 2005
BS, Psychology (*cum laude*)
James Madison University, Harrisonburg, VA
Minor: Family Issues
Study Abroad: London, Summer 2003
Italy, June 2004

COUNSELING AND INTERVENTION EXPERIENCE:

starting August 2011
University of Virginia School of Medicine, Neurocognitive Assessment Lab, Behavioral Health Post-Doctoral Fellow
Charlottesville, VA

August 2010 - July 2011
Appalachian State University Counseling and Psychological Services Center, Pre-Doctoral Intern (APA-accredited)
Boone, NC

Individual Counseling and Assessment

- Provided individual therapy using primarily a short-term therapy model, including the use of quantitative therapy outcome measures
- Utilized clinical interviews to assess intake clients and disposition them to appropriate services offered by the center (e.g., individual therapy, group therapy, career counseling) or refer them out if their needs can be better met elsewhere
- Conducted personality assessments with clients, write integrated

assessment reports, and provide assessment feedback to clients and consult with their primary therapist if applicable
- Offered career counseling and assessment with clients with co-morbid mental health concerns

Group Therapy
- Co-led a therapeutic group for transgender students including process issues as well as psychoeducation and support
- Co-led a therapeutic group for freshman in their first semester of college, struggling to adjust. This group included psychoeducation stemming from the preliminary results of my dissertation, as well as a processing client's current concerns
- Co-led three general process groups

Supervision
- Supervised the individual therapy work of four masters students in clinical and counseling psychology master's programs
- Supervised an undergraduate student in his social work field placement experience performing career guidance with other undergraduate students

Outreach, Consultation, and Crisis Management
- Offered outreach to university groups. Topics presented included stress management, domestic violence, culture shock when studying abroad, and helping skills and crisis training for residence life staff
- Conducted bi-weekly consultation meetings with the area coordinators and residence directors in four residence halls on campus. These consultations include providing information on mental health issues and also working together to assist targeted students to access counseling center services
- Contributed to a liaison relationship with the office of International Programs and Psi Chi, including providing outreach presentations, and serving as a resource when determining how to address students of concern
- Provided on-call after hours and weekend emergency services, including emergencies such as students with suicidal ideation or who have been recently sexually assaulted. Gather pertinent information from others (e.g., residence life staff, police, etc.) and provide support and advise them of follow-up plan as needed

Administration and Leadership
- Participated in the Internship Selection Committee and the review of applications for the APA-accredited internship at the counseling center
- Took part in the review of applications, interviewing, and selection of master's level trainees for the counseling center
- Engaged in monthly meetings of the training committee, working to enhance the experience of master's level trainees and pre-doctoral interns at the counseling center

Fall 2009 **The Archdiocese of Louisville Family Counseling Center, Doctoral Practicum**
Louisville, KY
- Conducted brief individual, couple, and family psychotherapy in an urban community mental health agency
- Provided weekly clinical supervision for two doctoral students in their first practicum placement

Fall 2008 – Spring 2009 **University of Louisville Student Counseling Center, Doctoral Practicum**
Louisville, KY

- Conducted individual psychotherapy with varying clinical issues (caseload of 2-4 long-term and 3-6 brief clients)
- Carried out full LD and ADHD assessment batteries
- Consulted with psychiatric staff to address more comprehensive care for referred clients
- Participated in outreach opportunities including the National Depression Screening Day

Summer 2008 **Communicare, Doctoral Practicum**
Elizabethtown, KY
- Worked as a co-counselor at a rural community mental health agency serving clients with a variety of presenting issues, such as Axis-II diagnoses, and court-referred clients
- Co-facilitated group therapy for clients with mood disorder diagnoses

Spring 2008 **Floyd County Youth Shelter and Youth Services Bureau, Doctoral Practicum**
New Albany, IN
- Conducted neuropsychological and psychodiagnostic testing with youth-shelter residents and those referred by the juvenile probation office
- Performed consultations with center staff and probation officers regarding test results, recommendations, and treatment plans

Spring 2007 **The Center for Behavioral Health at Rockingham Memorial Hospital, Masters Practicum**
Harrisonburg, VA
- Assisted in the administration of the LIFE recovery program for individuals with drug and alcohol dependence
- Co-led group psychotherapy and psychoeducational sessions on drug and alcohol recovery and maintenance

OUTREACH PRESENTATIONS:

Beard, J. B. (2011, June). *Managing the college transition.* Invited presentation for parents of incoming freshman college students, Appalachian State University, Boone, NC.

Beard, J. B. (2011, June). *Orientation to counseling center services.* Invited presentation for orientation for incoming freshman college students, Appalachian State University, Boone, NC.

Beard, J. B. (2011, April). *Psychological adjustment and studying abroad.* Invited presentation for undergraduate students preparing to study abroad the next semester, Appalachian State University, Boone, NC.

Beard, J. B. (2011, March). *Psychological treatment with survivors of sexual abuse.* Invited classroom presentation to graduate students in counseling psychology and marriage & family therapy, Appalachian State University, Boone, NC.

Beard, J. B. (2011, February). *Stress and the creative process.* Invited classroom presentation to theater majors, Appalachian State University, Boone, NC.

Beard, J. B. (2011, January). *Orientation to counseling center services.* Invited presentation for orientation programming for new international students, Appalachian State University, Boone, NC.

Clark, S. L., & **Beard, J. B.** (2010, November). *Taking time for me: Stress management.* Wellness workshop available to undergraduate students, Appalachian State University, Boone, NC.

Beard, J. B. (2010, November). *Psychological adjustment and studying abroad.* Invited presentation for undergraduate students preparing to study abroad the next semester, Appalachian State University, Boone, NC.

Beard, J. B. (2010, October). *Domestic violence in the African-American community.* Invited presentation and panel discuss to the minority men's and women's leadership circles, Appalachian State University, Boone, NC.

Beard, J. B., & Hogan, C. J. (2010, September). *Managing stress in the workplace.* Invited presentation for an undergraduate business class, Appalachian State University, Boone, NC.

Clark, S. L., & **Beard, J. B.** (2010, August). *Behind closed doors.* Co-led training and role-play for residence life staff on how to respond to mental health emergencies with their students, Appalachian State University, Boone, NC.

Martin, L. E., **Beard, J. B.**, & Even, C. E. (2010, August). *Basic helping skills.* Invited presentation and training for residence life staff, Appalachian State University, Boone, NC.

Burnett, J. B. (2008, October). *Stress management.* Invited presentation for the PEACC undergraduate student organization, University of Louisville, Louisville, KY.

RELATED WORK/VOLUNTEER EXPERIENCE:

Summer 2005 — **The Stevens Center Adult Day Care Center, Indirect Care Provider**
Wolfeboro, NH
- Provided attentive care for elderly clients with challenges ranging from partial paralysis to late-stage Alzheimer's disease
- Led weekly group discussion sessions on topics relevant to coping with adjustments and transitions in patients' lives

Fall 2004 – Spring 2005 — **Challenging Horizons Program, Undergraduate Assistant**
Harrisonburg, VA
- Administered and scored various intelligence and behavioral measures for an ADHD assessment battery
- Participated in the development and follow-up of treatment plans for ADHD-diagnosed middle school students

Summer 2004 — **Catholic Charities Clinical Services Center, Clinical Intern**
San Diego, CA
- Provided over-the-phone counseling for the Crisis Line
- Shadowed clinicians to observe group, couples and individual therapy

RESEARCH IN PROGRESS:

Erickson, L., Hirschy, A. S., **Burnett, J. B.**, & Real, M. (2009). *Critical thinking in choice of academic major: Career exploration, decision-making, and clarity.* University of Louisville Supporting Undergraduate Innovation: Ideas to Action Implementation Grant ($5000).

REFEREED PAPERS AND PRESENTATIONS:

Steger, M. F., Pickering, N. C., Adams, E., **Burnett, J. B.**, Shin, J. Y., Dik, B. J., & Stauner, N. (2010). The quest for meaning: Religious affiliation differences in the correlates of religious quest and search for meaning in life. *Psychology of Religion and Spirituality, 2*(4), 206-226.

Valentine, J. C., **Burnett, J. B.**, Nichols, A., Gonshak, A. B., Tong, S., Whitten, M., & Pickering, M. (2009). *Validity characteristics of randomized and quasi-experiments in studies of school-based prevention programs.* Poster presented at the annual meeting of the American Psychological Association, Toronto.

Burnett, J. B., & Pickering, N. C. (2008, April). *More than white coats and lab rats: Navigating the graduate student research lab experience.* Paper presented at the annual Tri-University Spring Research Conference, Cincinnati, OH.

Montazeri, P., **Burnett, J. B.**, Barry, C. L., & Henriques, G. R. (2007, May). *The Big Five meets the big three of social motivation.* Poster presented at the annual meeting of the Association for Psychological Science, Washington, DC.

Burnett, J. B. (2007, March). *Does the Unified Theory work?: Impact of a psychoeducational course on students' well-being.* In G. Henriques (Chair), *Assessing and improving well-being: An application of the tree of knowledge system.* Symposium conducted at the annual meeting of the Eastern Psychological Association, Philadelphia, PA.

Burnett, J. B., Barry, C. L., & Henriques, G. R. (2006, April). *Cross validation of The Influence Matrix with the Inventory for Interpersonal Problems.* Poster presented at the annual meeting of the Virginia Psychological Association, Virginia Beach, VA.

Barry, C. L., **Burnett, J. B.**, & Henriques, G. R. (2006, March). *Cross validation of the Influence Matrix with the NEO-FFI.* Poster presented at the annual meeting of the Eastern Psychological Association, Baltimore, MD.

Burnett, J. B., & Sheehan, K. (2005, April). *Why research experience is important for undergraduate students.* Poster presented at the annual Raising the Bar conference, Harrisonburg, VA.

TEACHING EXPERIENCE:

Fall 2009	**Human Development & Learning, Instructor** Department of Teaching & Learning, University of Louisville
Fall 2006 - Summer 2007	**Research Methods, Teaching Assistant & Lab Instructor** Department of Psychology, James Madison University
Fall 2005 - Summer 2006	**Measurement & Statistics, Teaching Assistant & Lab Instructor** Department of Psychology, James Madison University
Spring 2002	**General Psychology, Teaching Assistant** Department of Psychology, James Madison University

HONORS & AWARDS:

- Membership, **Future Faculty Program**, University of Louisville, Fall 2008.
- **University Fellowship**, University of Louisville, Fall 2007 – Summer 2009.
- **Graduate Student Award for Outstanding Teaching**, James Madison University, April 2007.
- Jerry O. Haynes Memorial Award for **Outstanding Senior in Psychology**, James Madison University, April 2005.
- James J. Hart Memorial Award for **Outstanding Junior in Psychology**, James Madison University, April 2004.

UNIVERSITY LEADERSHIP AND SERVICE:

- Member, **Technology Committee**, Tri-University Spring Research Conference, University of Louisville, Spring 2009.
- Student Member, Department of Educational and Counseling Psychology **Faculty Search Committee**, University of Louisville, Fall 2008.
- **Vice President**, Educational and Counseling Psychology Doctoral Student Organization, University of Louisville, Fall 2008 – Summer 2009.
- **Co-President**, Psychology Graduate Student Association, James Madison University, Fall 2006 – Spring 2007.
- **Graduate Student Representative**, Graduate Council, James Madison University, Spring 2006 – Spring 2007.
- **Poster Judge**, Research Category, Department of Psychology Undergraduate Poster Session, James Madison University, April 2006 & 2007.

PROFESSIONAL MEMBERSHIPS:

- American Psychological Association (APA)
    - Division 17: Counseling Psychology
        - Section on College and University Counseling Centers
- American College Counseling Association (ACCA)
- College Student Educators International (ACPA)
    - Commission for Counseling and Psychological Services (CCAPS)
- Omicron Delta Kappa (National Leadership Honor Society)
- Psi Chi (National Psychology Honor Society)