

# Journal of Counseling Psychology

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Online First Publication, August 8, 2011. doi: 10.1037/a0024635

### CITATION

Mattanah, J. F., Lopez, F. G., & Govern, J. M. (2011, August 8). The Contributions of Parental Attachment Bonds to College Student Development and Adjustment: A Meta-Analytic Review. *Journal of Counseling Psychology*. Advance online publication. doi: 10.1037/a0024635

# The Contributions of Parental Attachment Bonds to College Student Development and Adjustment: A Meta-Analytic Review

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We report findings from a meta-analysis of 156 studies conducted between 1987 and 2009 ( $N = 32,969$ ) that examined the relationship between self-reported parental attachment and multiple adjustment outcomes and developmental advances during the college years. Overall, a small-to-medium relationship was found between indicators of parental attachment quality and favorable adjustment outcomes ( $r = .23$ ). Effect sizes were of similar magnitude for mother and father attachment relationships, for male and female students, and across ethnicity and nationality of the sample. The attachment–adjustment relationship varied somewhat according to the developmental task being investigated in the study, showing the strongest association for the task of separation–individuation. Additionally, we found stronger attachment–adjustment links for students residing away from their parents when compared with students living at home during college.

*Keywords:* parental attachment, college students, meta-analysis, psychosocial development, academic adjustment

In the public consciousness and across many traditional and contemporary theories of counseling and psychotherapy, the parent–child relationship is often considered a significant formative influence on an individual’s psychological and psychosocial functioning. Indeed, within one conceptual framework—attachment theory (Bowlby, 1969, 1973, 1980, 1988)—the security-regulating features of this relationship play a central role in forecasting trajectories of personal adjustment and development across the life span. Moreover, since its debut, this theory has inspired sustained lines of research involving infants and young children (Berlin, Cassidy, & Appleyard, 2008), adolescents (Benson, McWey, & Ross, 2006), adults (Shaver & Mikulincer, 2007), and the aged (Bradley & Cafferty, 2001) that have affirmed its life-span perspective and established its particular heuristic value to scientific inquiry in counseling psychology (Lopez, 1995, 2009; Lopez & Brennan, 2000).

In the counseling literature, researchers have devoted considerable attention to the role of parent–child emotional bonds in affecting the functioning of adolescents and young adults as these individuals grapple with the tasks of developing adult identities, making decisions about work and career, managing educational and peer-related stresses, and forming intimate partnerships. In general, these studies have drawn upon the inferential power of attachment theory as an organizational framework for understanding human competence and adaptation during this sensitive time period wherein persons must navigate a normative yet uniquely challenging life transition.

Given the breadth and wide-ranging emphases of inquiry in this domain, we sought to conduct a meta-analysis of this literature, focusing particular attention on studies of the contributions of parent–child attachment relationship to multiple indicators of college student adjustment and development. In preparing for this work, we could locate only three prior meta-analyses of attachment theory–informed studies of adolescents and young adults (Benson et al., 2006; Rice, 1990; Schneider, Atkinson, & Tardif, 2001). Although these investigations yielded valuable information, Schneider et al. (2001) exclusively focused on studies of parental attachment and peer competence in childhood and early adolescence and thus did not include college students. Moreover, whereas Benson et al. (2006) defined adolescence as the “second decade of life” (p. 36) and thus presumably included studies involving middle school, high school, and college samples, these investigators again limited their focus to the single domain of peer competence. Only the earliest meta-analysis (Rice, 1990) considered the findings of 28 studies (most of which involved college-age samples) conducted through 1990 that explored the contributions of parental attachment variables to multiple domains of

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We wish to thank Tiana Krum and Lauren Costley Greenberg for their tremendous assistance in coding the studies included in this meta-analysis and Brian Louie and Natalie LeQuang for their assistance with assessing reliability. We also wish to express our deep appreciation to the graduate students in Frederick G. Lopez’s Adult Attachment Research Team who reviewed the entire manuscript and provided excellent advice and feedback.

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adolescent adjustment. In this regard, it is noteworthy that in the 2 decades since Rice's (1990) review, over 100 studies of the parental attachment–college student adjustment link have been published. This impressive growth of scholarship was likely stimulated by the development of measures of parental attachment bonds such as the Inventory of Parental and Peer Attachment (IPPA; Armsden & Greenberg, 1987) and the Parental Attachment Questionnaire (PAQ; Kenny, 1987, 1990) that were only beginning to enjoy widespread use toward the end of Rice's review period.

In sum, the time seems ripe for another critical meta-analytic review of the literature examining the contributions of parental attachment bonds to college student adjustment, one that updates and extends the findings of these prior meta-analytic studies in meaningful ways. Toward this end, we sought to (a) consider the available literature on this topic through 2009 and to evaluate the overall strength of associations between college students' self-reported attachment bonds with parents and multiple indicators of their adjustment to the academic, social, and developmental tasks associated with college life; (b) explore whether the strength of these associations varied according to the specific adjustment domain under study; and (c) determine whether these associations were themselves moderated by student and/or parent gender or by the particular measures used to assess the quality of the parent–student attachment relationship.

Before pursuing these inquiry objectives and detailing our literature search parameters and study selection methods, we begin with a brief overview of those key assumptions and constructs within attachment theory that are relevant to our larger purposes. We then call attention to distinct measurement traditions and controversies within the attachment literature and comment on how constructs measured by self-reports of attachment bonds with parents may relate to other constructs within this broad, diverse, and rapidly expanding literature. Next, we justify our particular focus on college students by considering how the multiple adjustment challenges and developmental tasks faced by this reference group afford a unique context for assessing the contributions of parental attachment bonds to these students' transitional adjustments and developmental progress. Last, we detail the specific goals of the current meta-analysis related both to evaluating the overall relationship between parental attachment and college adjustment and to addressing some unanswered questions within this more circumscribed literature.

### Attachment Theory: A Brief Introduction

Through the collaborative work of John Bowlby and Mary Ainsworth, attachment theory emerged in the 1960s as a novel perspective on early personality formation. Drawing upon a rich mixture of ideas from evolution and systems theories, ethology, and cognitive science, Bowlby (1969, 1973, 1980) proposed that attachment—or the human propensity to seek proximity to caregivers during moments of discomfort or threat—functioned as an independent, innate, and enduring motivational system designed by natural selection to serve the survival needs of the young and thus to advance their ultimate reproductive success. Challenging both the traditional psychoanalytic ideas of the time and the explanatory limitations of behaviorism, Bowlby (1969) further argued that this unique regulatory system was principally respon-

sible for shaping the formation and quality of parent–child emotional bonds that would thereafter advance or inhibit the child's psychosocial development.

According to Bowlby (1973), within the first year of life, the child would cognitively represent early patterns of parental responsiveness to his or her bids for care and support to form an *internal working model of self and other* (IWM). This complex schema was believed to incorporate nascent self-perceptions of one's lovability, expectations regarding the dependability of caregivers, and interactional strategies for achieving a goal-corrected partnership with those caregivers around the management of threats to felt security. When infants experienced their primary caregivers as consistently warm, accessible, and responsive to their bids for care and support, a secure attachment bond (and IWM) was presumed to form, enabling the parent–child relationship to serve as a safe haven when the child experienced threats or frustrations that activated the attachment system, thus allaying this distress and returning the system itself to a quiescent state. In so doing, this dynamic concurrently enabled the parent–child relationship to serve as a secure base that supported and encouraged the infant's exploratory behavior and progressive environmental mastery. On the other hand, if caregivers were experienced as inconsistently responsive to or consistently rejecting of the infant's natural proximity-seeking needs, an insecure parent–child attachment bond would likely form. Such bonds would be characterized by either the excessive activation or the chronic deactivation of the attachment system, thus orienting the child's development along less optimal pathways. Through her classic Strange Situation observational studies of the interactions of mother–infant dyads during standardized episodes of separation and reunion, Ainsworth and her associates furnished empirical support for the operation of the attachment system and developed a reliable coding system for differentiating secure and insecure patterns of parent–infant attachment behaviors (Ainsworth, Blehar, Waters, & Wall, 1978).

Bowlby (1973) contended that, by internally representing these early relational patterns and experiences associated with proximity seeking, the child acquired the capacity to regulate his or her own attachment-related appraisals and behaviors in a manner that adapted to the caregiving resources and constraints afforded by the parent–child relationship. Moreover, because it imposed confirmatory biases on subsequent interactions with current and future caregiving figures, the IWM functioned as an organizational framework that promoted relatively stable patterns of intrapersonal and interpersonal functioning by effectively shaping later relationship experiences, appraisals, and outcomes. Bowlby 1973 nonetheless argued that, as a working model, the IWM remained capable of revision in the face of significant and model-disconfirming events and experiences and thus represented a context-sensitive schema.

### Measurement Traditions and Controversies in the Attachment Literature

#### Measurement Traditions

Inquiry into the nature of attachment has been vigorously pursued by scholars in developmental psychology and social psychology, resulting early on in independent lines of inquiry that reflected the distinct investigatory goals, core research questions,

and measurement traditions embedded within these academic disciplines. For instance, developmental psychologists largely sought to clarify the normative processes underlying attachment organization as well as its intergenerational transmission and continuity. Their early efforts thus focused significant attention on attachment dynamics in mother–infant dyads and relied upon careful observational methods (cf. Ainsworth et al.’s, 1978, Strange Situation studies) to detect reliable patterns in the child’s proximity-seeking behaviors for classifying these children into one of three attachment style prototypes (i.e., secure, anxious–ambivalent, avoidant). Later on, spurred by preliminary inquiries into the experiential backgrounds of the mother participants in Strange Situation studies, other developmental psychologists directed more attention to the nature of adult attachment. This led to the creation and progressive refinement of a semistructured interview procedure (the Adult Attachment Interview or AAI; George, Kaplan, & Main, 1985) and reliable coding systems for assessing variability in attachment organization based upon the discourse quality of adults’ transcribed responses to a set of standard questions exploring the nature of their early experiences with parents and other caregivers. Established AAI coding systems not only permitted classifying adults into one of several prototype categories (i.e., secure–autonomous, dismissing, preoccupied, and unresolved–disorganized) but also included continuously indexed rating scales for assessing the degree to which their responses demonstrated narrative coherence as well as propensities to experience either the chronic (hyper)activation or deactivation of the attachment system (see Bakermans-Kranenburg & van IJzendoorn, 2009, and Hesse, 2008, for more comprehensive discussions). Thus, research initiatives within the developmental tradition have favored use of observational and interview-based assessments for illuminating underlying patterns or themes in attachment behavior (i.e., states of mind) that, while not necessarily linked to a specific attachment figure, are nonetheless associated with capacities for adult caregiving (Allen, 2008).

By contrast, attachment research that emerged within the social psychological tradition focused comparatively less attention on early childhood attachment and on the normative development of attachment, preferring instead to assess and explore individual differences in attachment characteristics within adolescent and adult samples. Moreover, research within this tradition, while drawing either directly or indirectly upon attachment theory constructs and assumptions, has favored use of self-report measures variously designed to assess cognitive–affective features of participants’ relational experiences and expectations of parents, close peers, and romantic partners. For example, Hazan and Shaver (1987) created a categorical self-report measure wherein respondents could indicate which of three paragraphs, respectively describing adult versions of Ainsworth et al.’s (1978) infant attachment styles (i.e., secure, anxious, avoidant) best described their interpersonal orientations to their romantic partners. Somewhat later, Bartholomew and Horowitz (1991) presented evidence that Hazan and Shaver’s avoidant attachment style could be further differentiated into dismissing avoidant and fearful avoidant categories. These prototype descriptions, in turn, were subsequently decomposed into more specific item statements to create and validate continuously scaled measures of adult attachment (Collins & Read, 1990; Griffin & Bartholomew, 1994; Simpson, 1990), thus permitting factor analytic study of scores on these and other

self-report measures of attachment within adolescent and adult populations (Brennan, Clark, & Shaver, 1998). The latter investigation, sampling over 1,000 subjects and involving some 60 self-report measures of adolescent and adult attachment, yielded evidence that two orthogonal dimensions (i.e., anxiety, or fear of rejection and abandonment, and avoidance, or discomfort with interpersonal closeness and intimacy) appeared to underlie the nature of adult attachment organization and that Bartholomew and Horowitz’s four adult attachment styles logically mapped onto the two-dimensional space represented by these factors.

It is important to note, however, that although social psychological studies of attachment to parents have similarly favored use of continuously scaled self-report measures such as the IPPA, the PAQ, and the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), these investigations have not typically sought to transform their subscale scores into distinct parent–adolescent attachment styles or prototypes (although see Vivona, 2000, for an exception) or to even conceptually link them to anxiety and avoidance dimensions of adult attachment identified by Brennan et al. (1998)<sup>1</sup> but have instead focused on assessing the degree to which adolescents and young adults characterized their relational experiences with parents in terms of trust versus mistrust, caring versus neglect, support versus control, and open versus conflicted communication patterns. Nevertheless, in line with Bowlby’s (1969) core theoretical assumptions, variability in these continuous scores is meaningfully associated with the overall quality of attachment security in parent–adolescent attachment relationships (Kenny, 1987), a point we later return to and elaborate on.

## Controversies

Perhaps not surprisingly, the concurrent evolution of attachment research within different academic traditions favoring distinct measurement approaches to attachment-related inquiry within different age groups and developmental contexts has led to some controversies and debates regarding inconsistent findings, as well as to more recent rapprochement-related commentary within this literature (Roisman, 2009). For example, studies comparing interview and self-report methods of classifying adults into distinct attachment style categories have yielded, at best, only weakly correspondent findings, prompting some scholars to question whether these methods were measuring a common construct and others to claim that, because of their less transparent assessment strategies, interview-based methods tapped the more implicit nature of adult attachment and were thus superior to self-report methods that require conscious self-appraisals (see review by Mikulincer & Shaver, 2007). However, others have noted that, despite their classification inconsistencies, attachment characteristics assessed by interview-based and self-report methods have been frequently related in similar (and theoretically consistent) ways to a number of outcome variables and that studies using similar methods have yielded correspondent findings (Bartholomew & Shaver, 1998).

Other debates have prompted inquiry as to whether adults possess a singular (i.e., generalized) model or multiple, relationship-specific models. On this issue, Collins and Read (1994) proposed

<sup>1</sup> The IPPA subscales were part of their factor analytic study.

that both types of adult attachment models exist and are hierarchically organized (with relationship-specific models nested below general models) and that relationship-specific measures explain some unique variability in attachment-related outcomes. These arguments have subsequently received empirical support (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996; Klohnen, Weller, Luo, & Choe, 2005; Overall, Fletcher, & Friesen, 2003).

Taken together, the above controversies and findings have led others to conclude that each measurement tradition offers potentially complementary perspectives on how internalized models of attachment relationships shape attachment behavior through distinct yet “equally valid streams of influence” (Collins, Guichard, Ford, & Feeney, 2004, p. 209). In line with this conclusion, we return now to our decision to limit our meta-analysis to studies using self-report measures of parent–adolescent attachment. We contend that, because attachment dynamics are likely to vary somewhat within different age groups, relationships, and developmental periods, closer study of outcome-related effect sizes (ESs) obtained by investigations using similar assessment methods (e.g., self-report) and focusing on how individuals within a particular developmental context (e.g., college students) describe their experiences within particular attachment relationships (e.g., parents) are clearly warranted.

With this objective in mind, we hypothesized that, within college populations, self-reported experiences of parental warmth and caring indicate that parental relationships are competently serving safe haven functions and that experiences of open communication and high levels of autonomy-related encouragement from parents indicate that these relationships are additionally serving important secure base functions. In line with theory, we reasoned that both functions should contribute to college students’ overall sense of attachment security and thus be conceptually related (negatively) to the anxiety and avoidance dimensions identified within the broader literature on adult attachment. As such, we conjectured that indicators of parental attachment security should be positively and comparably related to multiple indicators of college students’ adaptational competence in dealing with the demands of their particular adjustment context.

### **The College Years: Emerging Adulthood as a Strange Situation**

Currently in the United States, approximately two thirds of students who complete their high school education go on to college. However, of this number, about 25% drop out after their first year, and only slightly more than half of those attending 4-year institutions (58.4%) complete their baccalaureate degrees within 6 years of their first enrollment (National Center for Educational Statistics, 2008). These statistics alone suggest the presence of considerable variability in adjustment outcomes during the college years. Furthermore, the pursuit of a college degree likely ushers in a critical developmental period often marked by students’ initial physical relocation away from the parental home and accompanied by increased legal and social freedoms (e.g., the right to purchase tobacco products, gain easier access to alcohol, obtain bank credit cards, and select among various academic choice options), diminished parental oversight and supervision, exploration of one’s sexuality and development of romantic bonds that may supersede parental connections, exposure to new peer communities and new

academic and financial responsibilities, and heightened contextual demands for self-discipline and autonomous functioning.

Referring to Ainsworth et al.’s (1978) paradigmatic studies of infant attachment security, Kenny (1987) proposed that

According to Ainsworth et al.’s model (1978), the securely attached child separates readily from the caregiver when separation is voluntary and when stress is low. When stress is high, the child actively seeks out and maintains contact with the attachment figure until comforted. For the securely attached adolescent, leaving home for college is likely to be perceived as an opportunity for environmental exploration and mastery. If parents remain important as a secure base, the college student would continue to seek them out in situations of stress and would view them as still available as a source of support when needed in a way that does not threaten but supports the development of autonomy. (Kenny, 1987, pp. 18–19)

More recently, Arnett (2004) argued that *emerging adulthood*, defined as the years between the late teens and the late 20s, represents a dynamic and uncertain life period for individuals in postindustrial societies, distinct from the characteristic features of either late adolescence or young adulthood. Emerging adults exhibit considerably greater demographic, educational, and lifestyle diversity relative to late adolescents and are more fully immersed in intense identity-related explorations concerning work, education, sex, and intimate relationships prior to establishing financial self-sufficiency and making other firm commitments to independent living that typically signal the adaptive entry into young adulthood (National Opinion Research Center, 2003). According to Arnett,

Emerging adults have become more independent of their parents and most have left home, but they have not yet entered the stable, enduring commitments typical of adult life, such as a long-term job, marriage, and parenthood. During this interval of years, when they are neither beholden to their parents nor committed to a web of adult roles, they have an exceptional opportunity to try out different ways of living and different options for love and work. (Arnett, 2004, p. 8)

The above perspectives suggest that the confluence of multiple contextual and developmental pressures during the college years creates a potent experiential milieu of demands, distractions, possibilities, and temptations—one that should test college students’ capacities for self-reflection, affect regulation, social support seeking, relationship building, cultural tolerance, and adaptive life planning and decision making. Clearly, the outcomes of these adjustment processes are not inconsequential, as students’ success or difficulty in addressing these life challenges may have far-reaching impacts on their emotional, social, career, and civic development. As such, we contend that the college years may present an especially meaningful venue for assessing how the security-related features of students’ attachment bonds with their parents contribute to these important adjustment processes and outcomes.

### **Goals and Hypotheses of the Current Meta-Analysis**

The overarching goal of the current meta-analysis was to integrate findings from studies that examined links between student reports of their attachment relationships with their parents and multiple indicators of their adjustment to college life and their developmental progress with tasks associated with emerging adult-

hood. As of this writing, this line of research includes over 130 published or unpublished studies that focus on college students, include a self-report measure of parent–adolescent attachment, and assess one or more features of adjustment and/or developmental outcomes (our specific criteria regarding inclusion of studies in the current meta-analysis are more fully described below).

Beyond assessing the overall strength of the relationship between attachment and college adjustment, we examined a number of demographic and methodological variables that, based on attachment theory, we hypothesized may moderate the attachment–adjustment link. With regard to demographics, we examined first the moderating effect of gender on attachment outcomes. On the basis of attachment theory and notions of differential socialization, a number of theorists have suggested that adolescent males and females face somewhat different developmental challenges during adolescence, with females struggling to establish autonomy within close-knit familial relations and males trying to avoid a sense of isolation under the pressures to conform to societal expectations for independent functioning (Chodorow, 1991; Josselson, 1987). Given these different pressures, an ongoing secure attachment relationship may be particularly beneficial to female adjustment outcomes within domains of self-oriented competence (such as academic competence and self-assertiveness), whereas it may be particularly important for male adjustment in domains of relational competence, such as interpersonal competence and lack of externalizing behavior problems. In the current meta-analysis, we examined these intriguing gender possibilities by considering the moderating effect of student gender and parent gender across multiple dimensions of adjustment outcomes.

Second, based on Kenny's (1987) suggestion that the college environment represents a kind of Strange Situation, we speculated that a secure parental attachment relationship will be more closely related to adjustment outcomes for students who live away from their parents while at college and thus more likely to experience homesickness or safe haven needs than for students who live with their parents during the college years. In support of this idea, Larose and Boivin (1998) showed that residential students experience greater loneliness during the college transition than do students still living at home. In a more exploratory way, we also examined a number of other demographic variables, such as ethnicity, year in school, and family configuration, to assess the applicability and generalizability of the attachment–adjustment link to a wide range of college students.

We also examined a number of methodological moderators of the attachment–adjustment relationship in college students. First, we focused on the possibility that the attachment–adjustment link may be moderated by the type of parental attachment measure used in the study. Since 1987 (the year in which the PAQ and the IPPA were published), the vast majority of studies in this field have used the PAQ, the IPPA, or the PBI to assess parental attachment. Although these instruments share a similar conceptualization of the parent–adolescent attachment relationship (emphasizing, as mentioned above, the safe haven and secure base features of the parent–adolescent attachment relationship) and all possess excellent psychometric properties (internal consistency [Cronbach's alpha] estimates range from .75 to .95 for each subscale of each instrument), they differ somewhat in their ways of measuring these attachment features and in their instructions to the respondent. First, although all three instruments include comparable subscales

to assess safe haven concerns (Care subscale of the PBI, Trust subscale of the IPPA, and Affective Quality of the Relationship subscale of the PAQ), secure base features are assessed somewhat differently across the three instruments, with the PBI (Overprotection subscale) and the PAQ (Parental Fostering of Autonomy subscale) emphasizing autonomy encouragement as an indicator of a secure base relationship and the IPPA (Communication subscale) highlighting open communication as fostering secure base behavior. Second, while the PBI instructs students to retrospectively report on their relationships with their parents while growing up (i.e., during their first 16 years of life), the IPPA and PAQ ask students to report on the current parent–adolescent attachment relationship. Because these three instruments have frequently been used to assess the parent–student attachment relationship during the late adolescent years, it seemed prudent to examine whether these differing assessment strategies yielded unique effects on adjustment dimensions. Indeed, Benson et al.'s (2006) meta-analysis found that four of 13 measures of parental attachment (including the IPPA) were more strongly associated with social competence and relationship quality than were the remaining measures (which unfortunately were not fully specified in their study).

Second, we examined whether the type of adjustment domains focused on in the study moderated the relationship between attachment and outcome. This is a particularly important issue to examine because some researchers argue that attachment should be associated with a narrow range of developmental outcomes, primarily peer competence and intimate relationship satisfaction (Berlin et al., 2008; Schneider et al., 2001), whereas others suggest that a history of secure attachment provides the cognitive template for a healthy sense of self as well as positive expectations from others and thus may be linked to a broader range of competencies in young adult populations (Lopez & Brennan, 2000; Sroufe, Egeland, Carlson, & Collins, 2005). Despite the fact that research on parental attachment and college adjustment has examined a wide variety of outcomes and developmental advances, including academic achievement, social competence, self-worth, affective states (depression, anxiety, anger, shame, etc.), symptomatic difficulties (eating disorders, substance abuse, delinquent behavior, sexual promiscuity, etc.), ego-identity development, career identity, gender identity, and separation and individuation from parents, previous meta-analyses limited their scope to examining the effects of parental attachment on relational competencies in adolescents. To provide a more comprehensive and sensitive examination of the effects of attachment, we devised a coding system that organizes the broad range of dependent measures into five outcome megadomains (the development and validation of this coding system are more fully detailed below).

Finally, we sought to determine whether the attachment–adjustment link was moderated by the varying methodological quality of studies included in this area of research. Specifically, we examined a number of indicators of methodological quality that were available for coding from the original studies, including publication status of the study (journal publication vs. unpublished dissertation), reliability of the predictor and outcome variables, study design (cross-sectional vs. longitudinal), and type of university at which the study was conducted.

## Method

### Retrieval of Studies

We conducted computerized searches of PsycINFO, Medline, ERIC (Education Resources Information Center), and Dissertation Abstracts to identify studies for possible inclusion in our meta-analysis. Key search terms used were *attachment behavior*, *parental attachment*, *parent child relations*, *college students*, and *college adjustment*. We set parameters to limit studies to those with adolescents or young adult participants (age range: 18–29 years) that were published through 2009. Our initial search efforts yielded over 800 citations, including many studies of attachment style or adult romantic attachment that did not focus specifically on attachment to parents. Ultimately, we retained 163 published reports and 74 unpublished dissertations that appeared to relate to parental attachment and college adjustment. To supplement these electronic searches, we also examined the reference sections of many studies on parental attachment and college adjustment to identify additional relevant studies and contacted colleagues who have done significant research in this area (David Blustein, Maureen Kenny, Frederick Lopez, and Kenneth Rice) to request any additional published or unpublished studies they might be familiar with or have conducted on parental attachment and college adjustment (three additional unpublished conference papers were retrieved this way). A complete listing of all included studies is provided in Table 1.

### Criteria for Inclusion

The search procedures identified above yielded a total of 240 published studies or dissertations for possible inclusion in our meta-analysis. However, a number of these studies turned out to be inappropriate or unusable. For a study to be included in the present analyses, it had to meet the following criteria:

1. The sample consisted of students in an undergraduate institution, either a 2-year community college or 4-year university (20 published studies examined parental attachment and adjustment in young adult individuals who were not college students).
2. The study included a clearly identifiable measure of attachment to parents that was linked to at least one independent measure of college adjustment (18 published studies and 10 dissertations were eliminated because of this criterion; we also eliminated 12 published studies that examined the link between attachment representations on the AAI [George et al., 1985] and college adjustment. Although the AAI does ask about attachment experiences with parents while growing up, the scoring of the instrument focuses specifically on states of mind with regard to generalized attachment representations [e.g., secure vs. dismissing vs. preoccupied] and as such is more similar to adult attachment representation scales [such as the Experience in Close Relationships Questionnaire; Brennan et al., 1998] than it is to a measure of parental attachment relationships).
3. The report was written in English, and we were able to retrieve it through our library's system or through inter-

library loan (five published reports were not included because they were not written in English, and 15 dissertations were not included because we could not retrieve them through our library system or through interlibrary loan).

4. There was no published version of the dissertation (six dissertations were excluded in favor of a published version of the study that was found in the database).
5. The study included usable or adequate statistical analyses from which to calculate an ES (11 published studies and three dissertations were eliminated because of this criterion).

In addition, one study (Ying, Lee, & Tsai, 2007a) was eliminated because it reported findings from the exact same sample as a previous study. Regarding Criterion 5, the three dissertations included only qualitative data, whereas the 11 published reports utilized multivariate analytic procedures (e.g., canonical correlation or structural equation modeling) without including a table of correlations. Although the authors of these published reports were contacted and asked to provide available correlations, we received only one response, a table of correlations that we were able to include in the meta-analysis.

Ultimately, 156 studies (113 published reports [108 single-study reports plus five reports that included results of two different studies that were included separately in the meta-analysis; see Table 1 for details], three unpublished conference papers, and 40 dissertations) met all inclusion criteria, with a combined sample of 32,969 students (61.7% female). Table 1 lists published and unpublished studies included in the meta-analysis. As this table demonstrates, the studies were conducted all over the United States and in a number of other countries (e.g., Canada, Greece, Israel, Malaysia, Portugal, and Turkey). Although the studies included an extremely wide range of adjustment measures, they used a relatively narrow range of attachment measures, primarily the IPPA, PAQ, and PBI, along with a few self-created or adapted measures. We detail below our methods for coding each of these studies.

### Coding of Study Features

Coding of the 156 studies proceeded in two steps. In the first step, the following information was recorded for each study as a whole: (a) approximate size of undergraduate institution (community college, 4-year small university with under 5,000 students [S4 according to the Carnegie Foundation for the Advancement of Teaching's, n.d., categorization system;], or 4-year major university with over 10,000 students [Carnegie type L4]; a few studies utilized participants from multiple universities [ $k = 12$ ]; 10 of these 12 studies were excluded from the analyses below examining university size as a moderator of the attachment–adjustment link because the universities within those studies differed substantially in size), (b) location of the university (North, South, Midwest, West coast, or outside the U.S.A.), (c) longitudinal versus cross-sectional design study, (d) internal consistency (alpha) reliability of the parental attachment and college adjustment measures if computed for that study, (e) demographic characteristics of the sample (mean age, ethnic and gender composition, family config-

Table 1

*Sample Size, University Location, Attachment and Outcome Measures, and Overall Effect Sizes for All Studies in the Meta-Analysis*

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
<b>Published reports</b>						
Anderson & Fleming (1986)	132	University of Connecticut	Other attachment measure (Intergenerational Intimacy Scale)	College adjustment (College Maladjustment Scale)	1	.02
Armsden & Greenberg (1987)	86	University of Washington	IPPA	Ego identity (EIS) Depression, anger, and alienation (Affective Status Index)	5 3	.49
Aspelmeier, Elliott, & Smith (2007)	324	Undeterminable	IPPA	Self-esteem (TSCS) History of childhood trauma (Sexual Experiences Questionnaire)	4 99	.30
Barrett & Holmes (2001)	161	Griffith University (Australia)	PBI	Trauma symptoms (Trauma Symptom Inventory) Social threat cognitive biases, prosocial behavior, interpersonal problems, anger (Cognitive Interpretation Task)	3 2, 3	.55
Bell, Forthun, & Sun (2000)	470	Texas Tech University	IPPA	Social competence and coping skills (OSIQ) Substance abuse (author-developed measure focusing on negative effects of marijuana use)	2, 3 3	.35
Benson, Harris, & Rogers (1992)	268	Undeterminable	IPPA	Autonomy (EPSI) Identity achievement, foreclosure, moratorium, and diffusion (EOMEIS-2)	5 5	.143
Berman, Heiss, & Sperling (1994)	216	Multiple institutions on the East Coast	Other attachment measure (Continued Attachment Scale)	Trait affiliation (Personality Research Form), Interpersonal problems (Bell Object Relations Inventory), and loneliness (UCLA Loneliness Scale)	2	.047
Berman & Sperling (1991)	89	Fordham University	Other attachment measure (2 self-created scales assessing preoccupation and concern with attachment figure)	Anxiety (STAI), depression (BDI), and anger/aggression (Buss-Durkee Scale of Verbal Aggression) Depression (Profile of Mood States)	3 3	.28
Blazina (2001)	172	University of Houston	IPPA	Gender-role conflict (GRCS)	5	.17
Brack, Gay, & Matheny (1993)	60	Undeterminable	IPPA	Structuring, problem solving, self-disclosure, acceptance, social support, physical health, physical fitness, stress monitoring, tension control, self-directedness, and confidence (Coping Resources Inventory for Stress)	1, 2, 3, 4	.28
E. Bradford & Lyddon (1993)	157	University of Southern Mississippi	IPPA	Relationship satisfaction (DAS) Overall symptoms (Hopkins Symptom Checklist)	2 3	.49

*(table continues)*



Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Carnelley, Pietromonaco, & Jaffe (1994)	163	Undeterminable	Other attachment measure (developed positive experiences index from combining other measures)	Relationship satisfaction, intimacy with romantic partner (measure adapted from Schuster, Kessler, & Aseltine, 1990), constructive conflict resolution (Conflict Style Inventory)	2	.34
Cavell, Jones, Runyan, Constantin-Page, & Velasquez (1993)	171	Texas A&M University	IPPA	Depression (BDI)	3	.22
				Interpersonal problems (IIP)	2	
Cheng & Mallinckrodt (2009)	224	University of Missouri—Columbia	PBI	Alcohol use (Adolescent Alcohol Involvement Scale), overall symptoms (SCL-90-R)	3	.27
				Satisfaction with physical appearance (MBSRQ Body Area Satisfaction subscale)	4	
Cummings-Robeau, Lopez, & Rice (2009)	217	Undeterminable	IPPA	Interpersonal problems and anger (IIP Personality Disorders scales)	2, 3	.25
DeFranc & Mahalik (2002)	204	Boston College	PAQ	Gender-role conflict (GRCS), masculine gender-role stress (MGRSS), conflictual independence from parents (PSI)	5	.10
De Jong (1992)	126	Boston University	IPPA	Depression (Brief Symptom Index–Depression Scale)	3	.20
Diaz, Lizardi, & Rivera (2008)	119	Undeterminable	PBI	Depression (Inventory to Diagnose Depression—Lifetime Version)	3	.205
Ensign, Scherman, & Clark (1998)	101	University of Oklahoma	PAQ	Intimacy with romantic partners (attitudes toward love and intimacy with romantic partner)	2	.16
Fass & Tubman (2002)	357	Undeterminable	IPPA	Academic competence (SPPCS), GPA (self-reported)	1	.30
				Self Esteem (RSES), locus of control (Locus of Control Scale), optimism (Life Orientation Test)	4	
Feeney (2002)	101	Undeterminable	PBI	Androgyny (BSRI)	5	.14
Felsman & Blustein (1999)	147	State University of New York, Albany	IPPA	Social support (PSOC)	2	.07
				Career exploration (CES), commitment to career choices (VECS)	5	
Fischer & Good (1998)	195	Undeterminable	PAQ and IPPA	Gender-role conflict (GRCS), masculine gender-role stress (MGRSS)	5	.29
				Conflictual independence (PSI)	5	
Forbes & Adams-Curtis (2000)	395	Millikin University	IPPA	Gender-role identity (Personal Attributes Questionnaire)	5	.20
Frey, Beesley, & Miller (2006)	246	University of Oklahoma	PAQ	Relationship satisfaction (Relational Health Indices)	2	.34
				Overall symptoms (Outcome Questionnaire 45)	3	
Fukunishi et al. (1997) <sup>d</sup>						
Study 1	232	Undeterminable university in Japan	PBI	Alexithymia (Toronto Alexithymia Scale)	3	.168
Study 2	156	Undeterminable	PBI	Alexithymia	3	.185
Gnaulati & Heine (1997)	207	Undeterminable	PBI	Religiosity (two items from the SITA)	99	.00

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Goldberg & O'Brien (2005)	115	University of Maryland (College Park)	IPPA	Psychological distress (College Adjustment Scales) Attitudinal, emotional, functional, and conflictual independence (PSI) Jewish identity (Jewish Identity Questionnaire)	3 5 99	.51
Granqvist & Hagekull (1999)	156	Uppsala University (Sweden)	Other attachment measure (parent prototypes adapted from Hazen & Shaver, 1983, measure)	Religiosity (emotion-based religiosity scale developed by authors)	99	.05
Gratz, Conrad, & Roemer (2002)	133	University of Massachusetts at Amherst	PAQ	Deliberate self-harm (Deliberate Self-Harm Inventory)	3	.215
Greenberger & McLaughlin (1998)	157	University of California, Irvine	Other attachment measure (prototype descriptions of attachment to parent derived from Collins & Read, 1990)	Problem solving, social support, instrumental support (COPE Inventory)  Healthy attributions (Attributional Style Questionnaire)	1, 2, 3  4	.20
Gutzwiller, Oliver, & Katz (2003)	306	Undeterminable	PBI	Eating disorders (Questionnaire for Eating Disorder Diagnoses)	3	.17
Hagerty, Williams, & Oe (2002)	350	Undeterminable	PBI	Social support (Sense of Belonging Instrument)	2	.18
Haigler, Day, & Marshall (1995)	218	Collin County Community College	IPPA	Gender-role identity (BSRI)		.23
Hannum & Dvorak (2004)	95	University of Illinois at Urbana-Champaign	PAQ	Social adjustment (SACQ), overall symptoms (BSI)	2, 3	.357
Hart & Kenny (1997)	156	Boston College	PAQ	Drive for thinness, body dissatisfaction, bulimia, ineffectiveness, and maturity fears (EDI)  Importance of physical appearance (Importance of Appearance Scale) Super Woman Scale	3  4 99	.21
Heiss, Berman, & Sperling (1996)	216	Fordham University	Combined attachment measure (factor score combining all PAQ subscales, PBI mother Care subscale, and PBI mother and father Overprotective subscale)	Loneliness (UCLA Loneliness Scale), interpersonal dependency (Measure of Interpersonal Dependency), and trait affiliation (Personality Research Form)	2	.16
				Anxiety (STAI), depression (DEQ)	3	
Hiester, Nordstrom, & Swenson (2009)	271	Misericordia University and Pennsylvania State University, Hazleton	IPPA	Overall symptoms (BSI), self-confidence (SPPCS)  Academic, social and personal-emotional adjustment and institutional attachment (SACQ)	3, 4  1, 2, 3	.383
Hinderlie & Kenny (2002)	186	Undeterminable	PAQ	Social support (People in My Life Scale)  Academic, social, and personal-emotional adjustment (SACQ)	2  1, 2, 3	.24
Holmbeck & Wandrei (1993)	440	Undeterminable	PAQ	Social support (ISEL) Depression (BDI), anxiety (STAI), physical symptoms (Wahler Physical Symptoms Inventory) Self-esteem (RSES)	2 3 4	.28

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Huff (2001)	110	Westmont College and Biola University	PAQ	Overall college adjustment (combined score from three measures: Social Support Questionnaire, Homecomer Culture Shock Scale, and SACQ)	1	.15
Imamoğlu & Imamoğlu (2007)	168	Undeterminable (2 universities in Turkey)	Other measure (adapted Relationship Questionnaire to ask about parents)	Trait affiliation (Relatedness subscale of the BID)	2	.32
Kalsner & Pistole (2003)	252	Undeterminable	PAQ	Personal identity (Individuation subscales of the BID) Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.10
Kenny (1987)	173	University of Pennsylvania	PAQ	Social competence and assertiveness (Dating and Assertiveness Questionnaire)	2, 4	.36
Kenny & Donaldson (1991)	226	Boston College	PAQ	Social competence (Texas Social Behavior Inventory)	2	.16
Kenny, Griffiths, & Grossman (2005)	285	Undeterminable	PAQ	Overall symptoms (HSCL) Social competence, self-confidence, and career self-efficacy (OSIQ)	3 2, 4, 5	.14
Kenny & Hart (1992) <sup>c</sup>	162	Boston College	PAQ	Ethnic identity (MEIM) Drive for thinness, body dissatisfaction, bulimia, ineffectiveness, and maturity fears (EDI)	99 3	.07
Kenny & Perez (1996)	172	Boston College	PAQ	Interpersonal sensitivity, depression, and anxiety (HSCL)	2, 3	.16
Kerns & Stevens (1996)	112	Kent State University	Other attachment measure (modified Adult Attachment Scale to ask about mother and father)	Loneliness (UCLA Loneliness Scale), quantity and quality of social interactions (used daily log methodology)	2	.08
Ketterson & Blustein (1997)	137	University at Albany, State University of New York	IPPA	Anger, anxiety, ego resiliency, and ego undercontrol (peer-rated reports using methodology of Kobak & Sceery, 1988)	3, 5	
Laible (2007)	117	Undeterminable	IPPA	Career exploration (CES)	5	.04
Laible, Carlo, & Roesch (2004)	246	Southern Methodist University	IPPA	Empathy (IRQ), prosocial behavior (Prosocial Tendencies Measure)	2	.21
Lapsley, Rice, & Fitzgerald (1990)	253	University of Notre Dame	IPPA	Expression of positive and negative affect (Self-Expressiveness Questionnaire), awareness of moods (Toronto Alexithymia Scale), anger/irritability (WAI)	3	
				Empathy (IRQ), prosocial behavior (Index of Prosocial Responding)	2	.21
				Anger (WAI)	3	
				Self-esteem (RSES)	4	
				Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.25
				Social and personal identity (Aspects of Identity Questionnaire)	2, 5	

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Larose & Boivin (1998)	298	Laval University (Quebec City, Quebec, Canada)	IPPA	Social support (ISEL), loneliness (UCLA Loneliness Scale)	2	.10
				Anxiety (Interaction Anxiousness Scale)	3	
Leas & Mellor (2000)	108	Deakin University (Melbourne, Australia)	IPPA	Depression (BDI), risky behaviors (Adolescent Risk-Taking Questionnaire), delinquent behaviors (Australian Self-Report Delinquency Scale)	3	.17
Lease & Dahlbeck (2009)	214	University of Memphis	PAQ	Career self-efficacy (Assessment of Attributions for Career Decision Making and CDMSE)	5	.043
Leondari & Kiosseoglou (2000)	153	Florina Aristotelion University of Thessalonki (Greece)	IPPA	Conflictual, functional, attitudinal, and emotional independence (PSI)	5	.52
Leondari & Kiosseoglou (2002)	319	Undeterminable	IPPA	Social self-efficacy (SOC)	2	.12
				Expression of positive and negative affect (PANAS)	3	
				Self-esteem (RSES), locus of control (SOC)	4	
Lopez (1997)	142	University of New Mexico	PBI	Academic competence (adapted from Mastery Learning Scale), school attachment (SACQ), GPA (reported on by the students), student-professor attachment style (scale adapted by authors from the Attachment Style Inventory)	1	.01
Lopez, Fuendeling, Thomas, & Sagula (1997)	253	Michigan State University	PBI	Coping and stress level (single-item scales developed by authors)	3	-.02
				Use of splitting as a defense	5	
Lopez & Hsu (2002) <sup>d</sup> Study 1	127	Undeterminable	Other measure (P-AASQ)	Overall symptoms (PPI), overall coping (suppressive coping from the Problem-Focused Style of Coping)	3	.240
				Use of splitting as a defense	5	
Study 2	207	Undeterminable	Other measure (P-AASQ)	Overall symptoms (PPI), use of splitting as a defense	3, 5	.190
Love (2008)	167	Undeterminable	PBI	Depression and anxiety (CPAS)	3	.16
Love & Murdock (2004)	173	Undeterminable	PBI	Satisfaction with life (CPAS)	3	.09
Love et al. (2009)	147	Multiple institutions: historically Black colleges and universities	IPPA	Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.140
Lutwak & Ferrari (1997)	404	Undeterminable	PBI	Social avoidance (Social Avoidance Scale), fear of negative social evaluation (Fear of Negative Evaluation Scale)	2	.13
				Shame (adapted shame scale)	3	
Mallinckrodt (1992)	253	Undeterminable	PBI	Social self-efficacy (SES), social support (SPS)	2	.08
				Locus of control (Multidimensional-Multiattributinal Causality Scale), general self-efficacy (SES)	4	

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Mattanah, Hancock, & Brand (2004)	404	Towson University	IPPA	Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.30
				Loneliness (UCLA Loneliness Scale)	2	
				Depression (BDI)	3	
McCarthy (1998)	256	University of Texas at Austin	IPPA	Separation anxiety (SITA)	5	.34
				Awareness of mood and emotion regulation capacity (NMRS)	3	
McCarthy, Lambert, & Moller (2006)	390	University of Texas at Austin	PAQ and IPPA	Social support, acceptance, stress monitoring, and self-confidence (Personal Resources Inventory)	2, 3, 4	.22
				Loneliness (UCLA Loneliness Scale)	2	
				Depression (BHS), expression of negative affect (PANAS), management of negative moods (NMRS), overall symptoms (HSCL)	3	
McCarthy, Moller, & Fouladi (2001)	200	Undeterminable	PBI	Awareness of mood and mood regulation (NMRS, TMMS), worry (White Bear Suppression Index), stress level (PSS)	3	.27
McCormick & Kennedy (1994)	218	Georgia Southern University	MFP	Self-esteem (CSEI)	4	.40
McCormick & Kennedy (2000)	236	Undeterminable	MFP	Self-esteem (CSEI)	4	.388
McCurdy (1996)	90	Undeterminable	PAQ	Self-esteem (RSES)	4	.137
McCutcheon, Scott, Arguete, & Parker (2006)	299	Undeterminable	PBI	Celebrity stalking (author-created scale of obsessive and stalking behavior)	3	.20
McDonald, Beck, Allison, & Norsworthy (2005)	101	Abilene Christian University	PBI and PAQ	Attachment to God (adapted from Brennan, Clark, & Shaver's, 1998, ECR to ask about attachment to God)	99	.19
Miller & Hoicowitz (2004)	118	Undeterminable	Other measure (adapted ECR for ratings of Parents)	Quality of social interactions and intimacy with romantic partners (author-developed single-item rating of quality of peer and romantic relationships)	2	.17
Moller, Fouladi, McCarthy, & Hatch (2003)	261	University of Texas at Austin	IPPA	Social support (PSOC, Social Connectedness Scale), loneliness (UCLA Loneliness Scale)	2	.29
				Overall symptoms (HSCL), stress level (PSS), depression (BHS)	3	
Mothersead, Kivlighan, & Wynkoop (1998)	152	Undeterminable	IPPA and PAQ	Interpersonal problems (IIP), fear of negative social evaluation (Risk in Intimacy Inventory)	2	.32
				Locus of control (Interpersonal Control Scale)	4	
Noppe & Noppe (1997)	33	University of Wisconsin—Green Bay	IPPA	Risky behaviors (scale developed by author including items on drunk driving, unprotected sex, and smoking)	3	.29
O'Brien, Friedman, Tipton, & Linn (2000)	207	Undeterminable	IPPA	Career search self-efficacy (CDMSE), career aspirations (Career Aspiration Scale)	5	.20
				Functional, attitudinal, and emotional independence from parents (PSI)	5	

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Perry, Silvera, Neilands, Rosenvinge, & Hanssen (2008) <sup>d</sup>						
Study 1	166	Northern Kentucky University	PBI	Eating disorders (EDS-5)	3	.22
Study 2	233	Bodo University (Norway)	PBI	Eating disorders (EDS-5)	3	.33
Quintana & Lapsley (1987)	101	Undeterminable	IPPA	Ego identity (EIS, Eriksonian measure of ego identity)	5	.26
Rice & Cummins (1996)	140	Purdue University	PBI	Social self-efficacy (SES)	2	.19
Rice, Cunningham, & Young (1997)	630	Northeastern Louisiana University	IPPA	Self-esteem (RSES)	4	.22
				Social self-efficacy (SES), social adjustment (SACQ)	2	
				Personal-emotional adjustment (SACQ), depression (Kandel Depression Scale)	3	
Rice, FitzGerald, Whaley, & Gibbs (1995) <sup>d</sup>						
Study 1	223	Undeterminable	IPPA	Satisfaction with college life, social competence, and personal efficacy (CIAA)	1, 2, 4	.35
				Conflictual, attitudinal, emotional, and functional independence (PSI), separation anxiety (SITA)	5	
				Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	
Study 2	130	Undeterminable	IPPA	Satisfaction with college life, social competence, and personal efficacy (CIAA)	1, 2, 4	.25
				Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	
				Conflictual, attitudinal, emotional, and functional independence (PSI), separation anxiety (SITA)	5	
Rice & Whaley (1994)	131	Purdue University	IPPA	Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.28
Richman & Flaherty (1987)		University of Illinois at Chicago	PBI	Social support (Social Support Network Inventory)	2	.07
				Depression (CES-D)	3	
				Locus of control and self-esteem (RSES)	4	
Ryan, Solberg, & Brown (1996)	220	Undeterminable	IPPA	Career self-efficacy (Career Search Self-Efficacy Scale)	5	.33
Schultheiss & Blustein (1994)	139	University at Albany, State University of New York	IPPA	Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.32
				Establishing and clarifying purpose (SDTLI)	5	
				Conflictual, attitudinal, and emotional independence (PSI)	5	
Schwartz & Buboltz (2004)	368	Louisiana Tech University	IPPA	Conflictual, attitudinal, emotional, and functional independence (PSI)	5	-.11
A. B. Scott & Mallinckrodt (2005)	41	Multiple, undeterminable institutions	PBI	Self-efficacy (Science Self-Efficacy subscale of the Self-Efficacy for Technical/Scientific Fields)	4	.158

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
D. J. Scott & Church (2001)	287	Washington State University	PAQ	Career exploration (TTFS), commitment to career choices (VECS)	5	.341
Sideridis & Kafetsios (2008)	58	University of Crete (Greece)	PBI	Worry (Fear of Failure Scale)	3	.24
Sim & Ng (2007)	114	Unspecified university in Malaysia	PAQ	Academic adjustment (author-created scale)	1	.19
				Social adjustment (author-created scale)	2	
				Expression of positive affect (PANAS), expression of negative affect (PANAS), stress level (Stress Appraisal Measure)	3	
Soucy & Larose (2000)	158	3 unspecified universities in Quebec, Canada	IPPA	Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.08
				GPA (objectively recorded)	1	
Strahan (1995)	249	Avondale College (Australia)	PBI	Depression (CES-D)	3	.230
Styron & Janoff-Bulman (1997)	879	University of Massachusetts at Amherst	Other attachment measure (attachment to parent prototypes adapted from Hazan & Shaver's, 1987, measure of adult romantic attachment)	Depression (BDI) History of childhood trauma (scale developed by author measures history of verbal, physical, and sexual abuse)	3 99	.44
Vivona (2000) <sup>d</sup> Study 1	159	The College of New Jersey	IPPA	Worry (Penn State Worry Scale), anxiety (BAS), depression (BDI)	3	.26
Study 2	170	The College of New Jersey	IPPA	Worry (Worry Domains Questionnaire), anxiety (BAS), depression (BDI)	3	.25
				Academic, social, and personal adjustment (SACQ)	1, 2, 3	
				Autonomy (Autonomy Scale)	5	
Walsh (1992)	480	Boise State University	Other attachment measure (6-item self-created scale of parent-child attachment)	Involvement in illegal drugs (coded as frequency of use of any drug), number of sexual partners	3	.33
Walsh (1995)	480	Boise State University	Other attachment measure (same as above)	Number of sexual partners, involvement in illegal drugs (coded same as Walsh, 1992)	3	.17
				Satisfaction with physical appearance (ratings of eight body parts)	4	
				Masculinity and femininity (BSRI)	5	
				Religiosity (author-created instrument focusing on behavioral and attitudinal items)	99	
Walsh (1999)	192	Boise State University	Other attachment measure (same as above)	Reading of pornography (author-developed scale)	3	.28
Whisman & McGarvey (1995)	104	Undeterminable	Other attachment measure (INVAA)	Performance evaluation and interpersonal dependency (Dysfunctional Attitude Scale)	1, 2	.160
				Depression (BDI), healthy attribution style (Expanded Attributional Style Questionnaire)	3, 4	

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Williams & Schill (1993)	158	Undeterminable	Other attachment measure (adapted Hazan & Shaver's, 1987, measure to ask about parents)	Self-defeating personality (Self-Defeating Personality Scale)	3	.200
Wiseman, Maysseles, & Sharabany (2006)	146	University of Haifa (Israel)	PBI	Interpersonal dependency, self-efficacy, self-criticism (DEQ)	2, 4, 5	.22
Yazedjian & Toews (2006)	190	Texas State University, San Marcos	PAQ	Loneliness (UCLA Loneliness Scale) Satisfaction with college life (SACQ total score)	2 1	.14
Ying & Han (2007)	188	University of California, Berkeley; San Jose State University; and California State University Fresno	PBI	Self-esteem (RSES) Acculturation (Short Acculturation Scale for Hispanics), positive ethnic identity (Ethnic Identity Scale)	4 99	
Ying, Lee, & Tsai (2004)	238	University of California, Berkeley	IPPA	Intergenerational congruence (ICIF-CS)	99	.61
Ying, Lee, & Tsai (2007b)	353	University of California, Berkeley	IPPA	Intergenerational congruence (ICIF-CS) Depression (CES-D) Sense of life coherence (Sense of Coherence Questionnaire)	99 3 5	.66 .23
<b>Unpublished studies (dissertations or conference papers)</b>						
Bagheri (2005)	245	Undeterminable	IPPA	Interpersonal dependency (Spann-Fischer Codependency Scale) Self-esteem (RSES) Acculturation (Acculturation Rating Scale for Mexican Americans)	2 4 99	.21
Blaustein (1999)	136	Fordham University	IPPA	Social support (PSOC) Depression (BDI) Self-esteem (CSEI)	2 3 4	.26
Bowman (2000)	144	University of North Colorado	PBI	Drive for thinness, body dissatisfaction, bulimia, ineffectiveness, and maturity fears (EDI)	3	.17
J. W. Bradford (2007)	238	University of North Texas	PBI	Stress level (PSOC, Inventory of College Students' Recent Life Experiences), expression of positive and negative affect (PANAS), eating disorders (Eating Attitudes Test), bulimia (BULIT-R) Satisfaction with physical appearance (Body-Image Measure, MBSRQ)	3 4	.16
Cabral & Matos (2007)	387	University of Porto (Portugal)	Other attachment measure (used the FMAQ, which assesses quality of emotional bond, exploration, and separation anxiety in parent-student relations)	Coping (COPE Inventory); academic, personal-emotional, and social adjustment (SACQ)	3	.12

(table continues)



Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Cabral & Matos (2008)	218	University of Porto (Portugal)	Other attachment measure (FMAQ)	Awareness of moods (TMMS), coping (COPE Inventory), worry (RRS)	3	.16
Cabral, Matos, Beyers, & Soenens (2006)	942	University of Porto (Portugal)	Other attachment measure (FMAQ)	Awareness of moods (TMMS), coping (COPE Inventory), worry (RRS)	3	.15
Clemens (2005)	275	University of Georgia	IPPA	Depression, anxiety, substance abuse, personality disorders (Millon Clinical Multiaxial Inventory-III)	3	.25
Cook (1995)	264	Boston University	PBI	Social support (PSOC) Overall symptoms (SCL-90-R) Self-esteem (RSES)	2 3 4	.35
Danford (2008)	244	University of South Carolina	IPPA	Academic, social, and personal-emotional adjustment and school attachment (SACQ)	1, 2, 3	.49
Dassoff (1993)	211	University of Illinois at Chicago	PBI	Loneliness (UCLA Loneliness Scale), social support (Network Orientation Scale)	2	.19
Dejong (1997)	576	Undeterminable	PAQ	General and social self-efficacy (SES) Ego-identity exploration and commitment (Ego Identity Process Questionnaire)	2, 4 5	.21
Delaney (2002)	74	San Joaquin Valley College and Fresno City College	IPPA	Maturity of defenses (Defensive Style Questionnaire)	5	.55
Dewitt-Parker (2000)	137	Undeterminable	IPPA	Academic and personal-emotional adjustment (SACQ) Acculturation (African-American Acculturation Scale)	1, 3 99	.27
Elk (2000)	412	Florida State University	PAQ	Substance abuse (MDMA [Ecstasy] Questionnaire)	3	.21
Feinstein-Messinger (2007)	232	City University of New York	IPPA	Anxiety (Taylor Manifest Anxiety Scale) Career self-efficacy (CDMSE), career confidence (Career Decision Difficulties Questionnaire)	3 5	.13
Floyd (2004)	168	Rider University and Temple University	IPPA	Career self-efficacy (CDMSE)	5	.32
Hutto (1998)	320	University of South Carolina	PAQ	Academic, social, and personal-emotional adjustment and school attachment (SACQ) Interpersonal avoidance (Fear of Intimacy Scale)	1, 2, 3 2	.34
S. H. Johnson (1995)	65	Multiple campuses including Mills College; University of California, Berkeley; University of Southern California; and California State University, Hayward	IPPA and PAQ	Overall symptoms (SCL-90-R) General self-efficacy (SPPCS) Drive for thinness, body dissatisfaction, bulimia, ineffectiveness, and maturity fears (EDI)	3 4 3	.28
Just (1999)	202	University of Texas at Austin	IPPA	Academic, social, and personal-emotional adjustment (SACQ) Social support (PSS) Coping (Adolescent Coping Orientation for Problem Experiences) Ego identity (Extended Objective Measure of Ego-Identity Status-2)	1, 2, 3 2 3 5	.38
Kinney (2006)	179	Michigan State University	PAQ	Psychological well-being (multiple scales assessing psychological well-being)	3	.50

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Kirton (2000)	166	Arizona State University	IPPA	School attachment (PVDDS)	1	.05
				General self-efficacy (College Self-Efficacy Inventory)	4	
Lonergan (2003)	84	Undeterminable	IPPA	GPA (objectively recorded)	1	-.21
Magnotti (2005)	104	Fordham University	IPPA	Academic, social, and personal-emotional adjustment and school attachment (SACQ)	1, 2, 3	.42
				Social support (Life Stressors and Social Resources Inventory)	2	
				Stress level (PSS)	3	
				Conflictual independence (PSI)	5	
Marom-Tal (2007)	281	Adelphi University	IPPA	Relationship satisfaction (DAS)	2	.18
				Ego identity (EPSI)	5	
L. K. Mason (2005)	204	City College of New York, Fordham University, Iona College, and Lehman College	IPPA and PBI	Depression (BDI), anxiety (STAI)	3	.36
				General self-efficacy (SES)	4	
T. R. Mason (2001)	120	University of Maryland (College Park)	PAQ	Academic, social, and personal-emotional adjustment and school attachment (SACQ)	1, 2, 3	.29
Melendez (2005)	95	Rutgers University	PAQ	Academic, social, and personal-emotional adjustment and school attachment (SACQ)	1, 2, 3	.23
Perlman (1998)	210	Temple University	PAQ	Depression (DEQ)	3	.26
				Separation anxiety (SITA)	5	
Pfeil (2001)	100	Rutgers University	PAQ	Academic, social, and personal-emotional adjustment and school attachment (SACQ)	1, 2, 3	.09
Puffer (1999)	437	Undeterminable	PAQ	Personal identity (Vocational Identity Scale)	5	-.01
				Commitment to career choices (Career Factors Inventory)	5	
				Conflictual independence (PSI)	5	
Selby (2001)	158	University of North Texas	IPPA	Satisfaction with college life (SACQ total score)	1	.41
				Self-esteem (TSCS)	4	
Silva (1995)	181	Undeterminable	PAQ	Intimacy with romantic partners (Psychosocial Intimacy Questionnaire)	2	.22
Silver (1995)	120	Undeterminable	IPPA	Academic, social, and personal-emotional adjustment and school attachment (SACQ)	1, 2, 3	.38
				Attitudinal, conflictual, emotional, and functional independence (PSI)	5	
Sive-Ramirez (2001)	63	University of San Francisco	IPPA	Body dissatisfaction, drive for thinness, and bulimia (selected subscales of the EDI)	3	-.07
Slattery (2000)	102	Temple University	PAQ	Academic, social, and personal-emotional adjustment (SACQ)	1,2, 3	.26
				GPA (self-report)	1	
Smiley (1999)	33	Undeterminable	PAQ	Developing mature relationships (SDTLI)	2	.23
Sollenberger (2007)	163	Arizona State University	IPPA and PAQ	Academic confidence (PVDDS)	1	.26
				Stress level (Daily Hassles Index for College Stress Scale)	3	
Voight (1999)	131	Florida State University	PBI	Ego identity (EOMEIS-2)	5	-.05
Webster (2002)	362	University of Nebraska—Lincoln	IPPA	Empathy (IRQ)	2	.16

(table continues)

Table 1 (continued)

Study	<i>n</i>	College/university sampled	Attachment measure	Outcome dimensions and measurement devices	Megadomain <sup>a</sup>	Overall <i>r</i> <sup>b</sup>
Widlansky (1997)	91	DePaul University	PAQ	Social support (Brief Social Support Questionnaire)	2	.21
				Overall symptoms (BSI)	3	
				Commitment to career choices (My Vocational Situations)	5	
Yee (2001)	100	Undeterminable	IPPA	Academic, social, and personal-emotional adjustment (SACQ)	1, 2, 3	.12
Zanardelli (2002)	195	Virginia Commonwealth University	IPPA	Positive ethnic identity (MEIM)	99	
				Psychological separation (PSI), career exploration (VECS, TTFS)	5	.11

*Note.* BAS = Beck Anxiety Scale; BDI = Beck Depression Inventory; BHS = Beck Hopelessness Scale; BID = Balanced Integration-Differentiation Scale; BSI = Brief Symptom Inventory; BSRI = Bem Sex-Role Inventory; BULIT-R = Bulimia Test-Revised; CDMSE = Career Decision-Making Self-Efficacy Scale; CES = Career Exploration Survey; CES-D = Center for Epidemiological Studies—Depression Scale; CIAA = College Inventory of Academic Adjustment; CPAS = Comprehensive Personality and Affective Scale; CSEI = Coopersmith Self-Esteem Inventory; DAS = Dyadic Adjustment Scale; DEQ = Depressive Experiences Questionnaire; ECR = Experience in Close Relationships Questionnaire; EDI = Eating Disorder Inventory; EDS-5 = Eating Disturbance Scale; EIS = Ego-Identity Scale; EOMEIS2 = Objective Measure of Ego-Identity Status; EPSI = Erikson Psychosocial Stage Inventory; FMAQ = Father and Mother Attachment Questionnaire; GPA = grade-point average; GRCS = Gender Role Conflict Scale; HSCL = Hopkins Symptom Checklist; ICIF-CS = Intergenerational Congruence in Immigrant Families; IIP = Inventory of Interpersonal Problems; INVAA = Inventory of Adult Attachment; IPPA = Inventory of Parental and Peer Attachment; IRQ = Interpersonal Reactivity Questionnaire; ISEL = Interpersonal Support Evaluation List; MBSRQ = Multidimensional Body Self-Relations Questionnaire; MEIM = Multigroup Ethnic Identity Measure; MFP = Mother-Father-Peer Scale; MGRSS = Masculine Gender Role Stress Scale; NMRS = Negative Mood Regulation Scale; OSIQ = Self-Image Questionnaire; P-AASQ = Parent-Adult Attachment Style Questionnaire (Behrens & Lopez, 1998); PANAS = Positive and Negative Affect Schedule; PAQ = Parent Attachment Questionnaire; PBI = Parent Bonding Instrument; PPI = Personal Problems Inventory; PSI = Psychological Separation Inventory; PSOC = Perceived Social Support; PSS = Perceived Stress Scale; PVDDS = Persistence/Voluntary Dropout Decisions Scale; RRS = Ruminative Responses Scale; RSES = Rosenberg Self-Esteem Scale; SACQ = Student Adjustment to College Questionnaire; SCL-90-R = Symptom Checklist-90-Revised; SDTLI = Student Developmental Task and Lifestyle Inventory; SES = Self-Efficacy Scale; SITA = Separation-Individuation Test of Adolescence; SOC = Spheres of Control; SPPCS = Self-Perception Profile for College Students; SPS = Social Provisions Scale; STAI = State-Trait Anxiety Inventory; TMMS = Trait Meta-Mood Scale; TSCS = Tennessee Self-Concept Scale; TTFS = Tendency to Foreclose Scale; VECS = Vocational Exploration and Commitment Scale; WAI = Weinberger Adjustment Inventory.

<sup>a</sup> 1 = academic adjustment; 2 = social competence; 3 = stressful affects; 4 = sense of self-worth; 5 = developmental advances; 99 = other/miscellaneous dimension. <sup>b</sup> Refers to overall effect size across all outcome domains coded in the study. <sup>c</sup> Study included a sample of non-college-age inpatients with eating disorders who were not included in the analysis. <sup>d</sup> Reported on two studies in one published report with distinct samples; included separately in the meta-analysis.

uration [coded as (1) majority biological/adoptive parents (70% or more) or (2) significant number of participants from single, step, or blended families (30% or more)], percentage of first-year students and upperclassmen, and percentage of students living away from home vs. at home during their college years, if given), (f) publication type (published report, conference paper, or unpublished dissertation), and (g) year of publication/authorship.

In the second step, the following information was recorded for each reported ES within a study (an effect was defined as a zero-order correlation reflecting the relationship between a scale of attachment and a scale of college adjustment): (a) parental attachment measure used ([1] IPPA, [2] PAQ, [3] PBI, [4] Mother-Father-Peer Scale [Epstein, 1983], [5] other attachment measure [these included a few scales normally used to assess adult romantic attachment that were adapted to rate parental attachment (see Table 1 for details)], or [6] a combined or factor analyzed attachment measure [a number of studies used a factor analytic composite of attachment measures or they used multiple attachment measures from which we coded a single ES across the measures]), (b) adjustment dimension(s) examined in the effect (a total of 120 distinct adjustment dimensions were coded across the studies), (c) parent sample examined in the effect (recorded as mother, father, or parents), (d) student sample (recorded as men, women, first-year

students, upperclassmen, Caucasian students, ethnic minority students, or total sample), and (e) statistic from which the ES was calculated (*t* test or analysis of variance [ANOVA] procedures, correlation/regression, or mean differences).

Coding of the studies was conducted by Jonathan F. Mattanah along with two advanced undergraduate student research assistants with extensive coursework in statistical analysis and research design who were carefully trained and supervised by Jonathan F. Mattanah during the coding process. The two coders overlapped in their coding of five randomly selected studies to assess reliability. Their percentage agreement for 17 coded variables across the five studies was 84.7% ( $\kappa = .797, p < .001$ ), indicating a high level of interrater reliability. Any disagreements between coders were resolved by Jonathan F. Mattanah through his review of the original study.

### Development and Validation of Megadomain Coding System

As mentioned above, 120 distinct adjustment dimensions were coded across the studies. Some of these dimensions recurred frequently, such as depression levels, anxiety, social support, loneliness, and separation-individuation, whereas other dimensions

were unique to only one or two studies, such as satisfaction with physical appearance, shame feelings, or use of splitting as a defense. The extreme range and variability of these adjustment dimensions attest to the richness and complexity of this general line of inquiry but also complicate efforts to assess effects across multiple studies. To address this problem, we created five conceptually meaningful megadomains of adjustment that have been the focus of the attachment studies considered in this review. Many studies of attachment across the life span examine relational competencies, self-worth, academic motivation and classroom behavior, and expressions of symptomatic distress as relevant domains of adjustment that should be predicted by secure attachment (Sroufe et al., 2005). Our first four domains capture this wide range of adjustment outcomes, entitled *academic motivation and competence*, *interpersonal competence*, *stressful affects and high-risk behaviors*, and *self-worth*.

Our fifth domain, *developmental advances*, was meant to reflect the interest of many attachment theory-driven studies of college students in examining the relationships between secure parental attachment and students' advances in psychosocial developmental tasks associated with late adolescence such as gender-identity development and separation and individuation from parents. Because these psychosocial tasks vary quite widely in terms of the developmental demands placed on the student, we created four meaningful subdomains of Domain Five, focused on the development of ego identity, gender identity, and career identity and on the task of separating and individuating from parents.

The five domains, along with specific adjustment dimensions included within each domain, are presented in Table 2. (As indicated in Table 2, a few dimensions did not fit well into any of these five domains and were considered miscellaneous dimensions; these dimensions were not included in any of the separate domain analyses presented below but were included in the calculation of the overall ES for each study.) Since the bulk of the adjustment dimensions within Domains One, Two, Four, and Five were positive, we reverse-coded any negatively worded dimensions within those four domains so that reported ESs indicated associations between secure parental attachment and more favorable adjustment outcomes within those domains. Conversely, most of the adjustment dimensions within Domain Three were negative, so we reversed-coded any positive adjustment dimensions within that domain so that an overall negative ES would suggest that parental attachment was associated with fewer adjustment difficulties in that domain.

The decision of which dimensions to categorize into each domain was made by the study authors, based on their knowledge of attachment research with college students. In placing a dimension into a domain, we examined the original studies carefully to determine precisely how the authors were defining their adjustment dimensions. As an example of a somewhat challenging classification decision, the dimension academic autonomy was placed into Domain One because the authors who studied this dimension described it as a measure of the student's ability to attain academic goals independently (Schultheiss & Blustein, 1994) whereas the dimension of autonomy was placed in the subdomain of ego identity (within Domain Five) because the authors studying this dimension described it as a measure of the adolescents' ability to make their own choices, express their own opinions without undue influence from others, and rely on

themselves (Bell, Forthun, & Sun, 2000; Vivona, 2000). To test whether our conceptual approach to dimension placement could be replicated, we asked two research assistants (one advanced undergraduate student and one master's student in clinical psychology) to categorize 60 randomly selected dimensions chosen from the list of terms in Table 2 into their best fitting domain. For Domain Five, they were asked to select the best fitting subdomain. These two coders, who had access only to the terms themselves and a brief description of each domain and not to the original study from which the dimensions came, agreed substantially in their assignments of best fitting domain. Percentage exact agreement across the eight possible choices (Domain One, Two, Three, Four, or one of the four subdomains of Domain Five) was 73.3% ( $\kappa = .683$ ,  $p < .0001$ ). Additionally, each coder agreed very well with the original categorization decisions of Jonathan F. Mattanah (percentage exact agreement between Coder 1 [undergraduate student] and Jonathan F. Mattanah was 73.4% [ $\kappa = .684$ ,  $p < .0001$ ] and between Coder 2 [graduate student] and Jonathan F. Mattanah was 81.7% [ $\kappa = .779$ ,  $p < .0001$ ]).

In addition to determining whether our categorization system could be replicated, we examined the distributional properties of the ESs within each of the megadomains. Distributional statistics for each domain shown in Table 3 suggest a moderate range of ESs within each domain and no substantial skewness or kurtosis (a visual inspection of the histograms [available upon request] for each domain showed a relatively normal distribution of ESs within each domain, with no substantial gaps). We also calculated chi-square tests (cf. Shadish & Haddock, 2009) to assess the homogeneity of the ES distributions within each domain. Nonsignificant chi-square results shown in Table 3 suggest that the distribution of ESs within a domain were homogeneous and not heterogeneous. The homogeneity of distribution of ESs within each domain (and lack of obvious gaps in the distribution) provides some evidence that each domain is capturing a singular set of outcome dimensions, although it is possible that a multidimensional construct could still be reflected in such a singular distribution. Overall, it appears that our megadomain schema is replicable and defensible on both theoretical and empirical grounds. However, because Domain Five was composed of a number of different developmental areas, we include some analyses below examining links between parental attachment and students' psychological development across these different areas.

## Plan of Analysis

Our meta-analytic approach followed a nested model recommended by most meta-analysts (Lipsey & Wilson, 2001), whereby a single ES is calculated initially to evaluate the overall relationship and then a parsimonious set of effects can be calculated for each study, depending on the particular moderator variables of interest. When examining the overall relationship between parental attachment and college adjustment, we computed a single ES for each study, averaging across effects if more than one was reported in the study (such as separate effects for distinct adjustment dimensions or distinct effects for men and women). There are other methods for combining effects within studies that account for the strength of the relationship between the individual measures. However, we chose the method of averaging effects because it is the

Table 2.  
Outcome Megadomains and Specific Dimensions Included Within Each Domain

Academic motivation and competence	Interpersonal competencies and relational satisfaction	Stressful affects and high-risk behaviors	Self-worth and self-efficacy	Developmental advances in ego, gender, and career identity and separation-individuation	Miscellaneous
Academic adjustment	Acceptance	Alcohol use	Assertive. General self-efficacy	Ego identity	Acculturation
Academic autonomy	Constructive conflict resolution with romantic partner	Alexithymia		Autonomy	Attachment to God
Academic confidence	Dating competence	Alienation	Healthy attributions	Ego resiliency	History of childhood trauma
Effective study behavior	Developing mature relationships	Anger	Importance of physical appearance	Ego undercontrol (reversed)	Intergenerational congruence
Study skills	Empathy	Anxiety	Locus of control	Ego identity	Jewish identity
Grade-point average	Fear of negative social evaluation (reversed)	Awareness of moods and mood regulation (reversed)	Optimism	Ego-identity commitment	Positive ethnic identity
Performance evaluation concerns	Internal attributions for affiliation	Body dissatisfaction	Satisfaction with physical appearance	Ego-identity exploration	Religiosity
Problem solving	Interpersonal dependency (reversed)	Bulimia	Self-confidence	Establishing and clarifying purpose	Super Woman Scale
Satisfaction with college life	Interpersonal problems (reversed)	Coping (reversed)	Self-direction	Maturity of defenses	
School attachment	Intimacy with romantic partner	Depression	Self-esteem	Personal identity	
Structuring	Loneliness (reversed)	Deliberate self-harm		Self-criticism (reversed)	
Student-professor attachment	Prosocial behavior	Drive for thinness		Sense of life coherence	
style	Quality of social interactions	Eating disorder		Use of splitting as a defense (reversed)	
	Quantity of social interactions	Delinquent behaviors		Separation-individuation	
	Relationship satisfaction	Expression of negative affect		Attitudinal independence (PSI scale)	
	Self-disclosure	Expression of positive affect (reversed)		Conflictual independence (PSI scale)	
	Social adjustment	Ineffectiveness		Emotional independence (PSI scale)	
	Social avoidance (reversed)	Maturity fears		Functional independence (PSI scale)	
	Social competence	Number of sexual partners		Separation anxiety	
	Social identity	Overall symptoms		Gender identity	
	Social self-efficacy	Psychological well-being (reversed)		Androgyny	
	Social support	Risky behaviors		Femininity	
	Tendency toward making social threat cognitive biases (reversed)	Personal-emotional adjustment (reversed)		Gender-role conflict (reversed)	
	Trait affiliation	Personality disorder		Gender-role identity	
		Physical fitness (reversed)		Masculine gender-role stress (reversed)	
		Physical health (reversed)		Masculinity	
		Psychological symptoms		Career identity	
		Psychological distress		Career aspirations	
		Satisfaction with life (reversed)		Career confidence	
		Seeking instrumental support (reversed)		Career exploration	
		Self-defeating personality style		Career search self-efficacy	
		Shame		Commitment to career choices	
		Stress monitoring (reversed)			
		Stress level			
		Substance abuse			
		Tension control (reversed)			
		Worry			

Note. PSI = Psychological Separation Inventory.

Table 3  
*Distributional Properties of the Five Domains of College Adjustment*

Distributional property	Academic competence	Social competence	Stressful affects	Self-worth	Developmental advances
Number of effects	63	110	189	43	100
<i>M</i>	.221	.247	-.221	.248	.235
<i>Mdn</i>	.245	.228	-.222	.250	.190
<i>SD</i>	.151	.144	.125	.136	.206
Range	.850	.830	.700	.569	.890
Minimum–maximum	(-.21, .64)	(-.11, .72)	(-.56, .14)	(-.07, .49)	(-.25, .64)
25th–75th quartile					
Range	(.13, .32)	(.16, .32)	(-.31, -.14)	(.13, .36)	(.09, .40)
Skewness	-.265	.770	.165	-.008	.130
Kurtosis	0.772	1.162	0.324	-0.610	-0.637
<i>Q</i> homogeneity test <sup>a</sup>	61.81*	107.98*	184.33*	42.27*	100.10*

<sup>a</sup> The formula for the *Q* homogeneity test is given in Shadish and Haddock (2009) as  $\Sigma[(T - \bar{T})^2/v]$ , where *T* is the individual effect size,  $\bar{T}$  is the mean effect size for that outcome domain, and *v* is the variance for that group of effect sizes. If *Q* exceeds the critical value of the chi-square with *k* - 1 degrees of freedom (*k* = number of effects included in that analysis), then the variance in effect sizes is significantly greater than one would expect if those effects share a common population effect size.

\* *p* > .45.

most common and conservative approach (see Quintana & Minami, 2006, for a discussion of this issue).

When coefficients were averaged, they were first transformed using Fisher's *r*-to-*z* transformations (as recommended by Lipsey & Wilson, 2001), and then the averages were converted back to correlation coefficients to facilitate interpretation. This single ES was used to evaluate the overall effect as well as a number of study-wide demographic and methodological moderators, such as publication status of the study, university size, study design (longitudinal vs. cross-sectional), and reliability of the measurement devices. When examining the five outcome domains, we computed one ES per outcome per study, averaging across effects for dimensions that fell within the same outcome domain (e.g., if anxiety and depression were included in one study as outcome dimensions [both dimensions fall within Domain Three], a mean ES was computed across these two dimensions). When examining gender as a moderator of the attachment–adjustment relationship, we computed one ES per parent or student gender per outcome domain.<sup>2</sup> Finally, when examining attachment scales and subscales as moderators, we computed one ES per subscale for each study that included an examination of subscales.

ES estimates were obtained directly from the study if it included correlation coefficients or beta weights or were computed from *t* tests, ANOVAs, or mean differences, using readily available formulas provided by Lipsey and Wilson (2001). In seven cases, an effect was deemed insignificant by the original authors of the study without providing any statistical information. As recommended by most meta-analysts (Lipsey & Wilson, 2001; Rosenthal, 1995), these effects were conservatively coded as *r* = .00. All longitudinal studies in this meta-analysis were only two-time-point studies. To compute ESs for these longitudinal studies, we used the correlation of attachment measures assessed at Time 1 with adjustment dimensions assessed at Time 2.

It is common practice to weight ESs by sample size to give greater emphasis to studies that are likely to provide a more accurate estimate of the parameter of interest (Shadish & Haddock, 2009). Thus, we used inverse-variance-weighted ESs to analyze the overall strength of the relationship between parental attachment and the college adjustment domains. We also include the

results of an overall unweighted analysis for comparison purposes. The overall analyses were computed using a random-effects model because of the diversity of methodology employed in the studies and because the random model allows for greater generalizability of results.

Analyses of the moderators of interest were computed using an inverse-variance-weighted mixed-effects model, which includes the moderator as the fixed factor and error variance as the random component. Categorical moderators (e.g., gender) were analyzed using an analog ANOVA (*Q*) statistic, and continuous moderators (e.g., percentage of residential students) were assessed with an analog regression analysis. These analyses were computed using SPSS macros developed by Wilson (2005).

## Results

### Characteristics of Participants Included in the Meta-Analysis

Table 4 provides information on the demographic characteristics of the participants included in the meta-analysis. These characteristics closely mirror the reported percentages of students in institutions of higher education, which tend to include 60% females, about 60% Caucasian students, and 40% students of ethnic minority groups (National Center for Educational Statistics, 2008). Among those studies reporting on year in school, the participants were roughly split between first-year students and upperclassmen. Only a few studies reported on the residential status of students, and among those, about 63% lived away from home during college (either in residential housing on campus or in an off-campus apartment) and 37% lived at home with their parents.

<sup>2</sup> Although the majority of these studies reported separate ESs for mothers and fathers and/or men and women (91 studies reported separate ESs by gender of parent, gender of student, or both), we included studies that only focused on one parent (one mother-only study, three father-only studies) or student gender (13 female-only studies, three male-only studies).

Table 4  
Demographic Characteristics of Participants Included in the Meta-Analysis

Variable	<i>M</i>	<i>SD</i>	<i>K</i> <sup>a</sup>
Average sample size	210.77	130.68	154
Male sample size	80.44	63.29	154
Female sample size	130.85	91.16	154
Age (years)	20.14	2.05	139
Ethnicity			
% Caucasian	58.36	30.42	99
% African American	14.89	22.63	99
% Latino/a	10.29	18.84	99
% Asian American	11.27	20.30	99
% other	4.77	10.68	99
Year in school			
% first year	57.86	35.43	84
% Upperclassman	41.54	35.07	84
Residential status			
% living away from home	62.89	25.22	39
% living at home	37.11	25.22	39

<sup>a</sup> Refers to the number of studies that reported information on the sample characteristic.

### Overall Relationship Between Attachment and Adjustment

The average weighted ES between parental attachment and college adjustment was .231<sup>3</sup> ( $SE = .0119, p < .0001$ ) with a 95% confidence interval of [.205, .247]. ES estimates ranged from  $-.21$  to  $.66$ . The fail-safe  $n$  indicates that an additional 90,436 studies finding no relationship between parental attachment and college adjustment would be needed to reduce the probability of this ES to nonsignificance. According to Rosenthal and Rosnow (2008), this number is much larger than the recommended tolerance level of  $5k + 10$  additional studies (in this case, 790 studies with no relationship between attachment and adjustment). A chi-square homogeneity test indicated that the overall ES distribution was heterogeneous,  $\chi^2(155, N = 156) = 552.5693, p < .0001$ , which suggests that the variability of ESs across these studies is due to more than just sampling error (Shadish & Haddock, 2009). Given the great variation in the conduct of these studies (including attachment and outcome measures utilized, sample of students focused upon, cross-sectional vs. longitudinal design, etc.), a heterogeneous distribution is not surprising and justifies our examination of moderator effects, using a mixed-effects model, to account for both systematic and random factors affecting this heterogeneity.

### Demographic Moderators of the Attachment-Adjustment Relationship

Table 5 displays gender of parent and gender of student as potential moderators of the overall relationship between attachment and adjustment. We examined this analysis first by averaging across the five domains to form one ES per study and then within the five domains. ESs did not differ significantly between mother-student and father-student attachment across any of the five domains. Regarding gender of student, ES again did not differ

significantly between male and female students across any of the five domains.

We next focused upon other demographic moderators of potential interest to researchers in this area, including residential status, ethnicity, year in school, nationality of the sample, and family configuration. For the first three variables, we examined percentage of residential students, percentage of Caucasian students, and percentage of first-year students recorded in each study as continuous predictors of the overall effect, using inverse-variance-weighted regression analyses. Percentage of Caucasian students,  $\beta = .01, Q(117) = 0.017, p = .896$ , and percentage of first-year students,  $\beta = .04, Q(83) = 0.105, p = .746$ , did not predict the overall effect, whereas percentage of residential students did,  $\beta = .37, Q(37) = 6.418, p = .011$ . To understand this last effect more clearly, we split studies that had included information on residential status into those that reported a majority of students living away from home and those that reported a majority of students still living with their parents. We found that the ES for students living away from their parents ( $r = .27$ ) was significantly larger than the ES for students still living at home ( $r = .18$ ). We coded nationality of the sample as simply U.S.A. versus non-U.S.A. and found no difference in these ESs. Only a few studies reported on the family configuration of their participants. We dichotomized those studies into those with a majority of two-parent biological families (more than 70% of the participants reported coming from those types of families) versus studies with a significant number of participants from single-parent, step, or blended families. ESs for these studies did not differ significantly. A more fine-grained analysis would have calculated separate ESs for those studies that reported effects broken down by one or more of these demographic characteristics. Unfortunately, not enough studies reported separate effects for ethnicity, year in school, residential status, or family configuration to conduct a meaningful analysis.

### Methodological Moderators of the Attachment-Adjustment Relationship

Table 6 examines methodological qualities of the studies included in this meta-analysis (e.g., reliability of attachment and adjustment measures, study design, etc.) as potential moderators of the overall relationship between attachment and adjustment. ESs did not differ significantly across any of these methodological features, suggesting that the overall relationship between attachment and adjustment was robust across differing study qualities.

Since attachment security is a multidimensional construct and has been assessed using a variety of strategies, we sought to examine whether the particular attachment scale and subscales utilized in different studies moderated the overall relationship between attachment and college adjustment. Inspection of Table 7 shows that the bulk of the studies (125 out of 156 studies [80%]) included in the meta-analysis utilized one of three major self-report measures of parental attachment, the IPPA, PAQ, or PBI.

<sup>3</sup> This weighted ES was very similar to the average unweighted ES between attachment and adjustment ( $r = .230$ ), suggesting that the differing sample sizes of the studies included in this meta-analysis did not appreciably affect the overall relationship observed across these studies.

Table 5  
*Gender of Parent and Gender of Student as Moderators of the Attachment–Adjustment Relationship*

Adjustment domain	Female		Male		<i>Q</i>	<i>p</i> value
	<i>r</i> <sub>mean</sub>	<i>SE</i>	<i>r</i> <sub>mean</sub>	<i>SE</i>		
<b>Parent</b>						
Across all domains ( <i>k</i> = 91)	.243	.017	.218	.017	1.183	.277
Academic competence ( <i>k</i> = 16)	.237	.048	.234	.047	0.003	.953
Social competence ( <i>k</i> = 38)	.235	.021	.215	.021	0.544	.461
Stressful affects ( <i>k</i> = 52)	–.235	.019	–.213	.019	0.780	.372
Self-worth ( <i>k</i> = 21)	.319	.041	.231	.042	2.721	.099
Developmental advances ( <i>k</i> = 24)	.229	.035	.205	.036	0.249	.618
<b>Student</b>						
Across all domains ( <i>k</i> = 46)	.221	.020	.246	.024	0.671	.413
Academic competence ( <i>k</i> = 9)	.276	.061	.280	.069	0.004	.952
Social competence ( <i>k</i> = 15)	.203	.026	.213	.029	0.065	.798
Stressful affects ( <i>k</i> = 27)	–.222	.027	–.288	.036	2.419	.120
Self-worth ( <i>k</i> = 10)	.251	.056	.273	.068	0.071	.790
Developmental advances ( <i>k</i> = 15)	.186	.045	.193	.050	0.011	.915

Only two studies utilized the Mother-Father-Peer Scale, and the remainder developed their own attachment questionnaire (*n* = 21) or used a combination of attachment questionnaires (*n* = 8). For ease of comparing the ESs associated with these different measures, we eliminated the two studies utilizing the Mother-Father-Peer Scale and combined those studies that employed either a novel measure or multiple measures into a single category. We compared ESs for the four major assessment strategies (IPPA, PAQ, PBI, or other attachment measure) and found that they did not differ significantly from each other, *Q* (153) = 4.370, *p* = .224. Table 7 also displays ESs for the much smaller number of studies that included an examination of the subscales of the three major attachment questionnaires. We examined these ESs both within instruments and across the three instruments. The across-instrument comparison was not significant, *Q*(123) = 5.244, *p* = .630. However, when comparing ESs within instruments, we found that the ES for the PBI Overprotection scale (*r* = –.13) was notably smaller than the ES for the PBI Care subscale (*r* = .20), *Q*(26) =

4.808, *p* = .028 (note that in this analysis, we initially reverse-coded the PBI Overprotection scale ES so that we were testing the differences in the absolute value of these ESs rather than their differing signs). Analyses comparing the ESs of IPPA subscales to each other and the PAQ subscales to each other were not significant.

Our final analysis examined the pattern of ESs across the five domains of adjustment. As seen in Table 8, mean ESs were remarkably similar across all five domains and did not differ significantly from each other. This table also shows ESs associated with the four conceptually meaningful subdomains of Domain Five. These ESs differed substantially from each other, with the separation–individuation ES being significantly larger than the other three ESs, which did not differ significantly from each other.

## Discussion

In light of the significant growth of scholarship examining the contributions of self-reported parental attachment quality to col-

Table 6  
*Methodological Moderators of Parental Attachment–College Adjustment Relationship*

Moderator	<i>r</i> <sub>mean</sub>	<i>SE</i>	<i>K</i>	<i>Q</i>	<i>p</i> value
<b>Publication source</b>					
Journal article	.233	.007	113	2.189	.139
Unpublished study	.214	.010	43		
<b>University size</b>					
Community college	.255	.056	6	1.534	.464
Small 4-year college	.206	.032	21		
Large university	.250	.017	70		
<b>Study design</b>					
Cross-sectional	.231	.011	143	2.113	.146
Longitudinal	.175	.037	13		
<b>Internal consistency reliability of attachment measure</b>					
All subscales above .80 reliability	.222	.017	69	0.046	.831
One or more subscales below .80	.213	.036	16		
<b>Average internal consistency reliability of adjustment dimensions</b>					
All scales above .80 reliability	.211	.015	57	1.622	.203
One or more scales below .80	.169	.030	14		



Table 7  
Attachment Scales (and Subscales) as Moderators of the  
Parental Attachment–College Adjustment Relationship

Attachment scale and subscale	$r_{\text{mean}}$	$SE$	$K$
Inventory of Parental and Peer Attachment	.251	.017	60
Trust	.221	.054	7
Communication	.170	.054	7
Alienation	-.172	.047	9
Parental Attachment Questionnaire	.209	.023	34
Affective Quality of Relationship	.209	.034	18
Provision of Emotional Support	.184	.037	16
Role in Fostering Autonomy	.161	.037	16
Parental Bonding Instrument	.193	.024	31
Care <sup>a</sup>	.200	.022	27
Overprotection	-.131	.023	24
Unique or combined measures	.221	.024	29

<sup>a</sup> The Parental Bonding Instrument's Care subscale demonstrated a significantly larger effect size than its Overprotection subscale.

lege student adjustment and development, we sought to meta-analyze those studies available up to 2009 and to extend the findings of the handful of prior meta-analytic studies in three important ways. More specifically, beyond assessing the overall ES of the relations between parental attachment and college adjustment, we examined whether the strength of these relations varied by (a) gender and other demographic moderators, (b) the type of attachment measure used in the investigations, or (c) the domains of adjustment/development that were assessed. As we discuss more fully below, these methodological refinements yielded findings with the potential for advancing both theory-based inquiry and counseling practice.

## Review of Findings

We found a small-to-moderate relationship between parental attachment and college student adjustment. Our overall ES of  $r = .231$  was remarkably similar to effects found in previous meta-analyses on attachment in adolescent populations. Rice (1990) found an effect of  $r = .22$ , and Benson et al. (2006) reported an effect of  $r = .26$  (Benson et al., 2006, using  $d$  rather than  $r$  in their meta-analysis, found an overall  $d = .54$ , which, when converted using Rosenthal and Rosnow's, 2008, formula, yields an  $r = .26$ ). These effects are also comparable to the one meta-analysis examining adjustment outcomes with school-age and young adolescent offspring, where an overall effect of  $r = .20$  was found (Schneider et al., 2001). Summing across these meta-analyses, it appears that parental attachment representations in adolescent and emerging adult populations are moderate predictors of adjustment outcomes while further suggesting that other factors also contribute to these outcomes.

Given the modest direct relationship between parental attachment and college adjustment, it is likely that parental attachment serves as a significant but distal predictor whose effects on adjustment during the college years may be less direct and more proximally predicted by other developmental processes not specifically examined in our meta-analysis. Relevant to this point, a number of scholars (Feeney, 2004; Fraley & Davis, 1997; Shaver & Hazan, 1994) have argued that, beginning in adolescence, close friends

and romantic partners assume increasingly salient caregiving and security-regulating roles in the developing person's life, thus facilitating a gradual transfer of attachment functions from parents to intimate peers. Although parental attachment security is posited to affect the nature and quality of this developmentally expected shift, the transfer itself should, over time, progressively weaken the direct effects of parental attachment security while concurrently strengthening the more proximal effects of intimate peer attachment security on adjustment outcomes during the college years. In this regard, it is noteworthy that studies involving college samples that have incorporated self-report measures of both parental and adult (i.e., intimate peer) attachment security have generally revealed that (a) these attachment constructs are only moderately correlated and (b) relative to parental attachment measures, indicators of peer attachment security typically demonstrate stronger associations with independent measures of self-esteem, depression, coping, and socioemotional competence (Carnelley, Pietromonaco, & Jaffe, 1994; Cummings-Robeau, Lopez, & Rice, 2009; Laible, 2007; Lopez, 1996).

We also found that the attachment scales or subscales used in studies of college students for the most part did not moderate the relationship between parental attachment and adjustment outcomes. This result may suggest that parental attachment representations are fairly unidimensional by young adulthood, characterized globally as positive or negative, at least as assessed by self-report methodology. This result would certainly support the common practice in most studies we reviewed of combining subscales of these measures (especially for the IPPA and PAQ) to develop a single score of attachment security. We did find, however, that the Overprotection subscale of the PBI had a significantly smaller ES than the PBI Care subscale. In our review of the research, we found a number of studies where overprotection was actually associated with better rather than worse outcomes, contrary to the original design of the instrument (e.g., Feeney, 2002; Love & Murdock, 2004; Mallinckrodt, 1992). It is possible that the overprotection items of the PBI, which tend to address high levels of parental control bordering on intrusion, may be interpreted by

Table 8  
Means Effect Sizes Across the Five Domains of Adjustment

Domain	$r_{\text{mean}}$	$SE$	$K$	$Q$
Analysis of five domains				
Academic Competence	.226	.024	36	1.653
Social Competence	.235	.017	70	
Stressful Affects	-.239	.014	101	
Self-Worth	.257	.022	37	
Developmental Advances	.222	.020	49	
Analysis of Domain Five:				
Developmental advances <sup>a</sup>				17.419**
Ego identity	.203 <sub>b</sub>	.037	20	
Separation-individuation	.354 <sub>a</sub>	.043	15	
Gender identity	.127 <sub>b</sub>	.060	7	
Career exploration	.142 <sub>b</sub>	.047	12	

Note. Mean effect sizes with different subscripts differ significantly from each other.

<sup>a</sup> When examining the four subdomains of Domain Five, the number of effects was slightly larger (54 vs. 49) than the overall total because five of the studies provided effects from more than one subdomain.

\*\*  $p < .001$ .

some young adults as an indicator of a kind of behavioral control and monitoring often associated with more positive outcomes among adolescents and emerging adults. We therefore encourage investigators to first examine intercorrelations of parental attachment subscale scores with scores on study-specific outcome variables before combining attachment subscales, as a global index might obscure meaningful subscale–outcome relationships in their particular samples.

Relatedly, we found support for the idea that parental attachment security is linked to a broad (as opposed to more circumscribed) range of college adjustment outcomes. Parental attachment was equally predictive of adjustment across our five conceptually and empirically meaningful megadomains of outcome measures. This result is consistent with past meta-analytic findings that examined a range of adjustment outcomes in adolescent populations (Rice, 1990). Overall, it appears that security of attachment in adolescence is predictive of better adjustment both in relationships with others and in feelings about the self (greater self-worth and sense of academic competency), which together may lower stress levels and reduce engagement in high-risk behaviors.

In terms of demographic characteristics, we were somewhat surprised to find that gender of parent and gender of student did not moderate the attachment–adjustment relationship. Contrary to some theoretical speculations (Chodorow, 1991; Josselson, 1987), this finding suggests that attachment relationships with mothers and fathers are equally important to male and female development, at least during the period of emerging adulthood. We also found that ethnicity, nationality of the sample, and year in school did not moderate the overall attachment–adjustment relationship, suggesting that this relationship may hold true cross-culturally and cross-nationally. We did find that attachment security predicted adjustment significantly more strongly among students who leave home during the college years compared with students still residing at home. Consistent with theory, attachment needs are more likely to be activated in students who leave home for college and may help explain why residential students report greater loneliness than commuters during the transition to college (Larose & Boivin, 1998). Hence, relative to their commuting peers, for residential students, a secure relationship with their absent parents may especially protect against college transition–related adjustment difficulties.

Finally, within the domain of developmental tasks associated with college life, we found a significantly stronger effect for the task of separation–individuation from parents than for the other tasks. This finding is not surprising given that separation–individuation is the developmental task most closely associated with family life. Furthermore, it supports the suggestion made by attachment theorists and researchers that secure attachment, far from fostering dependency in families, lays the groundwork for a healthy process of separation and individuation from family members (Bowlby, 1988; Goldberg & O'Brien, 2005; Mattanah, Hancock, & Brand, 2004; Sroufe et al., 2005). It should be noted, however, that the item content of measurement strategies used to assess parental attachment and separation–individuation overlap to some extent within this age group, which may help account for the larger effects observed in our analyses (cf. Lopez & Gover, 1993). Although both sets of measures examine closeness and autonomy within the parent–adolescent relationship, we believe the concepts

are theoretically distinct. Future studies may provide a stronger test of these claims by developing measures that are more empirically distinct.

### Limitations and Directions for Future Research

Common features of the available literature on parental attachment and college student adjustment, together with strategic decisions that guided our particular meta-analysis, both constrained the generalizability and interpretive clarity of our findings and suggest potentially fruitful directions for future inquiry. For example, we limited our meta-analysis to studies using self-report measures of the quality of parent–adolescent attachment. Although these particular measures are inexpensive, easily administered research tools that possess well-established psychometric properties, they, like self-report measures of other psychological constructs, are vulnerable to defensive distortions and other response styles. In this regard, we would encourage investigators to consider incorporating both self-report and interview methods of parental attachment quality and to gather attachment- and adjustment-related information from multiple sources (e.g., parents, siblings, peers) as part of their designs. Such refinements could enhance the predictive utility of future findings and enrich understanding of how parental attachment relationships contribute to college student development.

The extant literature is also similarly dominated by studies involving cross-sectional and single-time-point designs. Cross-sectional research cannot establish casual connections between parental attachment qualities and students' adjustment and developmental outcomes. Indeed, it is quite possible that students who are currently adjusting better to the college environment provide a more favorable description of their attachment relationship with parents. Moreover, these studies generally provide insufficient information regarding student ethnicity (acculturation, generational status), sexual orientation, family structure (family size, parental marital status), and social class. Therefore, considerably less is known about how parental attachment qualities are associated with student development and adjustment though the college years and beyond, as well as whether these effects are moderated by other person, familial, or cultural factors. Additionally, although we were able to examine parent gender as a moderator, we did not find studies that had examined potential interactions between mother–student attachment and father–student attachment. Such studies would allow for an examination of whether having one secure attachment relationship compensates for the other relationship being insecure, an important issue that should be examined further in this population.

Although our meta-analysis supports the contention made by Kenny (1987) and others that the college environment represents a significant separation and transition in the life of a young adult and that, therefore, parental attachment security would be relevant to successful adjustment during that transition, we cannot definitively conclude that parental attachment security is especially important to college-bound young adults. To do so would require an examination of the relationship between parental attachment and adjustment in an appropriate comparison group of young adults who are not college bound. Unfortunately and somewhat surprisingly, very few studies have examined the relationship between parental attachment and adjustment outcomes in young adults who are not in

college. In our review of the literature, we could find only four studies that examined parental attachment and adjustment outcomes among normally developing young adults who were not college students (Avagianou & Zafiropoulou, 2008; Burge, Hammen, Davila, & Daley, 1997; Kenny & Sirin, 2006; Overbeek, Vollebergh, Engels, & Meeus, 2003). (There were a number of other studies that examined parental attachment in samples of young and middle-age adults who were experiencing particular mental or behavioral health problems, such as depression, eating disorders, or incarceration, but these studies did not seem comparable to studies of college student populations.) A brief review of these four studies found that the average ES of the relationship between parental attachment and adjustment outcomes was .26, comparable to the overall ES determined in our analysis. Thus, it may not be the case that the college transition triggers attachment concerns to a greater extent than other transitions associated with young adulthood, although we would welcome more research examining parental, peer, and romantic attachment relationships among heterogeneous groups of young adults.<sup>4</sup>

### Counseling Implications

By affirming that the quality of parental attachment relationships demonstrates a modest, albeit significant and generalized, effect on college student adjustment, our findings support therapeutic inquiry regarding these relationships in clinical work with college students. In addition, we believe our findings have other potential implications for counseling practice. For example, we found that the quality of parental attachment was more strongly related to indicators of separation–individuation than to other indicators in the developmental advances domain. These findings suggest that counseling interventions focusing on the dialogic and dialectical processes in parent–student communications may hold particular therapeutic value for promoting students’ experiences of greater self–other differentiation in their relationships with parents. Identifying and remedying those interactions associated with emotional reactivity and problem behaviors in these relationships may in turn strengthen communications that advance age-appropriate developmental competencies (e.g., forming secure intimate peer relationships, assuming greater personal responsibility for organizing and consolidating life/career goals and plans). Although Slade (1999) appropriately observed that, given the nascent state of empirical work linking attachment dynamics with therapeutic processes, “an understanding of the nature of attachment informs rather than defines intervention and clinical thinking” (p. 577), emergent efforts to connect attachment constructs within existing therapeutic frameworks such as contemporary psychoanalytic (Eagle & Wolitzky, 2009), cognitive–behavioral (McBride & Atkinson, 2009), interpersonally oriented (Florsheim & McArthur, 2009), and emotionally focused treatment approaches (S. M. Johnson, 2009) offer useful case illustrations of how attachment theory constructs and assumptions can be readily integrated within these approaches.

<sup>4</sup> We thank an anonymous reviewer for suggesting this interesting caveat to our analyses of parental attachment and adjustment among young adult college students.

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Received April 23, 2010

Revision received May 31, 2011

Accepted June 9, 2011 ■