

Parental Attachment, Separation-Individuation, and College Student Adjustment: A Structural Equation Analysis of Mediational Effects

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Secure parental attachment and healthy levels of separation-individuation have been consistently linked to greater college student adjustment. The present study proposes that the relation between parental attachment and college adjustment is mediated by healthy separation-individuation. The authors gathered data on maternal and paternal attachment, separation-individuation, and 3 dimensions of college adjustment in a sample of 404 college students. Using structural equation modeling, results supported a model in which separation-individuation fully mediated the link between attachment and college adjustment, for both men and women. Implications of these results are discussed for individuation-within-relatedness models of adolescent development and for counseling college students in distress.

The number of students enrolling in U.S. colleges and universities is at an unprecedented high, with new students reporting increased confidence that they will successfully graduate (Strage & Brandt, 1999). In spite of this confidence, the percentage of students actually graduating from college is declining and, once at college, students are reporting record high levels of emotional and psychological stress (Sax, Astin, Korn, & Mahoney, 1999; U.S. Department of Education, 1995). Given these statistics, it is imperative that counseling psychologists working with college students better understand the reasons why some students make their way through college successfully, with relatively low levels of emotional distress, whereas other students become increasingly emotionally distressed at college, requiring them either to drop out or to take extended leaves of absence before completing their degrees.

In an attempt to understand predictors of emotional adjustment in college, a number of early theories emphasized the importance of the development of autonomy and individuation as a key developmental task facing late-adolescent college students (Arnstein, 1980; Chickering, 1969). These theorists reasoned that students

with a stronger and healthier sense of themselves as individuals would be better equipped to handle the demands for independent functioning that accompany the college transition, including developing an academic schedule, negotiating a new and often complex social world, and developing the internal motivation to wake up at a reasonable time, attend classes, and keep up with assignments.

During the 1970s and 1980s, research demonstrated that students with higher levels of separation-individuation reported better academic and social adjustment to college and fewer symptoms of loneliness or depression (Hoffman, 1984; Hoffman & Weiss, 1987; Lapsley, Rice, & Shadid, 1989; Levine, Green, & Millon, 1986; Lopez, Campbell, & Watkins, 1986, 1988; Rice, Cole, & Lapsley, 1990). In these studies, *separation-individuation* was defined primarily as the absence of negative feelings about the process of separation, including feelings of anxiety, guilt, or expecting rejection when separating. Consistent with the present study, separation-individuation is seen as a developmental process that begins with separation from parents, peers, and other significant persons, but that extends to individuation and the development of a coherent, autonomous self.

In the early 1990s, research focusing exclusively on separation-individuation as a predictor of college adjustment came under some criticism from a number of perspectives (for an overview, see Kenny, 1990). From an adolescent developmental perspective, critics argued that adolescent development tends to proceed best when the adolescent can develop some autonomy from parents, but in the context of an ongoing supportive and close parent-adolescent relationship (Grotevant, 1989; Grotevant & Cooper, 1985). By contrast, adolescents who strive too strongly to separate from their parents appear isolated and withdrawn and are at increased risk for the development of behavior problems (Ryan & Lynch, 1989). From a feminist perspective, Kenny and colleagues (e.g., Kenny, 1987; Kenny & Donaldson, 1991) argued that the

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heavy emphasis on separation-individuation as the key dynamic in college adjustment was a male-centric view of development and that women's development of independence occurs best in a relational context, in which strong ties with others are maintained (Gilligan, 1982; Josselson, 1988). From this point of view, the goal of development is interdependence, not independence.

Following from these criticisms, a number of researchers began to look at a history of secure attachment with parents as a comparable, or perhaps, even better predictor of college adjustment than separation-individuation (Armsden & Greenberg, 1987; Kenny, 1987, 1990; Kenny & Donaldson, 1991; Larose & Boivin, 1998; Rice, FitzGerald, Whaley, & Gibbs, 1995; Vivona, 2000). *Attachment* is defined in these studies as an enduring emotional bond that forms between the parent and the child across the life span (Rice et al., 1995). A secure attachment relationship helps the child to develop a positive view of self and to expect positive, supportive interactions with others (Griffin & Bartholomew, 1994). The college transition may be viewed analogously as a second "strange situation" (Kenny 1987, 1990), in which students with a history of secure attachment to their parents will feel comfortable turning to them for social support and "refueling" as they negotiate the new academic and social challenges of college life. Supporting these ideas, a number of studies have shown that students securely attached to their parents report better social, academic, and emotional adjustment in college (Bradford & Lyndon, 1993; Holmbeck & Wandrei, 1993; Larose & Boivin, 1998; Schultheiss & Blustein, 1994b), greater social connectedness with friends and less loneliness (Blain, Thompson, & Whiffen, 1993; Brack, Gay, & Matheny, 1993), less psychologically distressing symptoms such as depression and anxiety, and even less use of alcohol (Armsden & Greenberg, 1987; Cavell, Jones, Runyan, Constantin-Page, & Valasquez, 1993; Vivona, 2000). One longitudinal study demonstrated that attachment security measured in freshman year predicted better college adjustment 2 years later (Rice et al., 1995).

Along with the research supporting a link between a history of secure parental attachment and college adjustment, a number of researchers have suggested that it is perhaps some additive combination of secure attachment and separation-individuation that best predicts college development and adjustment (Blustein, Walbridge, Friedlander, & Palladino, 1991; Holmbeck & Wandrei, 1993; O'Brien, Friedman, Tipton, & Linn, 2000; Rice et al., 1995; Schultheiss & Blustein, 1994a; Schultheiss & Blustein, 1994b). Using canonical correlational procedures, Schultheiss and Blustein (1994b) found that the combined additive effects of secure attachment and separation-individuation constituted the best predictor of college student development for women and of college student adjustment for men. Similarly, Blustein et al. (1991) found that the combination of secure attachment and separation-individuation was the best predictor of progress in the career developmental process (i.e., more career commitment and less tendency to foreclose) for both men and women. By contrast, Schultheiss and Blustein (1994a), in a study of identity formation, found that the combination of attachment and separation-individuation was the best predictor of identity formation for women; however, for men, only separation-individuation was related to identity formation variables. Finally, more recent longitudinal research by O'Brien et al. (2000) demonstrated that both attachment and separation-

individuation were predictive of women's subsequent vocational development.

The studies of the conjoint effects of attachment and separation-individuation suggest at least two possibilities for how these two sets of variables may affect college adjustment. One possibility is an additive model, wherein the presence of both attachment and separation-individuation does a better job in predicting college adjustment than does the presence of only one or the other variable. A second possibility is a mediational model, wherein a history of secure attachment actually leads to better feelings about separation-individuation during adolescence, which, in turn, yields greater college adjustment. This mediational model is consistent with attachment theorists' argument that secure attachment relationships provide the foundation for the development of a differentiated and complex view of self, including the capacity to view oneself as loveable, effective, and autonomous (Fonagy & Target, 1997; Laible & Thompson, 2000; Sroufe, 2002). It is also consistent with the suggestion of feminist theorists that supportive relational bonds facilitate the process of separation and individuation (e.g., Gilligan, 1982; Josselson, 1988). The present study was designed to test a model wherein current feelings about the process of separation and individuation would mediate the effects of secure attachment relationships on dimensions of college adjustment. We also compared this model with the additive model described above to determine which provided a more parsimonious account of the data.

In the present study, we examined whether this mediated model would hold true for both male and female college students, in light of some of the gender differences mentioned above (see Kenny & Rice, 1995, for a review). Additionally, we included both maternal attachment and paternal attachment separately in both male and female students' models given that studies have suggested students' attachment relationships with their mothers and fathers might have differential effects on college adjustment (Blustein et al., 1991; Brack et al., 1993; Schultheiss & Blustein, 1994b). Finally, we examined three dimensions of adjustment in the present study—academic, social, and personal—emotional—to explore whether attachment and separation-individuation were equally relevant across these areas of adjustment for male and female college students. The theoretical model proposed in the present study is presented in Figure 1.

The model and hypotheses of the present study were tested using structural equation modeling (SEM), a versatile analytical approach that provides an excellent mechanism for addressing the main questions of the present study (including issues of mediation and group differences in patterns of relations). Details of this process, the latent constructs involved, and the measured indicators used to operationalize those constructs are included in the following section.

Method

Participants and Procedures

Four-hundred four college students (158 [39.1%] men and 246 [60.9%] women) at a middle-sized public regional university in the Northeastern United States participated in what was described to them as a "study of college student adjustment." Data collection took place over a 3-year period and throughout the school year, from early in the fall semester to late in the spring semester. Participants were recruited via flyers placed

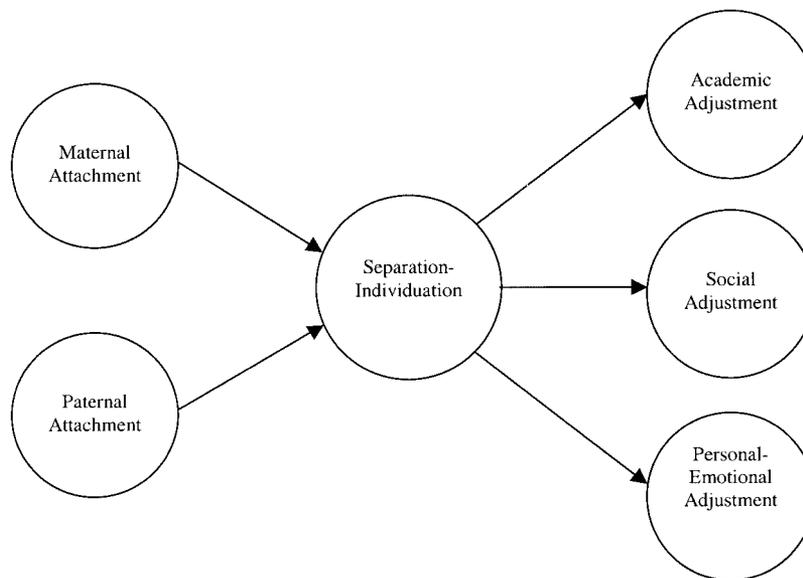


Figure 1. Theoretical model depicting links among parental attachment, Separation-Individuation, and college adjustment constructs.

around campus and through announcements made in undergraduate courses. Most of these announcements were made in undergraduate psychology courses, but an effort was made to recruit students in other departments as well (e.g., English, History, and Mass Communications). Interested students were individually administered a packet of questionnaires to complete, which took about 90 min.¹ Upon completion of the instruments, participants received a form that might be applicable for extra credit in their courses and their name was entered into a raffle for a small gift certificate at the local bookstore. To maintain confidentiality, participants signed a separate informed consent form but did not put any identifying information on the questionnaires.

Of the 404 students, 44.5% were freshmen, 15.4% were sophomores, 21.4% were juniors, and 18.2% were seniors (.5% was unaccounted for; there was 1 nondegree student and 1 graduate student). The mean age of the participants was 20.57 years ($SD = 4.17$). In terms of ethnicity, 78.4% were Caucasian, 11.6% were African American, 3.7% were Asian American, 1.2% were Latino/a, 2.0% identified themselves as biracial, and 3.1% were foreign or of other ethnicities (e.g., Persian, Russian, African Jamaican, and Native American). Using Hollingshead's (1965) two-factor index of social class, 43.7% of the students were from families in Social Classes I and II (i.e., executives, major professionals, and large business owners), whereas 56.3% were from families in Social Classes III and IV (minor professionals, middle management, small business owners, skilled workers, etc.).

Instruments

Eighteen manifest variables were included in the present analyses, serving as indicators of six latent constructs: Maternal Attachment, Paternal Attachment, Separation-Individuation, Academic Adjustment, Social Adjustment, and Personal-Emotional Adjustment. In the following section, we describe the instruments used to assess the measured variables that served as manifest indicators of each construct.

Maternal Attachment and Paternal Attachment. Security of attachment to each parent was measured using the revised version of the Inventory of Parent and Peer Attachment (IPPA; Arnsden & Greenberg, 1987). The IPPA consists of three 25-item, identically worded subscales that measure,

respectively, security of attachment to mother, father, and peers (given the focus on parental attachment in this study, the 25-item Peer Attachment subscale was not used in the present analyses). Participants respond to the items on 5-point rating scales ranging from 1 (*almost never or never true*) to 5 (*almost always or always true*). For each parent, security of attachment is measured using three subscales: Trust (10 items), Communication (9 items), and Alienation (6 items). Some sample items from the subscales include: "My mother accepts me as I am" (Trust item), "My father helps me to talk about my difficulties" (Communication item), and "My father doesn't understand what I'm going through these days" (Alienation item).

In their original validation work, Arnsden and Greenberg (1987) reported Cronbach's alphas for the Trust, Communication, and Alienation subscales to be .91, .91, and .86, respectively, and a 3-week test-retest reliability of .93 for parents (combined) and .86 for peers. In the present study, women's coefficient alphas for Trust, Communication, and Alienation were .94, .92, and .82 for mothers, and .94, .93, and .81 for fathers, respectively; men's coefficient alphas for Trust, Communication, and Alienation were .89, .86, and .76 for mothers, and .90, .88, and .78 for fathers, respectively. Much research has supported the general validity of the attachment construct, as reflected by these subscales, and has demonstrated that secure attachment on the IPPA (Arnsden & Greenberg, 1987) is positively correlated with greater self-esteem and lower levels of de-

¹ The packet of questionnaires included additional measures not analyzed in the present study. These measures were the Beck Depression Inventory (Beck, Steer, & Brown, 1996), the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980), the Authoritative Parenting Measure (Strage & Brandt, 1999), the Traumatic Events Questionnaire (Vrana & Lauterbach, 1994), the Purdue Post-Traumatic Stress Disorder Inventory (Lauterbach & Vrana, 1996), and the Dissociative Experience Scale (Bernstein & Putnam, 1986). It should be noted, however, that the study was advertised simply as a study of "college student adjustment" and, when consenting to participate in the study, students were not aware of the specific questions included in the questionnaire packet. Therefore, it is unlikely that students selectively signed up for or consented to participate in the study because of an interest in one or more of these issues.

pression and antisocial behavior in middle to late adolescents (Armsden & Greenberg, 1987; Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990; Marcus & Betzer, 1996). Secure attachment to parents is also modestly correlated with greater family cohesion, organization, and expressiveness, as measured by the Family Environment Scale (FES; Moos, 1974), and is related to a propensity to seek out parents during times of stress (Armsden & Greenberg, 1987). In terms of ethnic group differences, the IPPA was originally validated on a primarily Caucasian sample (about 80%) but has been used consistently with both Caucasian and non-Caucasian samples. Most studies have not examined ethnic group differences, but a few have found that non-Caucasian participants (especially when those participants are also from a low socioeconomic status) report lower levels of attachment to parents on the IPPA than Caucasian participants (Cavell et al., 1993; Paterson, Field, & Pryor, 1994). Although the IPPA was designed as a measure of the enduring attachment relationship between parent and child, one study examining the IPPA, along with other commonly used self-report measures of adult attachment to parents, demonstrated that although these measures appear correlated with attachment-relevant constructs (such as loneliness, alienation, and affiliation), they are best thought of as measures of "the general affective quality of one's continued relationships to parents" (Heiss, Berman, & Sperling, 1996, p. 112).

Separation-Individuation. Current feelings about the process of separation and individuation were evaluated in the study using the Separation-Individuation Test of Adolescence (SITA; Levine et al., 1986). The SITA contains 103 items that students respond to on a 5-point rating scale ranging from 1 (*never true or strongly disagree with*) to 5 (*always true or strongly agree with*) (depending on the wording of the item). Levine et al. developed the SITA to assess feelings about separation and individuation during adolescence. On the basis of Mahler's psychoanalytic theory of infant separation-individuation (Mahler, Pine, & Bergman, 1975), Levine theorized that adolescence was a time in which concerns about separation and individuation would be reawakened. The items focus on current relationship dynamics with parents, peers, and teachers, while echoing some of the themes highlighted in Mahler's stages, such as fears of merger and engulfment, anxiety about separation, denial of appropriate dependency needs, and narcissistic self-involvement.

The present study used three subscales of the SITA (Levine et al., 1986) to measure separation-individuation. All three of these subscales focus on anxiety about the separation process and have been shown to be linked with student adjustment and student's relationships with family members (Holmbeck & Wandrei, 1993; McClanahan & Holmbeck, 1992; Rice et al., 1995). The three subscales with sample items and reliability estimates in the present study are as follows: Separation Anxiety (e.g., "Being alone is a very scary idea for me"; females' $\alpha = .78$, males' $\alpha = .71$), Engulfment Anxiety (e.g., "I can't wait for the day that I can live on my own and am free from my parents"; females' $\alpha = .79$, males' $\alpha = .75$), and Rejection Expectancy (e.g., "Sometimes it seems that people really want to hurt me"; females' $\alpha = .83$, males' $\alpha = .81$). Research has shown that the subscales of the SITA are correlated in the expected direction with well-validated personality measures such as the Millon Adolescent Personality Inventory (Millon, Green, & Meagher, 1982) and the Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1989), with measures of attachment and adaptability in the family and with self-esteem and adjustment to college (Holmbeck & Leake, 1999; Levine et al., 1986; Levine & Sain-tinge, 1993; McClanahan & Holmbeck, 1992). In terms of ethnic group differences, although the SITA was developed on a primarily Caucasian sample, it has been used in studies with multiethnic samples (Gnaulti & Heine, 2001; McClanahan & Holmbeck, 1992). One study demonstrated significant ethnic group differences on a number of the subscales of the SITA, including those used in the present study (Gnaulti & Heine, 2001). In that study, African American, Hispanic American, and Asian American participants reported higher levels of engulfment anxiety than did Cauca-

sian participants; additionally, African Americans reported higher levels of rejection expectancy than Caucasians.

College student adjustment. Student adjustment to college was assessed using the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984). This is a 67-item self-report questionnaire used to assess college students' academic, social, and personal-emotional adjustment to college, all of which have been shown to correlate negatively with college attrition and positively with student grade point average and participation in social events (Baker & Siryk, 1984, 1986). The SACQ has shown internal consistency and construct validity with students from diverse ethnic backgrounds (Graham, Baker, & Wapner, 1984; Rice, Cunningham, & Young, 1997). Students responded to items using a 9-point rating scale ranging from 1 (*doesn't apply to me at all*) to 9 (*applies very closely to me*); higher scores suggest better adjustment. The SACQ is composed of a 24-item Academic Adjustment subscale (females' $\alpha = .89$, males' $\alpha = .86$), a 20-item Social Adjustment subscale (females' $\alpha = .86$, males' $\alpha = .87$), and a 15-item Personal-Emotional Adjustment subscale (females' $\alpha = .84$, males' $\alpha = .82$). Rather than use each total subscale score as a single measured variable in the structural equation model, however, each subscale was divided so as to yield three scores: a subtotal of the first third, second third, and last third of the items. These three subtotals were then used as indicators of the latent constructs of academic, social, and personal-emotional adjustment. This was done so that no latent construct in the model was assessed by a single indicator, which either introduces measurement error (unreliability) if modeled as a single measured variable or assumes that the sample reliability estimate holds for the population if modeled as a reliability-adjusted single-indicator factor (see Rice, Ashby, & Slaney, 1998, for a recent example of this same methodology).

Overview of Analyses

Across the entire dataset, there was very little missing data on individual variables or scales; on average, 2.16% (range = 0.25%–5.0%) of each variable's data were missing across all variables used in this study. To deal with the missing data for men and women (separately), thereby using information from all available data, the expectation maximization algorithm within SPSS 10.0 was used to generate covariance matrices under the standard assumption of data being missing completely at random. These covariance matrices were then used in the subsequent SEM analyses.

The SEM analyses in the present study, conducted using maximum-likelihood estimation within EQS (Bentler, 1998), proceeded in two phases: a measurement phase and a structural phase (see, e.g., Anderson & Gerbing, 1988). In the measurement phase, a confirmatory factor analysis (CFA) model in which all latent variables were allowed to covary was imposed on the variance-covariance matrices separately for men and women (with no constraints across groups). This method ensures that any badness of fit in the model is the result of measurement model misspecification rather than of inadequate structural relations among the latent variables. As is commonly done (see, e.g., Byrne, 1994), the measurement model was evaluated in this phase to see whether any meaningful improvement could be made within each group. Improvements in measurement models can take many forms, but the present study focused only on the possibility of improving fit by adding residual covariances into the model. A decision was made to add a residual covariance if, and only if, it made sense theoretically and was substantial enough such that overfitting (i.e., capitalization on chance covariation) was not occurring (see Byrne, 1994). Measurement model modifications suggested for one group were made in both groups so as to keep the measurement models completely consistent; in the present study, three such modifications were made, as detailed below. Once the final measurement model was determined for men and women separately, loading constraints were imposed across samples to test factorial invariance. Modification indices showed loading constraints did not introduce a statistically significant amount of badness-of-data model

fit; hence, this constrained measurement model was used in the next phase of analysis.

To start the structural phase of analysis, an initial model was tested that reflected partial mediation. Specifically, paths were modeled from the covarying Maternal Attachment and Paternal Attachment constructs to Separation-Individuation, from Separation-Individuation to the Academic Adjustment, Social Adjustment, and Personal-Emotional Adjustment constructs (whose latent residuals covary), and from the Maternal Attachment and Paternal Attachment directly to the Academic Adjustment, Social Adjustment, and Personal-Emotional Adjustment constructs. Note that this model, which has only cross-group loading constraints and no structural constraints across the male and female models, is structurally saturated, thus having fit equivalent to the final confirmatory factor model from the prior measurement phase of analysis. The partial mediation model is also structurally equivalent to an additive model, in which Attachment and Separation-Individuation serve as exogenous factors predicting the three outcome factors (and thus the two models are indistinguishable on the basis of data model fit). The partial mediation was then compared with a model in which the direct paths from the parental attachment constructs to the college adjustment constructs were constrained to zero, thus leaving the only effects of the former on the latter to be those mediated by Separation-Individuation. This total mediation model, as with the partial mediation model, had no cross-group structural constraints. If it fit significantly worse than the partial mediation model, then that would suggest that Separation-Individuation does not fully mediate the effects of parental attachment on college adjustment. This parallels the strategy outlined by Holmbeck (1997) for testing mediation using SEM. Once the final structural model

was determined (partial vs. total mediation), cross-group structural constraints were imposed and modification indices were used to assess invariance of the hypothesized structural relations. Results of this assessment appear below.

Results

Descriptive Statistics

Means and standard deviations for the 18 variables used in this study are presented in Table 1, separately for male and female students. Although the groups were largely comparable on attachment and separation-individuation variables (women reported slightly higher levels of communication with their mothers than did men), women reported statistically significantly better academic adjustment on one of the three subscales, and men reported statistically significantly better personal-emotional adjustment on two of the three subscales. The zero-order correlations among these variables are presented in Table 2, with data for the male sample above the diagonal and data for the female sample below the diagonal. As seen in the table, the three subscales of maternal and paternal attachment were statistically significantly correlated with the three separation-individuation variables and with the three college adjustment subscales. In addition, for men and women, the three separation-individuation variables generally were statisti-

Table 1
Descriptive Statistics for All Variables Included in the SEM Analyses

Variable	Men		Women		t^a (df)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Attachment					
Mother Trust	4.23	0.67	4.19	0.80	0.754 (387)
Mother Communication	3.60	0.77	3.82	0.90	-2.381* (393)
Mother Alienation	2.16	0.74	2.25	0.83	-1.259 (390)
Father Trust	4.00	0.76	3.95	0.91	0.390 (382)
Father Communication	3.29	0.87	3.22	1.04	0.340 (383)
Father Alienation	2.36	0.82	2.42	0.92	-0.664 (388)
Separation-Individuation					
Separation Anxiety	2.43	0.51	2.50	0.56	-1.380 (394)
Engulfment Anxiety	2.58	0.71	2.61	0.82	-0.392 (392)
Rejection Expectancy	1.88	0.56	1.86	0.58	0.465 (401)
Adjustment					
Acad. Adj.-Scale 1	5.81	1.28	6.13	1.30	-2.556* (395)
Acad. Adj.-Scale 2	5.85	1.21	6.02	1.20	-1.436 (400)
Acad. Adj.-Scale 3	5.90	1.19	6.06	1.19	-1.370 (396)
Soc. Adj.-Scale 1	6.17	1.55	6.18	1.66	-0.102 (396)
Soc. Adj.-Scale 2	5.83	1.29	5.76	1.41	0.472 (393)
Soc. Adj.-Scale 3	6.23	1.40	6.23	1.31	0.084 (394)
Pers.-Emot. Adj.-Scale 1	6.04	1.46	5.62	1.56	2.740** (398)
Pers.-Emot. Adj.-Scale 2	6.52	1.49	6.06	1.70	2.791** (399)
Pers.-Emot. Adj.-Scale 3	5.83	1.37	5.71	1.40	0.842 (398)

Note. SEM = structural equation modeling; Acad. Adj. = Academic Adjustment scale from the Student Adaptation to College Questionnaire (SACQ); Soc. Adj. = Social Adjustment scale from the SACQ; Pers.-Emot. Adj. = Personal-Emotional Adjustment scale from the SACQ.

^a Mean differences tested via two-tailed independent sample *t* tests at the .05 level.

* $p < .05$. ** $p < .01$.

Table 2
Zero-Order Correlations for All Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Mo. Trust	—	.75**	-.67**	.35**	.29**	-.30**	-.20**	-.45**	-.48**	.27**	.30**	.28**	.25**	.13	.31**	.22**	.28**	.24**
2. Mo. Commun.	.86**	—	-.67**	.26**	.39**	-.31**	-.20**	-.25**	-.48**	.24**	.29**	.28**	.25**	.14	.30**	.14	.20**	.17*
3. Mo. Alienation	-.80**	-.79**	—	-.26**	-.27**	.52**	.48**	.35**	.55**	-.38**	-.31**	-.31**	-.27**	-.18*	-.30**	-.38**	-.50**	-.44**
4. Father Trust	.29**	.30**	-.33**	—	.78**	-.76**	-.15*	-.27**	-.39**	.28**	.20**	.36**	.25**	.07	.25**	.22**	.20**	.25**
5. Father Commun.	.26**	.34**	-.33**	.83**	—	.70**	-.16*	-.21**	-.40**	.19*	.12	.20**	.33**	.19*	.24**	.16*	.15*	.18*
6. Father Alienation	-.22**	-.28**	.43**	-.69**	-.68**	—	.42**	.32**	.57**	-.37**	-.29**	-.37**	-.36**	-.21**	-.33**	-.35**	-.40**	-.37**
7. Sep. Anxiety	-.30**	-.25**	.42**	-.15*	-.12	.32**	—	.18*	.53**	-.25**	-.18*	-.19*	-.22**	-.19*	-.26**	-.47**	-.53**	-.47**
8. Engulf. Anxiety	-.54**	-.40**	.40**	-.26**	-.23**	.19**	.25**	—	.31**	-.31**	-.19*	-.27**	-.14	-.13	-.15*	-.18*	-.22**	-.24**
9. Reject. Expect.	-.53**	-.51**	.55**	-.37**	-.34**	.43**	.56**	.29**	—	-.37**	-.39**	-.38**	-.41**	-.29**	-.34**	-.33**	-.48**	-.36**
10. Acad. Adj. (Sc. 1)	.18**	.27**	-.34**	.23**	.21**	-.24**	-.32**	-.07	-.36**	—	.66**	.75**	.29**	.21**	.42**	.47**	.50**	.59**
11. Acad. Adj. (Sc. 2)	.22**	.27**	-.29**	.23**	.17*	-.17*	-.37**	-.07	-.31**	.75**	—	.64**	.29**	.33**	.38**	.24**	.33**	.37**
12. Acad. Adj. (Sc. 3)	.15*	.24**	-.28**	.20**	.18**	-.21**	-.33**	-.05	-.28**	.80**	.77**	—	.24**	.18*	.38**	.41**	.43**	.47**
13. Soc. Adj. (Sc. 1)	.22**	.24**	-.33**	.24**	.26**	-.30**	-.33**	-.08	-.36**	.33**	.40**	.30**	—	.74**	.73**	.20**	.45**	.25**
14. Soc. Adj. (Sc. 2)	.26**	.30**	-.38**	.23**	.27**	-.29**	-.38**	-.10	-.40**	.32**	.38**	.31**	.75**	—	.64**	.10	.33**	.19*
15. Soc. Adj. (Sc. 3)	.27**	.28**	-.37**	.19**	.21**	-.24**	-.32**	-.13	-.42**	.34**	.38**	.28**	.72**	.59**	—	.24**	.48**	.29**
16. Pers.-Emot. Adj. (Sc. 1)	.21**	.19**	-.37**	.20**	.19**	-.35**	-.55**	-.02	-.42**	.42**	.45**	.51**	.39**	.40**	.42**	—	.62**	.67**
17. Pers.-Emot. Adj. (Sc. 2)	.25**	.29**	-.43**	.21**	.17*	-.32**	-.54**	-.10	-.50**	.55**	.56**	.59**	.43**	.45**	.44**	.70**	—	.64**
18. Pers.-Emot. Adj. (Sc. 3)	.27**	.27**	-.42**	.20**	.20**	-.31**	-.49**	-.12	-.47**	.53**	.51**	.53**	.47**	.39**	.39**	.70**	.73**	—

Note. Data for the male students appear above the diagonal. Data for female students appear below the diagonal. Mo. = mother; Commun. = Communication; Sep. = Separation; Engulf. = Engulfment; Reject. Expect. = Rejection Expectancy; Acad. Adj. = Academic Adjustment scale (Sc.) from the Student Adaptation to College Questionnaire (SACQ); Soc. Adj. = Social Adjustment scale from the SACQ; Pers.-Emot. Adj. = Personal-Emotional Adjustment scale from the SACQ.
* $p < .05$. ** $p < .01$.

cally significantly correlated with the college adjustment dimensions. The primary question at hand is whether the relations between the parental attachment and college adjustment variables can be completely accounted for by a separation-individuation mediating mechanism.

Before turning to the primary models of the study, however, we examined whether there were any differences in the pattern of relations among the 18 manifest variables between 1st-year students and upperclassmen (i.e., sophomore standing and above). The data were split into the two samples, yielding a variance-covariance matrix for the 1st-year students and one for the upperclassmen. To test whether covariances differed across groups, we used maximum-likelihood estimation in EQS (Bentler, 1998) to fit a multisample covariance structure model in which all variables were simply allowed to covary. We imposed cross-group equality constraints on all covariances, thus forcing equivalent variable relations on data from 1st-year students and upperclassmen. As with all other models in this study, we paid less attention to the sample-size sensitive model chi-square (e.g., Bentler, 1990) and instead we assessed the data model fit using the three fit indices recommended by Hu and Bentler (1999). The first is the comparative fit index (CFI; Bentler, 1990), which assesses the theoretical model relative to a null model positing complete variable independence. Hu and Bentler (1999) suggested values "close to .95" (p. 27) as indicating satisfactory fit. The second recommended index is the standardized root-mean-square residual (SRMR), which is roughly an average of all standardized residual covariances. Hu and Bentler recommended that values "close to .08" (p. 27) were suggestive of acceptable data model fit. Finally, Steiger and Lind's (1980) root-mean-square error of approximation (RMSEA), with 90% confidence interval, was used to reflect both the fit and parsimony of the model at hand. Hu and Bentler recommended values "close to .06" (p. 27) for the RMSEA. (It should be noted, however, that Hu and Bentler's recommendations were derived in the context of single-sample models; the present study used multisample models, and hence their recommendations will be taken as only approximate guidelines.) In the case of the present multisample model, fit was excellent: CFI = .986, SRMR = .07, and RMSEA = .03; this suggests that the pattern of relations among the variables was not appreciably different between 1st-year students and upperclassmen. Thus, we felt justified in combining the data across the two groups of students in all subsequent models.

Measurement Models

We imposed an initial CFA measurement model, in which all factors were allowed to covary, on the male and female data separately to test the adequacy of the relations of the six latent constructs to the 18 measured indicator variables used in the study. As described previously, the Maternal Attachment and Paternal Attachment constructs had three measured indicators each: Trust, Communication, and Alienation. The Separation-Individuation construct had as its indicators Separation Anxiety, Engulfment Anxiety, and Rejection Expectancy. Finally, Academic Adjustment, Social Adjustment, and Personal-Emotional Adjustment each had three subtotals from the SACQ (Baker & Siryk, 1984) adjustment scales as their indicator variables (referred to hereafter as Scale 1, Scale 2, and Scale 3). The fit of this initial CFA model, which is the first part of the measurement phase, is seen in Table 3 to be encouraging, but with room for improvement through theoretically and statistically meaningful respecification. Such respecification took place using information from the Lagrange multiplier modification indices provided by EQS (Bentler, 1998). These tests suggested that for both men and women, the data model fit would be improved significantly if covariances were allowed between the residuals of the Mother Trust and Father Trust subscales, the Mother Communication and Father Communication subscales, and the Mother Alienation and Father Alienation subscales. This implies that, in addition to each of these subscales loading on their respective attachment constructs (which they did highly significantly), there is some residual covariation between scales across mothers and fathers. As the items are worded identically for mothers and fathers, this covariation seemed quite reasonable and we added these residual covariance paths to the measurement model. The result was a highly statistically significant improvement in the multisample model, $\chi^2_{diff}(6) = 140.679, p < .001$, and respectable data model fit indices: CFI = .93, SRMR = .076, and RMSEA = .063. Although the Lagrange multiplier test suggested other modifications as well, the three error covariance respecifications described above were the only ones that seemed justified theoretically.

We tested a final measurement model in which paths from the latent constructs to measured variables were constrained to be equal across men and women. This was done to see whether a single measurement model would appropriately describe the rela-

Table 3
Summary of Data Model Fit Statistics

Model	χ^2	df	CFI	SRMR	RMSEA	90% CI for RMSEA
First CFA model (without covarying residual pairs)	723.547	240	.90	.074	.073	(.067, .079)
Second CFA model (with 3 covarying residual pairs)	582.868	234	.93	.076	.063	(.056, .069)
Third CFA model (with loading constraints across genders)	601.035	246	.92	.080	.062	(.055, .068)
First structural model (partial mediation)	601.033	246	.92	.080	.062	(.055, .068)
Second structural model (total mediation)	616.646	258	.92	.082	.061	(.054, .067)
Third structural model (with structural constraints across genders)	621.992	264	.92	.085	.060	(.054, .066)

Note. CFI = comparative fit index; SRMR = standardized root-mean-square residual; RMSEA = root-mean-square error of approximation; CI = confidence interval; CFA = confirmatory factor analysis.

tions between latent constructs and measured variables for both genders. As seen in Table 3, this model fit the data well and resulted in no appreciable decrement in fit when compared with the unconstrained model, $\chi^2_{diff}(12) = 18.167, p = .11$. The measurement model respecifications and constraints imposed across male and female path loadings were carried forward in subsequent structural models. The final measurement model is presented in Figure 2 in standardized form. Note that although unstandardized paths were constrained to be equal across men and women, the standardized paths differ because of different variances for the measured variables across the groups. Relevant values for men and women are presented in the figure; the respecified error covariances are omitted for simplicity.

Structural Models

The initial structural model reflecting partial mediation was specified with direct paths from the parental attachment constructs to the three adjustment constructs, and with indirect routes from attachment to separation-individuation to adjustment. In addition, Maternal Attachment and Paternal Attachment were allowed to covary in this and subsequent structural models, as it was assumed that maternal and paternal attachment relationships would be somewhat related to each other. The three adjustment constructs' disturbances (latent residuals) were also allowed to covary in this

and subsequent structural models, as we expected there to be some overlap in students' reports of their academic, social, and personal-emotional adjustment to college above and beyond that overlap facilitated by their common antecedents. The measurement model had corresponding loadings constrained equally across groups and three unconstrained error covariances, whereas the structural portion of the model was completely unconstrained across groups. Fit indices for this partial mediation model, displayed in Table 3, were identical to the final measurement model because it included all possible structural relations in each group. It should be pointed out again that this initial partial mediation model is indistinguishable from an additive model, wherein attachment and separation-individuation serve as exogenous variables predicting college adjustment.

The second structural model represented the primary test of the mediational hypothesis of this study. In this model, direct paths from Maternal Attachment and Paternal Attachment to the three college adjustment constructs were constrained to zero for both men and women. The chi-square associated with this total mediation model was not statistically significantly worse than that of the first structural model, in which direct effect paths were included, $\chi^2_{diff}(12) = 15.613, p = .21$. This result supports the primary hypothesis of this study that the effect of parental attachment on college adjustment is mediated by separation-

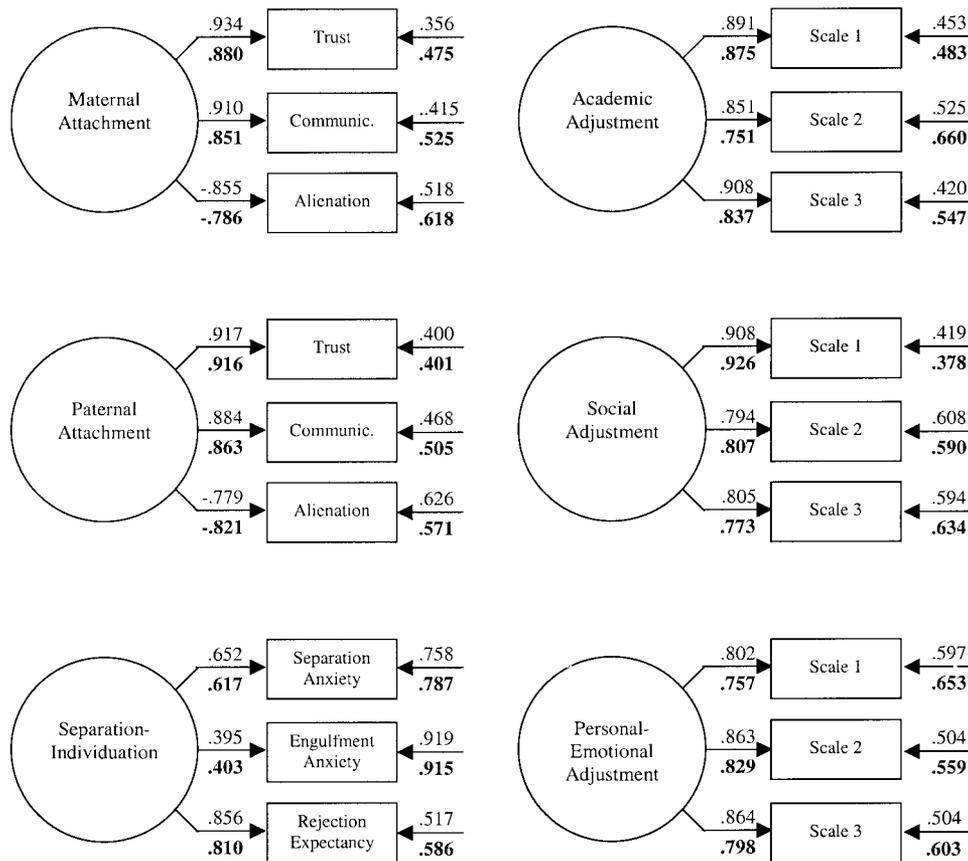


Figure 2. Final measurement model. Standardized paths for women are shown in plain type; standardized paths for men are shown in bold. All paths were significant at $p < .05$. Communic. = Communication.

individuation processes. It also suggests that this mediational model provides a more parsimonious account of the relationships among these variables than does an additive model, wherein both attachment and separation-individuation are viewed as exogenous predictors of the outcome variables (i.e., the partial mediation model presented above).

We tested a final structural model with total mediation in which the path between the parental attachment constructs, the paths from the parental attachment constructs to separation-individuation, and the paths from separation-individuation to the adjustment constructs were constrained to be equal across men and women. This model allowed us to test whether the patterns of relations among these constructs would be invariant across men and women. As determinable from Table 3, the fit of this model was again not statistically significantly worse than the fit of the structurally unconstrained total mediation model, $\chi^2_{diff}(6) = 5.346, p = .50$, suggesting that the hypothesized patterns of relations among the constructs of interest in this study were not appreciably different for men and women. As additional support for this conclusion, the Lagrange multiplier modification indices provided by EQS (Bentler, 1998) suggested that releasing any of these cross-group structural constraints would not significantly improve the data model fit. Overall, the fit was deemed quite satisfactory (e.g., CFI = .92).

This final structural model is displayed in Figure 3, with separate standardized path coefficients for men and women. All hypothesized direct causal relations in the model are statistically significant ($p < .05$) for both men and women, as are the indirect effects of the attachment constructs on adjustment constructs as mediated by Separation-Individuation (computed as the product of paths in each indirect relation and tested within EQS; Bentler, 1998). Similar to before, although unstandardized structural paths were constrained to be equal across men and women, the stan-

dardized paths may differ because of different variances for the latent variables across the groups. Note that all causal paths are negative in the model because Separation-Individuation is really representative of the presence of anxiety about the separation process (recall that the three subscales that make up this construct all assess anxiety about separation). Thus, to interpret this figure correctly, one would say that greater attachment to mothers and fathers leads to less anxiety about the separation process, and less anxiety about separation leads to greater academic, social, and personal-emotional adjustment to college. In the final model, the parental attachment constructs accounted for 51.3% and 51.4% of the variance in separation-individuation for women and men, respectively. The Separation-Individuation construct, in turn, accounted for 23.6% and 22.4% of the variance in Academic Adjustment, 29.3% and 24.5% of the variance in Social Adjustment, and 44.7% and 45.1% of the variance in Personal-Emotional Adjustment for women and men, respectively.

Discussion

The present study supports a growing body of evidence suggesting that both a secure attachment relationship to parents and a healthy level of separation-individuation are predictive of positive academic, social, and personal-emotional adjustment to college (Blustein et al., 1991; Holmbeck & Wandrei, 1993; O'Brien et al., 2000; Rice et al., 1995; Schultheiss & Blustein, 1994a; Schultheiss & Blustein, 1994b). Although past studies have shown that both additively predict college adjustment, the present study is the first to demonstrate that separation-individuation could actually mediate the effects of attachment on adjustment. This finding provides important evidence for theorists who suggest that the process of individuation is actually facilitated rather than impeded by the

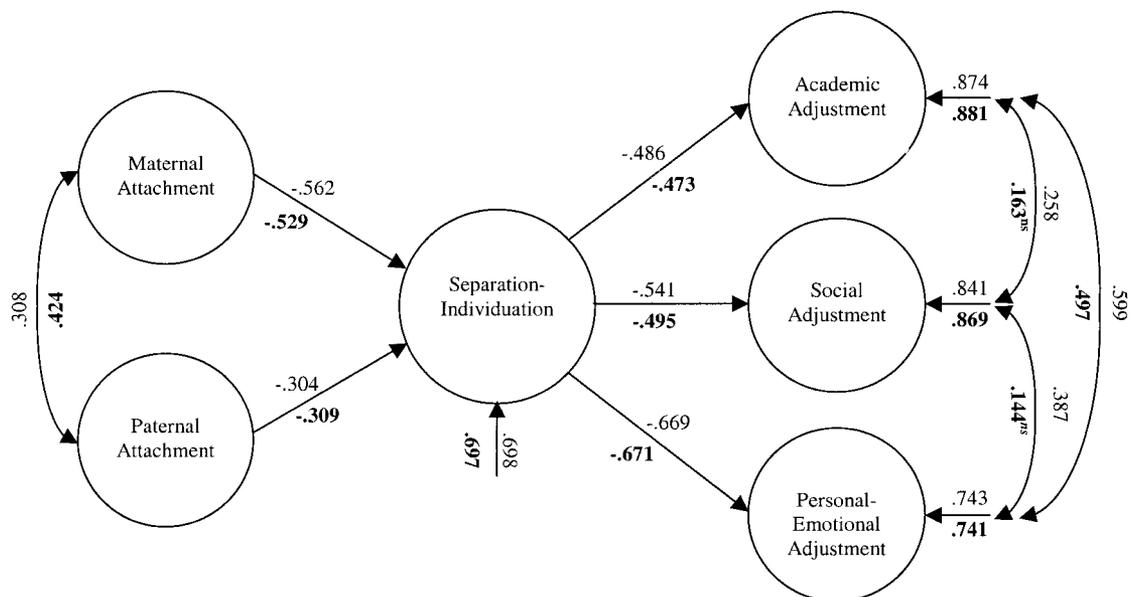


Figure 3. Final structural model. Standardized paths for women are shown in plain type; standardized paths for men are shown in bold. All paths were significant at $p < .05$, except the two designated as *ns*.

presence of secure and enduring connections with others (Gilligan, 1982; Grotevant & Cooper, 1985; Josselson, 1988).

The present study also found that secure attachment was comparably associated with positive college adjustment for both men and women, and that separation-individuation mediated that effect to a similar degree across the genders. This finding challenges some theorists who have argued that the individuation process proceeds quite differently for men and women, with men striving for separation from relationships, or independence, and women striving for separation within relationships, or, interdependence (Chodorow, 1990; Gilligan, 1982). The present findings suggest that the process of individuation is facilitated by the presence of secure relationships for both men and women, consistent with a number of other investigations that found both attachment and separation-individuation to be critical for healthy development in male and female college students (Blustein et al., 1991; Holmbeck & Wandrei, 1993; Schultheiss & Blustein, 1994b; but see Schultheiss & Blustein, 1994a, for an exception). In Holmbeck and Wandrei's (1993) study, men who overemphasized separation (i.e., were high on a "dependency denial" variable) were quite poorly adjusted to college, whereas women who overemphasized attachment (i.e., were high on separation anxiety and caretaker enmeshment) were poorly adjusted. Taken together, these findings argue for a model espousing separation within relationships as the most advantageous to the emotional development of both men and women at this developmental transition.

Although the effects of both maternal and paternal attachment were mediated by separation-individuation, we found that the path from maternal attachment to separation-individuation was nearly twice as large as the path from paternal attachment to separation-individuation, for both men and women. This finding suggests that both male and female students view their attachment relationship with their mother as more strongly associated with their process of separating and individuating than they do their attachment relationship with their father. These findings are consistent with a few other studies that have shown that a secure attachment relationship to mothers is somewhat more closely associated with the development of autonomy (Schultheiss & Blustein, 1994b), career identity (Blustein et al., 1991), and coping abilities (Brack et al., 1993) in college students than is a secure attachment relationship to fathers, although both attachment relationships do significantly predict adjustment in college (Holmbeck & Wandrei, 1993; Schultheiss & Blustein, 1994b).

The present study also contributes to a growing set of studies that have examined mediators of attachment on a variety of developmental outcomes for adolescents and young adults (Engels, Finkenauer, Meeus, & Deković, 2001; Lopez, Mitchell, & Gormley, 2002; Mikulincer, Florian, & Tolmatz, 1990; Mikulincer, Florian, & Weller, 1993; Roberts, Gotlib, & Kassel, 1996). Past studies have examined social support, self-esteem, and problem-solving style as potential mediators of the attachment-adjustment link. The present study found that aspects of self-development, specifically lack of anxiety about the process of separation and individuation, appeared to completely mediate the effects of attachment on college adjustment. One very recent study found similar results when looking at the effects of attachment on college student distress (Lopez et al., 2002). In their study, Lopez et al. examined the effects of attachment security on self-organizational processes, such as the ability to experience a coherent and stable

sense of self (identified as the absence of "self-splitting" in their study) and the ability to project a truthful image of self to others (identified as the absence of "self-concealment"). They found that both self-splitting and self-concealment mediated the link between anxious attachment and college student distress. Taken together, the research on mediators of attachment suggests that attachment promotes both greater self-development and greater competence in relationships (Lopez et al., 2002; see also Fonagy & Target, 1997). Future studies should include a range of possible mediators to examine their relative impact in mediating the effects of attachment on developmental outcomes in late adolescence.

Implications for Practice

The present study has potential implications both for counseling individual college students in distress and for psychoeducational programs aimed at facilitating students' adjustment to college life. Given the significant associations found in this study between attachment, separation-individuation, and college adjustment, it would be important for counselors working with distressed college students to assess their level of current attachment security. For those students who are insecurely attached, the counselor would need to focus on bolstering the students' relationship network to help them feel less anxious about the process of separation and adjustment to college. Secure peer attachments, teacher relationships, and the counselor-student relationship could all provide much needed emotional support for insecurely attached students as they make the transition to college (see Kenny & Rice, 1995; Lopez, 1995, for further discussion of these issues). It should be noted that this discussion suggests that insecure attachment to parents is (at least partially) causing the separation-individuation and adjustment difficulties for these students, which may not be the case, given the cross-sectional and correlational nature of the data in this study. It is equally plausible that well-adjusted students report a more secure relationship with their parents and less difficulties with separation-individuation. In that case, counselors may need to work with parents in recognizing that the difficulties they are experiencing in their relationship with their college student offspring are resulting from the students' difficulties in adjusting to college.

Whether disrupted parental-child attachment relationships result from or partially cause students' college adjustment difficulties, at a psychoeducational level, it seems important to convey to parents the notion that they should stay actively involved in their sons' and daughters' adjustment to campus, expecting occasional phone calls and visits to refuel and receive emotional support. These checking-in sessions may help preserve the parent-child relationship as well as aiding the student in feeling more comfortable about separating and adjusting to college (Bogenschneider, Wu, Raffaelli, & Tsay, 1998; Engels et al., 2001). Students can be encouraged to see their parents as a source of continuing emotional support and be told that part of the tools for success at college involves maintaining a supportive relationship with their parents.

Limitations of the Study

Although this study found significant relations among attachment, separation-individuation, and college adjustment, a number of important limitations must be acknowledged. First, the study is

limited methodologically in its test of the mediational model. Although the IPPA (Armsden & Greenberg, 1987) was designed to measure an enduring parental attachment relationship, it is probably most conservatively viewed as a measure of current parent–student affective relationships (see Heiss et al., 1996). Therefore, it is difficult to conclude, based on the present analyses, that a history of secure attachment relationships to parents laid the groundwork for separation-individuation, which in turn yielded better college adjustment. Future studies might improve on the present study by measuring secure attachment using a procedure that assesses more subtle and enduring working models of attachment that are thought to be laid down early in development (such as the Adult Attachment Interview; George, Kaplan, & Main, 1996).

Second, as mentioned above, this was a cross-sectional, correlational study; therefore, we can draw no definitive conclusions about the causal effects of attachment or separation-individuation on college adjustment. It is possible that those students who are adjusting better to the campus also tend to report a closer and more supportive relationship with parents, and less separation anxiety. This problem is compounded by the fact that all data were collected via self-report. A stronger methodological design could be provided by a longitudinal study, in which data on attachment and separation-individuation are collected prior to data collection on college adjustment, and parent-report or observational measures are used to assess either attachment or adjustment (such a design would help address the methodological issue mentioned above, as well). However, these concerns are ameliorated to some extent by studies that have shown a longitudinal relation between attachment and college adjustment (O'Brien et al., 2000; Rice et al., 1995) and that have shown a fairly strong relation between parental and student report on attachment and adjustment dimensions (Rice, 1996).

The present study is also limited in terms of the generalizability of the sample included. First, the sample consisted of students who voluntarily signed up to participate in psychological research. Students attracted to such a study may not be representative of the general population of college students. Second, the sample was predominately Caucasian and middle class. A number of recent investigations have examined attachment, separation-individuation, and college adjustment in ethnically diverse samples, including African American, Hispanic American, and Korean American samples (Choi, 2002; Giordano, Cernkovich, & DeMaris, 1993; Lopez, Melendez, & Rice, 2000; Rice et al., 1997). In line with the findings from the present study on the importance of secure attachment for college adjustment, these studies have found that close-knit, interdependent parent–adolescents relationships are highly valued and important to the adjustment of Korean American and African American students (Choi, 2002; Giordano et al., 1993). Somewhat contrary to the findings of the present study, however, is Choi's study of Korean Americans, which found that an emphasis on independence or individualism actually negatively predicted adjustment for these students. Given the limited number of non-Caucasian students included in the present study (about 22% across all ethnic groups), one should use caution in generalizing the findings of the present study to non-Caucasian students. Finally, because data from the present study were all collected at one middle-sized, regional university, results might not generalize to other university settings, such as small liberal arts colleges or

major universities with over 30,000 students, where the dynamics of parent–child relationships might differ.

Directions for Future Research

In line with some of the limitations mentioned above, future studies should examine the links between attachment, separation-individuation, and college adjustment across different ethnic and cultural groups, given especially the emphasis on interdependence and collectivism in African, Asian, and Latino culture (see Choi, 2002). Future studies could also expand on the present findings by using a longitudinal design, in which students' attachment to their parents is assessed prior to their entry into college, and then separation-individuation and adjustment to college are measured during the college years. This kind of a study would help determine the long-term effects of attachment and separation-individuation on college adjustment. Finally, future college adjustment research would be greatly enhanced by an increasing focus on intervention studies, to determine whether relatively low-cost interventions with 1st-year students enhance their adjustment across the college years. One intervention study in a small college in Canada has already demonstrated that a peer-group-based intervention had very promising effects on enhancing college adjustment and retention across a 5-year period (Pratt et al., 2000). This kind of intervention research may be enhanced by including a focus on attachment to and separation from parents, as demonstrated by results from the present study.

Conclusion

Notwithstanding potential methodological and sampling limitations, the present study makes important advances in our understanding of the relations among parental attachment, separation-individuation, and college adjustment. The model tested in this study provides support for well-known, but rarely tested, theoretical claims that individuation in late adolescence occurs in the context of ongoing relationship security, and that adolescents who feel isolated or cut off from supportive others are likely to flounder emotionally and have difficulty adjusting during important developmental transitions, such as the entrance into college. Importantly, this individuation-within-relatedness model seems to capture the development of both female and male adolescents during this developmental time frame. The challenge for college student counselors is to facilitate adolescent individuation while supporting students' ongoing need for emotional connection with others.

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