Perceived Parental Social Support and Academic Achievement: An Attachment Theory Perspective

Carolyn E. Cutrona, Valerie Cole, Nicholas Colangelo, Susan G. Assouline, and Daniel W. Russell

The study tested the extent to which parental social support predicted college grade point average among undergraduate students. A sample of 418 undergraduates completed the Social Provisions Scale—Parent Form (C. E. Cutrona, 1989) and measures of family conflict and achievement orientation. American College Testing Assessment Program college entrance exam scores (ACT; American College Testing Program, 1986) and grade point average were obtained from the university registrar. Parental social support, especially reassurance of worth, predicted college grade point average when controlling for academic aptitude (ACT scores), family achievement orientation, and family conflict. Support from parents, but not from friends or romantic partners, significantly predicted grade point average. Results are interpreted in the context of adult attachment theory.

Parents strive to cultivate personal characteristics in their offspring that will enable them to function successfully and independently once they leave the parental home. This cultivation must occur throughout the child's life if he or she is to develop the self-confidence and skills required to meet the challenges of adult life. Contrary to early theories of adolescent development (e.g., Erikson, 1956), a stormy rejection of parental ties is not required to attain competent adult status. Rather, research indicates that individuals who maintain a close relationship with parents throughout adolescence demonstrate more self-confidence and independence than those who report greater emotional distance from their parents (Maccoby & Martin, 1983).

Theories of early childhood development also stress the importance of a high-quality relationship with parents for the acquisition of needed life skills. According to Ainsworth (1982), responsive and nurturant parents provide a secure base from which the child can explore the environment without anxiety about parental availability. A secure relationship with one or both parents facilitates exploration, discovery, skill acquisition, and the development of self-confidence (Ainsworth, 1982). It is hypothesized that a secure relationship with parents throughout childhood contributes to the development of positive schemata regarding oneself (i.e., high self-worth and self-efficacy) and what can be expected in relationships with others (i.e., a

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belief that others are trustworthy and available; Bowlby, 1973; Hazan & Shaver, 1987; Reis & Shaver, 1987).

Barbara and Irwin Sarason and colleagues have drawn parallels between the concept of attachment in childhood and perceived social support in adulthood (B. R. Sarason, Pierce, & Sarason, 1990). According to their view, people who experienced a secure relationship with early caregivers form working models of other people as available and supportive. Although recent experiences with specific individuals affect perceptions of available support (Pierce, Sarason, & Sarason, 1989), B. R. Sarason et al. (1990) have argued that attitudes toward others formed early in life influence general tendencies to appraise support as available or unavailable. Drawing on attachment theory, B. R. Sarason et al. argued that the perception of support availability provides a "safety net" that permits active participation, exploration, and experimentation in a wide range of life experiences, resulting in the acquisition of coping strategies, skills, and self-confidence (B. R. Sarason et al.,1990).

The current study was designed to determine whether perceived social support from parents would predict an important criterion of success, academic performance in college during the first 1 or 2 years after the student leaves the parent's home. Although intellectual ability is a major determinant of academic performance, not all students achieve academic success commensurate with their abilities. According to a national study, approximately 50% of those students identified as gifted by IQ scores are designated as academic underachievers (National Commission on Excellence in Education, 1984). Although academic ability (assessed by standardized intelligence and aptitude tests) is a consistent predictor of academic achievement, and a variety of nonintellective variables have been tested as predictors, it has been estimated that 60% to 70% of achievement remains to be explained (Binder, Jones, & Strowig, 1970). As argued above, individuals who perceive their parents as supportive are hypothesized to have acquired the skills and self-confidence to master new situations and cope effectively with challenge. Thus, we anticipate that parental support will have a positive effect on academic performance.

Our social support research has been guided by the concep-

tual framework of Robert Weiss (1974), who proposed six "provisions" that may be derived from relationships with others. These include *guidance* (advice and information), *reliable alliance* (tangible aid), *attachment* (expressions of caring and love), *reassurance of worth* (respect for abilities and personal qualities), and *social integration* (mutual interests and concerns and belonging to a group of similar others). A final component in Weiss's (1974) list of social provisions is *opportunity to provide nurturance*, which refers to the extent to which the target person is a source of support to others.

A small number of studies have documented links between perceived social support and performance on academic or academic-like tasks. Subjects high in perceived social support performed better on a difficult anagram task than did subjects low in social support. Subjects high in social support also reported less cognitive interference, concentrated more on performing the task, and reported fewer interfering thoughts and worries during the task (I. G. Sarason, Sarason, Keefe, Hayes, & Shearin, 1986). In a study of first- and second-year cadets at the U.S. Coast Guard Academy, high interpersonal stress with peers weakened the association between intellectual aptitude (Scholastic Aptitude Test Mathematics scores) and classroom grades (Barnes, Potter, & Fiedler, 1983). Among students who reported a large number of peer-related stressful events (and presumably low perceived peer support), high intellectual ability frequently was not translated into good grades. Among cadets who reported high stress in their relationship with their parents, first- and second-year grades were lower than those of cadets who reported lower levels of stress in their relationship with parents.

Purpose of the Study

Undergraduates were assessed at the beginning of the semester regarding perceived social support. Their college entrance exam scores (American College Testing Assessment Program college entrance exam [ACT]; American College Testing Program, 1986) and cumulative grade point averages (GPAs) were obtained from the registrar the following semester. This enabled us to assess the relation between perceived social support and GPA while statistically controlling for academic aptitude. The first study assessed only perceived support from parents on the basis of theoretical links between early parent–child attachment and perceived parental support in adulthood. We conducted analyses to determine which of six components of parental support were most closely linked to students' academic performance. In addition, we conducted analyses to determine the specificity of the relation between parental social support and grades. In our analyses, we controlled for level of family conflict. It has been argued that measures of perceived social support may, in fact, reflect the absence of aversive interactions rather than the occurrence of supportive interactions (Coyne, Ellard, & Smith, 1990). Controlling for family conflict allowed us to determine whether the link between perceived social support and academic performance would retain significance when controlling for negative aspects of family relations. In addition, we controlled for parental achievement orientation. Parental values that emphasize winning, success, doing one's best, persistence, excellence, and productivity have been associated with academic achievement (Bloom, 1985; Rimm, 1991). We reasoned

that these values and behaviors might covary with parental supportiveness and wanted to discover whether controlling for parental academic orientation would weaken the link between parental social support and academic achievement.

In the second study, we broadened our assessment of perceived support to include two additional sources: friends and romantic partners. Although a history of interaction with supportive parents was hypothesized to play a key role in the formation of self-confidence and coping skills, it was anticipated that the quality of support received from peers and romantic partners would enhance well-being and would add to the explained variance in academic performance, although these relations were not expected to be as strong as that for parents.

An exploratory analysis was conducted to uncover potential mediating variables in the relation between parental social support and academic performance. According to attachment theory, a secure, supportive relationship with parents should lead to low anxiety and willingness to explore the environment (Ainsworth, 1982). Successful exploration should be associated with the development of self-confidence. We reasoned that individuals who have experienced a lifetime of secure and supportive parenting would experience low anxiety, which would allow them to take advantage of opportunities to obtain needed skills, competencies, and self-confidence. Although a range of positive self-appraisals are probably produced in this manner, we reasoned that academic self-appraisal would be most closely linked to academic performance.

Individuals with high self-efficacy beliefs, that is, those who believe that they can perform behaviors required to achieve specific valued goals, have been shown to demonstrate greater persistence, willingness to tackle difficult tasks, and avoidance of self-blaming attributions for failure (Bandura, 1982). Among science and engineering majors, academic self-efficacy was a significant predictor of college grade point average when controlling for aptitude as assessed by college entrance exam scores (Brown, Lent, & Larkin, 1989). Thus, we predicted that self-efficacy in the academic domain would be a significant predictor of actual GPA. To summarize, we hypothesized that parental social support would predict low anxiety, which would in turn predict academic self-efficacy. We predicted that academic self-efficacy would contribute to better performance in the classroom, as measured by GPA.

Study 1

Method

Participants and Procedure

Participants were undergraduates at the University of Iowa, all of whom were enrolled in an introductory psychology course. Students earned partial course credit for participating in a 1-hr group testing session in which they completed a large set of measures, most of which were unrelated to the current study. For the purpose of the current study, questionnaires were administered assessing perceived social support from parents, family conflict, and parental achievement orientation. In addition, students were asked to provide written permission for the investigators to obtain their most recent scores on the ACT (American College Testing Program, 1986) and their University of Iowa cumulative GPA, (to be obtained the following semester) from the university registrar. By limiting the data to University of Iowa GPAs, we hoped to

eliminate variation due to grades transferred from other colleges with differing grade distributions and standards. Of the 554 students who participated in the group testing session, 452 (82%) gave their consent. Complete data were obtained for 418 students (234 women, 165 men, and 19 who did not indicate their gender). Year in school was not obtained from students. However, all subjects were currently enrolled in introductory psychology, and during the semester when the data were collected, 59% of those enrolled were freshmen, 26% were sophomores, and 15% were juniors or seniors. Historically, the class distribution of students who participate in the group assessment program is very similar to that for the class as a whole.

Measures

Academic ability. Academic ability was assessed by scores on the ACT exam. The ACT (American College Testing Program, 1986) is the second most widely used college admissions test, administered to more than one million students each year. It is the primary college entrance exam taken by Iowa students. The academic tests for the 1988–89 ACT included the English Usage Test, the Mathematics Usage Test, the Social Studies Reading Test, and the Natural Sciences Reading Test.

The ACT academic tests yield standard scores of 1 to 36 that are averaged to create the ACT Composite. Internal consistency reliabilities for the tests are quite good, ranging from .85 to .92. The composite typically correlates .40 to .50 with freshman GPA (Kifer, 1985), although the correlations vary as a function of college, ranging from .29 to .80 (Munday, 1970).

Social support. The Social Provisions Scale—Parent Version was used to assess parental social support (SPS-P; Cutrona, 1989; Cutrona & Russell, 1987). The SPS was designed to tap the six provisions of social relationships identified by Weiss (1974). The six provisions assessed are guidance (advice and information), reliable alliance (tangible assistance), attachment (caring), social integration (similarity of interests and concerns), reassurance of worth (positive evaluation of skills and abilities), and opportunity to provide nurturance (providing support to others). In the SPS-P, each provision is assessed by two items, one that describes the presence and one that describes the absence of the provision in the student's relationship with his or her parents, for a total of 12 items. Reliability for the scale ranges from .81 to .91 across a range of samples (Cutrona, 1989; Cutrona & Russell, 1987). Extensive validity evidence for the SPS among both adult and adolescent populations has been presented elsewhere (Cutrona, 1989; Cutrona & Russell, 1987). Coefficient alpha for the total SPS-P was .81 in the current study. Alpha coefficients for the two-item provision subscales ranged from .47 (opportunity to provide nurturance) to .72 (attachment).

Family conflict and parental achievement orientation. Both family conflict and achievement orientation were assessed with subscales of the widely used Family Environment Scale (Moos & Moos, 1986). Internal consistency of .75 and 2-month test–retest reliability of .85 have been reported for the Conflict scale. For the Achievement Orientation scale, internal consistency of .65 and test–retest reliability of .74 have been reported (Moos & Moos, 1986). Extensive validity evidence has been reported for all subscales of the Family Environment Scale (summarized in Moos & Moos, 1986)

Results

Descriptive Statistics

Table 1 provides means and standard deviations for all study variables. The mean ACT score for this sample ($N = 418$, $M = 23.70$) was significantly higher than the national mean of 21.1 for college freshmen, $t(417) = 14.14$, $p < .01$. Thus, results must be interpreted with the understanding that the lower range of

Table 1

Means and Standard Deviations for Study 1 Achievement, Personal, and Family Variables

Measure	M	SD	Possible range
ACT exam score	23.70	4.32	1–36
Grade point average	2.70	.66	1.0–4.0
Total parental social support	30.05	4.32	12–48
Social support subscale			
Reassurance of Worth	5.08	1.01	2–8
Reliable Alliance	5.78	.60	2–8
Guidance	5.19	1.06	2–8
Social Integration	4.56	1.18	2–8
Nurturance	4.03	1.27	2–8
Attachment	5.08	1.20	2–8
Family Environment Scale			
Conflict	12.94	2.36	9–18
Achievement Orientation	15.16	1.67	9–18

Note. ACT = American College Testing Assessment.

scores was underrepresented in our sample, which may lower correlations between the ACT and other variables. Means for social support, conflict, and achievement orientation were comparable with published norms for similar populations (Cutrona & Russell, 1987; Moos & Moos, 1986).

Causal Modeling Analysis

Structural equation analysis with latent variables was used to test the causal model shown in Figure 1, as operationalized by the maximum likelihood methods of LISREL VII (Jöreskog & Sörbom, 1989). To evaluate the fit of a causal model to the data, the LISREL program provides a chi-squared test that reflects the extent to which the hypothesized model is able to account for relations among the variables. Because the chi-squared goodness-of-fit statistic is sensitive to sample size and violations of the assumption of multivariate normality, evaluation of model fit was based on considerations beyond the statistical significance of the chi-squared. We relied on the Goodness of Fit Index (GFI) reported by LISREL VII. GFI represents the proportion of variances and covariances of the variables being analyzed that is explained by the causal model (Tanaka & Huba, 1985). This statistic represents a multivariate extension of the R^2 values derived from a multiple regression analysis. Values of GFI can range between 0 and 1.0, with values of .90 or greater generally indicating a model that accounts for the data well (Tanaka, 1987).

Testing the Causal Model

Because multiple indicators of ACT scores and GPA were not obtained, these two variables were specified as manifest variables. Only parental social support, family conflict, and achievement orientation were specified as latent variables. The six subscales of the SPS-P were used to operationalize the latent parental social support variable. All of the six subscales' factor loadings on the social support latent variable were highly significant. Items on the family conflict scale were randomly divided into three subscales, each of which was used as an indicator of the latent conflict variable. All of the subscales' factor
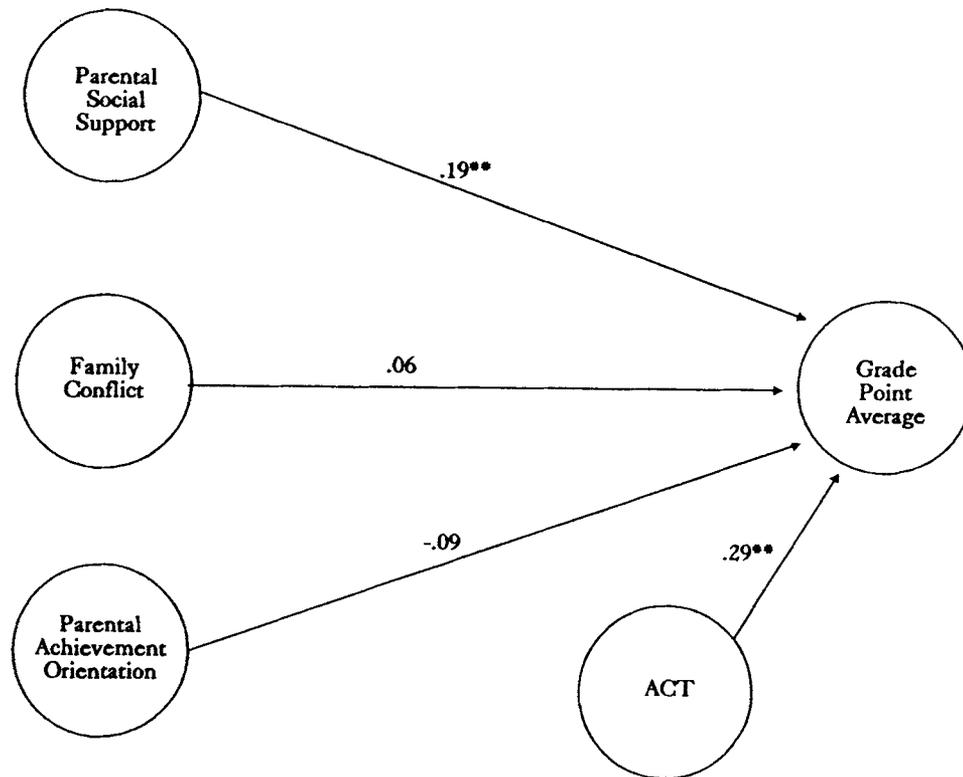
Figure 1. The model testing the significance of parental social support, family conflict, and parental achievement orientation, controlling for American College Testing Assessment (ACT) scores, in the prediction of college grade point average. * $p < .05$. ** $p < .01$.

loadings on the conflict latent variable were highly significant. We attempted to follow the same procedure for the achievement orientation subscale. However, surprisingly low interitem correlations were found for the scale in our sample (Cronbach's α = .45). We selected the three items with intercorrelations greater than .20 and used each as an indicator of the achievement orientation construct. Each item loaded significantly on the achievement orientation latent factor. Results for achievement orientation should be viewed with caution in light of the small number of items used to operationalize the latent variable. Table 2 contains the correlations among all manifest and latent variables included in the model.

Figure 1 presents the results of testing the causal model. This

model was found to fit the data well, $\chi^2(69, N = 418) = 127.48$, $p < .001$, GFI = .958. As shown in Figure 1, high school ACT scores and current social support were both significant predictors of GPA. Neither family conflict nor parental achievement orientation achieved significance as a predictor of GPA. All of the variables together accounted for 11.0% of the variation in the following semester's cumulative GPA. A "trimmed" model that included only parental social support and ACT scores predicting GPA was tested next. These two variables together accounted for 9.9% of the variance in GPA. The fit of the model was good and did not show significant decline with the elimination of the conflict and achievement variables, $\chi^2(71, N = 418) = 130.14$, $p < .001$, GFI = .957. Unique variance proportions attributable to ACT and parental support were 8.2% and 2.3%, respectively.[1]

Having demonstrated a significant relation between the general social support factor and GPA, it was of interest to determine

Table 2

Correlations Among Study 1 Latent and Measured Constructs

Construct	1	2	3	4	5
1. GPA	—				
2. Conflict	−.06	—			
3. Achievement orientation	−.09	.14*	—		
4. Parental support	.14*	−.50**	.04	—	
5. ACT	.28*	−.04	−.04	−.06	—

Note. $n = 418$. GPA = grade point average; ACT = American College Testing Assessment, composite score.
* $p < .05$. ** $p < .001$.

[1] We computed the unique variation explained by each of the two predictor variables by testing models that eliminated each predictor variable and then compared the R^2 value associated with that reduced model with the R^2 associated with the full model. So, for example, the unique variation explained by parental support was calculated by comparing the R^2 value associated with the full model (i.e., that included ACT and parental support as predictor variables) with the R^2 associated with the model that only used ACT as a predictor of GPA. The unique variation attributable to ACT scores was determined in the same way. Using this procedure, the variance uniquely accounted for by social
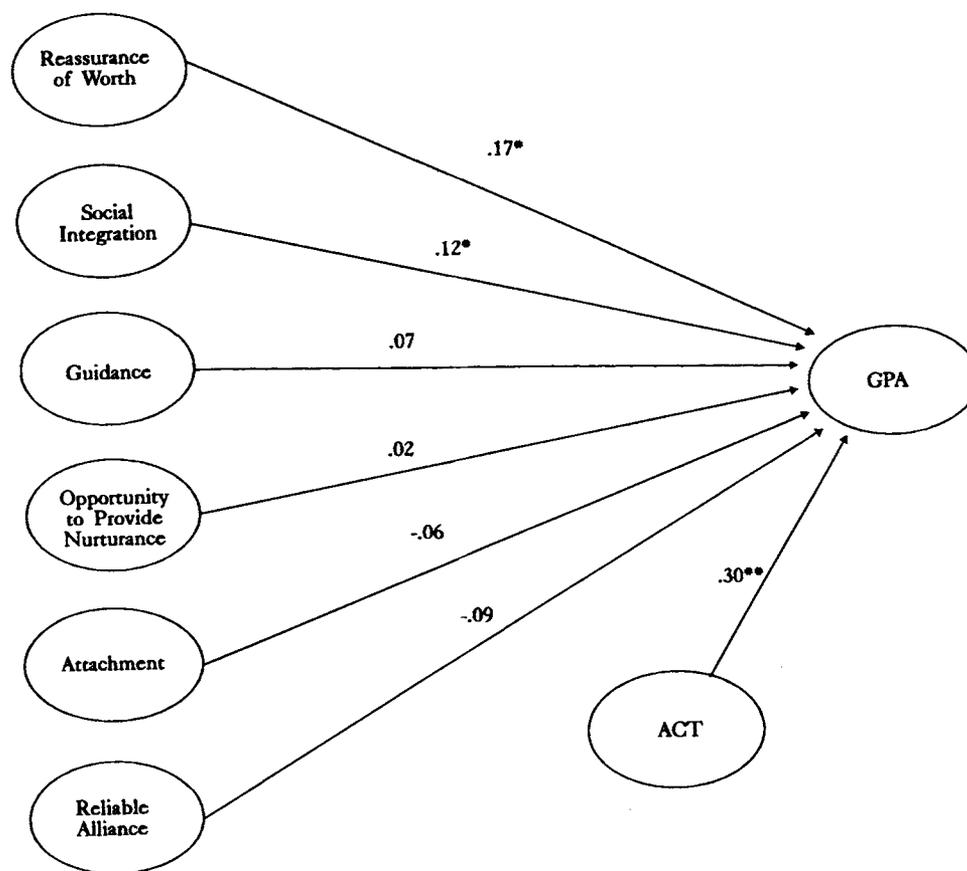
Figure 2. The model testing the significance of separate components of parental social support in the prediction of college grade point average, controlling for American College Testing Assessment (ACT) scores. GPA = grade point average. $* p < .05.$ $** p < .01.$

which of the individual social support components was most strongly predictive. In this model, individual paths from each provision subscale to GPA were hypothesized, as well as the path from ACT score to GPA. In the model, all subscales were allowed to correlate with each other, reflecting known interrelations among social support components. Thus, all possible paths were included in the model. The chi-squared test is not meaningful in this case ($\chi^2 = 1.00$), but it was of interest to investigate the extent to which specific paths in the model attained significance. Results of this analysis are shown in Figure 2. In addition to the path between ACT and GPA, which was highly significant, significant paths were found for both reassurance of worth and social integration. Students whose parents expressed belief in their competence and abilities and who shared the students' interests and concerns were more likely to perform well in college than those whose parents did not demonstrate these attributes. None of the other paths linking support components to GPA attained significance. The ACT and

social support variables together accounted for 13.4% of the variation in GPA.

Gender Differences

Analyses were also conducted to test for sex differences in the path coefficients linking the predictor variables to GPA, using the multiple group option in the LISREL program. For the purposes of these analyses, the measurement models (i.e., the loadings of the measured variables on the latent variables) were constrained to be equal for men and women. The fit of a model that constrained the path coefficients to be equal for the two sexes was then compared with the fit of a model that allowed the path coefficients to vary by sex, using a chi-squared difference test (Bentler & Bonnet, 1980). The results of this comparison were nonsignificant, $\chi^2(4) = 0.20$. Therefore, we can conclude that the path coefficients for the model are not significantly different for male and female students.

Study 2

Method

Participants and Procedures

Participants were recruited the following academic year from the same source (introductory psychology class), using the same procedures

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support and ACT sums to slightly more than the total variance explained by the model. This reflects a suppressor effect (Pedhazur, 1982), in which the two predictor variables appear jointly to explain less variation in the dependent variable than each variable does uniquely.

as reported in Study 1. Similarly, students' ACT scores and next-semester cumulative University of Iowa GPAs were obtained, with the students' written consent, from the registrar. Complete data were obtained from 378 subjects.

Measures

Because they did not attain significance in Study 1, the Conflict and Achievement Orientation scales were not administered in Study 2. To test the relative contribution of perceived social support from different sources, the entire Source Specific version of the SPS (SPS–SS; Cutrona, 1989) was administered, rather than the SPS–P alone. The full SPS–SS includes 36 items. Twelve items assess perceived support from each of three sources: parents, friends, and romantic partners. Coefficient alpha for the three source subscales were .86, .86, and .88, respectively. Coefficient alphas for the two-item individual provision subscales ranged from .54 to .77.

Testing the Causal Models

Once again, GPA and ACT scores were treated as manifest variables. In the first model to be tested, three latent variables were operationalized to reflect social support from each of three sources: parents, friends, and romantic partners. The six provision subscales for each source were used to operationalize the latent support factor for each source. Each subscale loaded significantly on the appropriate latent variable. Correlations among all manifest and latent variables included in the model are shown in Table 3. In this model, correlated measurement error was included in the model between measures of the same type of support across sources (e.g., guidance from parents, friends, and romantic partner). A model was tested in which ACT scores and support from each of the three sources predicted GPA. (See Figure 3.) The model was a good fit to the data, $\chi^2(155, N = 378) = 374.09, p < .001$, GFI = .91. In addition to the significant path between ACT score and GPA, the only other significant path was that between parental social support and GPA. Neither friend support nor romantic partner support was significantly predictive of GPA. Together, the variables in the model accounted for 15.1% of the variance in GPA.

Given that only parental support was significantly related to GPA, an analysis was conducted to determine which components of parental social support were most strongly predictive of GPA. This was a replication of the model tested in Study 1. The parental support component subscales and ACT were tested as predictors of GPA. Once again, all of the parental support components were allowed to intercorrelate. Because all possible paths were included in the model, the chi-squared test was not informative. The predictor variables accounted for 18.1% of the variability in GPA. Of this, 15.1% was attributable to ACT score and 5% was attributable to parental social support.[2]

Table 3
Correlations Among Study 2 Latent and Measured Constructs

Construct	1	2	3	4	5
1. GPA	—				
2. ACT	.36**	—			
Support from					
3. Parents	.10*	−.11*	—		
4. Friends	.05	.02	.39**	—	
5. Romantic partner(s)	.08	.04	.35**	.51**	—

Note. $n = 386$. GPA = grade point average; ACT = American College Testing Assessment, composite score.
* $p < .05$. ** $p < .001$.

The path between ACT and GPA was once again significant. In addition, the paths linking parental reassurance of worth and opportunity to provide nurturance to GPA were significant. Parental reassurance of worth, that is, belief in one's competence and abilities, was also a significant predictor of GPA in Study 1.

Gender Differences

Using the same procedures as were used in Study 1, analyses were conducted that tested whether the path coefficients linking the predictor variables to GPA were significantly different for male and female students. Once again, the results of the chi-squared difference test were nonsignificant, $\chi^2(4) = 2.49$, indicating that the path coefficients did not vary by sex.

Study 3

Method

Participants and Procedure

Participants were a subset of those who participated in Study 2. All students who participated in the psychology department group testing session were eligible for Study 3. They had the opportunity to choose among a large number of experiments, including the study to be described. They received partial course credit in introductory psychology for their participation. Students were asked to attend a 1-hr session in which they completed measures of interpersonal anxiety and self-efficacy and a number of other measures not relevant to the current study. Their scores on the SPS–SS were available from group testing. Their ACT score and the following semester's University of Iowa GPA were obtained from the registrar, as described in Study 1. The total sample for Study 3 was 131 students (37 men and 94 women).

Measures

Academic self-efficacy. We developed a brief measure of academic self-efficacy for the current investigation. Students were asked to rate their confidence that they would receive a grade of B or better in each of a number of categories of classes (their major field of study and each of seven areas of course work required of all liberal arts undergraduates, e.g., foreign language, mathematics, and literature). Confidence ratings were made on 5-point scales that ranged from *certain that I will not* to *certain that I will.* Coefficient alpha for this 8-item scale was .79.

Anxiety. We administered the Adult Attachment Scale (Collins & Read, 1990), which was designed to assess adult attitudes and behaviors deemed relevant to one's attachment history. The measure was derived from Hazan and Shaver's (1987) widely used measure of adult attachment and includes three subscales, interpersonal anxiety, comfort with closeness, and belief in the dependability of others. As described above, we reasoned that anxiety would be most relevant to academic performance, and only this subscale was included in tests of the proposed mediational model. Validity evidence for the scale was provided by Collins and Read (1990), who found that the three subscales correlated significantly with measures of self-esteem, expressiveness, instrumentality, trust in others, beliefs about human nature, and styles of loving. Internal consistency for the anxiety scale was .87.

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[2] Once again, the variance accounted for by social support and ACT sums to slightly more than the total variance explained in the model. The same suppressor effect found in Study 1 appears to be operative.
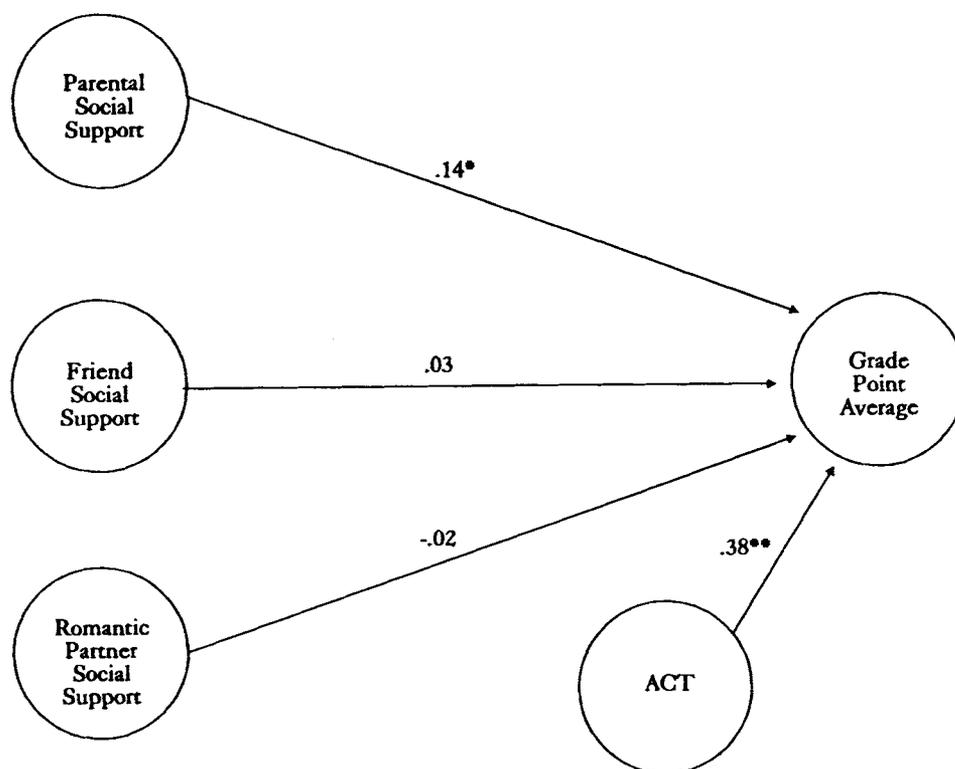
Figure 3. The model testing the relative contribution of social support from parents, friends, and romantic partners to college grade point average, controlling for American College Testing Assessment (ACT) scores. $* p < .05. ** p < .01.$

Results

Because only 131 subjects participated in Study 3, structural equation modeling with latent variables was judged to be inappropriate. Thus, we tested the proposed mediational model using ordinary (least-squares regression) path analysis. Replication with a larger sample using more powerful latent variable techniques is needed.

In the model, we hypothesized that parental social support would be associated with a low level of interpersonal anxiety, which would in turn predict academic self-efficacy. We further anticipated that academic self-efficacy would predict GPA, when controlling for academic aptitude (ACT scores). To test this model, we conducted a series of regressions, the results of which are shown in Figure 4. As predicted, the path between parental social support and anxiety was significant. The path between anxiety and academic self-efficacy was also significant. Finally, the path between academic self-efficacy and GPA was significant when controlling for the effects of ACT scores. It should be noted that parental social support did not correlate significantly with academic self-efficacy, but only through its association with anxiety. Similarly, anxiety did not correlate significantly with GPA, but only through its association with academic self-efficacy. Although all paths in the model were significant, a test of the overall fit of the model revealed the need for modification, $\chi^2(5, N = 131) = 25.62, p < .001$. (A nonsignificant chi-squared indicates a good fit.) Examination of uni-

variate relations among variables revealed a highly significant relation between ACT scores and academic self-efficacy. The model was modified to include this path (see Figure 5), which resulted in a significant improvement in fit, $\chi^2 (1, N = 131) = 18.00, p < .001$. The fit of the final model was very good, $\chi^2(4, N = 131) = 7.61$, *ns*. It should be noted that the addition of a path between ACT scores and self-efficacy reduced the strength of the path between anxiety and self-efficacy to marginal significance ($p = .06$).

To test for possible gender differences in the path coefficients, a second set of regression analyses was conducted. In these analyses, gender (a dummy variable, coded 0, 1) was entered into each of the regressions required to derive the path coefficients reported above. In addition, interaction terms with gender were derived for each predictor variable by multiplying each variable by the gender dummy variable. These interaction terms were entered into each equation after the main effects. Neither the gender main effect nor its interaction with any of the predictor variables attained significance. Thus, no evidence for gender differences was found.

Discussion

The degree to which a supportive relationship with parents predicted college grade point average was tested in a sample composed primarily of first- and second-year university students. Most research on family predictors of achievement has
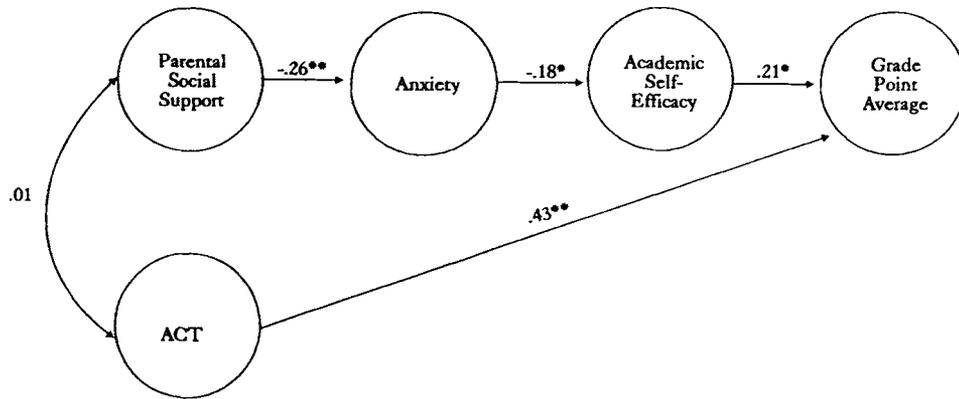
Figure 4. The ordinary least squares regression model testing the mediational model of parental social support's effects on grade point average through its effects on interpersonal anxiety and academic self-efficacy. ACT = American College Testing Assessment scores. * $p < .05$. ** $p < .01$.

been conducted among younger students who still live in the parental home. Our study tested the effects of parental social support among young adults, most of whom were not in daily contact with their parents. Despite these characteristics of the sample that would be expected to weaken parental influence, parental social support was a significant predictor of college grade point average in two independent samples.

It must be recognized that only a small proportion of the variance in academic achievement was attributable to perceived parental support. The purpose of the study was not to identify the most powerful predictors of college GPA, but to test a theoretically based hypothesis that the relationship between student and parent influences the ability of the student to navigate successfully through one aspect of the transition to adulthood. Although the effect size for social support was small in both studies, the relation between support and GPA was 25% to 50% as strong as that between ACT scores and GPA. Furthermore, it is notable that parental support predicted GPA across a group that was quite heterogeneous (e.g., different majors and varying ability levels).

Two general mechanisms may explain the effects of parental

support on academic performance. The first is the traditional "stress-buffering" hypothesis, that is, that interactions with parents during times of stress (e.g., during exam week) facilitate adaptive coping and positive adjustment. The second, based on attachment theory, is that a lifetime of parental support allows the individual to develop adaptive attitudes toward other people that facilitate active exploration and skill development, without inhibitory anxiety or self-doubt. In this view, current interactions with parents are less important than the accumulated influence of growing up in a supportive environment. The current study was not designed to provide a definitive test of these competing models. However, it is significant that grade point average was not predicted by social support from either friends or romantic partners, both of whom are in more frequent contact with college students than are parents and represent a more "immediate" presence. Although support from friends and romantic partners was not related to academic achievement, prior research has shown that the quality of these relationships is a very strong predictor of subjective well-being among college students. For example, loneliness among first-year college students was predicted by quality of relationships with friends, but not
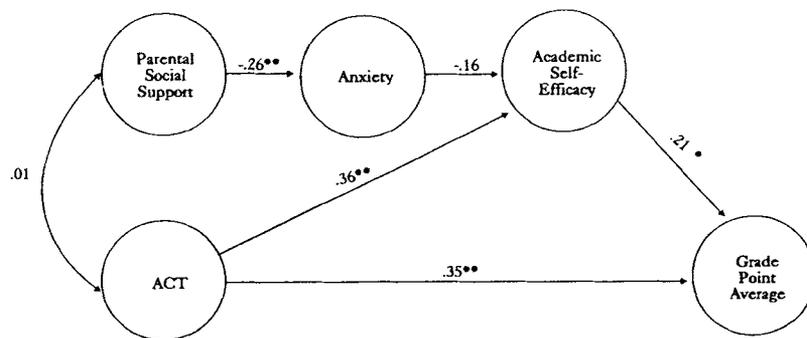

Figure 5. Ordinary least squares regression model testing the revised mediational model of parental social support's effects on grade point average through its effects on interpersonal anxiety and academic self-efficacy. ACT = American College Testing Assessment scores. * $p < .05$. ** $p < .01$.

by quality of relationships with parents (Cutrona, 1982). Thus, different relationships may be linked to different outcomes. Furthermore, different mechanisms may be responsible for the links between outcomes predicted by parental social support and those predicted by peer social support. Friendships and romantic relationships are generally of relatively recent origin and, in most cases, cannot have played a role in shaping one's character. Thus, the effects of social support from these sources are probably the result of recent help-intended behaviors. By contrast, the effects of social support from parents are probably a combination of the formative effects during development of interacting over time with an accepting and available caretaker plus the effects of recent help-intended behaviors.

The relation between parental social support and GPA retained significance when controlling for parental achievement orientation. Thus, the effect is not attributable to a third variable explanation in which middle-class values and lifestyle predict supportive parenting, achievement orientation, and academic performance. The relation between parental social support and GPA also retained significance when statistically controlling for level of family conflict. Positive aspects of the relationship with parents appeared to facilitate adaptive behavior, whereas negative characteristics of family relationships did not appear to impede achievement. Links to subjective well-being are often stronger for negative compared with positive relationship variables (e.g., Rook, 1984). It is not possible to ascertain whether the stronger relation for social support in the current study is attributable to the subject population, our exclusive focus on the parental relationship, or the nature of the dependent variable. Further investigation of the relative contributions of positive and negative relationship variables to a range of outcomes are needed.

We have hypothesized elsewhere that different components of support should be maximally beneficial, depending on the context (Cutrona, 1990; Cutrona & Russell, 1990). In the achievement domain, we hypothesized that reassurance of worth, that is, belief in the individual's competence and abilities, would be of greatest utility because of its links to self-efficacy (Cutrona & Troutman, 1986) and in turn, to goal-directed behavior (Bandura, 1982). The single component of parental support that attained significance as a predictor of grade point average in both Study 1 and Study 2 was reassurance of worth. These results suggest that parents who recognize and express belief in their offspring's capabilities may facilitate adaptive behaviors in the academic domain.

In a preliminary test of factors that mediate the relation between parental social support and academic performance, both low interpersonal anxiety and high academic self-efficacy appeared to contribute. Our original model was overly simplistic in its exclusion of a path between ACT scores and academic self-efficacy. However, the inclusion of such a path is fully consistent with Bandura's (1982) views of the antecedents of self-efficacy. Past performance is a critical determinant of how well we expect to perform in the future (Bandura, 1982). Students who have performed well on achievement tests would expect to perform well in the classroom.

Our study is one of very few that documents a significant relation between perceived social support and objectively assessed performance in an important role function. Although the amount of variance in academic performance explained by parental social support was small, our replication of the results in an independent sample suggests that the finding is reliable. Because correlational studies such as ours cannot establish a causal relation between social support and behavior, it is crucial that experimental and intervention studies be focused on these issues, especially those designed to test the operation of specific mechanisms.

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