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Adolescents' Relationships with Their Mothers and Fathers: Associations with Depressive Disorder and Subdiagnostic Symptomatology

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Abstract

This study compared family relationships across three groups of adolescents: a) those with unipolar depressive disorders ($n = 82$); b) those with subdiagnostic depressive symptoms ($n = 78$); and c) those without emotional or behavioral difficulties ($n = 83$). Results based on multi-source, multi-method constructs indicated that depressed adolescents, as well as those with subdiagnostic symptomatology, experience less supportive and more conflictual relationships with each of their parents than do healthy adolescents. These findings are notable in demonstrating that adverse father-adolescent relationships are associated with depressive symptomatology in much the same way as mother-adolescent relationships. As well, they add to the emerging evidence that adolescents with subdiagnostic symptoms experience difficulties in social relationships similar to those experienced by adolescents with depressive disorder.

The role of family relationships and interactional processes as factors relevant to child and adolescent depression has received increasing attention over the last decade (Sheeber, Hops, & Davis, 2001). The research to date suggests that adverse family environments characterized by the absence of warm and supportive interactions and, conversely, by elevated levels of conflictual and critical interactions are associated with depressive symptomatology and disorder (Sheeber et al., 2001). These findings are consistent with evidence that chronic interpersonal stress is negatively associated with children's emotional well-being (Compas, Grant, & Ey, 1994; Rudolph, Hammen, Burge, Lindberg, Herzberg, & Daley, 2000). It is important to note in this regard, that although adolescents spend increasing amounts of time with peers outside of the home, available evidence suggests that the family environment retains its salience and in fact, family relations appear to be more reliably associated with adolescent depressive symptomatology than are peer relations (Barrera & Garrison-Jones, 1992; McFarlane, Bellissimo, Norman, & Lange, 1994; Stice, Ragan, & Randall, 2004).

The primary objective of this study, therefore, was to extend our understanding of family processes associated with adolescent depression by conducting a rigorous examination comparing the nature of mother-adolescent and father-adolescent relationships and interactional processes across three groups of adolescents: (a) those who met diagnostic criteria for unipolar depressive disorder (Depressed); (b) those with subdiagnostic levels of

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symptomatology (Subdiagnostic); and (c) those who had no significant emotional or behavioral difficulties (Healthy). The investigation focused on the levels of conflict and support experienced in adolescents' relationships with their mothers and fathers. Within this broad objective, we aimed to examine two secondary questions. First, does information on the adolescents' relationship with each parent broaden our understanding of the family processes associated with depression? Second, does parental support moderate the association between parent-adolescent conflict and depressive status? Relevant background and substantiation for these objectives are provided below.

The most widely-reported finding with regard to family processes is that depression is inversely related to the level of support, attachment, and approval adolescents experience in the family environment. This result has been replicated in both community (e.g., Avison & McAlpine, 1992; Garrison, Jackson, Marsteller, McKeown, & Addy, 1990; McFarlane, et al., 1994; Scaramella, Conger, & Simons, 1999) and clinical samples (e.g., Pavlidis & McCauley, 2001; Prange, Greenbaum, Silver, Friedman, Kutash, & Duchnowski, 1992; Sheeber & Sorensen, 1998). Depression has also been found to be associated with parent and adolescent reports of conflictual family interactions (Stark, Humphrey, Crook, & Lewis, 1990; Cole & McPherson, 1993; Hops, Lewinsohn, Andrews, & Roberts, 1990; Sheeber & Sorensen, 1998). Studies using multi-method constructs to tap parental hostility, harsh discipline, and family conflict have, moreover, demonstrated similar associations with internalizing symptoms (Conger, Ge, Elder, Lorenz, & Simons, 1994; Ge, Conger, Lorenz, & Simons, 1994; Sheeber, Hops, Alpert, Davis, & Andrews, 1997). Though it could be argued that conflict and support are at opposite ends of a single dimension, previous research has suggested that they represent distinct dimensions that may have differential associations with psychological well-being (Barrera, Chassin, & Rogosch, 1993). Because parents may well be sources of both conflict and support to their adolescents, an interesting question emerges as to whether adolescent adjustment is related to the interactive effects of parental support and conflict. However, to our knowledge, this question has not been addressed in prior research. Thus, in this investigation we examined the hypothesis that adolescent depression is most likely to occur in family contexts characterized by both deficits in parental provision of support and heightened levels of parent-adolescent conflict.

Our understanding of the association between family processes and adolescent depression is constrained, moreover, by limitations in the available literature. One area of concern is that fathers have been noticeably under-represented in studies of child and adolescent depression, as they have in studies of child development and psychopathology more generally (Phares, 1992). Data from existing studies indicate that both nurturant and harsh parenting behavior, on the part of fathers, relate to depressive symptomatology in the expected directions (Avison & McAlpine, 1992; Brennan, Brocque, & Hammen, 2003; Ge, Best, Conger, & Simons, 1996; McFarlane, Bellissimo, & Norman, 1995; Wentzel & Feldman, 1996). Nonetheless, the vast majority of studies on childhood and adolescent depression have focused on the mother-adolescent relationship, collapsed across parents, or relied on mothers' reports of father-child relationships. There is thus very little information available regarding the associations of father-child relationships to adolescent emotional health. In this investigation, we examined both mother-adolescent and father-adolescent relationships.

Another concern is that though some investigations have made use of multi-source or multi-method assessments, the literature as a whole is compromised by the over-reliance on self-report data. The research on the supportiveness of the family environment is particularly striking in this regard because adolescents have often been the sole reporter regarding both depressive symptoms and family characteristics. It is thus difficult to discern the extent to which reports are accurate descriptions of the family environment or reflections of a negative response set consistent with a depressive state. This is particularly problematic given evidence

that depressed children and adolescents may misread parental affect and discount parents' supportive behavior (Downey & Walker, 1992; Ehrmantrout, Sheeber, Davis, & Leve, 2006; Sanders, Dadds, Johnston, & Cash, 1992; Shirk, Van Horn, & Leber, 1997). For example, Sanders and colleagues reported that there was little correlation between depressed children's rating of maternal anger and that provided by independent observers. Similarly, our own recent findings have indicated that adolescent depressive symptoms are associated with over-reporting of parental anger and under-reporting of parental happy and neutral affect relative to independent observers (Ehrmantrout et al., 2006). It is thus important to include additional sources of information regarding the family environment (Holmbeck, Li, Schuman, Verrill, Friedman, & Coakley, 2002); both observational methodologies and family member reports can contribute useful information in this regard. In this investigation, we have used adolescent- and parent-report instruments as well as behavioral observations to build multi-source, multi-method constructs of family functioning variables.

Sampling practices also influence the conclusions that can be drawn from available studies. Samples of youth with diagnosed depressive disorders have typically been recruited from treatment settings, often including inpatient facilities. As only about 20% of depressed children and adolescents receive any form of mental health treatment (Lewinsohn, Rohde, & Seeley, 1995; Keller, Lavori, Beardslee, Wunder, & Ryan, 1991), this sampling strategy brings into question the generalizability of the information gathered. This is particularly the case as preliminary evidence suggests that family discord is greater in families who seek treatment than in those who do not (Lewinsohn, Clarke, Rohde, Hops, & Seeley, 1996). We have thus, in the current investigation, recruited adolescents from schools rather than clinical settings so as to broaden the population of youth to whom the results are generalizable.

On the other hand, most investigations of childhood and adolescent depression have used unselected samples recruited from community settings, and treated depression as a continuous variable. These studies have provided a wealth of information regarding family processes associated with depressive symptomatology in youth. However, as few participants in these studies would be likely to meet diagnostic criteria for depressive disorder, these findings may not provide information relevant to understanding family processes associated with clinical levels of symptomatology. As noted by Zahn-Waxler and colleagues (Zahn-Waxler, Klimes-Dougan, & Slattery, 2000), few studies have directly addressed the question of whether variables associated with depressive syndromes exist on a continuum. In other words, are more extreme levels of family difficulties associated with clinical conditions and more moderate difficulties associated with subdiagnostic levels of symptomatology? Addressing this question directly will provide information regarding the relevance of the large body of research on correlates of depressive symptomatology in community samples for understanding affective disorder. As well, the inclusion of participants experiencing subdiagnostic levels of symptoms will yield information about the family environment of these youth. Substantial numbers of adolescents experience subdiagnostic symptomatology (Roberts, Andrews, Lewinsohn, & Hops, 1990). Initial evidence suggests that these youth present with many of the same social, clinical, and behavioral problems as do those who meet diagnostic criteria and are, moreover, at substantially increased risk of developing depressive disorders (Gotlib, Lewinsohn, & Seeley, 1995; Pine, Cohen, Cohen, & Brook, 1999). They thus comprise a vulnerable population in their own right. Understanding family processes relevant to subdiagnostic levels of depression may well yield information relevant to family-based prevention interventions. We have, therefore, included depressed, subdiagnostic, and healthy adolescents in the current investigation.

Method

Participants and Inclusion Criteria

Participants were 243 adolescents and their parents. To be included in the investigation, adolescents had to be living with at least one parent or permanent legal guardian, be between 14 and 18 years old, and meet research criteria for placement in one of three groups: depressed, subdiagnostic, or healthy. Depressed adolescents ($N = 82$) evidenced elevated scores on the Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) and met DSM IV (American Psychiatric Association [APA], 1994) diagnostic criteria for a current unipolar depressive disorder. Consistent with guidelines for establishing the offset of depressive episodes, a diagnosis was considered current if it was ongoing or had an offset within two months preceding the diagnostic interview (APA, 1994). Adolescents in the subdiagnostic group ($N = 78$) had elevated CES-D scores but did not meet diagnostic criteria for current or lifetime affective disorders or current nonaffective disorders. It should be noted that these criteria, which exclude adolescents whose depressive symptoms occur in the context of either nonaffective disorders or past affective disorder are more restrictive than those found in past research (e.g., Gotlib et al., 1995; Lewinsohn, Solomon, Seeley, & Zeiss, 2000). The criteria were selected to reduce the likelihood that observed family difficulties could be attributed to either past affective disorder or other clinical syndromes. Healthy adolescents ($N = 83$) scored below an adolescent-appropriate cut-off on the CES-D, had no current or lifetime history of psychopathology, and no history of mental health treatment.

Cut-off scores for selecting potential participants were based on the distribution of scores obtained in the Oregon Adolescent Epidemiological Depression Project (Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). The cut-offs for the depressed and subdiagnostic groups were CES-D ≥ 26 for males and ≥ 30 for females. These relatively high scores, by gender, were selected to maximize the positive predictive power of the CES-D administration in identifying adolescents experiencing depressive disorder. Approximately 12% of the sample scored above these cut-offs. The sample pool for the healthy group was defined as students with scores less than $\frac{1}{2}$ SD above the mean score of students in the epidemiological sample (CES-D < 21 for males and < 24 for females). The mean CES-D scores by group were 38.52 ($SD = 6.88$), 34.90 ($SD = 5.20$), and 9.77 ($SD = 6.50$) for the depressed, subdiagnostic, and healthy groups respectively.

To the extent possible, subdiagnostic and healthy participants were matched to depressed participants on adolescent age, gender, ethnicity, and the socioeconomic characteristics of their schools. Demographic, diagnostic, and treatment history data are presented in Tables 1 and 2.

Recruitment and Assessment Procedures

Families were recruited and selected using a two-gate procedure consisting of an in-school screening and an in-home diagnostic interview. Selected families were invited to participate in the family assessment.

School Screening—Students from eight area high schools participated in the school screening which was conducted during class time. To facilitate recruitment of a representative sample of students, we used a combined passive parental consent and active student consent procedure to inform families about the project and request their participation in the school screening (Biglan & Ary, 1990; Severson & Ary, 1983). Approximately 75% of eligible students participated. Of the remaining students, 13% declined or had parents who declined their participation and 12% were absent from school on the day of the assessment. Participating students completed the CES-D, a demographic information form, and a contact form. As described above, CES-D scores were used to identify students with elevated levels of

depressive symptomatology as well as those with low levels of symptomatology. Schools were provided a small remuneration for each student that participated in the assessment.

Information Meeting and Diagnostic Assessment—Research staff initially telephoned the families of those adolescents with elevated CES-D scores. The staff briefly described the project and invited families to participate in an informational meeting in the families' homes. At these meetings, the interviewers described the project, answered questions, and obtained active informed consent from the adolescents and their parents. Following the consent procedure, the interviewers conducted the Schedule of Affective Disorders and Schizophrenia-Children's Version (K-SADS; Orvaschel & Puig-Antich, 1994) interviews with the adolescents. Subsequent to the interviews, the families of adolescents who met diagnostic criteria for a unipolar depressive disorder were invited to participate in a lab-based family assessment. After each adolescent in the depressed group completed the family assessment, a demographically matched adolescent with subdiagnostic levels of symptomatology (i.e., one who had elevated CES-D scores but did not meet criteria for depressive disorder) was invited to participate in the same assessment. Additionally, a healthy comparison participant, demographically matched to the depressed student, was recruited from the pool of students who scored within the normal range on the CES-D and invited to participate in the home assessment. Procedures for scheduling and conducting the home assessment with healthy adolescents were identical to those described above. Healthy adolescents invited to participate in the family assessment were defined as those who did not meet diagnostic criteria for any Axis I disorder and who did not have a history of mental health treatment. If an adolescent didn't meet the inclusion criteria or if a family declined to participate, another healthy participant was recruited.

Approximately 15% of families contacted were not eligible to participate based on the inclusion criteria described above. Of families invited to participate, approximately 20% declined. Rates of decline did not vary as a function of pre-interview group status (i.e., elevated or healthy CES-D score), age, race, gender, or parental marital status. The diagnostic interview took place an average of 33 days ($SD = 22$) after the school screening for participants with elevated CES-D scores and an average of 106 days ($SD = 70$) for adolescents with scores below the healthy cut-off. Of adolescents with elevated CES-D scores who participated in the interview, 32% met criteria for a unipolar affective disorder (Depressed group) and 36% did not meet diagnostic criteria for current or lifetime affective disorders or current nonaffective disorders (Subdiagnostic group). The remaining 32% did not meet inclusion criteria for either group. Of adolescents with CES-D scores in the healthy range, approximately 73% met criteria for inclusion in the healthy group.

Family Assessment—Approximately 6% of families invited to participate in the family assessment declined. The decline rate did not vary as a function of group status (i.e., depressed, subdiagnostic, healthy), age, race, gender, parental marital status, or income. In approximately 89% of two-parent families, both parents participated in the assessments. The family assessment included parent and adolescent questionnaires and two 10-minute family problem-solving interactions. In each interaction, the parents and adolescents were asked to discuss and try to resolve an area of conflict for them. Topics for the interactions were identified based on parents' and adolescents' responses on the Issues Checklist (IC; Robin & Weiss, 1980), a list of 44 issues about which parents and adolescents frequently disagree. The two items having the highest conflict ratings (frequency $\times$ intensity) averaged across adolescents' and parents' reports were chosen. Topics discussed by the depressed and subdiagnostic adolescents and their parents had overall greater conflict ratings than did those discussed by the healthy dyads, $F(2, 234) = 11, p < .0001$. The lab assessments took place an average of 22 days ($SD = 18$) after the home assessment for depressed participants, 33 days ($SD = 25$) for subdiagnostic participants, and 22 days ($SD = 18$) for healthy participants.

Measures

Depression Screener—The CES-D is a widely-used, self-report measure of depressive symptomatology that has acceptable psychometric properties for use with adolescents (e.g., Roberts et al., 1990; Radloff, 1991). It has a well-established record of use as a screener for depressive symptomatology in adolescent samples (e.g., Asarnow, Jaycox, Duan, LaBorde, Rea, Murray, et al., 2005; Dierker, Albano, Clarke, Heimberg, Kendall, Merikangas, et al., 2001; Roberts, Lewinsohn, & Seeley, 1991). As described above the CES-D was used as the initial gate of a two-stage recruitment and screening procedure.

Diagnostic Interview—The K-SADS interview was conducted with the adolescents to obtain current and lifetime diagnoses. Parents did not participate in the diagnostic assessment both because of the already lengthy nature of our assessment and because, as noted by others (Lewinsohn et al., 1993), the reliability of adolescent report increases and the agreement between parent and adolescent decreases with age. Additionally, our primary focus was on depressive symptomatology and we expected that adolescents would have more direct access to information regarding their depressive moods and behaviors. This procedure has been used successfully in past research (e.g., Lewinsohn et al., 1993; Sheeber & Sorensen, 1998).

Interviewers participated in a rigorous training program and demonstrated agreement with a senior interviewer ($\kappa \geq .80$) on at least two interviews before conducting independent interviews. Interviewers included bachelor through doctoral level research staff. All interview-derived diagnoses were confirmed by masters or doctoral level supervisors who reviewed both item-endorsement and interviewers' notes. Questions regarding the accuracy of diagnoses were resolved based upon discussion with the interviewer and review of the audiotaped interview as needed. Biweekly supervision sessions were held among the supervisor and the interviewers. Reliability ratings were obtained on approximately 20% of the interviews, chosen at random. The average agreement was $\kappa = .90$.

Parent-Child Relationship Questionnaires—Adolescents and their parents completed a number of questionnaire measures to provide indices of the quality of the parent-adolescent relationships to be used in the development of multi-method constructs. Adolescents and their parents completed the following measures: Conflict Behavior Questionnaire (CBQ; Prinz, Foster, Kent, & O'Leary, 1979); the Issues Checklist (Robin & Weiss, 1980); the Children's Report of Parents' Behavior Inventory (CRPBI; Margolies & Weintraub, 1977); and the Conflict Negotiation Scale (CNS). The CNS was adapted for the purpose of this project from two existing conflict-resolution measures (Aida & Falbo, 1991; Rubenstein & Feldman, 1993). Each of the questionnaire measures was adapted, as needed, to enable each family member to report on both parents. Adolescents also completed the Network of Relationships Inventory (NRI; Furman, 1996). All subscale scores demonstrated acceptable reliability (i.e., $\alpha > .80$).

Behavioral Observations—The Living in Family Environments coding system (LIFE; Hops, Biglan, Tolman, Arthur, & Longoria, 1995) was used to code parental behavior during the problem-solving interactions. The observers were blind to diagnostic status as well as to all interview and self-report data obtained from family members. The observers recorded the affect and verbal content of interactions in real time. Two composite codes, derived from individual affect and content codes, were used in the present investigation. Facilitative behavior, which includes statements that conveyed approval or served to maintain the conversation, as well as those said with happy or caring affect, were included in the support constructs. Aggressive behavior, which includes statements said with irritable affect or which expressed disapproval, threat, or argument were a component of the conflict construct. The observational variables included in the support and conflict constructs were defined as the total

proportion of time spent by mothers and fathers engaged in facilitative and aggressive behavior, respectively. Kappas were .76 and .78 for mother and father facilitative codes and .71 and .68 for mother and father aggressive codes. The validity of the LIFE coding system to meaningfully represent behavior derived from parent-adolescent problem-solving interactions has been established in numerous studies of adolescent depression (e.g., Davis, Sheeber, Hops, & Tildesley, 2000; Sheeber, Allen, Davis, & Sorensen, 2000; Sheeber, Hops, Andrews, Alpert, & Davis, 1998). Detailed information regarding the development and psychometric characteristics of LIFE coding system is presented in Hops, Davis, and Longoria (1995).

Constructed Variables

Depression Variables—The primary depression measure used in this investigation was the grouping variable described earlier (i.e., Depressed, Subdiagnostic, Healthy). As noted, adolescents were placed into one of three groups based on CES-D scores, K-SADS diagnoses, and treatment history. A secondary measure was created for use in analyses in which a continuous measure was advantageous. This measure was created by standardizing CES-D scores and K-SADS symptom counts and summing the two standardized measures. The two measures were moderately correlated ($r = .62, p < .001$).

Parent Support and Conflict Variables—Multi-agent, multi-method constructs were created to measure the quality of the relationship and interactions that adolescents experienced with each of their parents (See Table 3). Each of the constructs was comprised of parent- and adolescent-report variables, as well as behavioral observations derived from the problem-solving interactions. We use a multi-method approach because each measurement approach provides access to unique information but also has potential liabilities. In this investigation, questionnaire measures provide input from family members who have substantially greater access than observers to behavior patterns as they occur across time and setting. Observational measures, on the other hand, provide information about family interactional processes without the intrusion of perceptual biases inherent in self-report measures.

On questionnaire measures, each family member reported about both parents. As reports of each respondent were positively and significantly correlated, scores were averaged across respondents to minimize potential reporter bias. Potential questionnaire and observational indices of each construct were then subjected to a principal factor analysis, with a one-factor solution. To be included, indices were required to demonstrate factor loadings of .30 or higher as recommended by Capaldi and Patterson (1989). In order to create constructs with the strongest possible psychometric properties, indices of latent constructs were allowed to vary across mother and father variables. Correlations between mother and father constructs were $r = -.61$ and $r = -.42$ for support and conflict, respectively.

The support construct was designed to assess the degree of warmth, support, approval, and closeness the adolescents experienced in their relationships with each parent. Conversely, the conflict construct tapped the extent to which the adolescents' relationships with each parent were characterized by conflict, criticism, and anger. Indicators and factor loadings for each of these constructs is presented in Table 3. Though there were conceptual reasons for examining support and conflict as distinct variables, we nonetheless examined the associations between the constructs to be sure that they were not redundant. The correlations between the support and conflict constructs were approximately $r = -.70$ for both mothers and fathers. Hence, though as expected, the constructs were not independent, it appeared that they each provided unique information.

Results

The first set of analyses addressed the primary question of whether depressed, subdiagnostic, and healthy adolescents differed from each other with regard to the quality of their relationships and interactions with their parents. A series of ANOVA models were run to examine between group differences in the degree of support and conflict that the adolescents experienced with each of their parents. As shown in Table 4, the overall F value was significant for each of the parent variables. Post-hoc tests of least significant differences were subsequently performed on all pairwise comparisons to examine theoretically-derived hypotheses regarding group differences. All three groups were significantly different from one another on the mother support and conflict variables. On the father support and conflict variables, depressed and subdiagnostic participants differed significantly from healthy participants but not from each other. As readers may be interested in between group differences on the manifest variables that constitute the constructs, this information is provided in Table 5.

Because potential participants with comorbid conditions were included in the depressed group, but not in the subdiagnostic group, the differences between these two groups could be attributable to the comorbid conditions experienced by participants in the depressed group. In order to address this potential confound, an additional set of ANOVAs were conducted post hoc, in which only depressed participants ($n = 47$) who did not evidence comorbid conditions were included. The pattern of results was equivalent to those reported above, with pairwise comparisons indicating that each of the three groups were significantly different from each other on the mother support, $F(2,225) = 23.60, p < .001$ and mother conflict variables $F(2,222) = 27.44, p < .001$. Hence, it did not appear that the between group differences were attributable to comorbid conditions experienced by adolescents in the depressed group.

Finally, as researchers have hypothesized that adolescent girls may be more vulnerable than boys to family stressors (Compton, Snyder, Schrepferman, Bank, & Shortt, 2003; Hops, 1995; Windle, 1992), we performed a series of multinomial logistic regressions in order to examine whether adolescent sex moderated the association between the parenting support and conflict variables and the polychotomous depression measure (i.e., group). In each analysis, the parameter of interest was the -2 Log-likelihood between a reduced model without the interaction term, and the model with the interaction term included. In these analyses, relevant χ^2 s ranged from .22 to 4.67 (d.f.=2, n.s.). Thus we failed to observe any interaction of child sex with the parenting behavior variables, a finding that is consistent with those we've obtained in previous research (Sheeber et al., 1997).

As noted earlier, we hypothesized an interaction between parent support and conflict in their relations with depressive symptomatology--- that is, we expected that adolescents whose relationships with their parents were characterized by both low levels of support and high levels of conflict, would be more likely to evidence depressive symptomatology. In order to test the interaction of parent support and conflict variables on the polychotomous depression measure, we performed a series of multinomial logistic regressions. For each, the parameter of interest was the -2 Log-likelihood between a reduced model without the interaction term, and the model that included the interaction term. The interaction statistic was not significant in analyses of either the mother or father parenting variables, mother $\chi^2=2.46, \text{d.f.} = 2, \text{n.s.}$; father $\chi^2 = 2.41, \text{d.f.} = 2, \text{n.s.}$ Finally, we also examined the possibility that high levels of support from one parent could offset the effect of high conflict with the other; no support was found for this possibility (mother conflict x father support $\chi^2=0.22, \text{d.f.} = 2, \text{n.s.}$; father conflict x mother support $\chi^2 = 1.41, \text{d.f.} = 2, \text{n.s.}$). Taken together, these results indicate that though support and conflict are independently associated with group status, the interaction between the two variables is not additionally predictive.

As the quality of the relationships that the adolescents experienced with each of their parents was associated with depressive status, we also sought to examine the extent to which mother-adolescent and father-adolescent relationships were unique in their association with adolescent symptomatology. In order to address this question, we performed two direct multinomial logistic regressions to predict group, with conflict and support as predictors, respectively. These analyses were performed on the 141 families in which two parents participated in the assessment.

The test of the full model with both parent conflict scores as predictors against a constant-only model was statistically reliable, $\chi^2(4, N = 141) = 45.13, p < .001$, indicating that the mother and father conflict scores, as a set, reliably distinguished between the three groups. Nagelkerke's R^2 , which approximates an ordinary least squares R^2 , reflected a moderate effect (Nagelkerke's $R^2 = .31$). Prediction was moderately successful with group predicted accurately in 60.3% of the cases. In order to refine our interpretation of these findings, effect parameters were estimated with both depressed and healthy group as reference categories. These analyses revealed that both mother and father conflict scores made unique contributions in distinguishing participants in the depressed group from those in the healthy group. As well, mothers' conflict score made a unique contribution to distinguishing the subdiagnostic group from the depressed group. Finally, fathers' conflict score uniquely contributed to distinguishing the subdiagnostic from the healthy group. These results are presented in Table 6.

For the parent support predictors, the test of the full model with both parent predictors against a constant-only model was statistically reliable, $\chi^2(4, N = 141) = 30.51, p < .001$, indicating that the mother and father support scores, as a set, reliably distinguished between the three groups. The Nagelkerke's R^2 indicated a modest effect (Nagelkerke's $R^2 = .22$), with group predicted successfully in 53.9% of the cases. Effect parameters were estimated with both depressed and healthy groups as reference categories. Similar to the findings for conflict, unique contributions of both mother and father support scores significantly distinguished participants in the depressed group from those in the healthy group. Neither parents' support scores made independent contributions to distinguishing the subdiagnostic from the depressed groups. The fathers' support score made an independent contribution to distinguishing the subdiagnostic group from the healthy group. These effects are presented in Table 6. No moderating effect of child gender emerged, (χ^2 s = .21 to 4.11, ns).

In order to provide information regarding the percent of variance explained by mother-adolescent and father-adolescent relationships controlling for the other, a more familiar index for examining unique contributions, we subsequently performed a series of regression analyses in which the dependent variable was the continuous measure of depression described earlier. The significance of the standardized regression weights provided the test of the unique contribution of each predictor. The first regression examined the support variables and indicated that both mother support ($B = -.19, t = -1.99, p < .05$), and father support ($B = -.32, t = -3.41, p < .001$) uniquely predicted adolescent depressive symptomatology, $F(2, 138) = 19.05, p < .0001$ explaining 2% and 6% unique variance, respectively and 22% combined. Similarly, in the second regression, both mother conflict ($B = .22, t = 2.81, p < .01$) and father conflict ($B = .41, p < .001$) were uniquely related to adolescent depressive symptoms, $F(2, 138) = 29.18, p < .0001$, explaining 4% and 14 % unique variance, respectively and 30% combined.

Discussion

The results of the present investigation provide strong evidence that adolescents with unipolar depressive disorders experience less supportive and more conflictual relationships with each of their parents than do healthy adolescents. Parent-adolescent relationships are related to subdiagnostic symptomatology in much the same way, moreover, as they are to depressive

disorder. A clear linear trend was evident in the quality of mother-adolescent relationships across the groups. Mother-adolescent relationships were most adverse in families of depressed adolescents and most favorable in families of healthy adolescents, with relationships in families of subdiagnostic adolescents being midway between the other groups. The same pattern emerged in father-adolescent relationships though the differences between families of adolescents with diagnosed disorder and those with subdiagnostic symptoms were not significant, perhaps reflecting the smaller sample of fathers. These results are consistent with those of earlier studies (Gotlib et al., 1995; Lewinsohn et al., 2000) in indicating that adolescents with subdiagnostic symptoms experience substantial difficulties in social relationships. It is notable that in the current investigation, subdiagnostic was operationalized so as to exclude both adolescents with a past history of affective disorder and those with current nonaffective disorders. Thus, the results may under-estimate the difficulties experienced by the broader population of adolescents with subdiagnostic syndromes. On the other hand, this approach, more restrictive than that used in the previous research, allows for greater confidence that the observed family difficulties are related to the subdiagnostic depressive symptomatology and are not confounded by associations with past affective disorder or other clinical syndromes. These results suggest that family-based interventions for clinical and subdiagnostic depressive syndromes could target similar interactional and relationship characteristics. Given that subdiagnostic depressive syndromes constitute a strong risk factor for the onset of depressive disorder (Gotlib et al., 1995; Pine, et al., 1999), an important direction for ongoing research will be to examine family variables that may precipitate or protect against the development of disorder in adolescents with subdiagnostic symptomatology.

The findings of this investigation extend those of previous research by demonstrating that adverse father-adolescent relationships are associated with depressive symptomatology in a manner similar to the more frequently studied mother-adolescent relationships. That is, father-adolescent relationships in families of adolescents with diagnostic- and subdiagnostic- levels of depressive symptoms are distinguished by lower levels of support and higher levels of conflict than are those of healthy families. In two-parent families, moreover, it appears that each parent-adolescent relationship is independently associated with the adolescents' well-being. The unique effect of father-adolescent relations appeared to be somewhat stronger than those for mother-adolescent relations, most noticeably in regard to the effect of parent-adolescent conflict. These results speak to the importance of including fathers in examinations of family processes associated with child and adolescent psychopathology. Though somewhat of an aside, we would note as well that the investigation also points to the feasibility of doing so; in nearly 90% of two-parent families, both parents participated in the assessment.

To our knowledge, no other investigation has examined whether a supportive parent-adolescent relationship would moderate the association between parent-adolescent conflict and adolescent depression. Contrary to our hypotheses, no evidence for such a moderating effect was found in the adolescents' relationships with either their mothers or their fathers. Moreover, support from the 'other' parent, did not moderate the association of mother-adolescent or father-adolescent conflict with depression. Hence, it appears that the association between parent-adolescent conflict and depression is not attenuated by a supportive parent-adolescent relationship with either the same parent, or in two-parent homes, with the second parent. Of course, these are initial results and firm conclusions should await replication.

The most significant limitation of the current investigation is its cross-sectional design. This design does not allow us to determine the extent to which low levels of parental support and high levels of parent-child conflict have etiological significance for the development of depression or, conversely, the extent to which they reflect disruptions attributable to the social impairments associated with depression (e.g., Coyne, Kessler, Tal, Turnbull, Wortman, &

Greden, 1987; Slavin & Rainer, 1990). The evidence that depressed persons exhibit interpersonal difficulties that strain their relationships (e.g., Rudolph et al, 2000) suggests that it is important to consider the potential for the behavior of depressed adolescents to adversely effect family relationships. For example, Slavin and Rainer (1990) reported that in a sample of adolescent girls, depressive symptoms were associated with a decline in parental support over time.

That said, the literature available to date do suggest that family relations have a prospective influence on adolescent depressive symptoms. Notable in this regard is evidence that the quality of parent-adolescent interactions predict the clinical course of depressive disorders in child and adolescent psychiatric samples (Asarnow, Goldstein, Thompson, & Guthrie, 1993; Sanford, Szatmari, Spinner, Munroe-Blum, Jamieson, & Walsh, 1995). Additionally, in two studies with nonselected populations, initial levels of family support and conflict were found to predict subsequent levels of adolescent depressive symptomatology; initial levels of adolescent depression, on the other hand, were not predictive of deterioration in the quality of family relationships or interactions (Sheeber et al., 1998; Stice et al., 2004). Of course, these results apply within the range of family disruption and depressive symptomatology observed in these community samples. It is likely that depressive behaviors of clinical severity would adversely impact family functioning. In the current study, longitudinal data would have enabled us to draw more definitive conclusion in this regard, and the conduct of such studies is thus an important direction for continued research.

Another limiting feature of the current study is that the sample was fairly homogeneous, with regard to ethnic and racial characteristics. Though we expect that supportive and nonconflictual parent-adolescent relationships would serve to promote and protect adolescent emotional well-being across ethnically diverse groups (O'Connor, 2002; Steinberg, Mounts, Lamborn, & Dornbusch, 1991) there is relatively little research available that addresses these relationships in non-white samples (for exceptions see Brody, Kim, Murry, & Brown, 2005; Grant, Poindexter, Davis, Cho, McCormick, & Smith, 2000; Simons, Murry, McLoyd, Lin, Cutrona, & Conger, 2002). Additionally, it is not unlikely that cultural differences with regard to the expression and meaning of warmth and conflict within the family may influence the nature of associations between parent-adolescent relationships and adolescent symptomatology (Lopez, Hipke, Polo, Jenkins, Karno, Vaughn, et al., 2004).

Despite these limitations, this investigation provides compelling evidence that family relationships are relevant to understanding adolescent depression. The use of multi-source, multi-method constructs to assess family processes is a particular strength of the investigation, reducing the likelihood that the observed associations are inflated by source variance or attributable to depressive biases in family members' perceptions. As noted earlier, evidence that depression is associated with errors in interpreting and reporting parental behavior (e.g., Ehrmantrout et al., 2006; Sanders, et al., 1992; Shirk et al., 1997) substantiate the need for designing studies that include multiple respondents or behavioral observations to protections against this potential source of bias. It should be noted, that though the behavioral observations did not load on the constructs as highly as the other indices each measure loading on the construct differentiated between the groups. Thus this approach provided a conservative test of the relations between family processes and depression. Importantly, the results substantiated the effects of earlier, adolescent-report studies in documenting an inverse association between supportive parent-adolescent relationships and depression. They were, moreover, consistent with the somewhat larger literature of multi-source or multi-method studies indicating a direct association between parent-adolescent conflict and depression.

The use of a community sample of adolescents, a subset of whom met diagnostic criteria for unipolar depressive disorder and a subset set of whom evidenced subdiagnostic criteria,

enabled us to extend the research knowledge in important ways. The results indicating that the family characteristics associated with clinical and subdiagnostic depressive syndromes are similar, with differences emerging with respect to relationships with mothers only in degree, provide support for the relevance of the literature on community samples to the understanding of affective disorder. As well, because we used a community recruitment strategy, the results suggest that the quality of the family environment is relevant to depression not only in the subset of adolescents whose difficulties have led them into treatment but for the large number that do not seek or receive treatment services as well. Finally, the study has advanced our knowledge by determining that father-adolescent relationships are associated with depressive syndromes in adolescence and are as important to address and understand as mother-adolescent relationships. We postulate that this information has implications for the development of family-based preventive and treatment interventions as well as for the conduct of continued research on family processes related to adolescent depression.

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Table 1

Demographic Data

Demographic Category	Depressed (<i>n</i> = 82)	Subdiagnostic (<i>n</i> = 78)	Healthy (<i>n</i> = 83)	Test Statistic
Gender				
Male	26	35	23	$\chi^2 = 5.68$, ns
Female	56	43	60	
Age				
Mean (SD)	16.26 (1.24)	16.06 (1.15)	16.49 (1.21)	$F = 2.5$, ns
Family Structure				
Dual parent family ^a	46	55	58	$\chi^2 = 8.86$, ns
Single parent family ^b	33	19	25	
Other	3	4	0	
Income				
Md	40,000	46,200	54,382	$\chi^2 = 5.58$, ns
Range	8,436 – 250,000	1,800 – 200,000	7,600–250,000	
Race & Ethnicity				
Caucasian	69	68	73	$\chi^2 = 3.32$, ns
Latino	3	1	2	
African American	1	1	0	
Asian	2	2	3	
Native American	2	3	2	
Other	5	3	3	

^a Of dual parent homes approximately 70% of families were in-tact, 26% were mother and step-father (husband or co-habiting partner), and 3% were father and step-mother (wife or cohabitating partner).

^b Approximately 83% of single parents were mothers.

Table 2

Diagnostic and Treatment Data

Diagnoses	Depressed	Subdiagnostic	Healthy
	(<i>n</i> = 82)	(<i>n</i> = 78)	(<i>n</i> = 83)
Current Affective Disorders			
Major depression	79		
Dysthymic disorder	3		
Current Nonaffective Disorders ^a			
Anxiety disorders	21		
Substance use disorders	13		
Externalizing disorders	16		
Any nonaffective disorder	35		
Lifetime Nonaffective Disorders ^a			
Anxiety disorders	27	1	
Substance use disorders	21	1	
Externalizing disorders	23	5	
Any nonaffective disorder	49	7	
Mental Health Treatment			
Current	19	6	
Past	50	21	

^a Diagnoses are not mutually exclusive.

Table 3
Items and Factor Loadings for Support and Conflict Constructs

Indicants	Mother	Father
Support		
CRPBI		
Acceptance	.77	.82
NRI		
Admiration	.92	
Intimacy	.62	
Reliable Alliance	.72	
Companionship		.76
Instrumental Aid		.80
LIFE - Facilitative	.30	.36
Conflict		
CBQ		
Appraisal of Parent	.83	.89
Appraisal of Dyad		.89
CNS		
Attack	.65	.69
NRI		
Antagonism	.81	.79
Conflict	.87	.88
IC		
Frequency X Intensity	.63	
LIFE - Aggressive	.46	.38

Table 4

Between Group Differences on Parent Support and Conflict

Parent-Child Relationship	Healthy Mean (SD)	N	Subdiagnostic Mean (SD)	N	Depressed Mean (SD)	N	F
Mother Support	0.49 (0.68) _a	78	-0.03 (0.83) _b	73	-0.47 (1.06) _c	77	23.60*
Mother Conflict	-0.44 (0.65) _a	75	-0.14 (0.74) _b	73	0.56 (1.09) _c	77	27.44*
Father Support	0.50 (0.74) _a	52	-0.14 (0.83) _b	55	-0.39 (1.06) _b	46	13.76*
Father Conflict	-0.55 (0.53) _a	52	0.14 (0.91) _b	55	0.46 (1.12) _b	46	17.11*

Note. Means in the same row that do not share superscripts differ at $p < .05$.

* $p < .0001$

Table 5
Descriptive Statistics and Univariate ANOVA Results for Disaggregated Construct Indicators

Variable	Depressed		Healthy		Subclinical		F	η^2 -squared
	Mean	SD	Mean	SD	Mean	SD		
Father Conflict Factor (<i>n</i> =153)								
CBQ Appraisal of Parent	8.51	5.57	3.43	3.01	7.22	5.19	15.83***	0.17
CBQ Appraisal of Dyad	4.57	3.11	1.86	1.69	3.88	2.78	14.95***	0.17
CNS Attack	20.05	3.50	17.98	2.63	20.25	3.36	8.16***	0.10
LIFE Aggressive	0.13	0.14	0.09	0.08	0.16	0.15	4.16*	0.05
NRI Antagonism	2.74	1.16	1.88	0.70	2.35	0.87	10.75***	0.13
NRI Conflict	2.80	1.20	1.85	0.58	2.35	0.96	12.47***	0.14
Mother Conflict Factor (<i>n</i> =225)								
CBQ Appraisal of Parent	8.62	6.59	3.23	3.17	5.35	4.52	22.59***	0.17
CNS Attack	20.69	3.62	18.05	2.66	19.82	3.67	12.18***	0.10
IC Frequency $\times$ Intensity	2.13	0.90	1.53	0.56	1.91	0.73	12.55***	0.10
LIFE Aggressive	0.20	0.15	0.11	0.09	0.17	0.14	9.59***	0.08
NRI Antagonism	2.90	1.09	2.00	0.85	2.09	0.70	23.47***	0.17
NRI Conflict	2.82	1.12	1.98	0.82	2.04	0.74	20.32***	0.15
Father Support Factor (<i>n</i> =153)								
CRPBI Acceptance	20.48	5.72	25.19	3.98	21.66	4.75	12.92***	0.15
LIFE Facilitative	0.34	0.15	0.38	0.15	0.31	0.12	3.59*	0.05
NRI Admiration	2.87	1.13	3.92	0.80	3.18	1.00	15.26***	0.17
NRI Companionship	2.25	1.01	2.98	0.98	2.50	0.92	7.39**	0.09
NRI Instrumental Aid	2.72	1.19	3.23	0.90	2.88	0.80	3.60*	0.05
Mother Support Factor (<i>n</i> =228)								
CRPBI Acceptance	22.30	5.45	26.93	3.67	25.28	3.87	21.96***	0.16
LIFE Facilitative	0.32	0.12	0.41	0.12	0.36	0.14	11.45***	0.09
NRI Admiration	3.10	1.05	4.04	0.71	3.47	0.92	21.18***	0.16
NRI Intimacy	2.27	1.21	2.68	1.11	2.29	0.94	3.35*	0.03
NRI Reliable Alliance	4.10	1.13	4.72	0.59	4.42	0.87	9.30***	0.08

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 6
Unique Contribution of Mother-Adolescent and Father-Adolescent Relationships in the Prediction of Group Status

Group	B	Wald Test (z-ratio)	Odds Ratio	95% Confidence Interval for Odds Ratio	
				Lower	Upper
Healthy Reference					
Depressed					
Constant	-0.09	0.13			
Father support	-0.75	5.34*	0.47	0.25	0.89
Mother support	-0.82	5.55*	0.44	0.22	0.87
Subdiagnostic					
Constant	0.25	1.16			
Father support	-0.68	5.22*	0.51	0.28	0.91
Mother support	-0.35	1.20	0.70	0.37	1.32
Depressed Reference					
Subdiagnostic					
Constant	0.33	2.17			
Father support	0.07	0.07	1.08	0.62	1.86
Mother support	0.46	2.62	1.59	0.91	2.77
Healthy Reference					
Depressed					
Constant	-0.01	0.00			
Father conflict	1.22	12.27***	3.40	1.71	6.75
Mother conflict	0.88	6.47	2.40	1.22	4.72
Subdiagnostic					
Constant	0.30	1.45			
Father conflict	1.21	13.25***	3.34	1.75	6.40
Mother conflict	-0.07	0.04	0.93	0.49	1.79
Depressed Reference					
Subdiagnostic					
Constant	0.31	1.72			
Father conflict	-0.02	0.01	0.98	0.62	1.57
Mother conflict	-0.94	9.90**	0.39	0.22	0.07

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.