

# Family Functioning, Self-Concept, and Severity of Adolescent Externalizing Problems

Craig E. Henderson · Gayle A. Dakof ·  
Seth J. Schwartz · Howard A. Liddle

© Springer Science+Business Media, Inc. 2006

**Abstract** We investigated direct and shared effects of family functioning and self-concept on the severity of adolescent externalizing problems in a sample of 224 clinically referred adolescents. Structural equation modeling (SEM) revealed strong, direct relationships between problem behaviors and both family functioning and self-concept. Using R. M. Baron and D. A. Kenny's (1986) and G. N. Holmbeck's (1997) criteria for testing mediation in SEM, family functioning partially mediated the relationship between self-concept and problem behaviors. A moderation model, testing the relationship between externalizing problems and the interaction between family functioning and self-concept, did not yield a significant effect. Our findings indicate that self-concept and family functioning exert direct and shared effects on externalizing problems and suggest that interventions for clinically referred adolescents should target both the individual adolescent and his/her family.

**Keywords** Adolescence · Externalizing · Family · Self-concept · Mediation

---

C. E. Henderson (✉)

Assistant Professor of Psychology, Sam Houston State University, Campus Box 2447,  
Huntsville, Texas 77341-2247  
e-mail: chenderson@shsu.edu

G. A. Dakof

Research Associate Professor, Department of Epidemiology and Public Health, Center for Treatment Research on Adolescent Drug Abuse, University of Miami School of Medicine, Miami, Florida

S. J. Schwartz

Research Associate Professor, Department of Psychiatry and Behavioral Sciences, Center for Family Studies, University of Miami School of Medicine, Miami, Florida

H. A. Liddle

Professor, Department of Epidemiology and Public Health, University of Miami School of Medicine, Center for Treatment Research on Adolescent Drug Abuse, Miami, Florida

Findings from longitudinal studies indicate that adolescent externalizing problems predict deleterious long-term consequences including addiction, impaired family relationships, and criminal activity well into adulthood (Brook, Cohen, & Jaeger, 1998; Duncan et al., 1997; Newcomb, Scheier, & Bentler, 1993). A risk and protective factor framework is often invoked to explain the development and progression of adolescent externalizing problems (Hawkins, Catalano, & Miller, 1992; Loeber, Stouthamer-Loeber, & White, 1999). Such models posit that risk factors combine and interact synergistically to produce pervasive difficulties in adolescent functioning (Farrington, 1995; Newcomb & Bentler, 1988). Two commonly investigated risk factors for adolescent problem behavior are family functioning and self-concept.

A range of family risk factors have been linked to the development and exacerbation of adolescent drug abuse and antisocial behavior. Of these family-related risk factors, ineffective parenting practices, especially poor parental monitoring (Pettit, Bates, Dodge, & Meece, 1999), disorganized family management strategies (Swadi, 1999), coercive and manipulative attempts to control the adolescent (Loeber & Stouthamer-Loeber, 1998), and low levels of involvement and autonomy granting (Gray & Steinberg, 1999) have been implicated as among the most important predictors of the severity of adolescent substance abuse and antisocial behavior. Self-concept also has been linked to adolescent externalizing problems, including specific factors such as low expectations for success, low self-esteem, negative views of one's own behavioral conduct, and an imbalance between positive and negative aspects of the self (DeHaan & McDermid, 1999; Jessor, Turbin, & Costa, 1998; Newcomb & Bentler, 1989; Oyserman & Markus, 1990; Paschall & Hubbard, 1998; Peiser & Heaven, 1996).

Given the growing consensus among adolescent researchers that risk factors should be conceptualized in an integrative framework (e.g., Dishion & Kavanagh, 2001; Hawkins et al., 1992), key factors such as family functioning and self-concept may operate synergistically in relation to the development and exacerbation of externalizing behavior. Research has found that delinquent behavior develops and is maintained within a social context, in particular the family (Dishion, Capaldi, & Yoerger, 1999; Loeber, Farrington, Stouthamer-Loeber, Moffitt, & Caspi, 1998). Self-concept also does not exist in a vacuum, as its development is influenced significantly by the immediate family context (McClun & Merrell, 1998), although self-concept may also be influenced by factors outside the family, such as peers and school (Harter, 1999). It is likely that factors such as family functioning and self-concept work in conjunction with one another to predict adolescent externalizing behavior. This hypothesis has been supported by research indicating that family functioning and self-concept jointly predict adolescent externalizing problems (Barber, Ball, & Armistead, 2003; Peiser & Heaven, 1996; Raboteg-Saric, Rijavec, & Brajsa-Zganec, 2001). With the exception of Barber et al., these studies have typically not examined complex relational patterns such as mediation and moderation.

We investigated the unique and joint effects of family functioning and self-concept on the severity of adolescent problem behaviors in a clinical sample of drug abusing adolescents. First, we hypothesized that family functioning and self-concept would directly predict severity of adolescent externalizing problems. We were particularly interested in the joint contribution of family functioning and self-concept to adolescent externalizing problems, as this question has been the focus of much less inquiry. Given the lack of prior mediation/moderation research with respect to self-concept, family functioning, and adolescent externalizing problems, we had no basis for advancing clear hypotheses regarding mediation or moderation. Instead, we hypothesized that self-concept and family functioning

would jointly predict externalizing problems, as demonstrated by either moderation or mediation.

## Method

### Participants

Study participants were urban families with an adolescent between 12 and 17 years of age referred for outpatient substance abuse treatment. At the time they were referred, the majority (approximately 60%) were involved in the juvenile justice system. The sample consisted of 224 youth (182 males and 42 females) with an average age of 15.4 years ( $SD = 1.2$ ). Seventy-two percent of the youth were African American; 18% were non-Hispanic White; and 10% were Hispanic. The median yearly family income from all sources was between \$11,000 and \$13,000. Forty-one percent of the families were on public assistance. All youth were drug users, with 95% meeting the criteria for a substance use disorder (78% meeting criteria for dependence and 17% meeting criteria for abuse). Seventy-eight percent of youth met criteria for one or more of the following disorders: conduct disorder (67%), oppositional defiant disorder (50%), attention deficit hyperactive disorder (27%), dysthymia (21%), and major depressive disorder (17%).

### Procedure

Parents of referred youth were contacted by telephone and screened for initial eligibility. Once initial eligibility was established, study procedures and purpose, including that participation was voluntary and that they had the right to discontinue participation in the research at any time, was explained to potential participants. Written informed consent was then obtained. Trained research assistants, blind to study hypotheses, administered the assessment battery. The researchers received approval by the university Institutional Review Board (IRB) prior to beginning the research, and all research procedures were monitored by the IRB through the duration of the study.

### Measures

#### *Demographic characteristics*

Information on adolescent gender and ethnicity was gathered through a structured interview format.

#### *Family functioning*

Adolescent perception of family functioning was measured by the conflict, cohesion, and organization subscales of the Family Environment Scale (FES; Moos & Moos, 1984). As reported by Moos and Moos (1984) internal consistency and test-retest reliability for these subscales are: Cohesion, Cronbach's  $\alpha = .78$ , test-retest = .86; Conflict, Cronbach's  $\alpha = .75$ , test-retest = .85; and Organization, Cronbach's  $\alpha = .76$ , test-retest = .76. This study examined adolescent report data only, for three reasons. First, individual teen and parent reports of family functioning typically show low-to-moderate levels of agreement (Jacob & Windle, 1999). Second, with respect to the relationship to adolescent behavioral outcomes,

adolescent perceptions have been shown to be more valid indicators of family functioning (Cottrell et al., 2003). Third, the amount of missing parent report data in this sample was prohibitively high.

### *Self-concept*

The Academic Competence, Behavioral Conduct, and Social Acceptance subscales of the Self-Perception Profile for Adolescents (SPPA; Harter, 1988) were used in the current study. The SPPA has generated acceptable internal consistency reliability estimates, ranging from .74 to .93 (Harter, 1988).

### *Externalizing problems*

The extent to which adolescents were psychologically involved with drugs and alcohol was measured by the Personal Involvement with Chemicals scale of the Personal Experience Inventory (PEI; Winters & Henly, 1989). Adolescents were queried about their psychological involvement with drugs during the 30 days prior to assessment. Winters and Henly (1989) report alpha coefficients on the PEI ranging from .88 to .92.

The Aggressive and Delinquent Behavior subscales of the Youth Self-Report (YSR; Achenbach, 1991) were employed as additional indicators of externalizing problems. Cronbach's alpha coefficients and one-week test-retest reliabilities for the YSR scales used in this study are: Aggressive Behavior, Cronbach's  $\alpha = .76$ , test-retest = .79; Delinquent Behavior, Cronbach's  $\alpha = .86$ , test-retest = .72 (Achenbach, 1991).

### Data analytic strategy

Three latent variable (LV) measurement models were created, corresponding to family functioning, self-concept, and externalizing problems, and the strength of the relationships between the three LVs was the subject of investigation. Confirmatory factor analyses (CFAs) evaluated the adequacy of the measurement models, prior to testing more complex SEMs. In the SEMs, both family functioning and self-concept were posited as predicting the severity of adolescent externalizing behavior. Moderation and mediation models were then designed to assess the joint relationships between family functioning and self-concept on externalizing problems. For the moderation model, an interaction term, representing the interaction between the family functioning and self-concept LVs, was created and implemented in the Mplus software. Mplus utilizes the quasi-maximum-likelihood approach to computing interactions between latent variables (Klein & Muthén, 2002), which has recently been favorably compared to other methods for calculating latent variable interactions (Marsh, Wen, & Hau, 2004). The latent variable representing the shared variance in externalizing problems was then regressed on the latent interaction term.

For the mediation analysis, we followed well-accepted criteria for establishing mediation as outlined by Baron and Kenny (1986) and Holmbeck (1997): (1) a significant direct-effects relationship (i.e., self-concept on externalizing), (2) significant relationships between the hypothesized mediator (i.e., family functioning) and both variables in the direct-effects relationship (i.e., self-concept and externalizing), (3) a significant reduction in the direct-effects relationship once the mediator is added to the model, and (4) no significant reductions in model fit when the direct-effects path is removed. Chi-square difference tests among the models were used to identify the model that most closely fit the data. For all models, three fit statistics are reported: (a) the chi-square test, (b) the comparative fit index (CFI), and (c) the

**Table 1.** Correlations among self-concept, family functioning, and externalizing problem indicators

Variable	2	3	4	5	6	7	8	9	10
Self-concept domain									
SPPA scholastic competence	.38**	.27**	.46**	.16*	-.17*	.12	-.18*	-.23**	-.16**
SPPA behavioral conduct	-	.04	.39**	.22**	-.31**	.20**	-.32**	-.49**	-.46**
SPPA social acceptance		-	.36*	.14*	-.11	.11**	.05	<.001	-.08
SPPA global self-worth			-	.33**	-.32**	.23**	-.20**	-.24**	-.28**
Family functioning domain									
FES cohesion				-	-.50**	.51**	-.28**	-.31**	-.35**
FES conflict					-	-.38**	.20**	.32**	.35**
FES organization						-	-.17*	-.30**	-.29**
Externalizing problems domain									
PEI chemical involvement							-	.46**	.37**
YSR aggressive behavior								-	.65**
YSR delinquent behavior									-

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

root mean square error of approximation (RMSEA). It should be noted that, in moderately sized samples (*N* > 200), the chi-square test tends to be inflated and may reach significance even with adequately fitting models (Kline, 1998). Therefore, when discrepancies between the chi-square test and other fit indices arose, we relied more heavily on the RMSEA and CFI fit indices. The confidence-interval-based test of mediation recommended in MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) was also conducted, as it provides a more powerful test of the indirect effect (i.e., the relationship between self-concept and externalizing problems, adjusting for the relationship of each variable with family functioning).

**Results**

Confirmatory factor analyses

A correlation matrix was computed among the self-concept, family functioning, and externalizing problem variable domains (see Table 1). With two exceptions in the self-concept domain, all intradomain correlations were above .30, demonstrating a medium-size relationship (Cohen, 1988). CFAs were conducted on the self-concept, family functioning, and externalizing problems variable clusters. All CFAs produced adequate fit to the data (i.e., non-significant  $\chi^2$  statistics, CFI's exceeding .90, and RMSEA less than .10). The overall measurement model, including all three latent variables, also produced satisfactory model fit,  $\chi^2(24, N = 224) = 77.87, p < .001; CFI = .99; RMSEA = .08$ , indicating that the observed variables were good indicators of the latent variables and the three latent variables represented separate constructs.

Structural equation models

A total of six structural equation models are reported in this section. The first model tested is a direct-effects model examining the relationship between family functioning and externalizing problems. The second and third models are direct-effects models examining the relationship

between family functioning and externalizing problems and between self-concept and externalizing problems respectively. The fourth model is a moderation model, assessing the extent to which the interaction between family functioning and self-concept predicts externalizing problems. The fifth model investigates the extent to which family functioning mediates the direct relationship between self-concept and externalizing problems. If judged to fit the data adequately, this final model would then be tested with the relationship between self-concept and externalizing problems constrained to zero in order to satisfy Holmbeck's (1997) fourth criterion for testing mediation. The sixth model (the reverse mediation model) considers the extent to which self-concept mediates the direct relationship between family functioning and externalizing problems and likewise was followed by a model constraining the direct relationship to zero to fully test mediation. This last model allowed us to explore different sequencing of effects and their relative fit to the data.

### *Direct effects models*

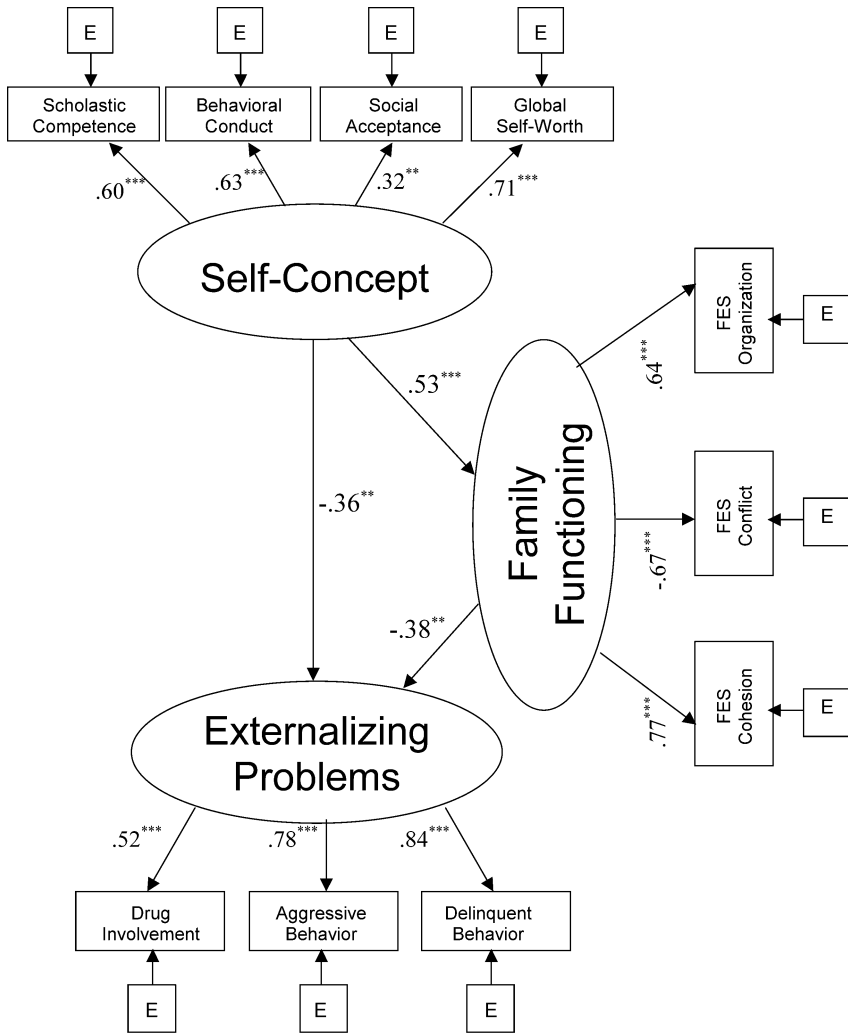
The direct effects model testing the impact of family functioning on externalizing problems demonstrated excellent model fit,  $\chi^2(8, N = 224) = 8.25, p = .41$ ; CFI  $> .999$ ; RMSEA = .01]. The path coefficient from family functioning to externalizing problems was significant and negative  $\beta = -.57, t(1, 189) = -3.79, p < .001$ , indicating that more problematic family functioning was related to more externalizing problems. The direct effects model consisting of self-concept and externalizing problems also demonstrated adequate model fit based on the CFI, although the RMSEA was higher than desired,  $\chi^2(13, N = 224) = 60.15, p < .001$ ; CFI = .99; RMSEA = .13. The path coefficient from self-concept to externalizing problems was significant and negative,  $\beta = -.60, t(1, 189) = -3.76, p < .001$ , indicating that lower self-concept was related to more externalizing problems.

### *Moderation model*

The moderation model, assessing the relationship between externalizing problems and the interaction between the family functioning and self-concept latent variables, did not fit the data well. Although the statistical software used to produce the moderation models does not produce traditional model fit statistics when calculating latent variable interactions, the Bayesian Information Criterion (BIC) for the moderation model was much larger than the BIC statistics for the two direct effects models, where smaller values indicate better model fit. Further, the path coefficient from the latent variable interaction term to externalizing problems was not statistically significant,  $b = .77, t(1, 220) = 0.68, p > .05$ .

### *Mediation models*

The mediation model with family functioning as the mediator provided a somewhat better fit to the data than did the self-concept/externalizing problems direct effects model,  $\chi^2(32, N = 224) = 77.87, p < .001$ ; CFI = .99; RMSEA = .08. The path coefficients from self-concept to family functioning,  $\beta = .53, t(1, 175) = 4.87, p < .001$ , and from family functioning to externalizing problems,  $\beta = -.38, t(1, 175) = -3.35, p = .001$ , were both statistically significant (see Figure 3), indicating that lower self-concept was related to more problematic family functioning, and that more problematic family functioning was related to more externalizing problems. Although the  $\chi^2$  difference test comparing the direct effects model to the mediational model was nonsignificant, the direct path coefficient from self-concept to externalizing problems was reduced to  $\beta = -.36, t(1, 175) = -3.07$ ,



\*\*  $p < .01$ ; \*\*\*  $p < .001$

**Fig. 1** Structural model depicting family functioning mediating the relationship between self-concept and externalizing problems

$p < .01$ . This reduction in the direct path coefficient from the direct-effects model to the mediational model was statistically significant ( $\Delta\chi^2(1) = 5.98, p < .05$ ), satisfying Baron and Kenney’s (1986) third criterion for mediation (i.e., a significant reduction in the direct-effects relationship once the mediator is added to the model). This mediational finding indicated that, although lower self-concept is related to more externalizing problems, this relationship is attenuated when family functioning is taken into account (thus supporting the validity of the mediational model). Following procedures discussed by MacKinnon et al. (2002) and implemented in Mplus, the bootstrap confidence interval for the indirect effect displayed in Fig. 1 did not include zero (95% CI =  $-7.52$  to  $-0.51$ ;  $p < .05$ ), also supporting the mediation finding.

The only remaining step needed to ensure mediation is to constrain the direct path from self-concept to externalizing problems to zero and reevaluate the model. When the direct path from self-concept to externalizing problems was constrained to zero, the model fit worsened,  $\chi^2(32, N = 224) = 160.74, p < .001$ ; CFI = .97; RMSEA = .13. A chi-square difference test revealed that the fit for this model was significantly worse than was the fit for the model with the direct-effects path unconstrained,  $\Delta\chi^2(1) = 82.87, p < .001$ .

The reverse mediation model, with self-concept as the mediating variable, demonstrated worse model fit (BIC = 4963.54) than the direct effects model of family functioning on externalizing behavior (BIC = 2598.87). Therefore, this mediation model was rejected in favor of the more parsimonious direct effects model.

## Discussion

Recent developments in the adolescent externalizing problem behavior literature suggest that risk factors should be conceptualized in an integrative framework, as opposed to limiting focus to single factors (Dishion & Kavanagh, 2001). However, despite previous research supporting the importance of family functioning and self-concept in adolescent externalizing problems, these risk factors have rarely been studied together. The current study addressed this research question by investigating the direct effects of family functioning and self-concept on adolescent externalizing problems, as well as more complex mediation and moderation models investigating shared effects. Three primary findings emerged from this investigation: (1) a strong direct relationship between family functioning and externalizing problems, (2) a strong direct relationship between self-concept and externalizing problems, and (3) family functioning partially mediated the relationship between self-concept and externalizing problems. A model examining the extent to which the interaction between family functioning and self-concept predicted externalizing problems (i.e., a moderation model) was not supported by the results.

The findings on the direct relationships of family functioning and self-concept on externalizing problems are consistent with large bodies of literature demonstrating similar direct effects (e.g., Farrington & Loeber, 2000; Oyserman & Markus, 1990; Resnick et al., 1997). The finding suggesting shared influence of self-concept and family functioning on adolescent externalizing problems is also consistent with previous research (Barber et al., 2003; Peiser & Heaven, 1996; Raboteg-Saric et al., 2001); however, this body of research is much less developed. Further, previous investigations have not taken advantage of recent methodological developments capable of demonstrating more complex mediational and moderational relationships between and among variables.

The findings from our study are consistent with integrative models of adolescent risk factors, suggesting that family functioning and self-concept work in conjunction with one another to predict the severity of adolescent externalizing problems. Specifically, the finding that family functioning partially mediated the relationship between self-concept and externalizing problems suggests that poor self-concept is related to adolescent perceptions of maladaptive family functioning, which in turn is related to more severe externalizing behaviors. Although this sequence may seem counterintuitive, it should be noted that family functioning was assessed from the adolescent's point of view. Following this line of thought, it seems likely that a youth who has low self-esteem may also see his/her family in a negative light. It seems unlikely that a youth who has low self-esteem would view his/her family functioning, especially along the relationship dimensions assessed here, as high. Further, an adolescent's low self-worth may stimulate more conflict and less closeness in families,

as parents and others may interact with such an adolescent in a more critical or avoidant manner (Liddle, 1994). Such an interpretation is consistent with research in developmental psychology supporting the bidirectional influence of social relationships (Baltes, Reese, & Nesselroade, 1977; Eisenberg et al., 1999). In other words, although family functioning has been shown to influence the developing adolescent's self-concept, theories supporting bidirectionality would also suggest that self-concept is capable of influencing family functioning.

The findings from this study should also be interpreted in light of some limitations. First, the sample was comprised of predominantly African American male youth involved in the juvenile justice system; therefore, the results may not generalize to other samples composed of youth from different gender, ethnic, and juvenile justice backgrounds. Second, the cross-sectional design used in the present study does not allow us to test how self-concept, family functioning, and externalizing problems are causally related to one another or to infer the exact direction of these relationships. Longitudinal studies are required to make definitive inferences, as has been discussed in recent treatments of mediation in the research literature (e.g., Collins, Graham, & Flaherty, 1998). Third, the family measures used in this study were collected from the adolescents' perspectives. It is conceivable that parents may perceive the family environment differently than their adolescents, and therefore that different results may have been obtained if both adolescent and parent perspectives were analyzed. However, it should be noted that some adolescent researchers stress the importance of the adolescent's subjective experience, arguing that the way children perceive their parents' behavior is of more influence on their development than is parents' actual behavior (Steinberg, Lamborn, Dornbusch, & Darling, 1992).

Despite these limitations, the present findings may have important implications for the treatment of adolescent externalizing problems. They suggest that treatments that focus on specific risk factors (i.e., self-concept and family functioning) should view self-concept and family functioning in an integrative fashion rather than as separate foci. This premise is consistent with findings suggesting that a combination of family and individual therapy sessions is an effective approach to treating adolescent externalizing problems (Liddle et al., 2001; Waldron, Slesnick, Brody, Turner, & Peterson, 2001). It suggests that rebuilding adolescents' self-concept and self-esteem, as well as creating a supportive family environment and facilitating effective parenting practices, should be incorporated into interventions targeting substance abuse and similar adolescent externalizing problems. It is in this integrative spirit that the continuum of intervention, the coming together of family-based and self-based approaches, is proposed.

**Acknowledgments** Completion of this research was supported by grants P50-DA07697, P50-DA11328, and T32-DA07297. The authors acknowledge Cynthia Rowe, Arlene Frank, and Dana Mills for their comments on previous versions of this manuscript.

## References

- Achenbach, T. M. (1991). *Manual for the youth self-report*. Burlington: University of Vermont, Department of Psychiatry.
- Baltes, P. B., Reese, H. W., & Nesselroade, J. R. (1977). *Life-span developmental psychology: Introduction to research methods*. Oxford, England: Brooks/Cole.
- Barber, C. N., Ball, J., & Armistead, L. (2003). Parent-adolescent relationship and adolescent psychological functioning among African-American female adolescents: Self-esteem as a mediator. *Journal of Child and Family Studies*, 12, 361–374.

- Baron, R. M., & Kenny, D. A. (1986). The mediator-moderator variable distinction in social psychological research: Conceptual, statistical, and strategic considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.
- Brook, J. S., Cohen, P., & Jaeger, L. (1998). Developmental variations in factors related to initial and increased levels of adolescent drug involvement. *Journal of Genetic Psychology*, *159*, 179–194.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. San Diego: Academic Press.
- Collins, L. M., Graham, J. W., & Flaherty, B. P. (1998). An alternative framework for defining mediation. *Multivariate Behavioral Research*, *33*, 295–312.
- Cottrell, L., Li, X., Harris, C., D'Alessandri, D., Atkins, M., Richardson, B., et al. (2003). Parent and adolescent perceptions of parental monitoring and adolescent risk involvement. *Parenting: Science and Practice*, *3*, 179–195.
- DeHaan, L. B., & MacDermid, S. M. (1999). Identity development as a mediating factor between urban poverty and behavioral outcomes for junior high school students. *Journal of Family and Economic Issues*, *20*, 123–148.
- Dishion, T. J., Capaldi, D., & Yoerger, K. (1999). Middle childhood antecedents to progressions in male adolescent substance use: An ecological analysis of risk and protection. *Journal of Adolescent Research*, *14*, 175–205.
- Dishion, T. J., & Kavanagh, K. (2001). An ecological approach to family intervention for adolescent substance use. In E. F. Wagner & H. B. Waldron (Eds.), *Innovations in adolescent substance abuse interventions* (pp. 127–142). New York: Elsevier Science Ltd.
- Duncan, T. E., Duncan, S. C., Alpert, A., Hops, H., Stoolmiller, M., & Muthén, B. (1997). Latent variable modeling of longitudinal and multilevel substance use data. *Multivariate Behavioral Research*, *32*, 275–318.
- Eisenberg, N., Fabes, R. A., Shepard, S. A., Guthrie, I. K., Murphy, B. C., & Riser, M. (1999). Parental reactions to children's negative emotions: Longitudinal relations to quality of children's social functioning. *Child Development*, *70*, 513–534.
- Farrington, D. P. (1995). The development of offending and antisocial behavior from childhood: Key findings from the Cambridge study in delinquent development. *Journal of Child Psychology and Psychiatry*, *36*, 1–36.
- Farrington, D. P., & Loeber, R. (2000). Epidemiology of juvenile violence. *Child and Adolescent Psychiatric Clinics of North America*, *9*, 733–748.
- Gray, M. R., & Steinberg, L. (1999). Unpacking authoritative parenting: Resassessing a multidimensional construct. *Journal of Marriage and the Family*, *61*, 574–587.
- Harter, S. (1988). *The self-perception profile for adolescents*. Unpublished measure, University of Denver, Denver, CO.
- Harter, S. (1999). Symbolic interactionism revisited: Potential liabilities for the self constructed in the crucible of interpersonal relationships. *Merrill-Palmer Quarterly*, *45*, 677–703.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, *112*, 64–105.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, *65*, 599–610.
- Jacob, T., & Windle, M. (1999). Family assessment: Dimensionality and correspondence across family members. *Journal of Family Psychology*, *13*, 339–354.
- Jessor, R., Turbin, M. S., & Costa, F. M. (1998). Risk and protection in successful outcomes among disadvantaged adolescents. *Applied Developmental Science*, *2*, 194–208.
- Klein, A. G., & Muthén, B. O. (2002). *Quasi maximum likelihood estimation of structural equation models with multiple interaction and quadratic effects*. Unpublished manuscript, Graduate School of Education, University of California, Los Angeles.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford.
- Liddle, H. A. (1994). The anatomy of emotions in family therapy with adolescents. *Journal of Adolescent Research*, *9*, 120–157.
- Liddle, H. A., Dakof, G. A., Parker, K., Diamond, G. S., Barrett, K., & Tejada, M. (2001). Multidimensional family therapy for adolescent drug abuse: Results of a randomized clinical trial. *American Journal of Drug and Alcohol Abuse*, *27*, 651–687.
- Loeber, R., Farrington, D. P., Stouthamer-Loeber, M., Moffitt, T. E., & Caspi, A. (1998). The development of male offending: Key findings from the first decade of the Pittsburgh Youth Study. *Studies on Crime and Crime Prevention*, *7*, 141–171.

- Loeber, R., Stouthamer-Loeber, M., & White, H. R. (1999). Developmental aspects of delinquency and internalizing problems and their association with persistent juvenile substance use between ages 7 and 18. *Journal of Clinical Child Psychology*, 28, 322–332.
- Loeber, R., & Stouthamer-Loeber, M. (1998). Development of juvenile aggression and behavior: Some common misconceptions and controversies. *American Psychologist*, 53, 242–259.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, 7, 83–104.
- Marsh, H. W., Wen, Z., & Hau, K.-T. (2004). Structural equation models of latent interactions: Evaluation of alternative estimation strategies and indicator construction. *Psychological Methods*, 9, 275–300.
- McClun, L. A., & Merrell, K. W. (1998). Relationship of perceived parenting styles, locus of control orientation, and self-concept among junior high age students. *Psychology in the Schools*, 35, 381–390.
- Moos, R. H., & Moos, B. S. (1984). *Family Environment Scale manual*. Palo Alto, CA: Consulting Psychologists Press.
- Newcomb, M. D., & Bentler, P. M. (1988). *Consequences of adolescent drug use*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Newcomb, M. D., & Bentler, P. M. (1989). Substance use and abuse among children and teenagers. *American Psychologist*, 44, 242–248.
- Newcomb, M. D., Scheier, L. M., & Bentler, P. M. (1993). Effects of adolescent drug use on adult mental health: A prospective study of a community sample. *Experimental and Clinical Psychopharmacology*, 1, 215–241.
- Oyserman, D., & Markus, H. R. (1990). Possible selves and delinquency. *Journal of Personality and Social Psychology*, 59, 112–125.
- Paschall, M. J., & Hubbard, M. L. (1998). Effects of neighborhood and family stressors on African American male adolescents' self-worth and propensity for violent behavior. *Journal of Consulting and Clinical Psychology*, 5, 825–831.
- Peiser, N. C., & Heaven, P. C. L. (1996). Family influences on self-reported delinquency among high school students. *Journal of Adolescence*, 19, 557–568.
- Pettit, G. S., Bates, J. E., Dodge, K. A., & Meece, D. W. (1999). The impact of after-school peer contact on early adolescent externalizing problems is moderated by parental monitoring, perceived neighborhood safety, and prior adjustment. *Child Development*, 70, 768–778.
- Raboteg-Saric, Z., Rijavec, M., & Brajsa-Zganec, A. (2001). The relation of parental practices and self-conceptions to young adolescent problem behaviors and substance use. *Nordic Journal of Psychiatry*, 55, 203–209.
- Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., et al. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. *Journal of the American Medical Association*, 278, 823–831.
- Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. *Child Development*, 63, 1266–1281.
- Swadi, H. (1999). Individual risk factors for adolescent substance use. *Drug and Alcohol Dependence*, 55, 209–224.
- Waldron, H. B., Slesnick, N., Brody, J. L., Turner, C., & Peterson, T. (2001). Treatment outcomes for adolescent substance abuse at 4- and 7-month assessments. *Journal of Consulting and Clinical Psychology*, 69, 802–813.
- Winters, K. C., & Henly, G. A. (1989). *Personal Experiences Inventory test and manual*. Palo Alto, CA: Consulting Psychologists Press.