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Engaging Parents in the Family Check-Up in Middle School: Longitudinal Effects on Family Conflict and Problem Behavior Through the High School Transition

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Abstract

Purpose—Adolescence is a time of significant developmental change. During this period, levels of problem behavior that had been relatively innocuous may escalate in the company of peers, with simultaneous reductions in parental monitoring and involvement. In this article we report the results of a randomized controlled trial of the Family Check-Up (FCU), a family-centered, school-based intervention designed to forestall the escalation of adolescent problem behavior by promoting and motivating skillful parenting through the transition to high school.

Methods—In this study, 593 ethnically diverse families were randomized to be offered the FCU when their youth was in seventh and eighth grades of middle school. We used complier average causal effect (CACE) analysis to examine change in family conflict, antisocial behavior, involvement with deviant peers, and alcohol use from sixth through ninth grades.

Results—Analyses revealed that when compared with a matched control group, youths whose parents had engaged in the FCU demonstrated significantly lower rates of growth in family conflict ($P = .052$), antisocial behavior, involvement with deviant peers, and alcohol use.

Discussion—Our results extend current research on the FCU and provide support for theory linking family conflict with a variety of youth problem behavior. These results, and the extant research on the FCU, suggest that traditional school-based service delivery models that focus on the individual child may benefit from a shift in perspective to engage parents and families.

Keywords

family conflict; peer group; adolescent behavior; alcohol consumption; prevention

INTRODUCTION

The transition to adolescence coincides with an increase in the likelihood of a variety of deviant behaviors, including antisocial behavior and substance use.[1,2] This period is also characterized by significant change in parent–adolescent relationships, including less time spent together (and more time spent with peers), reduced communication, and lower levels of parental involvement and monitoring.[3,4] If parental monitoring is reduced too early in

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middle school, youths may be placed at risk for deviant behavior.[5] Lower levels of monitoring imply that parents have fewer opportunities to socialize their youth and communicate effective standards for behavior; as a result, youths may fail to develop adequate self-control and, in turn, are more likely to become involved in deviant behavior.[6]

When poorly monitored adolescents self-organize into deviant peer groups, problem behavior can escalate.[5] Deviant peer groups influence individual behavior by providing models of antisocial or substance-using behavior and then encouraging and reinforcing imitations of such behaviors within the group,[7] a process called *peer contagion.*[8] These processes put individuals at risk for more serious problems in late adolescence or early adulthood, including violent delinquency, incarceration, and mental health problems.[9–11] Escalating alcohol use is particularly problematic in adolescence given the potential for long-term abuse and addiction[12] and for more immediate outcomes, such as increased risk of automobile fatalities[13] and negative effects on adolescent brain development, such as reduced hippocampal volume[14] and impaired neurocognitive functioning.[15]

The transition to high school can create additional change and upheaval in adolescents' lives.[16] The high school environment is generally more impersonal, competitive, and grade-oriented than are most middle school environments, and youths must adjust to a larger school and integrate with new peer groups.[17] This transition can be a major developmental turning point, and those youths who adapt effectively are more likely to continue to be successful, whereas youths who struggle with the transition may fall victim to delinquency, association with deviant peer groups, or substance use.[18]

The Family Check-Up[19,20] (FCU) is a family-centered, school-based intervention designed to forestall the escalation of problem behavior in adolescence by bringing about change in parenting. The goal of the FCU is to intervene in family processes and help parents identify reasonable change strategies that lead to reductions in child behavior problems.[21] After an initial interview and family assessment, parents participate in a feedback session that focuses on motivation to improve parental communication skills and family management practices. At the conclusion of this session, parents who need additional support are provided a menu of options for more intensive intervention. In this way, the FCU actively encourages self-selection into the most appropriate intervention services based on systematic assessments of family interactions, parental motivation, and available resources.[22]

The FCU is grounded in social learning theory, which hypothesizes that noncompliant child behavior is reinforced by the acquiescence of the parents in the face of highly negative, aversive exchanges with children.[23] In other words, children learn to escalate aversive exchanges in order to counteract parents' efforts to set limits on behavior. Over time, these families develop interaction patterns characterized by high levels of parent–adolescent conflict and low levels of parental support and monitoring. The gradual withdrawal of parents from active family management provides the opportunity for the youth to engage in antisocial behavior and become involved with deviant peers, who further promote antisocial behavior and substance use.[24–26]

This Study

In this randomized trial, we selected an ethnically diverse sample and focused our intervention specifically on the family–school partnership in an effort to increase engagement in the FCU among ethnically diverse families. Previous research using this sample found that the intervention reduced growth of antisocial behavior and substance use and increased self-regulation and school engagement during middle school.[27,28] We were interested in extending this research by examining the impact of the FCU on adolescent problem behaviors during the transition to high school (ninth grade). We examined

trajectories of family conflict, antisocial behavior, deviant peer involvement, and alcohol use across the first 4 years of the study (i.e., sixth–ninth grades).

In previous research, both gender and race/ethnicity have been linked to these outcomes. Epidemiological research has found that male adolescents begin drinking at an earlier age than do female adolescents, and that African American adolescents report lower levels of alcohol use than do European Americans.[29] Other research has found higher levels of antisocial behavior in males than in females[30] and a closer link between deviant peers and antisocial behavior in males than in females.[31] Thus, we will use gender and race/ethnicity as covariates in our analysis.

METHODS

Participants

Participants were 593 adolescents and their families across three public middle schools in an urban area in the Pacific Northwest. Among the three schools, 35%, 89%, and 39% of families received free/reduced-price lunch. All three schools were Title 1 schools, and approximately 20% of the combined school populations qualified for special education services. Youths and families were recruited in sixth grade across two cohorts. Parents of all sixth grade students were invited to participate, and 80% of all parents agreed to do so. The sample was 51.4% male ($n = 305$), M age was 11.88 years ($SD = .42$), and ethnicity was as follows: European American (36.1%, $n = 214$), Latino (18%, $n = 107$), African American (15.2%, $n = 90$), Asian American (7.1%, $n = 42$), Native American (2.4%, $n = 14$), Pacific Islander (1.9%, $n = 11$), and multiple ethnicities (19.2%, $n = 114$). All participating families provided signed consent forms, and all study procedures were approved by the Institutional Review Board (IRB).

An unbalanced approach to randomization was used to enhance the power to detect intervention effects. Thus, 386 families (65%) were randomly assigned to the intervention condition, and 207 families (35%) were randomly assigned to the control condition in which families experienced “school as usual,” including regular services offered by the schools (see Figure 1). A high degree of retention was seen across the 4 years of the study (Wave 2, $n = 525$, 89% of sample; Wave 3, $n = 511$, 86% of sample; Wave 4, $n = 493$, 83% of sample).

Intervention Protocol

The FCU is a component of an ecological approach to family intervention and treatment originally designed for adolescents at high risk for problem behavior (EcoFIT).[19,20] The first level of the EcoFIT was a universal intervention that included a family resource center in each of the three participating public middle schools. The selected intervention was the FCU, a three-session intervention designed to provide strengths-based feedback to parents using norm-referenced assessments and motivational interviewing techniques[32] that engage families in the process of change. Following the FCU, parents who needed additional support were offered adaptive, tailored interventions that targeted specific parenting skills. These components were derived from the *Everyday Parenting* curriculum,[33] an empirically validated curriculum that provides skill training for parents in areas of family management that are relevant to adolescence, including positive behavior support, monitoring, and limit setting.

Of the 386 families in the intervention condition, 51% ($n = 197$) participated in the initial interview, and of these, most ($n = 163$) elected to receive the full FCU intervention (i.e., the family assessment and feedback session). Of the families receiving the full FCU, 78% ($n = 127$) received additional follow-up support and skills training after the feedback session. The

average intervention family received 262 minutes (4.4 hours) of intervention time. The initial wave of data gathering (sixth grade) was completed before FCU feedback sessions began. Most families who received the feedback session did so in seventh grade (n = 138), and a few received the feedback session in eighth (n = 23) or ninth (n = 2) grade. With respect to gender, 47% (n = 76) of families who engaged in the FCU had a girl and 53% (n = 87) had a boy. The percentages of families who engaged in the intervention by ethnicity were as follows: 36% (n = 59) European American, 20% (n = 33) Latino, 13% (n = 22) African American, 23% (n = 37) multiethnic, and 7% (n = 12) from other ethnic backgrounds.

Measurement Procedures

In the spring semester from sixth through ninth grades (Waves 1–4), students completed a series of surveys.[34] Measures from these surveys have been used in previous research with this sample.[27] Assessments were conducted primarily in the schools. If students moved out of their original school, we surveyed them at their new location. Each youth who participated received $20 for each year he/she completed the assessment.

Measures

Family Conflict—Youths' reports of conflict with parents were measured by averaging across four items. Items elicited youths' report of how often someone in their family got mad and hit someone and how often they got their own way by getting angry. Responses ranged from 0 (*never or almost never*) to 5 (*always or almost always*). Good internal reliability was found for this scale (α = .80–.82).

Antisocial Behavior—Youths' reports of antisocial behavior were measured by averaging across 11 items. Items elicited youths' report of the number of times in the past month they had done things such as lied to parents about where they were or who they were with, hit or threatened someone at school, and engaged in theft and vandalism. Responses ranged from 0 (*never*) to 6 (*more than 20 times*). Good internal reliability was found for this scale (α = .80–.86).

Deviant Peer Involvement—Youths' reports of deviant peer involvement were measured by averaging across five items. Items elicited youths' report of the number of times in the past week they had spent time with peers who get into trouble, fight a lot, take things that don't belong to them, or use tobacco or alcohol. Responses ranged from 0 (*never*) to 7 (*more than seven times*). Good internal reliability was found for this scale (α = .73–.87).

Alcohol Use—Youths reported how often they had used alcohol during the previous month (e.g., How many alcoholic drinks did you have last month?). Numbers up to 9 were coded as is, and numbers ranging from 10 to 20 were coded as 11, numbers ranging between 21 and 40 were coded as 12, and numbers greater than 40 were coded as 13 to reduce overdispersion. The proportion of youths reporting the use of alcohol ranged from 4% (n = 26) in sixth grade to 20% (n = 89) in ninth grade.

Child Gender—Gender was coded as 0 = male and 1 = female.

Child Ethnicity—Youths reported their ethnicity as one of the following categories: European American, Latino, African American, Asian American, Native American, Pacific Islander, and multiple ethnicities. One youth failed to report ethnicity. Ethnicity was coded as 0 = non-European American, 1 = European American.

Intervention Status—Random assignment was coded as 0 = control and 1 = intervention.

Engagement Status—Engagement status was coded with two variables (i.e., "comply" and "noncomply") to reflect family participation in the FCU. Families in the intervention condition who elected to receive the FCU were coded as 1 = comply and 0 = noncomply. Families in the intervention condition who did not receive the FCU were coded as 0 = comply and 1 = noncomply. In the control condition, families were coded as 1 for both comply and noncomply to indicate that compliance status was unknown. These variables were used in the analysis as described below.

Analysis Plan

Adaptive interventions such as the FCU can be difficult to evaluate because of the wide variation in the extent to which families assigned to the intervention actually engaged in the program. Although some families assigned to the intervention received all services, other families received minimal or no services. Intention-to-treat (ITT) analyses evaluate intervention effects by comparing participants in the control group with those in the intervention group, regardless of their actual level of engagement with treatment services. As a result, ITT analyses may underestimate intervention effects.

Complier average causal effect[35] (CACE) analysis provides a statistical basis for incorporating intervention engagement in the analysis of program effects for a randomized trial. In CACE modeling, treatment effects are examined by comparing outcomes of the intervention group with those of the control group while taking into account intervention engagement or "compliance." Researchers can examine outcomes specifically for participants who engaged in (or "complied with") the intervention and compare effects with those of a selected portion of the control group. Specifically, CACE modeling matches the intervention "nonengagers" (an observed class) with the control "nonengagers" (not observed) according to their measured behavior (i.e., family conflict, antisocial behavior, etc.). Once the control "nonengagers" are identified, then the control "engagers" class can be identified. Using this subgroup from the control condition, intervention effects can be calculated.[35] Model fit is evaluated using entropy, which is a summary measure of the probability of membership in the most-likely class for each individual (i.e., complier or noncomplier class). Possible values range from 0 to 1.0, with higher values representing better classification.[36]

In our study, latent growth modeling was used to model change in the outcomes over time within the CACE framework. All analyses were conducted with Mplus 6.1, and all models were fit using robust maximum likelihood (RML), which provides "sandwich" or Huber-White standard errors that can provide unbiased estimates in the presence of missing or nonnormal data.[36] Alcohol use was count based, so a Poisson growth curve with a log-based link function was used for this portion of the analysis. When graphing the growth curves for alcohol use, the model coefficients were first transformed to their original metric by using exponentiation (i.e., antilog). The growth curve intercept reflected the initial level of the outcome in sixth grade (prior to any intervention), and the slope reflected the linear rate of change from sixth through ninth grades. The intervention condition was used to predict the change over time (i.e., slope) of the outcomes in the complier class but not in the noncomplier class, because by definition the noncomplier class did not receive the intervention. In addition, the intervention condition was not used as a predictor of the initial level (i.e., intercept) of any outcome in either class or membership in the latent compliance classes. We included all outcomes in a single model.

RESULTS

Means and standard deviations for all variables are reported in Table 1. As would be expected, youths' behavioral problems tended to increase across Grades 6–9. The covariates

demonstrated the expected correlations; for example, there was more antisocial behavior and deviant peer involvement among males.

Unconditional Growth Models

To determine the parameters needed to adequately describe the change trajectories, unconditional latent growth models were examined for family conflict, antisocial behavior, deviant peer involvement, and alcohol use. For each construct, models with intercept and linear slope parameters proved to be a good fit to the data; quadratic terms were not significant. All linear slopes were significant and positive, indicating an increase over time.

CACE Model Results

In the analyses, entropy was very good (0.88). Results for predictors of engagement status and the results for within-class variation in trajectories of family conflict, antisocial behavior, deviant peer involvement, and alcohol use are shown in Table 2.

Compliance Class Membership—Results for predictors of engagement followed a logistic regression framework in that predictors attempted to discriminate between the complier and noncomplier classes. Our results indicated that none of the predictors was significantly related to family compliance with the FCU (see Table 2), suggesting equal participation among ethnicities and families of boys and of girls.

Predictors of Within-Class Variation—Assignment to the intervention condition predicted rate of change in all four outcomes, although the effect for family conflict was $P = .052$ (see Table 2). The negative coefficients indicate that the intervention compliers possessed a significantly less steep rate of change across time compared with compliers in the control group. As can be seen in Figure 2, the intervention compliers maintained a relatively flat level of family conflict, whereas the control compliers demonstrated a rather steep increase over time (2a). Similar effects appeared regarding antisocial behavior (2b), deviant peer involvement (2c), and alcohol use (2d; the lines are not straight because the Poisson model coefficients were subject to a nonlinear transformation, as described earlier). Control variables also predicted significant within-group variance in the expected directions; for example, boys had higher levels of antisocial behavior and deviant peer involvement than did girls.

Effect Sizes—To calculate effect sizes, class estimates were saved and outcomes for individuals assigned to the complier class in the control and intervention groups were compared in ninth grade. Based upon Cohen's criteria[37] (i.e., moderate, $d = .50$, and large, $d = .80$), effect sizes were moderate for family conflict (.47) and large for antisocial behavior (.86) and deviant peer involvement (.77). Effect size calculations are not appropriate for count-based data, such as alcohol use.

DISCUSSION

Study results demonstrated that the FCU had a significant effect on adolescent problem behavior across the transition to high school. Although the FCU is a relatively brief intervention, it demonstrated a positive effect on family conflict ($P = .052$), antisocial behavior, deviant peer involvement, and alcohol use. Youths whose families engaged in the intervention showed less growth in these behaviors in the years leading up to and including the transition to high school. Although this transition may create a significant degree of stress for adolescents, the effects of the FCU did not appear to be attenuated. Given the ethnic diversity of the sample, the results are highly generalizeable.

These results are the first instance in which the FCU has demonstrated effects on multiple steps of the causal chain hypothesized by Patterson et al.[23] In their model, a high degree of family conflict contributes to parental withdrawal, which provides youths with the opportunity to not only engage in delinquent behavior, but also to affiliate with peers that model and reinforce further delinquent behavior, including substance use.[7] The fact that we found program effects in many of these areas lends support to Patterson's model.

In contrast to the families who engaged in the intervention, the nonengagers demonstrated less severe trajectories. This may be a reflection of the fact that the higher risk families in our sample were more motivated to participate in the FCU, a dynamic that has been uncovered in research on other prevention and intervention programs.[38] In addition, the family-based nature of the FCU (as compared to traditional approaches that include only the child) may have contributed to enhanced engagement and retention among the higher risk families.[39,40]

Even though the trajectories among the nonengagers appeared to be less severe, we do not believe that they were completely benign. Indeed, the unconditional mean growth curves (i.e., without covariates) for the nonengagers demonstrated statistically significant increases in family conflict, antisocial behavior, association with deviant peers, and alcohol use across the range of this study, suggesting that these behaviors could continue to escalate into high school and put youth at risk for substance abuse or incarceration in adulthood.

The use of CACE modeling was a strength of this study in that it permitted us to isolate program effects when less than 100% of the intervention group received the treatment. CACE modeling enabled us to compare the subgroup that engaged in the intervention with a matched control group and obtain a more accurate assessment of program effects.

Our study had some limitations. First, the outcome data were based entirely upon adolescent self-reports. Although there can be biases inherent to youth self-report, we argue that the use of these reports reinforces our conclusions in that the intervention focused primarily on parents and caregivers, and thus our analyses were thus more conservative than if we had assessed only parenting practices or parent ratings of youths' behavior. A second limitation is that the CACE approach cannot test mediation, so we must assume that the underlying mechanism for change was the effect of the intervention on parenting strategies. Finally, our sample was obtained from three different schools, raising the possibility that differences in the student populations among the schools created a degree of bias. To evaluate this possibility, we controlled for school membership by using multiple dummy codes and reran the analysis. We found that school membership predicted one growth curve slope—for alcohol use among the compliers—and did not predict membership in the complier versus noncomplier classes. The intervention effect for parental monitoring was slightly attenuated ($P = .061$) because of the higher number of covariates, although the effect size remained moderate (.41). Overall this post-hoc analysis suggests that school membership did not introduce a significant level of bias into the results. Nevertheless, these limitations suggest caution when interpreting our results.

CONCLUSION

This study extends current research on the FCU by demonstrating its effectiveness across the transition to high school on a diverse array of youth outcomes. Our findings and existing research on the FCU suggest that traditional school-based service delivery models that focus on the individual child may benefit from a shift in perspective to include parents and families.

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Abbreviations

FCU	Family Check-Up
CACE	complier average causal effect

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Implications and Contribution

In a randomized controlled trial, adolescents whose families engaged in the Family Check-Up showed less growth in family conflict (P = .052) and problem behaviors across sixth through ninth grades. Traditional school-based prevention/intervention models that focus on the individual child may benefit from a shift in perspective to include families.

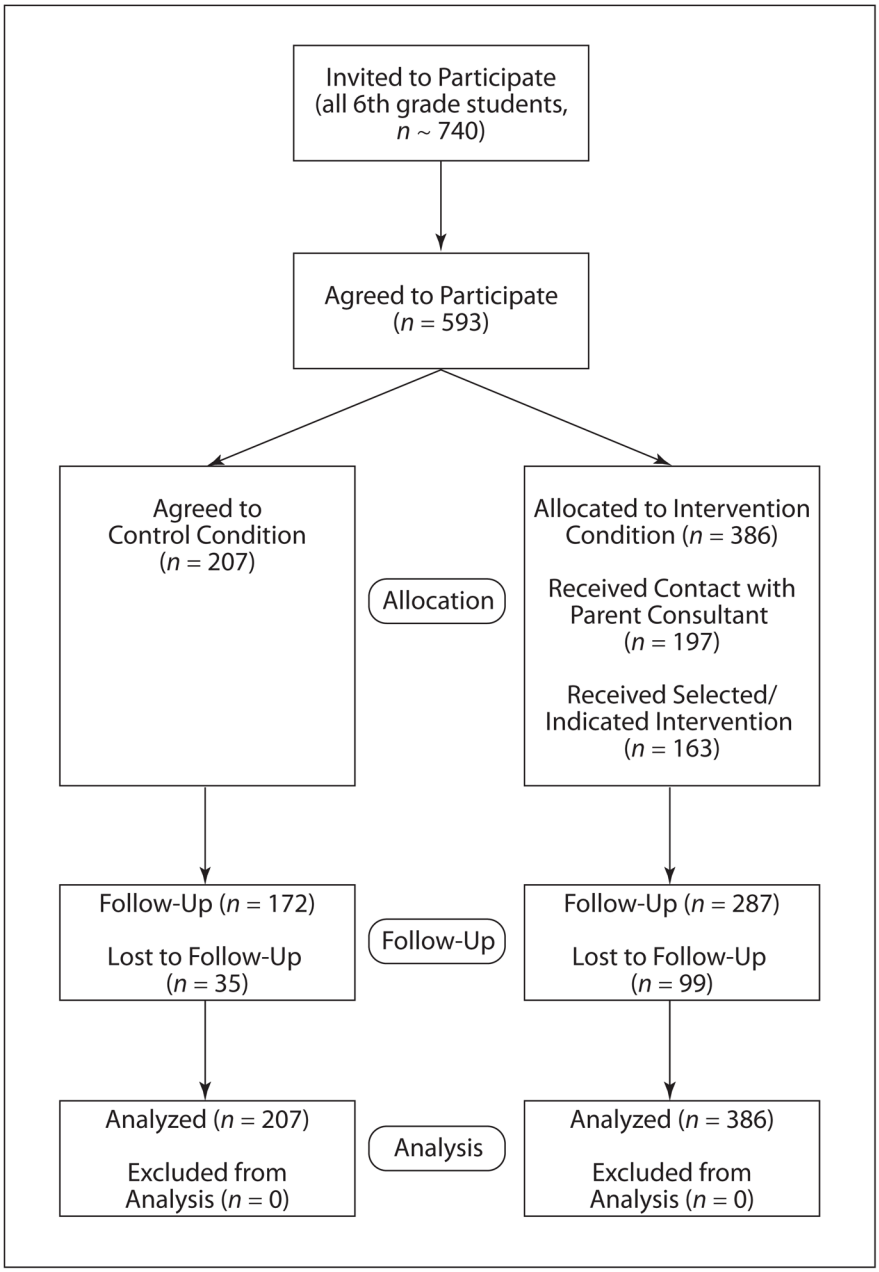

Figure 1.
Participant flow through study recruitment, randomization to Family Check-Up, and follow up.

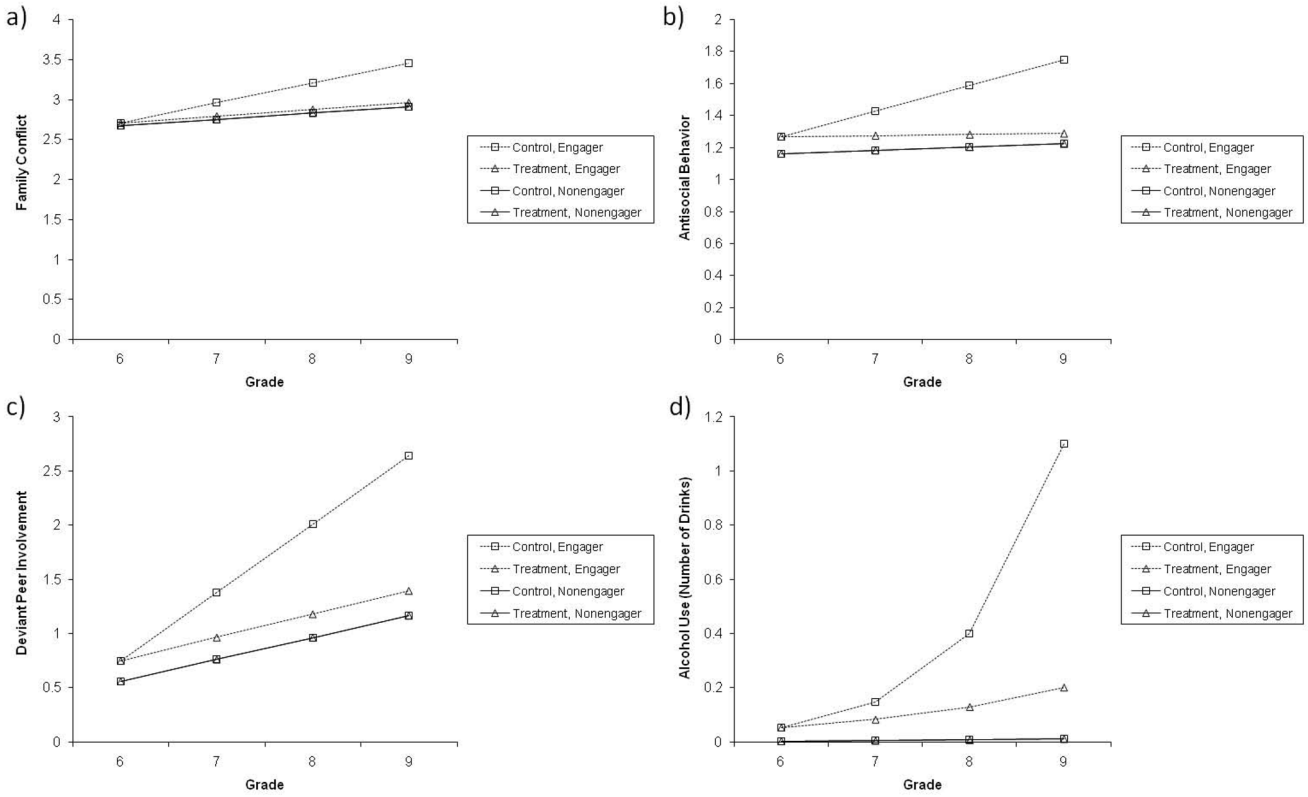

Figure 2.
Intervention effects on (a) family conflict, (b) antisocial behavior, (c) deviant peer involvement, and (d) alcohol use.

Table 1

Correlations and Sample Descriptives

	Family conflict (by grade)				Antisocial behavior (by grade)				Deviant peer involvement (by grade)				Alcohol use (by grade)			
Variable	**6**	**7**	**8**	**9**	**6**	**7**	**8**	**9**	**6**	**7**	**8**	**9**	**6**	**7**	**8**	**9**
1. Intervention status	.03	.00	.01	.01	.04	−.04	−.05	.00	.06	.05	.01	.05	.02	.03	.03	.00
2. Gender	.08	.13**	.24***	.25***	−.10*	−.11*	−.06	−.03	−.11**	−.05	.04	.09*	−.08	.06	.07	.02
3. Ethnicity	−.07	−.06	−.05	−.09	−.17***	−.18***	−.14**	−.09	−.14**	−.13**	−.07	−.04	−.03	−.02	.03	.05
N	588	524	508	459	583	524	508	459	590	523	510	459	592	523	509	456
M(median)	2.57	2.97	2.94	2.90	1.19	1.26	1.32	1.31	.60	1.00	1.27	1.45	.00	.00	.00	.00
SD(range)	1.45	1.46	1.42	1.33	.37	.44	.49	.46	.91	1.30	1.51	1.64	0–11	0–11	0–13	0–13

Note. Spearman's *r* used for all alcohol use correlations. Mean and standard deviation presented for family conflict, antisocial behavior, and deviant peer involvement; median and range presented for alcohol use.

*$P < .05$.

**$P < .01$.

***$P < .001$.

Within-class variation				Within-class variation				Within-class variation			
Noncomplier class		**Complier class**		**Noncomplier class**		**Complier class**		**Noncomplier class**		**Complier class**	
tercept est. (SE)	**Slope est. (SE)**	**Intercept est. (SE)**	**Slope est. (SE)**	**Intercept est. (SE)**	**Slope est. (SE)**	**Intercept est. (SE)**	**Slope est. (SE)**	**Intercept est. (SE)**	**Slope est. (SE)**	**Intercept est. (SE)**	**Slope est. (SE)**
Antisocial behavior				Deviant peer involvement				Alcohol use			
Fixed at 0	Fixed at 0	Fixed at 0	−.15*(.05)	Fixed at 0	Fixed at 0	Fixed at 0	−.42*(.13)	Fixed at 0	Fixed at 0	Fixed at 0	−.54*(.16)
−.01*(.01)	.00 (.01)	−.02*(.01)	.00 (.01)	−.02 (.01)	.03*(.01)	−.06*(.02)	.02 (.01)	.05 (.06)	.02 (.03)	.02 (.07)	−.01 (.02)
−.11*(.03)	.01 (.02)	−.22*(.05)	.02 (.03)	−.27*(.08)	.09 (.06)	−.34*(.14)	−.02 (.09)	.22 (.46)	.21 (.19)	−.12 (.44)	−.01 (.17)
1.25*(.04)	.02 (.02)	1.42*(.07)	.16 (.05)	.74*(.09)	.08 (.06)	1.11*(.17)	.63 (.14)	−4.45*(.52)	.28 (.25)	−3.28*(.45)	1.01 (.21)
.04*(.01)	.01*(.01)	.07*(.02)	.02*(.01)	.42*(.10)	.10*(.03)	.56*(.10)	.21*(.03)	4.04*(.83)	.55*(.15)	4.33*(.90)	.29*(.08)

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