Published in final edited form as:
J Youth Adolesc. 2001 October ; 30(5): 597–622.

Social Orientation: Problem Behavior and Motivations Toward Interpersonal Problem Solving Among High Risk Adolescents

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Abstract

A model of problematic adolescent behavior that expands current theories of social skill deficits in delinquent behavior to consider both social skills and orientation toward the use of adaptive skills was examined in an ethnically and socioeconomically diverse sample of 113 male and female adolescents. Adolescents were selected on the basis of moderate to serious risk for difficulties in social adaptation in order to focus on the population of youth most likely to be targeted by prevention efforts. Structural equation modeling was used to examine cross-sectional data using multiple informants (adolescents, peers, and parents) and multiple methods (performance test and self-report). Adolescent social orientation, as reflected in perceived problem solving effectiveness, identification with adult prosocial values, and self-efficacy expectations, exhibited a direct association to delinquent behavior and an indirect association to drug involvement mediated by demonstrated success in using problem solving skills. Results suggest that the utility of social skill theories of adolescent problem behaviors for informing preventive and remedial interventions can be enhanced by expanding them to consider adolescents' orientation toward using the skills they may already possess.

INTRODUCTION

Numerous studies have examined links between social problem solving (SPS) skills and adolescent problem behaviors. Delinquent and substance abusing adolescents repeatedly have been found to generate less effective strategies for resolving interpersonal conflict than other adolescents do (Allen *et al.*, 1990b, 1994; Freedman *et al.*, 1978; Hains and Herrman, 1989; Pont, 1995), and less sophisticated skills for integrating the perspectives of self and others (Leadbeater *et al.*, 1989; Lenhart and Rabiner, 1995). These findings are consistent with the assumption that poor social skills place youth at risk for antisocial behavior. However, an alternative interpretation is that the apparent social *incompetence* demonstrated by some youth might reflect a preference for social behavior that is viewed as less than competent by others. Rather than indicating skill deficits, the relation between a lack of *demonstrated* social skills and delinquent behavior may reflect young people's beliefs and expectations about the effectiveness of using skills they possess or their lack of identification with prosocial goals.

Although empirical research supports the association between SPS skills and adolescent problem behavior, evidence for long-term reductions in the incidence of problem behaviors through social skill enhancing interventions has been inconclusive. Some programs have documented positive impact on reducing problem outcomes (e.g., Caplan *et al.*, 1992), but many others have not shown significant reductions in targeted problem behaviors, despite documenting improvements in skill levels (Dishion *et al.*, 1984; Durlak, 1983; Kazdin, 1993; Mulvey *et al.*, 1993). Although there are notable exceptions (e.g., Weissberg *et al.*, 1997), many programs that have shown positive effects have not generally found links between outcomes and changes in the skill levels of program participants (Weissberg and Elias, 1993). Many reasons have been cited for these inconsistent findings, including inadequate training of staff or failure to fully implement program components (Kazdin, 1993; Pillow *et al.*, 1991). Beyond these limitations in program implementation there is general agreement that formulating more effective programs requires greater understanding of how risk and protective processes are linked to the development of problem behaviors (Catalano and Hawkins, 1996; Dryfoos, 1991; Hawkins *et al.*, 1992; Jessor *et al.*, 1998; Kazdin, 1993).

Studies have often concluded that social skill deficits accompany greater risk for problem behaviors, but few studies have considered how adolescents' views of what defines socially competent behavior might contribute to their levels of risk (Allen *et al.*, 1994). A major cognitive advance of adolescence is an ability to observe and evaluate one's own skills and attributes (Damon and Hart, 1988; Harter, 1990; Marsh and Shavelson, 1985). Yet, adolescents may differ in their overall orientation to social tasks in ways that determine how well they *demonstrate* their competence. For example, a youth who participates in a social skill enhancing intervention may show gains in measured skills, but may not view those skills as relevant to meeting real-life challenges (Selman *et al*., 1992). When assessments of SPS skills evaluate the adequacy of problem solving efforts, they may overlook important motivational processes that generate those efforts (D'Zurilla and Goldfried, 1971; D'Zurilla and Maydeu-Olivares, 1995; White, 1959).

The present study evaluates the role of adolescents' orientation toward the *use* of adaptive skills in explaining both the extent to which adolescents generate effective problem solving strategies and their involvement in serious problem behaviors. Our use of the term, *social orientation*, to describe these motivational processes is consistent with past work which recognized that an individual's "orientation or set in approaching a situation can greatly influence the way in which he will respond to that situation" (D'Zurilla and Goldfried, 1971, p. 112). We would expect social orientation to be influenced by opportunities for, involvement with, and perceived rewards for either prosocial or antisocial activities and models (Catalano and Hawkins, 1996). A positive social orientation is operationalized in the present study as a set of beliefs that include positive self-evaluations of effectiveness in past problem solving, a sense of self-efficacy in facing future conflicts, and identification with prosocial goals.

Figure 1 presents a conceptual model of relations between social orientation, SPS skills, and problem behaviors. The figure illustrates a potential role of social orientation in influencing the acquisition of social skills and affecting important behavioral outcomes, both directly and through its relation to social skills. The figure shows a direct association of social orientation to SPS skills (path *A*), and of SPS skills to problem behaviors (path *B*). The model includes both an indirect association between social orientation and problem behaviors mediated by SPS skills (paths *A* and *B*), and a direct association leading from social orientation to problem behavior (path *C*). Associations of gender, age, minority status, family income, and single parent family status (paths *D*) are also considered. The components of this model and expected relations among them are discussed in the sections that follow. Latent variable structural equation modeling (SEM) was used to test three models that reflect competing hypotheses about the relative importance of each of these paths. An initial model tested measurement

adequacy of the hypothesized constructs of social orientation, SPS skills, delinquent behavior, and drug involvement. Three subsequent explanatory models were then tested hypothesizing the following: (1) There is no association of social orientation with either SPS skills or problem behaviors; (2) A positive social orientation has a direct association with high levels of SPS skills but only an indirect association with problem behaviors; and (3) A positive social orientation has direct associations with the high levels of SPS skills and involvement in fewer problem behaviors.

Conceptualization and Measurement of Problem Behavior

Adolescent problem behaviors, such as juvenile crime and substance abuse, carry tremendous costs to youth, their families, and society. For example, Federal Bureau of Investigation (FBI) statistics show overall declines in violent and property crimes from 1989 through 1998 but substantial increases in the proportion of juvenile arrests for those crimes by 1998 (FBI, 1998; Grisso, 1993). The prevalence of substance abuse among adolescents remains alarmingly high, with more than half of students reporting illicit drug use by their last year in high school (Johnston *et al.*, 2000).

Adolescent problem behaviors have been found frequently to co-occur and may comprise a syndrome of problem behavior that reflects underlying developmental patterns, such as a tendency toward unconventionality (Allen, Aber, and Leadbeater, 1990a; Donovan and Jessor, 1985; Donovan *et al.*, 1988; Elliott *et al.*, 1989). The co-occurrence of problem behaviors suggests that individual problems may result from general patterns of difficulties in social development. Nevertheless, it is important that research on multiple adolescent problem behaviors examine pathways that illuminate important unique characteristics of those problems (Allen *et al.*, 1994).

Research typically has relied on information about multiple problem behaviors from a single informant, most often adolescent self-reports. Sensitively collected self-reports can provide the *least* biased estimates of specific adolescent problem behaviors (Allen *et al.*, 1994; Elliott *et al.*, 1989; Farrington, 1973), but estimates of their co-occurrence may be inflated due to correlated measurement error when the information is gathered from a single source. Reports from different informants may tap differing, but overlapping, aspects of behavior across multiple settings (e.g., peer group and family), indicating that it is important to gather information about adolescents' behavior problems from multiple informants (Achenbach, 1991; Achenbach *et al.*, 1987). Moreover, relations between problem behaviors and constructs relevant to social problem solving competence also may be inflated when measures of both criterion and independent variables rely on self-report. The present study examined delinquent activity and drug involvement as assessed via self, parent, and peer reports.

Social Problem Solving Skills

Research on adolescent SPS skills has been hindered by a lack of conceptual clarity (Cavell, 1990; Cavell, Meehan, and Fiala, in press; Peterson and Leigh, 1990). Assessments have treated competence as a global construct (e.g., judgments of effectiveness) or focused on specific skills (e.g., social perspective integration skills) presumed to underlie effective behavior (Peterson and Leigh, 1990; Selman *et al.*, 1986; Waters and Sroufe, 1983). Each approach carries advantages and limitations. Global assessments may lack situational specificity, but offer greater generalizability. Skill specific assessments, on the other hand, offer greater insight into SPS processes and may be more useful for assessing specific strengths and deficits, but lack generalizability (D'Zurilla and Maydeu-Olivares, 1995; Waters and Sroufe, 1983). Although rarely considered together, combining these two approaches may provide more robust estimates of the adequacy of adolescents' social problem solving efforts. Problem solving skills were evaluated in the present study using assessments both of overall effectiveness and of a

specific skill—integrating the perspectives of self and others—that have been found to relate to overall competence and to adolescent adjustment (Brion-Meisels *et al.*, 1984; Leadbeater *et al.*, 1989; Lenhart and Rabiner, 1995).

Social Orientation Toward Problem Solving

Bandura (1980, 1993) has postulated that negative self-efficacy expectations function by decreasing the effort placed on mastering difficult tasks and increasing the likelihood of maladaptive responses. Similarly, Dweck and colleagues (Dweck and Elliott, 1983; Henderson and Dweck, 1990) hold that adolescents' ability to adapt effectively to social demands is determined, in part, by psychological–motivational factors, including values and beliefs about their abilities. Also, Ryan and Deci's elaboration of self-determination theory (Ryan and Deci, 2000) postulates that motivation and well-being decline when individuals perceive that their efforts to function competently are thwarted. These theories suggest that individuals who possess high levels of social skills might resort to less than optimal means of handling difficult situations if they (1) do not view competent strategies as adaptive in their current environment, (2) do not value the outcomes that those strategies are expected to produce, or (3) do not believe that the strategies will work for them.

By adolescence, these expectations, values and beliefs appear to characterize an overall orientation toward competent problem solving. Research has shown that adolescents are rated as socially competent by their teachers and peers when they value competent solutions, express prosocial goals, and expect positive outcomes (Allen *et al.*, 1989; Parkhurst and Asher, 1985). Research also has begun to show that adolescents' expectations, values, and beliefs about social problem solving have implications for their engagement in problem behavior (Allen *et al.*, 1990a, 1994; Patterson *et al.*, 1989).

Aims of the Present Study

Previous research supports the importance of social problem solving competence for explaining adolescents' engagement in problem behavior, and the relevance of social orientation (i.e., beliefs, values, and expectations) to the development of social competence. In the present study, a role-playing performance test (D'Zurilla and Maydeu-Olivares, 1995; McFall, 1982) involving hypothetical conflicts with peers, parents, and other adults was used to measure the effectiveness and sophistication of adolescents' SPS strategies. Self-efficacy expectations, perceived identification with adult prosocial values, and perceived effectiveness in resolving recent conflicts were assessed as indicators of social orientation. SPS skills and social orientation were examined in relation to multiinformant assessments of delinquent behavior, and drug involvement. Associations with gender, age, racial or ethnic background, family composition, and family income were also examined. The central question addressed by this study was as follows: What is the extent and nature of the associations of social orientation and SPS skills with delinquent behavior and drug involvement? Although these cross-sectional data do not allow conclusions about the direction of effects, this study advances prior research by using SEM to investigate multiinformant data from self-, parent and peer reports about adolescent engagement in problem behaviors.

METHOD

Participants

Data were collected from 57 male and 56 female adolescents, a parent, and two peers whom each adolescent named as knowing him or her "pretty well." These data were drawn from the first wave of a longitudinal study of changing patterns of family and peer relationships. The mean age of the adolescents was 16.03 (SD = 0.74; range 14–18). The adolescents' racial or ethnic background was 66% Caucasian and 32% African American; 2% reported other racial

or ethnic backgrounds (e.g., Native American, multiracial). Most (58%) of the adolescents' families were headed by a single parent; the rest were headed by two parents (either biological, adoptive, or step). Median annual family income was $30,000 (SD = $20,864; range $7,500–$70,000). Peer data were obtained for 99 (88%) of the adolescents: Data were obtained from two peers for 70 of the adolescents, and from only one peer for the remaining 29.

Adolescents were recruited through two public school systems in a geographic area that includes rural, suburban, and urban populations. Ninth and 10th grade students were identified from school records based on the presence of at least one of four academic risk factors: recent school suspension, course failure, truancy, and a history of grade retention. These criteria identified approximately half of all 9th and 10th graders as eligible for the study, making it possible to examine relations between problem behaviors and adolescent competencies in a population that is often targeted by school-based prevention programs (Weissberg *et al.*, 1991). The sample included students who were performing adequately with only occasional, minor problems and over-sampled students who were already experiencing serious difficulties.

Procedure

After adolescents who met study criteria were identified, letters were sent to each family of a potential participant explaining the investigation as an ongoing study of the lives of teens and families. These initial explanatory letters were followed by phone calls to families who indicated a willingness to be further contacted. Approximately 50% of approached families agreed to participate. If both the teen and the parent(s) agreed to participate, the family was scheduled to come to our offices for two 3-h sessions. Adolescents formally assented to participation in the peer portion of the study, in addition to their own and their parents' active consent to participate in other aspects of the study. Adolescents identified peers during their second interview session, and peers were interviewed only after obtaining their informed assent and the consent of their parents. Peers were assured that all information would be kept confidential.

Interviews were conducted in separate sessions with adolescents, parents, and peers. Adolescents and their parents were paid a total of $105 for participating in two 3-h interviews. Peers were paid $10 for participating in an interview of approximately 30 min. All participants were interviewed individually by a graduate student in psychology or an advanced undergraduate who had received training in interview techniques. Participants' data were protected by a Confidentiality Certificate issued by the US Department of Health and Human Services which protected information from subpoena by federal, state, and local courts. All participants were given the option of declining to answer any questions with which they felt uncomfortable.

Measures

Performance Test of Social Problem Solving Competence—Adolescents' responses to an inventory of nine hypothetical social dilemmas, drawn from the Adolescent Problem Inventory for Boys (API; Freedman *et al.*, 1978) and the Problem Inventory for Adolescent Girls (PIAG; Gaffney and McFall, 1981) were used to assess the effectiveness and sophistication of SPS strategies. Virtually identical items from the boys' and girls' measures were selected to maximize comparability across gender while retaining the properties of the original measures (for similar use of these measures, see Allen *et al.*, 1990b, 1994; Kuperminc *et al.*, 1996). Adolescents reported their most likely responses to dilemmas describing conflicts with peers, parents, and other adults. Responses were scored using criterion-referenced ratings for the overall *effectiveness of the strategies* and the level of *sophistication of interpersonal negotiation strategies*.

The coding system for effectiveness of strategies was developed by the authors of the API and PIAG and extensive reliability and validity data have been reported previously (Allen *et al.*, 1990a, 1994; Freedman *et al.*, 1978; Gaffney and McFall, 1981; Leadbeater *et al.*, 1989). Two trained raters (advanced undergraduate psychology majors enrolled in independent research), reliably coded the effectiveness of adolescents' strategies (Spearman Brown $r = 0.93$) on 9-point scales (0 : least effective; 8 : most effective). Scores were averaged across situations to construct an overall score across this inventory of challenging situations.

The coding system for sophistication of interpersonal negotiation strategies (Brion-Meisels and Selman, 1984; Leadbeater *et al.*, 1989) was used to score eight of the situations that met Selman and colleagues' (1986) definition of a situation of interpersonal conflict. Such situations involve a mutually perceived disequilibrium in the needs of self and other (e.g., your father is angry at you for coming home after curfew). The scoring system followed a theoretical description of developmental differences in interpersonal negotiation strategies (Selman *et al.*, 1986). Four trained raters (advanced undergraduate psychology majors enrolled in independent research), reliably coded the sophistication of adolescents strategies (Spearman-Brown $r = 0.78$) on a 4-point scale (0 : least sophisticated; 3 : most sophisticated). A total score was obtained by averaging scores across the eight coded dilemmas.

Social Orientation—Three indicators of social orientation were assessed via self-report: self-efficacy expectations, expected identification with adult prosocial values, and perceived social problem solving effectiveness. Following Bandura's contention that self-efficacy is both situation and domain specific (Bandura, 1980, 1993), assessments of self-efficacy expectations and level of expected identification with adult prosocial values were taken with reference to the API and PIAG dilemmas (Allen *et al.*, 1990a,b, 1994). After first providing their likely responses to the nine dilemmas, adolescents listened to each dilemma a second time followed by a competent response derived from the API and PIAG scoring manuals. These competent responses were described to the youth as "another teenager's response." Assessment of expectations followed adolescents' reports of their own likely behaviors so as not to bias these reports, and so that the thought required to imagine one's likely response could aid in imagining one's expectations in the situation. *Self-efficacy expectations* were measured by asking "Do you think you could [perform the specified competent behavior] if you tried to?" Adolescents answered on an anchored 10-point scale ranging from "definitely no" to "definitely yes" for each behavior; item scores were averaged across dilemmas to compute a total score ($\alpha = 0.76$). Adolescents' own values toward competent behaviors were measured by asking "Would you like a person more or less" for engaging in the specified competent behavior? Answers were given on an anchored 10-point scale ranging from 1 : "definitely would like them less" to 10 : "definitely would like them more." Perceptions of an important adult's values "whose opinions mattered most" to the youth were measured similarly. Scores for *identification with adult prosocial values* were created by subtracting the perceived adult score from the adolescents' score on each item and then averaged across dilemmas to compute a total score ($\alpha = 0.73$). The resulting score indicates how closely youth perceived their own values about competent behaviors to be identified with the values of an important adult (Allen *et al.*, 1990a,b, 1994).

Adolescents rated their effectiveness in resolving recent disagreements with a parent, a peer, and an adult (e.g., teacher or neighbor). Unlike API and PIAG dilemmas, these situations were not hypothetical, but drawn from adolescents' experience (Kuperminc, 2000; Holditch *et al.*, 2000). In order to ensure that adolescents would describe interpersonal conflicts that demanded rational problem solving efforts (D'Zurilla and Maydeu-Olivares, 1995), adolescents were asked to describe "the hardest time in the last 6 months when you felt like you disagreed …" with a peer, a parent, and an adult outside of the family. The content of these conflict situations ranged from disagreements with friends about the choice of a movie to heated arguments with a school principal. Adolescents rated their effectiveness in resolving these disagreements so

that each would be unlikely to recur (see Freedman *et al.*, 1978, for a similar operational definition of SPS effectiveness). After each description, adolescents responded to the following three questions on anchored 10-point scales (1 : worst way possible; 10 : best way possible): (1) How well they felt they had handled the situation; (2) how they felt the other person involved in the situation would have rated the teen's handling of the situation; and (3) how effective they felt their advice would be to a younger friend facing a similar situation in the future. Item scores were averaged across disagreements to create a measure of perceived social problem solving effectiveness ($\alpha = 0.60$).

Self-Reports of Adolescent Problem Behavior—Delinquent behavior was measured as the total number of times youth reported engaging in each of 30 nonoverlapping illegal acts (assessing all significant youth criminal behavior, except drug use) during the previous 6 months (Allen *et al.*, 1990b, 1994; Elliott *et al.*, 1989). Examples of the illegal acts include minor theft (stealing something worth less than $5) grand larceny (stealing a motor vehicle), vandalism (destroying property), and assault (attacking someone with the idea of seriously hurting him or her). A composite measure of drug involvement was created, tapping both frequency of and social difficulties with adolescents' use of alcohol, marijuana, and hard drugs (e.g., LSD, cocaine) (Herting *et al.*, 1996; Johnston *et al.*, 2000; University of Virginia Center for Substance Abuse Studies, 1990). Frequency of drug use was measured as the total reported frequency of using alcohol, marijuana and hard drugs on a 9-point scale (0 : not used; 8 : used two or more times per week; $\alpha = 0.67$). Social problems associated with drug use were measured as the total number of reported social problems from a list of 15 problems that might result from use of alcohol, marijuana, and hard drugs ($\alpha = 0.84$). Examples of these problems include whether drug use has ever caused the teenager to behave in ways she or he later regretted; hurt the teenager's relationship with parents; or gotten the teenager in trouble with the police. The measure of drug involvement was obtained by averaging the z-scores of the self-reported frequency and social problems variables ($r = 0.57$, $p < 0.001$).

Parental Reports of Adolescent Problem Behavior—Mothers reported about their adolescents' delinquent behavior using the extemalizing problems scale of the Child Behavior Checklist (Achenbach, 1991). Items tap both illegal (e.g., "steals outside the home") and aggressive (e.g., "gets in many fights") behaviors that are theoretically relevant to involvement in a delinquent lifestyle or subculture (Elliott and Ageton, 1980). This measure has been used widely in research and clinical applications with samples of normal and clinically referred youth, and shows good evidence of reliability and validity (Achenbach, 1991). Mothers rated how well each of 32 items described their adolescent on a 3-point scale (0 : not true to 2 : very true or often true; $\alpha = 0.90$). Mothers reported about their adolescents' drug involvement by completing measures of drug use frequency ($\alpha = 0.62$) and social problems ($\alpha = 0.90$) with identical item content to those completed by the adolescents. Fathers' data were substituted for five participants for whom maternal data were not available (each of those participants lived with their father only). As for the self-reports, the z-scores of parent reports of adolescent drug use and social problems resulting from drug use were averaged to compute a score for drug involvement ($r = 0.61$, $p < 0.001$).

Peer Reports of Adolescent Problem Behavior—Two peers of each adolescent completed 21 items adapted from the measures of delinquent behavior and drug involvement described previously (Allen *et al.*, 1998). Items were measured on a 4-point scale, using a response format similar to the Adolescent Self-Perception Profile (Harter, 1988), which is designed to reduce social desirability. For each item, two contrasting stems were presented side by side, for example: "Some teenagers often damage or destroy property that doesn't belong to them," but "Other teenagers hardly ever destroy things that don't belong to them." Peers were asked to decide which stem best described the target adolescent, and then to decide

whether the statement was "Sort of true" or "Really true" for them. Ten items (α = 0.88) assessed adolescents' delinquent behavior; examples included the extent of the target adolescent's asking friends to do things that are against the law, assaulting others, and doing things serious enough to be sent to reform school or jail. Eleven items (α = 0.91) assessed adolescents' drug involvement; examples included extent of alcohol, marijuana and hard drug use, and letting drug use get in the way of relationships with family and friends. Scores for the two peers who rated each participating teen were averaged to produce composite scores (between-peer correlations were $r = 0.43$, $p < 0.001$, for delinquent behavior and $r = 0.36$, $p < 0.001$, for drug involvement).

RESULTS

Preliminary Analyses

Raw score means and standard deviations and the response formats of problem behavior measures are presented in Table I. Distributions of most problem behavior measures were skewed positively, similar to the distributions found in previous studies of multiple adolescent problem behaviors (e.g., Elliott *et al.*, 1989). The means are consistent with the moderately at-risk nature of the sample. For example, parental reports of delinquent behavior reveal scores that are approximately twice as high as published norms for nonclinical samples but lower than norms for clinical populations (Achenbach, 1991). Variables with skewed distributions were transformed to their natural logarithm to better approximate normal distributions.

There were few missing values (3 or fewer) for self and parent report data; these were replaced with sample means in order to maximize the data. However, because of the relatively large proportion of missing peer data noted previously, we computed analyses of variance, followed by Tukey's studentized range tests (α = 0.05), comparing adolescents for whom data were available from no peers ($n = 14$), one peer ($n = 22$), or two peers ($n = 77$). Peer participation was unrelated to self- and parent reports of problem behaviors, and to gender, age, minority status, family income, and family composition. Adolescents with data from only one peer did not differ on any comparisons with those for whom data were obtained from two peers. However, adolescents with no peer data had less effective SPS strategies, $F(2,110) = 3.51$, $p < 0.05$, and less sophisticated strategies, $F(2,110) = 3.78$, $p < 0.05$, than adolescents with data from two peers had, and lower self-efficacy expectations than adolescents with data from one peer or two peers had, $F(2,110) = 4.59$, $p < 0.05$. Because of these differences, subsequent analyses were conducted with the reduced sample ($n = 99$) for whom self, parent, and peer reports (from at least one peer) of problem behavior were available. These findings suggest that adolescents who were unwilling or unable to provide the names of peers who would provide data about them have weaker SPS skills and a more negative social orientation than other adolescents have. Thus, the final sample reflects a possible bias toward more motivated, and more socially competent adolescents.

We next examined correlations of the indicators of social orientation, SPS skills, delinquent behavior, and drug involvement with age and family income. We also examined *t* tests of those variables with gender, minority status, and single parent family status. None of these analyses reached significance after Bonferroni adjustment for the large number of comparisons (α = 0.05/55 = 0.001). We also conducted similar analyses of demographic variables with composite measures of social orientation, SPS skills, delinquent behavior, drug involvement, and total problem behavior. The composite measures were created by averaging the z-scores of the relevant indicators for each construct (e.g., the delinquent behavior composite was computed by averaging the z-scores for self-, parent and peer reports of delinquent behavior). These analyses revealed lower levels of drug involvement for ethnic minorities than nonminorities, $t(111) = 3.65$, $p < 0.01$, higher levels of delinquent behavior for boys than girls, $t(111) = -2.37$, $p = 0.02$, and somewhat more positive social orientation for girls than boys, $t(111) = 1.80$, $p =$

0.07. We then examined interactions of each demographic variable with the composite measures of social orientation and SPS skills in multiple regression analyses of delinquent behavior, drug involvement, and overall problem behaviors. None of the interactions reached significance. However, as shown in Table II, the social orientation and SPS skills composites were independently related to delinquent behavior and overall problem behaviors. The lack of significant interactions indicates that the processes linking social orientation and SPS skills to problem behaviors are unlikely to differ for individuals varying in age, family income, and single-parent family status. The regression analyses also provide evidence that both social orientation and SPS skills contribute to adolescent involvement in problem behavior and that it is important to consider effects of gender and minority status.

Structural Equation Models

Maximum likelihood SEM was used to estimate associations of social orientation and SPS skills with the multiinformant reports of delinquent behavior and drug involvement. Associations of gender and minority status with each of these constructs were also examined. Maximum likelihood estimation has been found to produce robust parameter estimates, even with relatively small sample sizes (Tanaka, 1987). Structural equations allow the researcher to examine theoretical constructs measured with multiple indicators such that shared variance among the constructs is isolated from measurement error and method biases (Byrne, 1994; Loehlin, 1987). Latent variables of social orientation, SPS skills, delinquent behavior, and drug involvement were constructed. Analysis proceeded in two stages: construction of a measurement model testing the construct validity of the latent variables, followed by examination of explanatory models.

Models were evaluated by examining parameter estimates and summary goodness-of-fit statistics. Four criteria were used to assess how adequately these models accounted for the observed covariance among the measured variables in each model. The model Chi-square (χ^2) provides a maximum likelihood estimate of the probability that the model differs by chance from the observed data. Small, nonsignificant values of χ^2 imply that a model fits the data adequately. We also used the comparative fit index (CFI) and the standardized root mean square residual (SRMR). Hu and Bentler (1999) have recommended the use of a cutoff value equal to or greater than 0.95 for CFI and a cutoff value equal to or less than 0.09 for SRMR for evaluating goodness-of-fit for models tested with small samples ($n < 150$). In combination, these cutoff values maximize the likelihood of rejecting mis-specified models. Finally, the *relative adequacy* of nested models was tested using a χ^2 difference test ($\Delta\chi^2$) that was calculated by taking the difference between the χ^2 estimates for consecutively tested models and the difference in their degrees of freedom (McArdle and Prescott, 1991; Loehlin, 1987).

Measurement Model—An initial model tested the factor structure of the latent variables of social orientation, SPS skills, delinquent behavior, and drug involvement. It is important to establish adequate fit of the model to the data at this stage, because poor overall fit would indicate that assumptions about the underlying structure of the latent variables may be incorrect or that the measures are inappropriate (Farrell, 1994).[3]

[3]Two sources of possible bias were identified and steps were taken to reduce their influence on the results. First, because the indicators of social orientation (i.e., self-efficacy expectations and identification with adult prosocial values) and of SPS skills (i.e., effectiveness and sophistication of strategies) were drawn from the same set of hypothetical dilemmas, the association between these latent constructs might be inflated due to shared method variance (Kuperminc *et al*., 1996). To control for this method bias, we correlated the error terms of these indicators across constructs of social orientation and SPS skills. Second, to control possible rater bias in estimating co-occurrence of delinquent behavior and drug involvement, we correlated the error terms of ratings by the same informant across problem behavior measures (e.g., the correlation between the error terms in peer ratings of drug involvement and delinquent behavior were freely estimated) (Ge, Best, Conger, and Simons, 1996).

Correlations among the measured variables are shown in Table III and their standardized factor loadings on the latent variables of social orientation, SPS skills, delinquent behavior, and drug involvement are shown in Table IV. The factor loadings provide an overall estimate of how much each measure contributes to the latent variables when relations between latent variables are taken into account (Byrne, 1994; Byrne *et al.*, 1989; Farrell, 1994; McArdle and Prescott, 1992). Examination of these loadings shows that all were significant, ranging from 0.36 to 0.95. These findings suggest that the latent constructs of adolescent social orientation SPS skills, delinquent behavior, and drug involvement provided reasonable summaries of the relations among the measured variables loading on each construct, $\chi^2[47] = 63.08$, $p = 0.06$; CFI = 0.955, SRMR = 0.077.[4] Significant correlations ($p < 0.05$) were found in the measurement model for the latent variable of delinquent behavior with drug involvement ($r = 0.73$), SPS skills ($r = -0.68$), and social orientation ($r = -0.76$). Significant correlations were found of drug involvement with SPS skills ($r = -0.38$) and minority status ($r = -0.38$), and of social orientation with SPS skills ($r = 0.63$) and gender ($r = -0.28$).

Explanatory Models—Three hierarchically nested models were estimated to examine the relations implied in Fig. 1. Two paths involving demographic variables were included based on the results noted previously—one leading from gender to social orientation and the other leading from minority status to drug involvement. Summary goodness of fit statistics for the three explanatory models and standardized estimates of key parameters are shown in Table V.

The first model examined paths from SPS skills to delinquent behavior and drug involvement (corresponding to path *B* in Fig. 1) and paths from gender to social orientation and from minority status drug involvement (paths *D*). This model omitted explanatory paths from social orientation to either SPS skills (path *A*) or problem behaviors (path *C*). Thus, the model tested the possibility that social orientation has no role in explaining the incidence of problem behavior. The model fit was poor, $\chi^2[56] = 97.91$, $p < 0.01$, CFI = 0.882, SRMR = 0.140.

The second model differed from the first by a single path, from social orientation to SPS skills (path *A*). This model tested the possibility that social orientation has only indirect associations with problem behaviors (paths *A* and *B*), mediated by SPS skills. Although this model represented a significant improvement in fit as compared to the first model, $\Delta\chi^2[1] = 13.07$, $p < 0.01$, its overall fit remained poor, $\chi^2[55] = 84.84$, $p < 0.01$, CFI = 0.916, SRMR = 0.097.

The findings from the second model indicated the need to consider direct paths from social orientation to delinquent behavior and drug involvement. Lagrangian multiplier tests from the second model were therefore examined to identify additional paths that would improve the model's fit. These tests indicated that the association between delinquent behavior and social orientation was not well accounted for.

Based on these tests, a final model was estimated, examining one additional path leading from social orientation to delinquent behavior (path *C*). This final model, shown in Fig. 2, showed significant improvement relative to the previous model, $\Delta\chi^2[1] = 14.23$, $p < 0.01$, and produced a nonsignificant $\chi^2[54] = 70.61$, $p = 0.06$, and goodness of fit indices that exceeded the cutoff scores recommended by Hu and Bentler (1999), CFI = 0.953, and SRMR = 0.086. As seen in the figure and shown in the final column of Table IV, social orientation was significantly and positively associated with SPS skills and negatively associated with delinquent behavior. SPS skills were significantly and negatively associated with overall drug involvement but nonsignificantly associated with delinquent behavior. Minority adolescents had lower levels

[4]This model specifying separate factors for delinquent behavior and drug involvement, fit the data better than an alternative model specifying a single factor reflecting overall problem behavior. The fit of this alternative model was $\chi^2[52] = 97.37$, $p < 0.001$, CFI = 0.872, SRMR = 0.111.

of drug involvement than did others and girls had more positive social orientation than boys. After accounting for these associations, the correlation between delinquent behavior and drug involvement was 0.90. The model accounted for 60% of the variance in delinquent behavior and 22% of the variance in drug involvement.

DISCUSSION

A positive social orientation was found to play a role in adolescents' levels of delinquent behavior and drug involvement. Latent constructs of social orientation and social problem solving skills, and multiinformant measures of problem behaviors showed acceptable levels of construct validity. Social orientation explained variance in problem behavior both jointly with, and independent of, social problem solving skills. This suggests that knowing whether youths believe in their capacity to behave competently is as important for understanding their decisions to engage in problem behavior as is their demonstrated level of social problem solving skills. Conclusions about the direction of effects cannot be drawn from these cross-sectional data, but the results are consistent with expectations derived from social-learning (e.g., Bandura, 1980, 1993), social-cognitive development (e.g., Dweck and Elliott, 1983; Henderson and Dweck, 1990), social development (Catalano and Hawkins, 1996), and self-determination theories (Ryan and Deci, 2000) about the role of self-evaluations and motivation in social behavior.

The findings have implications for understanding both the co-occurrence of problem behaviors and their unique aspects. Specifically, adolescents who reported a positive social orientation had higher levels of SPS skills and lower levels of delinquent behavior. In contrast, SPS skills mediated the association of social orientation with drug involvement. When only indirect associations of social orientation were considered, SPS skills were significantly associated with both delinquent behavior and drug involvement. Yet, when both direct and indirect associations of social orientation were considered, SPS skills showed a significant association only with drug involvement. Delinquent behavior might be the result of both poor social skills and little motivation to employ competent problem solving strategies. Drug involvement, on the other hand, might be more closely linked to poor social skills and only indirectly to negative social orientation.

Few associations were found of demographic variables with social orientation, social problem solving skills, or problem behaviors. Prior research generally has shown higher levels of problem behavior among adolescents from less advantaged demographic backgrounds (e.g., Jessor *et al.*, 1998). In the present study, however, minority status showed the only direct relation to problem behaviors, indicating that minority adolescents had *lower* levels of drug involvement than nonminorities. This finding is consistent with recent reports that have documented lower rates of drug use among African American as compared to White/Caucasian youth (Barnes *et al.*, 1994; Gibbs, 1996). The somewhat lower levels of delinquent behavior observed for girls as compared to boys appeared to be accounted for by their more positive social orientation. It is important to take note of recent reports that have documented increasing rates of delinquent behavior among adolescent girls (FBI, 1997), which may also help explain the lack of a significant gender difference in delinquency.

Implications and Directions for Future Research

Critical reviews of the effectiveness of social skill enhancing interventions have argued for the need to broaden the scope of these interventions to target comprehensively the intrapersonal, interpersonal, and social factors that might influence adolescents' motivations to engage in problem behaviors (Durlak, 1983, 1995; Weissberg *et al.*, 1991). It is clear that risk and protective factors occur in multiple contexts, including family, neighborhood, school, and peer group settings (Catalano and Hawkins, 1996; Hawkins *et al.*, 1992; Jessor *et al.*, 1998; Patterson

et al., 1989; Seidman, 1991), but research has been less clear about specific underlying mechanisms that might describe how these factors influence adolescents' decisions to engage in problem behavior. Results of the present study raise the possibility that social orientation toward problem solving plays a key role in these processes, and suggest three propositions that should be addressed in future research.

One proposition is that a negative social orientation reflects an underlying risk for engagement in problem behavior (Bell, 1986). For example, adolescents with negative self-efficacy expectations are likely to experience socially challenging events (e.g., disagreements with peers) as distressing, and respond in ways that undermine their ability to use social skills they possess (Bandura, 1980, 1993). Indeed, Allen *et al.* 1994 showed that negative expectations in social interactions predicted future involvement in problem behaviors. Youth with negative beliefs about the outcomes of their problem solving efforts may respond to interpersonal conflict in ways that potentiate negative outcomes (Dodge and Frame, 1982; Lochman and Dodge, 1994; Slaby and Guerra, 1988). Moreover, negative beliefs and their negative outcomes may be mutually reinforcing. For example, experiences of peer rejection and coercive family interactions (Patterson *et al.*, 1989) may reinforce an adolescent's beliefs that competent or cooperative solutions are ineffective and observations by others that she or he is incompetent. This interpretation suggests that intervention efforts will require not only intervening to increase social skills, but also to alter the negative beliefs that may accompany social skill deficits (Guerra and Slaby, 1990).

A second proposition is that a positive social orientation serves as a protective factor. Whereas risk factors operate by increasing the likelihood of problematic outcomes, protective factors function by reducing the impact of risk (moderation) or intervening in the causal chain between risk factors and problematic outcomes (mediation) (Coie *et al.*, 1993). The findings of the present study are consistent with a broad research literature on resiliency, indicating that personality characteristics such as internal locus of control, high self-esteem, and ego development, can compensate for detrimental effects of negative life events (Cowen and Work, 1988; Garmezy *et al.*, 1984; Luthar, 1991; Rutter, 1987). A positive social orientation may mediate relations between problem behaviors and environmental risks, including poor family management practices (Patterson *et al.*, 1989), exposure to neighborhood danger (Seidman, 1991), negative school experiences (Kasen *et al.*, 1990; Kuperminc *et al.*, 1997), and involvement with antisocial peers (Patterson *et al.*, 1989). An ability to maintain positive beliefs may empower young people to successfully "negotiate risk situations" (Rutter, 1987). Research is needed to examine these possibilities and to contribute to practical knowledge about how to move toward systems-based approaches promoting adolescent social competence within competence-enhancing environments (Weissberg *et al.*, 1991).

Processes of risk and resilience offer explanations of *how* social orientation might function to predict involvement in problem behavior. A third proposition arises from the question of *why* a positive social orientation might carry special developmental importance during adolescence. Social orientation may affect the ways adolescents pursue central developmental tasks (Connell, 1990; Dweck and Elliott, 1983; Ryan and Deci, 2000; White, 1959). These tasks include a gradual growth from dependency on parents to increased maturity, self-reliance, and personal autonomy (Allen *et al.*, 1990a; Connell, 1990; Erikson, 1963; Greenberger, 1984; Hill and Holmbeck, 1986). Current developmental theories suggest that adolescents are most likely to achieve positive outcomes in these areas when they are able to establish their independence while maintaining positive relationships with important people in their lives (Allen *et al.*, 1990a; Allen *et al.*, 1997). Adolescents who feel they lack effective social problem solving skills, expect negative outcomes, or devalue the importance of parental values may pursue their need for autonomy in ways that are destructive to relations with others (Allen *et al.*, 1997; Connell, 1990; Holditch *et al.*, 2000; Kuperminc *et al.*, 1996). Thus, negative beliefs

may reduce adolescents' motivation to pursue developmental goals in socially appropriate ways.

Limitations

The statistical models implied a direction of influence from adolescents' social orientation and social problem solving skills to problem behaviors, yet opposite or reciprocal pathways might fit these data equally well. For example, problematic behavior patterns (and their consequences) may generate negative beliefs and lower levels of demonstrated skills. Caution is warranted in drawing firm conclusions from the present data, especially given the small sample size.

Future longitudinal research can provide more powerful tests of hypotheses by enabling examination of changes over time in adolescents' social orientation, levels of SPS skills, and problem behaviors, as well as reciprocal and cross-lagged influences among these constructs. Because participants were selected based on the presence of a common set of school-based risk factors, the findings cannot be generalized to all adolescents. Moreover, adolescents for whom peer data were unavailable were excluded from analyses, raising the likelihood that the findings reported here do not apply to at-risk youth that are unskilled in maintaining peer relationships. Even so, this sampling strategy offers advantages for research intended to inform the design of preventive interventions, because the selection criteria for the study were similar to those likely to be used in selecting participants for targeted prevention efforts (e.g., Pillow *et al*., 1991).

This research is a step toward understanding and learning to prevent the developmental pathways leading to destructive adolescent behavior. By clarifying the distinctions between social skills and social orientation, this study identified critical aspects of young people's social competence that may mediate the relationship between environmental risks and the expression of behavior problems.

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Acknowledgements

This study was supported by grants from the Spencer, Smith-Richardson, and William T. Grant Foundations to the second author. We thank Bonnie J. Leadbeater for comments on an earlier draft of this manuscript.

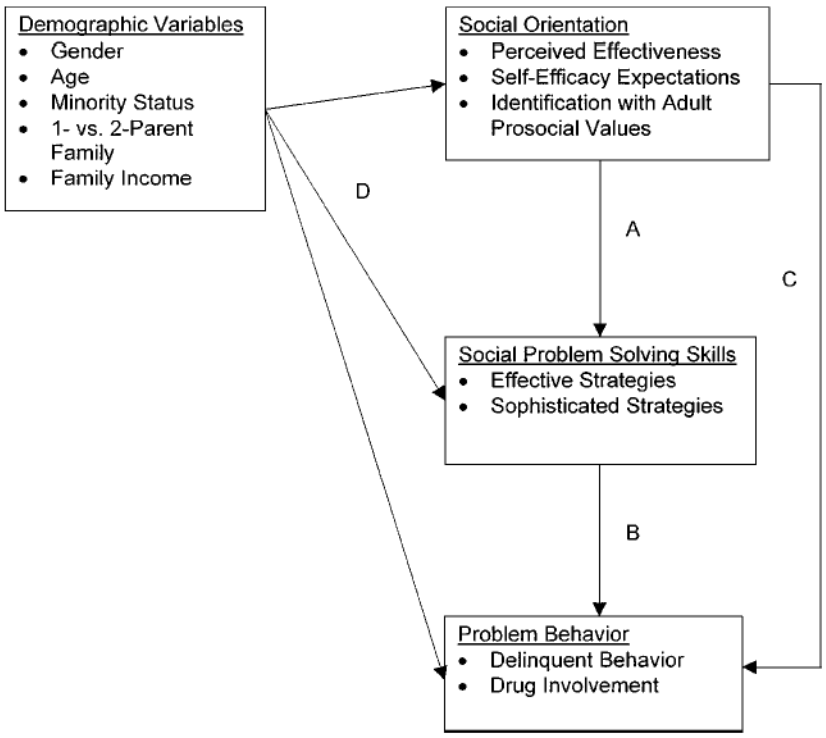

Fig. 1.
Conceptual model of associations between adolescent social orientation, social problem solving skills, problem behaviors, and demographic variables.

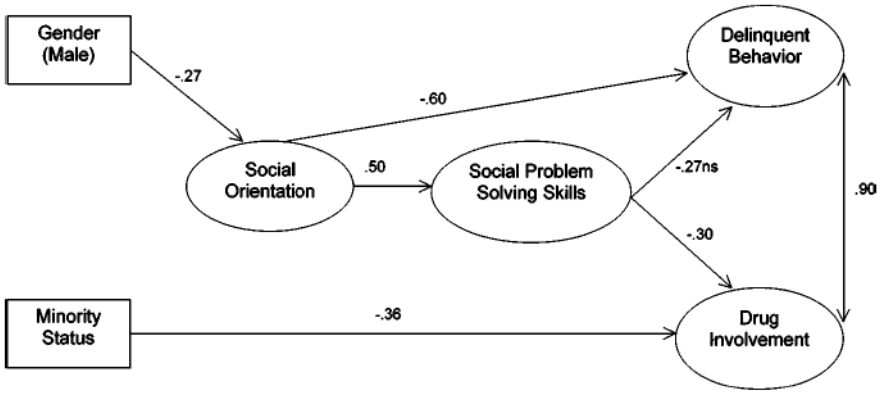

Fig. 2.
Standardized parameter estimates of associations between adolescent social orientation, social problem solving skills, problem behaviors, and demographic variables for final structural equation model.

Table I

Means, Standard Deviations, and Skewness for Problem Behaviors From Self, Parent, and Peer Reports (n = 113)

	Mean	SD	Skewness	Response format
Self-report				
Delinquent behavior	18.69	41.72	3.01	Total frequency in past 6 months
Drug involvement				
Use (frequency)	2.41	2.97	1.53	0 : not used; 8 : 2–3 times per week
Problems	1.84	2.78	1.85	Number experienced out of 15
Parental report				
Delinquent behavior	13.68	9.00	0.72	0 : no problems; 64 : maximum
Drug involvement				
Use (frequency)	1.28	2.04	2.33	0 : not used; 8 : 2–3 times per week
Problems	1.15	2.42	2.48	Number experienced out of 15
Peer report				
Delinquent behavior	1.78	0.55	0.88	1 : not characteristic; 4 : very characteristic
Drug involvement	1.69	0.60	1.00	1 : not characteristic; 4 : very characteristic

Note. Descriptive statistics are presented for raw scores prior to natural log transformation.

Table II

Regression Analysis of Composite Measures of Drug Involvement, Delinquent Behavior, and Total Problem Behavior on Gender, Minority Status, and Composite Meaures of Social Orientation and SPS Skills

	Drug involvement			Delinquency			Total problems		
	Δ	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2
		0.11**	0.11**		0.06*	0.06*		0.07*	0.07*
Gender (male)	−0.02			0.15†			0.06		
Minority Status	−0.31***			−0.08			−0.23**		
		0.19***	0.09*		0.28***	0.22***		0.25***	0.17***
Social orientation	−0.14 (−0.26**)			−0.27 (−0.43*****)			−0.23 (−0.38****)		
SPS skills	−0.19 (−0.27†**)			−0.26 (−0.42****)			−0.25 (−0.38****)		

Note. Standardized regression coefficients (betas) from the final equations are given. Values in parentheses are the partial correlations of social orientation and SPS skills controlling gender and minority status. No interactions of social orientation or competence with any of the demographic variables reached significance.

† $p < 0.10$

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$.

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Table III

Correlations Among Measures of Social Orientation, Social Problem Solving Performance, and Problem Behavior (n = 99)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Social orientation													
1. Perceived effectiveness	—												
2. Self-efficacy expectations	0.31	—											
3. Identificaiton with prosocial values	0.24	0.49	—										
SPS Skills													
4. SPS effectiveness	0.20	0.57	0.59	—									
5. Sophistication of strategies	0.22	0.45	0.33	0.51	—								
Problem behavior													
6. Delinquent (self)	−0.11	−0.28	−0.36	−0.44	−0.27	—							
7. Drug involvement (self)	−0.18	−0.15	−0.18	−0.34	−0.08	0.44	—						
8. Delinquent (parent)	−0.23	−0.19	−0.19	−0.19	−0.10	0.29	0.19	—					
9. Drug involvement (parent)	−0.06	−0.06	−0.05	−0.19	−0.01	0.30	0.68	0.31	—				
10. Delinquent (peer)	−0.27	−0.38	−0.34	−0.24	−0.28	0.27	0.35	0.33	0.25	—			
11. Drug involvement (peer)	−0.20	−0.35	−0.25	−0.26	−0.14	0.21	0.39	0.35	0.43	0.68	—		
Demographic variables													
12. Gender (male)	−0.10	−0.16	−0.18	−0.07	−0.14	0.10	−0.14	0.08	−0.04	0.26	0.11	—	
13. Minority status	0.15	0.07	0.09	0.12	0.01	−0.02	−0.36	−0.10	−0.30	−0.01	−0.10	0.17	—
Mean	6.81	7.83	−0.75	4.53	1.17	1.55	−0.02	13.06	−0.03	0.53	0.47	0.48	0.31
SD	1.23	1.41	1.12	1.06	0.25	1.55	0.90	0.87	0.87	0.30	0.34	0.50	0.47

Note. SPS : Social Problem Solving. Correlations with absolute values ≥ 0.20 are significant ($p < 0.05$). Descriptive statistics for problem behavior measures are presented after natural log transformation.

Table IV

Factor Loadings on Latent Variables of Social Orientation, Social Problem Solving Skills, Delinquent Behavior, and Drug Involvement (n = 99)

	Standardized factor loading
Social orientation	
Perceived effectiveness	0.41
Identification with prosocial values	0.72
Self-efficacy expectations	0.68 =
Social problem solving (SPS) skills	
Effective strategies	0.84
Sophisticated strategies	0.61 =
Delinquent behavior	
Self-report	0.62
Parent report	0.36
Peer report	0.52 =
Drug involvement	
Self-report	0.95
Parent report	0.72
Peer report	0.42 =

Note. Standardized factor loadings from the measurement model. All parameters significant ($p < 0.05$). Model χ^2[47 df] = 63.08, p = 0.06, CFI = 0.955, SRMR = 0.077, RMSEA = 0.060 (90% CI = 0.000–.094). The symbol "=" denotes parameters that were fixed at 1.0 in the unstandardized solution.

Table V

Goodness-of-fit Statistics and Standardized Estimates for Nested Latent Variable Models (n = 99)

	Model 1	Model 2	Model 3
Goodness-of-fit summary			
Chi-square (χ^2)	97.91	84.84	70.61
Degrees of freedom (df)	56	55	54
Probability (p)	0.00	0.01	0.06
Change in chi-square ($\Delta\chi^2$)	—	13.07	14.23
Degrees of freedom (Δdf)	—	1	1
Probability (p)	—	0.01	0.01
Comparative fit index (CFI)	0.882	0.916	0.953
Standardized root mean square residual (SRMR)	0.140	0.097	0.086
Structural relations			
[β] Social orientation → SPS skills	=0.00	0.76	0.50
[β] Social orientation → Delinquent behavior	=0.00	=0.00	−0.60
[β] SPS skills → Delinquent behavior	−0.28	−0.56	−0.27(ns)
[β] SPS Skills → Drug involvement	−0.23	−0.32	−0.30
[r] Delinquent behavior ↔ Drug involvement	0.70	0.66	0.90
Demographics			
β Gender → Social orientation	−0.18(ns)	−0.18(ns)	−0.27
β Minority Status → Drug involvement	−0.35	−0.36	−0.36
Explained variance (R^2)[a]			
Social orientation	0.03	0.03	0.07
SPS skills	—	0.58	0.25
Delinquent behavior	0.13	0.32	0.60
Drug involvement	0.16	0.23	0.22

Note. Maximum likelihood standardized estimates. Independence model χ^2 [78 df] = 432.74. All estimated parameters shown in the table are significant ($p < 0.05$) unless noted with the symbol "ns" (nonsignificant). The symbol "=" denotes a fixed (i.e., not estimated) parameter.

[a]Obtained by subtracting the squared disturbances from 1 ($R^2 = 1 - D^2$).