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Increasing School Success Through Partnership-Based Family Competency Training:

Experimental Study of Long-Term Outcomes

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Abstract

An expanding body of research suggests an important role for parent or family competency training in children's social-emotional learning and related school success. This article summarizes a test of a longitudinal model examining partnership-based family competency training effects on academic success in a general population. Specifically, it examines indirect effects of the Iowa Strengthening Families Program (ISFP) on school engagement in 8th grade and academic success in the 12th grade, through direct ISFP effects on intervention-targeted outcomes —parenting competencies and student substance-related risk—in 6th grade. Twenty-two rural schools were randomly assigned to either ISFP or a minimal-contact control group; data were collected from 445 families. Following examination of the equivalence of the measurement model across group and time, a structural equation modeling approach was used to test the hypothesized model and corresponding hypothesized structural paths. Significant effects of the ISFP were found on proximal intervention outcomes, intermediate school engagement, and the academic success of high school seniors.

Keywords

academic success; school engagement; parenting competency; adolescent substance use; family intervention

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Although there has been substantial empirical investigation of factors influencing academic-related success and failure outcomes, a number of investigators note that much further study is warranted (Alexander, 2000; Mulhall, Flowers, & Mertens, 2002; Welsh, Parke, Widaman, & O'Neil, 2001) in order to better explain relationships between the suggested influential factors and academic-related outcomes. Academic-related outcomes examined have ranged from achievement or competence (e.g., Mulhall et al., 2002; Welsh et al., 2001; Wentzel, 1993), to dropout (e.g., Hymel & Ford, 2003), to learning problems (e.g., Horn & Packard, 1985).

In the context of this ongoing empirical investigation, there is an expanding body of scientific work supporting the important role of social-emotional learning in school success (see Zins, Bloodworth, Weissburg, & Walberg, 2004, for a comprehensive review). For example, Zins and colleagues present compelling evidence of the influence of social-emotional learning in academic performance and learning, describing the need for the integration of social-emotional learning interventions with academic programs (also see Adelman & Taylor, 2000, 2003). From this perspective, they articulate a model of evidence-based, social-emotional programming paths to school success (Zins, Blood-worth, Weissberg, & Walberg, 2004, p. 9). Within the framework of their social-emotional programming model, Zins and colleagues describe a central role of parental involvement in schools. The primary programming described by the model is, however, school-based.

Although Zins and colleagues' social-emotional learning model (Zins et al., 2004) focuses primarily on parental involvement, there is a strong argument that family-focused competency-building programming also would influence school success. Family socialization processes influence social-emotional development that generalizes to the school setting and enhances school engagement (Biglan, Hallfors, Spoth, Gottfredson, & Cody, in press; Greenberg et al., 2003). The empirical literature evaluating the family-focused intervention addressed in this article clearly show positive effects on family socialization processes and parenting competencies (e.g., Redmond, Spoth, Shin, & Lepper, 1999; Spoth, Redmond, & Shin, 1998). In addition, literature reviews on parent- and family-focused skills training outcomes (e.g., Center for Substance Abuse Prevention, 1998; Taylor & Biglan, 1998) indicate that reduced problem behaviors (e.g., substance use) are among the outcomes positively influencing school success (Zins et al., 2004). The family-focused intervention examined in this study also has shown positive effects on reduced problem behaviors (Spoth, Redmond, & Shin, 2000, 2001).

In consideration of the current empirical literature, this article articulates an integrated model of family competency training and other key factors in social-emotional learning and school success. It summarizes experiment-based analyses that put the integrated model to a rigorous test, using data derived from a partnership-based study that involved families and schools in rural communities working collaboratively with a land grant university (see Spoth & Molgaard, 1999).

Parent and Family Factors in Academic-Related Success

A central theme in the literature on factors in academic-related success and failure is the role of socialization processes and their influence on the development of social responsibility and prosocial behavior in students (Denham & Weissberg, 2003; Greenberg et al., 2003; Wang, Haertel, & Walberg, 1997; Zins et al., 2004). In other words, the literature underscores roles of parents, as well as teachers and other influential adults in children's lives, and the manner in which they teach children social responsibility. Key socializing agents can create a "social context" for effective academic learning, generating social goals that either can work in

conjunction with learning goals or thwart them (Christenson & Havsy, 2004; Malecki & Elliott, 2002).

Much of the work to date on parent or family factors in academic-related success focuses on "deficit-to-deficit" etiology; often in samples of children at risk. That is, research has focused on the influence of deficient parenting practices, marital disruption, or problematic family socioeconomic conditions on academic-related deficiencies, such as dropping out of high school, experiencing learning problems in elementary/high school, or academic failure (Christenson & Havsy, 2004; Peterson & Zill, 1986; Teo, Carlson, Mathieu, Egeland, & Sroufe, 1996; Vitaro, 2003). This state of the science has motivated a call for research that focuses more on understanding how social competencies positively influence academic success by studying normal students or general populations (e.g., Welsh et al., 2001). The present study has its investigative focus on family competency influences in a general population, in order to address this suggested gap in the knowledge base.

Reviews of the literature addressing parent or family factors on academic success emphasize the importance of parent involvement in school (e.g., Christenson & Havsy, 2004; Hoover-Dempsey & Sandler, 1997) and parent support in early childhood programs (Connor & Morrison, 2004), citing the need for more research on effective strategies for engagement of parents and families with schools. As stated by Christensen and Havsy (2004): "The descriptive empirical base for the effect of the home on children's learning is strong ..." (p. 64). A recent metanalysis (Mattingly, Prislin, McKenzie, Rodriguez, & Kayzar, 2002), however, highlights the complexity of parent involvement programs, which range from parenting classes to parent involvement in decision making, supporting home learning, parent-teacher communication, parent volunteering, and so on. Results of the metanalysis reveal limited empirical support for direct effects of the entire class of parent involvement interventions on school success and highlight how results can vary by specific type of parent involvement programs. Among the types of parent involvement programs, researchers have specifically recommended family competency or skills training, as one of five key strategies for promoting students' social-emotional and academic learning (Biglan et al., in press). The present study focuses on this subset of parent involvement programming. No controlled, longitudinal studies of academic success effects of universal family competency training with general populations of students and their parents could be found.

Another point of emphasis in the literature reviewed is the need for community partnerships with schools to foster social-emotional learning among children and youth (Denham & Weissberg, 2003; Elias, Wang, Weissberg, Zins, & Walberg, 2002; Smith, Hawkins, & Catalano, 2004). Denham and Weissberg (2003) note how active engagement of parents, educators, and community leaders who link community, school, and family facilitates well-coordinated and effective social-emotional learning for enhanced school success. Elias et al. (2002) call for collaboration among families, schools, and communities to enhance learning and the achievement of academic goals, with emphasis on evidence-based programming. The authors concur with Elias and colleagues; we view the university as potentially playing a key role in community partnerships that implement evidence-based programming (see Spoth & Greenberg, 2005). The current study is part of a larger project that implements evidence-based, family-focused interventions for general populations of middle school students (Spoth, Greenberg, Bierman, & Redmond, 2004; Spoth & Molgaard, 1999) and employs a type of family-school partnership with a land grant university that is especially well suited to effective implementation and evaluation and evidence-based programming.

Model of Family Competency Training Effects on Academic Success

To address important gaps in the knowledge base highlighted in the prior section, the present study tests family competency training intervention effects examining a model of family competency-related factors (Spoth & Redmond, 2002; Spoth et al., 1998) influencing academic success, namely, increased parenting competencies, decreased student substance-related risk and increased school engagement. The following sections briefly summarize the theoretical and empirical work supporting each of the hypothesized paths in the model (see Figure 1).

Family Competency Training Effects on Parenting Competency and Students' Substance-Related Risk

The first path in the model is directed toward the most proximal outcome, namely, effective parenting behaviors, hereafter described as parenting competency. These are measured competencies or skills directly targeted by the intervention (described in detail below) and linked explicitly to core intervention content. The primary intervention content for parent competency training is directed toward the type of skills building often incorporated in parent training programs offered by schools. This content includes, for example, clarification of expectations of the student, particularly those that concern use of substances, consequences for violating expectations, and enhancement of positive child involvements (in day-to-day family activities). Earlier research has shown the positive effects of the intervention on these behaviors at a posttest (Spoth et al., 1998) and a follow-up assessment 1 year after the posttest (Redmond et al., 1999).

A second path marks another relatively proximal outcome in the tested model, that is, student risk related to substance use. Alcohol is the most commonly used substance during adolescence (Johnston, O' Malley, Bachman, & Schulenberg, 2004), and it increases risk for use of other substances (Kandel, Yamaguchi, & Chen, 1992; Martin, Velicer, & Fava, 1996). The current study employed a measure of alcohol-related risk used in an earlier study and shown to have construct validity (Redmond, Spoth, & Shin, 1998). In that study, alcohol-related risk was indicated by various measures of propensity to use alcohol, that is, students' alcohol initiation, intention for future use, and peer pressure toward alcohol use. Each of these indicators taps a primary outcome targeted by the intervention, as reported in the earlier study (Redmond et al., 1998).

Parenting Competency Effect on School Engagement

The tested model hypothesizes a path from parenting competency to school engagement over time, based on the parallel influences on school attachment and engagement hypothesized in the social-emotional learning model proposed by Zins and colleagues (Zins et al., 2004). That is, the social-emotional learning model posits key student competencies (e.g., self and relationship management, responsible decision making) that enhance school engagement and that are fostered by parenting competencies. In this vein, the tested intervention teaches parents to provide opportunities for positive behavior in their children and to reward them for it. In social-emotional learning models like that by Zins and colleagues (2004), such opportunities and rewards enhance students' attachment to adults outside of the home, such as school professionals. This mechanism of influence is consistent with child and adolescent development theories and models (e.g., attachment theory) that suggest a leading role for improved parent-child interactions and their subsequent influence on other prosocial relationships between adults and adolescents (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; DeMarsh & Kumpfer, 1986).

The literature suggests that the timing of the measurement of school engagement is important. The present model positions an effect on school engagement in the eighth grade, allowing time for aforementioned effects of parenting competency to develop and accumulate to the level that school engagement would be measurably affected. It also was clear that it could be important to capture this effect before the students entered into school-related transitions (e.g., move from junior or middle school to high school) because these transitions often produce a reduction in their commitment and positive affect about school, but one that is only temporary (Alspaugh, 1998; Hawkins, Guo, Hill, Battin-Pearson, & Abbott, 2001).

Student Substance-Related Risk Effect on School Engagement and Academic Success

The tested model shows a direct path between students' risky behavior and attachment or engagement to school. This effect is consistent with reviews of literature concerning student health risks and academic achievement, concluding that substance use deleteriously impacts a student's attitude toward school (Symons, Cinelli, James, & Groff, 1997). Earlier research has suggested that intervention effects on student risk related to alcohol use are such that there is a gradually increasing divergence of intervention and control groups over time (Spoth et al., 2001). Consistent with this pattern, it was expected that gradually increasing reduction in student risk (early initiation, vulnerability to peer pressure for alcohol use, and a positive attitude toward alcohol use) would contribute to gradually increasing engagement with school. There are several possible mechanisms for this school engagement effect. For example, reducing vulnerability to peer pressure and increasing positive relationships is associated with increased engagement in school-related activities (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004).

In the case of substance-related risk effects on academic success there is, on one hand, literature indicating that substance use, in general, and alcohol use in particular, negatively affect academic success (Hawkins, Farrington, & Catalano, 1998; Symons et al., 1997; U.S. Department of Education, 2003). On the other hand, the risk measure in this study was taken at a time when alcohol use, intentions and attitudes have not stabilized (6th grade) and the distal outcome of academic success was measured 6 years later, leading to the expectation that a direct effect was not likely. In balance, it was deemed most appropriate to examine whether the model fit was enhanced with an effect path from substance-related risk to academic success included, though the expectation was that such a direct effect would be unlikely. This possible effect is represented by a dashed-line path in the model presented in Figure 1.

School Engagement Effect on Academic Success of High School Seniors

The tested model posits a direct link between school attachment or engagement and academic success. Students' engagement in school can influence academic success both directly and indirectly. For example, a low level of engagement is associated with increased tardiness and frequencies of absences which, in turn, are associated with decreased academic success (Goodenow & Grady, 1993). Christenson and Havsy (2004) explain the link between school engagement or attachment and academic success by describing how expectations for success develop as a result of perceptions of connected-ness and how students who "feel connected" report reasons for engaging in positive school-related behaviors. Christenson and Havsy also summarize research showing how the involvement resulting from student engagement or attachment to school is associated with a number of indicators of academic performance, including grade point averages and test performance, and how effects have been demonstrated across race and gender. In addition, findings from a qualitative review of the literature (Osterman, 2000) and long-term effects of a social development model on school bonding (Hawkins et al., 2001) further support the proposed

positive influence of school engagement on academic success. Osterman (2000) found that students who reported “belonging” in school were more highly motivated, engaged in learning, and committed to school. This belonging or attachment influence on academic outcomes (e.g., GPA) has been verified by a prospective longitudinal study by the Seattle Social Development Project (Hawkins et al., 2001), supporting the association between measures of attachment and commitment with academic outcomes at the end of high school.

To summarize, the tested model of family competency training effects specifies paths suggested by the relevant theoretical and empirical literature. In addition to testing the overall model fit with the data, tests are performed for hypothesized direct and indirect paths of family intervention effects on key variables associated with parenting competency, student substance-related risk, school engagement, and academic success of high school seniors.

Method

Sample

Participants in the study were families of sixth graders enrolled in 33 rural schools in 19 contiguous counties in a Midwestern state. Schools included in the study were selected on the basis of school lunch program eligibility (15% or more of district families eligible for free or reduced cost lunches) and community size (populations of 8500 or fewer). A randomized block design guided the assignment of the 33 schools. Schools were blocked on the proportion of students who resided in lower income households and on school size. Within blocks, each school was randomly assigned to one of three experimental conditions: the 7-session ISFP, the 5-session Preparing for the Drug-Free Years (PDFY), or a minimal-contact control condition (participants in the PDFY intervention were not a focus of this study). Random assignment was computer-generated by a data analyst, and assignment information was then provided to program implementation staff who, in turn, sent letters to the schools informing them of their assignment. This study focuses on the ISFP because (1) it addresses both parent and child skills training relevant to the hypothesized model in all sessions, whereas the PDFY does not, and (2) there is much stronger empirical support the for hypothesized risk-related proximal outcome paths for ISFP.

All families of sixth graders in participating schools were recruited for participation. Of the 1309 eligible families recruited for this study from the 33 schools, 667 (51%) completed pretesting, including 446 (51%) of the 873 recruited from the 22 schools assigned to the ISFP and control groups (238 ISFP group families and 208 control group families). Prior reviews of the literature on prevention trial recruitment rates indicate that this compared favorably to, or exceeded, those commonly reported for prevention trials addressing child problem behaviors with similar evaluation components at the time this trial was undertaken (see Spoth & Redmond, 1994). Of the initially recruited families, 84% (n = 374) completed the posttest, 71% (n = 317) completed the 1.5-year-past-baseline follow-up, 66% (n = 293) completed the 2.5-year-past-baseline follow-up, 68% (n = 303) completed the 4-year-past-baseline follow-up, and 69% (n = 308) completed the 6-year-past-baseline follow-up.

Among ISFP and control group families who completed the pretest, there was an average of 3.1 children; in just over half of the families (52%), the target child was a girl. Representative of the study region, 86% of the families were dual-parent. Nearly all study parents completed high school (98% of mothers and 95% of fathers), and more than half (54% of mothers and 49% of fathers) reported some post-high-school education. Average ages of study parents were 37.2 years for mothers and 39.4 years for fathers; nearly all (98%) were White.

Sample Quality: Representativeness, Pretest Equivalence, Attrition

Approximately 6 months before the pretest recruitment began, a prospective participation factor survey was conducted by telephone in order to subsequently assess the representativeness of the families successfully recruited for the study. The completion rate among all eligible families was 90% (N = 1192); analyses of these data supported sample representativeness (Spoth, Redmond, Kahn, & Shin, 1997). Next, pretest equivalence of the intervention and control groups was assessed, and analyses were conducted to assess differential attrition. No pretest differences and no differences in differential attrition were found for any of this study's variables. Detailed descriptions of tests to establish pretest equivalence are provided in earlier research reports (Spoth, Goldberg, & Redmond, 1999; Spoth et al., 1998; 2001). These reports found pretest equivalence of the intervention and control conditions with respect to family sociodemographic characteristics. For the current study, pretest equivalence also was found for all variables.

To assess differential attrition across experimental conditions, 2-factor analyses of variance (ANOVA) were conducted for ISFP-control comparisons with measures across all waves. No significant Condition × Attrition interaction effects were found for the variables between the sixth-grade pretest and the twelfth-grade follow-up. For completers versus dropouts from pretest to Wave 6, Condition × Attrition ANOVAs were nonsignificant for pretest indicators of parenting competency, student substance-related risk, school engagement, and academic success.

Intervention, Quality of Implementation, and Control Condition

The ISFP (Molgaard, Kumpfer, & Fleming, 1997) is based upon the Biopsychosocial Model (DeMarsh & Kumpfer, 1986) and other empirically based family risk and protective factor models (Kumpfer, Molgaard, & Spoth, 1996; Molgaard, Spoth, & Redmond, 2000). The long-range goal of ISFP is to reduce youth substance use and other problem behaviors. Intermediate goals include the enhancement of parental skills in nurturing, limit-setting, and communication, as well as youth prosocial and peer resistance skills.

The ISFP requires seven sets of sessions conducted once per week for 7 consecutive weeks and held on weekday evenings in participating schools. Weekly sessions consist of separate, concurrent training sessions for parents and children, followed by a family session in which parents and children jointly participate. During the family session, parents and children practice skills learned in their separate sessions. The concurrent parent and child sessions last 1 hr and are followed by the family session, which also lasts 1 hr. The seventh meeting consists of a 1-hr family interaction session without the concurrent training sessions for parents and children; thus, the total number of intervention hours is 13. Essential program content for the parent and child skills training sessions is contained on videotapes that include family interactions illustrating key concepts.

ISFP program sessions were offered in the participating schools during the evening. Each session required three facilitators, one for the parent session and two for the youth session. All three facilitators offered support and assistance to all family members; they also modeled appropriate skills during the family session. During this family session, each facilitator took major responsibility for a subgroup of families, working with the same group each session. Many of the family activities involved individual families working together, with the facilitator offering help when needed.

Youth, parent, and family sessions used discussions, skill-building activities, videotapes that modeled positive behavior, and games designed to build skills and strengthen positive interactions among family members. Specifically, the individual youth sessions focused on strengthening future goals, dealing with stress and strong emotions, increasing the desire to

be responsible, and building skills to appropriately respond to peer pressure. The majority of each youth session was spent in facilitated group discussions, skill practice, and social bonding activities. Parent sessions included discussion of social influences on youth, understanding developmental characteristics of youth, providing nurturant support, dealing effectively with youth in everyday interactions, setting appropriate limits, following through with reasonable and respectful consequences, and communicating beliefs and expectations regarding substance use.

During the conjoint family sessions, parents and youth practiced skills learned in the separate sessions. For example, parents and youth practiced respectful listening and communication. Emphasis was placed on the use of family meetings to teach responsibility, solve problems, and plan “fun” family activities. Activities included communication exercises and poster-making activities in which family members gave visual expression to program concepts. Teaching games were employed to assist parents and youth in empathizing with each other and in learning skills for problem-solving.

An ISFP intervention delivery mechanism was developed that entailed a cooperative arrangement between the Cooperative Extension network and local schools (Kumpfer et al., 1996; Spoth & Redmond, 1996). Twenty-one 3-person leader teams conducted 21 ISFP groups in the 11 participating schools. A total of 161 families participated in the 21 groups, including 117 families who had completed the in-home pretest assessment. Group sizes ranged from 3 to 15 families, with an average size of 8 families and an average of 20 individuals per weekly session. Approximately 94% of attending, pretested families were represented by a family member in five or more weekly sessions, 88% attended six or seven sessions, and 62% attended all seven sessions.

Each team of ISFP group leaders was observed two or three times. These observations confirmed that the teams covered all of the key program concepts. Coverage of the component tasks for activities described in the group leader’s manual showed an average coverage of 87% in the family sessions, 83% in the parent sessions, and 89% in the youth sessions. Reliability checks were conducted on approximately 50% of the family session observations, 25% of the parent session observations, and 30% of the youth session observations; paired observers’ assessments of coverage of detailed group activities varied by an average of 9.8% across the three types of sessions.

Families participating in the control condition were mailed four leaflets describing different aspects of adolescent development (e.g., physical and emotional changes, as well as parent-child relationships), at the same time families in the other two experimental groups were participating in the interventions.

Procedure

All procedures were approved by the Iowa State University Institutional Review Board. All eligible families in the selected schools were first mailed descriptive information summarizing both the assessment and program components of the prevention trial. A project staff member contacted families to schedule the in-home pretest assessment visit at a convenient time for the family. During and after the administration of the study questionnaires, the interviewer videotaped the family members as they engaged in structured interaction tasks. The complete visit averaged about 2.5 hr in length. Each family member was compensated at the rate of approximately $10/hr for time devoted to the assessments. Family assessment incentives were employed to bolster initial recruitment rates, as well as to enhance wave-to-wave sample retention. Recruitment and retention strategies for participation in project assessment have included the monetary incentive noted above,

scheduling flexibility, and close tracking of participants (see Guyll, Spoth, & Redmond, 2003; Spoth & Redmond, 2002, for more detail on participation incentives and strategies).

Measures

Academic Success—Self-reported grades and school-reported grades are often used as outcome measures of academic success (Crosnoe, Erickson, & Dornbusch, 2002; Mulhall et al., 2002; Smith et al., 2004). Past research has shown high association between self-reported grades and official high school transcripts (e.g., Dornbusch, Ritter, Mont-Reynaud, & Chen, 1990). To strengthen the validity of the academic success construct, we used multiple reports from mother, father, and student response to the question, "Which of the following is closest to the grades "your child" (or "you" for student interviews) usually gets in school?" The responses, scored on a 9-point scale (mostly Fs = 1 to mostly As = 9), were coded so that higher responses reflected higher grades. Interrater reliability for the student and parent reports for this outcome measure, assessed in 12th grade, was relatively high (r = .75).

School Engagement—The literature on constructs tapping a student's engagement or connectedness with school contains numerous terms and measures (Jimerson, Campos, & Greif, 2003; Libbey, 2004; O'Farrell & Morrison, 2003). Jimerson and colleagues reviewed 45 articles, suggesting the use of the term *school engagement* to mean "a multifaceted construct that includes affective, behavioral, and cognitive dimensions" (p. 11). Indicators of each of these three dimensions were used in the present study.

We conducted an exploratory factor analysis of 12 items scored on a Likert-type scale, 1 (*strongly agree*) to 5 (*strongly disagree*), following the stem "How much do you agree or disagree with these statements about school?" All items were recoded so that a higher number reflected a higher level of engagement with school. Based upon this analysis, consistent with Jimerson et al.'s (2003) recommendation, we created three indicators assessing an affective (student's feelings toward school), cognitive (student's perceptions or beliefs related to school and school and self), and behavioral component (observable actions) of school engagement. Four items (e.g., "In general, I like school a lot"—α = .77) comprised the affective indicator. The cognitive indicator consisted of two items (e.g., "I know how to study and how to pay attention in class so that I will do well in school"—α = .64). The third indicator of school engagement, observable behavior, consisted of three items (α = .70) and included questions such as "I usually finish my homework."

Student Substance-Related Risk—As noted above, student substance-related risk was operationalized by three indicators, based on participant self-report questionnaire items. The first was an alcohol initiation index used in earlier research (Spoth, Redmond, & Lepper, 1999; Spoth et al., 2001), summing four initiation-related items (e.g., "Have you ever drunk beer, wine, or liquor without your parent's permission?"). The second indicator consisted of a single item assessing the participant's attitude toward alcohol use: "How wrong do you think it is for someone your age to do any of the following things: drink beer, wine, wine coolers, or liquor?" Responses ranged from 1 (*not at all wrong*) to 4 (*very wrong*). The item was recoded so that higher responses reflected a more positive attitude toward alcohol use. The third indicator also consisted of a single item assessing the participant's potential response to peer pressure for alcohol use: "If you were at a party and one of your friends offered you an alcoholic drink, how likely would you be to- ...Drink it." Responses ranged from 1 (*very likely*) to 5 (*very unlikely*); the item was recoded to reflect responsiveness to peer pressure.

Parenting Competency—Four indicators of a proximal parenting competency outcome were developed from 13 self-report questionnaire items. These items mapped directly onto parenting behaviors targeted for change through specific intervention skills training activities. These indicators measured: (1) Rules—parents' explanation of substance use rules and of consequences to their child when violations occur; (2) Involvement—parental efforts to involve their child in family activities and decisions; (3) Anger Management—parental management of anger and strong emotion in the parent-child relationship; and (4) Communication—parental activities to communicate understanding of children's feeling and goals as well as parental intentions and values. The validity and reliability of these indicators have been established in earlier research (Redmond et al., 1999; Spoth et al., 1998). Five-point Likert-type items ranging from 1 (*strongly agree*) to 5 (*strongly disagree*) were used to construct each of the indicators and were coded so that a high score reflected high parental competency.

Response ranges, means, and standard deviations of all indicator variables, for both conditions and across all time points, are provided in Table 1.

Data Analyses

To preserve random assignment, analyses presented here included all assessed intervention-group students, whether or not their families actually attended an intervention. In other words, the study used "intent-to-treat" analyses to avoid a self-selection bias in the results and to avert possible overestimation of the magnitudes of intervention effects associated with such a bias.

A group code approach (i.e., a dummy variable with the ISFP group coded as "1" and control group as "0") was used for the analyses. A major advantage to the group code approach is that it requires estimating about half as many parameters as the alternative multigroup approach (for detailed explication of this approach and alternatives see Aiken, Stein, & Bentler, 1994; Russell, Kahn, Spoth, & Altmaier, 1998; and Spoth et al., 1998).

In addition to the hypothesized direct and indirect effects, and corresponding structural paths in the family competency training model, a number of other parameters relevant to the measurement or structural model fit were estimated. Pretest assessments of constructs were specified as controls for each construct represented in Figure 1. Also included were correlated errors for each of the indicator variables with the corresponding pretest indicator. All exogenous constructs and the group variable were allowed to correlate.

Structural equation modeling was conducted with M*plus* Version 3.12 (Muthén & Muthén, 2004); overall model fit was assessed by employing the complex analysis option and the Yuan-Bentler T_2* test statistic. This type of analysis and corresponding statistic provided maximum likelihood parameter estimates with standard errors and a chi-square test robust to nonnormality and nonindependence of observations. Thus, the reported results accounted for possible multivariate nonnormality and non-independence of observations due to students nested within schools. Because the chi-square goodness of fit test and its corresponding probability value are sensitive to sample size, often making it difficult to accurately assess model fit when limited to this single statistic (Byrne, 2001; Kelloway, 1998; Ullman & Bentler, 2003), other measures of model fit reported include the Comparative Fit Index (CFI—Bentler, 1990); the Tucker-Lewis coefficient (TLI—Bentler & Bonett, 1980; Tucker & Lewis, 1973); Browne and Cudeck's (1989) root mean squared error of approximation (RMSEA); the standardized root mean squared residual (SRMR); and Hoelter's Critical *N* (Hoelter, 1983). Recently, Hu and Bentler (1999) suggested that values close to .95 for TLI and CFI, .08 for SRMR, and .06 for RMSEA are necessary before concluding that a

relatively good fit between the observed data and the hypothesized model exists. The statistical significance of individual model parameters was assessed with *t* tests.

Because methods for handling missing data (e.g., listwise deletion) may introduce problems (e.g., greatly reduced sample size and biased parameter estimates) in structural equation modeling, some methodologists recommend direct maximum likelihood or full information maximum likelihood (FIML) as a possible solution to missing data, as was applied in this study. See Allison (2003) and Schafer and Graham (2002) for detailed discussion of the problems and possible solutions to missing data and Enders and Bandalos (2001) for explication of empirical support for FIML in Structural Equation Modeling.

Analyses began with evaluation of the measurement model, along with its equivalence across time and experimental condition. Subsequently, the hypothesized intervention effects model was tested, including the comparative fit with and without the path from student-related risk to academic success. Chi-square difference tests of nested models for model evaluations conducted during each step were performed using the MLR estimator adjustment procedure, available on the M*plus* website.

Results

Measurement Model Equivalence

Multiple-group structural equation analyses were used to assess measurement model equivalence across experimental conditions and time. A model was fit to the data in which the latent variable indicator loadings were constrained to be equal (a) across ISFP and control group subsamples and (b) for corresponding pretest and follow-up indicators. No other equality constraints were imposed, with the exception that the loading of one indicator for each latent variable was fixed at 1.0 for model identification. The measurement model latent construct indicator loadings for both conditions and each measurement occasion are presented in Table 2.

The fit of this model was compared with that of a less restrictive model in which latent construct indicator loadings were allowed to vary across intervention groups and across time of measurement. For the less restrictive model with no constraints, the overall MLR $\chi^2(534, N = 446) = 970.11$. For the nested model with equality constraints imposed, the MLR $\chi^2(561, N = 446) = 935.40$. The adjusted chi-square difference test (Muthén & Muthén, 2004) comparing these two nested models was not significant, $\chi^2(27, N = 446) = 12.3$, $p > .05$. Thereby, it was considered reasonable to accept an assumption of latent construct measurement equivalence across conditions and time of measurement.

Intervention Effects Model

The same equality constraints used for the measurement model analyses were specified in the tests of the intervention effects model. First, a model including the path from student substance-related risk to academic success was fit to the data (i.e., the test included the dashed path in Figure 1). The fit indices suggested a reasonable overall fit, MLR $\chi^2(301, N = 445) = 439.48$, $p < .001$ (CFI = .97, TLI = .96, RMSEA = .032, SRMR = .055, and CN = 341), although the path in question was nonsignificant ($t = .54$).

Analyses were then conducted on the nested model deleting the path from student substance-related risk to academic success, as planned. This model, with one extra degree of freedom, also fit the data reasonably well, differing only from the first model by a slight increase in chi-square—MLR $\chi^2(302, N = 445) = 440.23$, $p < .001$. All other values of fit indices remained the same. Comparing the model with the substance-related risk path and the nested model resulted in a nonsignificant MLR χ^2 difference test, MLR $\chi^2(1, N = 445) = .46$; $p > .$

05); the final, more parsimonious model in Figure 2 is presented without this path. Notably, all structural paths (direct effects), indirect effects, and latent variable indicator loadings were significant ($t > 2.0$).

The distal effects of the partnership-based, family-focused intervention also were investigated, specifying its indirect effects on both school engagement and academic success (M*plus* 3.12 provides estimates of specified indirect effects and their corresponding *t*-values). The four specified indirect effects were each significant at the .05 level: ISFP through parenting competency and school engagement on academic success, $t = 2.06$; ISFP through student substance-related risk and school engagement on academic success, $t = 2.10$; ISFP through parenting competency on school engagement, $t = 2.19$; and ISFP through student substance-related risk on school engagement, $t = 2.72$.

A word on the size of the indirect effects is in order. Particularly in the case of theory-based evaluation of intervention effect mechanisms on distal outcomes, indirect effects can be theoretically meaningful even when they are small in size. It is noteworthy that the indirect effects of the intervention on academic success were observed over a 6-year time period. In other words, the brief, partnership-based family intervention initiated a "developmental cascade" beginning in sixth grade that ultimately influenced academic success in twelfth grade through direct effects on risk and protective factors (namely, increased parenting competency and decreased substance-related risk) and their subsequent influence on school engagement.

The final family competency training effects model, including standardized estimates of structural coefficients and the proportion of variance explained in each construct is presented in Figure 2. Factor loadings for the latent constructs at each measurement point in the intervention effects model are presented in Table 3.

Discussion

Overall, latent variable structural equation analyses supported the posited model of direct and indirect effects of a universal, partnership-based family competency-training intervention on academic success of high school seniors. The long-term effects on academic success occurred through more proximal effects on parenting and student risk-related outcomes targeted by the intervention. The proximal family competency training intervention effects are consistent with previous findings on direct intervention effects on parenting competency outcomes (Redmond et al., 1999; Spoth et al., 1998) and on student risk-related outcomes (Spoth et al., 2001). More specifically, this longitudinal, randomized study found that the intervention increased parenting competencies and reduced students' substancerelated risk in the sixth grade and was indirectly and positively associated with changes in twelfth grade academic performance, through positive effects on school engagement measured in the eighth grade.

Family Socialization, Parent Competencies, and School Success

A primary point of discussion raised by this study concerns the relevance of family socialization processes to academic success, in general, and the possible benefit of universal family interventions as part of a strategy to enhance student learning supports. Concerning the relevance of family socialization effects on factors that influence academic learning, the literature cited in the introduction (e.g., Denham & Weissberg, 2003; Christenson & Havsy, 2004; Zins, Weissberg et al., 2004) describes how socializing agents like parents create a social context generating students' positive social goals and encouraging students' prosocial behavior or skills development that can support academic learning. Emerging literature is beginning to elaborate these relationships.

For example, the literature on learning supports in schools suggests that adolescents' perceptions of positive connections with parents or teachers, and regulations from parents or teachers, uniquely predict academic growth in math performance from eighth to twelfth grade (Gregory & Weinstein, 2004). In a similar vein, Hawkins and colleagues (Catalano, Haggerty, et al., 2004; Hawkins et al., 2001) have described a social development theory explaining how effective bonding to prosocial influences (e.g., parents, school officials) contributes to positive developmental outcomes from childhood to adolescence to early adulthood. Specifically, these researchers have reported positive academic results of interventions designed to positively influence students' relationships with parents and teachers. This literature, however, also highlights that study of students' social competencies influence on academic success in "normal" students or general populations is still quite limited.

In other words, the important role of family socialization influences on academic success encourages investigation of parent and family competency training as a strategy to promote academic success (Biglan et al., in press; Elias et al., 1997; Zins et al., 2004). Basically, the literature argues the case that family and parenting skills training should be considered as one of the primary means by which positive student development and academic success can be fostered, along with school-wide effective behavior supports, other types of student social skills training, establishing norms or expectations for positive behavior in the school setting, and proactively attending to the needs of highrisk students. The significance of the present study is that it uniquely provides empirical support for longitudinal links between family competency training and academic success in a general population. No other study could be found providing this type of support through longitudinal SEM using multisource data.

Part of the significance of this study lies in its attempt to rigorously evaluate both proximal and distal, indirect effects of the tested universal intervention. This point is important in consideration of the limited rigorous study of universal family-focused intervention to date (Spoth & Redmond, 2002). First, a randomized controlled design with multi-informant measurement procedures was used, including multi-informant measurement of the academic success outcome. Second, the theoretical model was only tested after a valid and stable measurement model was constructed. Third, intervention implementation was supported with observation ratings of adherence, using an observational system developed specifically for this study. Fourth, validity threats from differential attrition and group inequivalence were examined. Fifth, the analyses address the possible inflated Type I error rates that are associated with the hierarchical structure of the data. Sixth, the structural equation modeling included statistical controls for pretest levels of the outcome variables, as well as controls for random measurement error.

A noteworthy methodological point of discussion concerns the measurement timing of school engagement at the eighth grade data collection. Hawkins et al. (2001) found that the significance of the effects of their multicomponent interventions (for teachers, parents, and students from first through sixth grades) on school attachment or bonding was related to the timing of the measurement, with nonsignificant effects at age 14, but reappearance of effects in later adolescence, showing school bonding among full-intervention students significantly higher than those in the control group by age 18. These findings suggested the timing of the measurement of school engagement in the eighth grade and measure of academic success four years later in twelfth grade (also see Alspaugh, 1998, and Hawkins et al., 2001, on the effects of transitions to middle school and high school). That is, students undergoing middle school transitions may show short-term deleterious influences on the indicators of school engagement; those students who develop more positive behavioral, cognitive, and affective responses to school may show a recovery from this transition in the latter half of secondary school. Consistent with the findings of the present study, strengthening a student's

engagement with school prior to the developmental transitions typically experienced between middle and high school seems to produce a positive impact on later academic success.

Role of School-Community-University Partnerships

Another significant aspect of this study is its use of a school-community-university partnership to implement the research project. The introduction reported on literature emphasizing the need for partnerships with schools to foster social-emotional learning among students. Weissberg, Kumpfer, and Seligman (2003) summarized convergent perspectives of coordinated prevention programming for children and youth that benefit from effective partnerships, including involvement of families, peers, schools, and communities as partners to target multiple outcomes. Such perspectives are congruent with the community-university partnership approach of this study. That is, this study further underscores the potential benefits of community-university partnerships with schools by demonstrating important direct and indirect effects of the family competency training model on academic success. The evidencebased, family-focused universal intervention studied was implemented through a type of community-university partnership (Spoth & Molgaard, 1999) that previously showed success in effective delivery of evidence-based preventive interventions (Spoth & Redmond, 2002) and on the reduction of problem behaviors outcomes, including substance use (Spoth et al., 2001) and aggressive or disruptive behaviors (Spoth et al., 2000).

School-community-university partnerships can address issues highlighted in an emerging literature on barriers to practitioner applications of evidence-based practices, for both applications in school settings (Doll, Haack, Kosse, Osterloh, & Siemers, 2005) and those involving a range of other community-based organizations (Spoth & Greenberg, 2005). Barriers to practitioners include competing time demands and schedule conflicts, limited intervention resources, differences in implementation methods between researchers and practitioners, limited administrative support, and related lack of reward structures for implementing the intervention (Doll et al., 2005; Spoth & Greenberg, 2005). All of these barriers render it difficult to sustain partnership-based delivery of evidencebased interventions like that tested in this study. The partnership model used in the present study is grounded in stable resource systems (the land grant university, Cooperative Extension System) that help to address sustainability obstacles. In addition, research subsequent to the present study has been conducted to address sustainability issues further. This ongoing study evaluates the benefits of supports for a community team that collaborates with school staff, in order to generate resources for combined implementation of evidence-based family focused and school-based interventions (Spoth et al., 2004). To date, research on the refined partnership model indicates relatively high recruitment of families into the intervention and maintenance of high quality implementation of the interventions (Spoth, Clair, Greenberg, Redmond, & Shin, 2007; Spoth, Guyll, Lillehoj, Redmond, & Greenberg, in press).

The present study's findings on school success, and earlier evidence on the effectiveness of family-focused interventions improving parenting competency and reducing students risk-related behaviors (Biglan et al., in press), combine with evidence on the effectiveness of school-community-university partnerships to suggest implications for school-based practitioners. Specifically, it suggests that practitioners consider (a) evidence-based, family-focused intervention as part of their programs to enhance social-emotional learning of students and (b) school-community-university partnerships as a mechanism for sustained implementation of those evidence-based interventions, consistent with current recommendations for school reform (see Adelman & Taylor, 2003).

Limitations

Although it was expected the parent and family competency training would particularly affect parental involvement, it was not modeled because the study's measurement battery lacked a strong measure of this school involvement construct. It is noteworthy that positive, indirect family intervention effects on academic success were observed without modeling parental involvement factors such as partnering between teachers and families to encourage and reinforce learning commitment, school engagement, and positive behavior, not to mention contextual factors, including safe and orderly school and classroom environments, and innovative teaching methods (e.g., cooperative learning and proactive classroom management—Abbott et al., 1998; Catalano, Berglund et al., 2004; Greenberg et al., 2003).

Other limitations of this study include specific characteristics of the sample and measures. Virtually all of the families of adolescents in the study area were White and a vast majority of these were two-parent families and lived in rural communities. Although this sample is representative of the rural-area families targeted for the family skills intervention, the extent to which these particular results might generalize to more culturally diverse and urban populations is unknown. Moreover, although a multi-informant measure of academic success was applied through a latent variable modeling approach, consistent with literature on the validity of selfreports, it does not include standardized test scores or teacher reports.

Finally, our intervention's design is neither multiyear nor multicomponent (e.g., involving teacher classroom instruction and behavior management). Although there are few comprehensive K-12 prevention programs, proponents of social-emotional learning models call for whole-school approaches involving multiyear, coordinated, evidence-based interventions, along with technical assistance for superintendents, principals, teachers, and parents, in order to ensure high fidelity and, ultimately, maximize influences on positive youth development (Adelman & Taylor, 2003; Elias et al., 2001; Greenberg et al., 2003). The observed effects of the very narrow, low-intensity, and short-duration ISFP are all the more noteworthy from this perspective.

Future Directions

While the family competency training model represents a closer examination of the role of interventions with family socialization processes in a general population, much work remains concerning the delineation of paths from parent- and family-competency training in middle school to academic success at the end of high school. The tested model does not articulate the precise mechanisms of effects, a task that remains for future study. That is, there are many conceivable mechanisms whereby the modeled parent competencies could affect school engagement. So too, there are a number of mechanisms whereby substance-related risks might reduce school engagement or impact one of the key indicators of school engagement. Examples of needed areas of investigation to better elaborate relevant mechanisms include study of the direction of causality and possible reciprocal effects between parenting-related social competencies and other constructs (like academic self-concept and school engagement) and academic achievement (Guay, Marsh, & Boivin, 2003); other mechanisms to be examined concern a range of mediators between parental involvement and students' academic achievement (Hong & Hsiu-Su, 2005).

To address this need for better understanding of the mechanisms of the observed effects related to specific paths in the tested model, future study will assess unique contributions and multiplicative effects of parenting competencies and risky behaviors on school engagement and academic success. It also will further investigate the causal ordering among social competencies, risky student behaviors, and school engagement or academic success,

guided by models of the longitudinal associations between social and academic competencies (e.g., Coie & Krehbiel, 1984; O'Neil, Welsh, Parke, Wang, & Strand, 1997).

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References

Abbott RD, O'Donnell J, Hawkins JD, Hill KG, Kosterman R, Catalano RF. Changing teaching practices to promote achievement and bonding to school. American Journal of Orthopsychiatry. 1998; 68:542–552. [PubMed: 9809114]

Adelman HS, Taylor L. Building comprehensive, multifaceted, and integrated approaches to addressing barriers to student learning. Childhood Education. 2002; 78:261–268.

Adelman HS, Taylor L. Creating school and community partnerships for substance abuse prevention programs. The Journal of Primary Prevention. 2003; 23:329–369.

Aiken LS, Stein JA, Bentler PM. Structural equation analyses of clinical subpopulation differences and comparative treatment groups: Characterizing the daily lives of drug addicts. Journal of Consulting and Clinical Psychology. 1994; 62:488–499. [PubMed: 8063975]

Alexander PA. Toward a model of academic development: Schooling and the acquisition of knowledge [Electronic version]. Educational Researcher. 2000; 29:28–34. Retrieved September 9, 2006, from http://www.aera.net/pubs/er/arts/29-02/alexan01.htm.

Allison PD. Missing data techniques for structural equation modeling. Journal of Abnormal Psychology. 2003; 112:545–557. [PubMed: 14674868]

Alspaugh JW. Achievement loss associated with the transition to middle school and high school. The Journal of Educational Research. 1998; 92:1–8.

Bentler PM. Comparative fit indexes in structural models. Psychological Bulletin. 1990; 107:238–246. [PubMed: 2320703]

Bentler PM, Bonett DG. Significance tests and goodness of fit in the analysis of covariance structures. Psychological Bulletin. 1980; 88:588–606.

Biglan, A.; Hallfors, D.; Spoth, R.; Gottfredson, D.; Cody, C. Effective strategies for nurturing successful development in school settings. in pressChapter in forthcoming volume to be published by the U.S. Department of Education

Browne MW, Cudeck R. Single sample cross-validation indices for covariance structures. Multivariate Behavioral Research. 1989; 24:445–455.

Byrne, BM. Structural equation modeling with AMOS: Basic concepts, applications, and programming. LEA Publishers; Mahwah, NJ: 2001.

Catalano RF, Berglund ML, Ryan JAM, Lonczak HS, Hawkins JD. Positive youth development in the United States: Research findings on evaluations of positive youth development programs. Annals of the American Academy of Political & Social Science. 2004; 591:98–124.

Catalano RF, Haggerty KP, Oesterle S, Fleming CB, Hawkins JD. The importance of bonding to school for healthy development: Findings from the social development research group. Journal of School Health. 2004; 74:252–261. [PubMed: 15493702]

Center for Substance Abuse Prevention. Family-centered approaches to prevent alcohol, tobacco, and other drug use among children and adolescents. National Institute on Drug Abuse; Rockville, MD: 1998. DHHS Publication No. (SMA) 3223-FY98

Christenson, SL.; Havsy, LH. Family-school-peer relationships: Significance for social-emotional and academic learning. In: Zins, JE.; Weissberg, RP.; Wang, MC.; Walberg, HJ., editors. Building academic success on social and emotional learning: What does the research say?. Teachers College Press; New York, NY: 2004. p. 59-75.

Coie JD, Krehbiel G. Effects of academic tutoring on the social status of low-achieving, socially rejected children. Child Development. 1984; 55:1465–1478.

Connor, CM.; Morrison, FJ. Services or programs that influence young children's academic success and school completion [Electronic version]. In: Tremblay, RE.; Barr, RG.; Peters, RD., editors. Encyclopedia on early childhood development. Centre of Excellence for Early Childhood Development; Montreal, Quebec: 2004. p. 1-11.Retrieved September 9, 2006, from http://www.excellence-earlychildhood.ca/documents/Connor-MorrisonANGxp.pdf

Crosnoe R, Erickson KG, Dornbusch SM. Protective functions of family relationships and school factors on the deviant behavior of adolescent boys and girls. Youth & Society. 2002; 33:515–544.

DeMarsh J, Kumpfer KL. Family-oriented interventions for the prevention of chemical dependency in children and adolescents. Prevention. 1986; 18:117–151.

Denham, S.; Weissberg, R. Social-emotional learning in early childhood: What we know and where to go from here. In: Chesebrough, E.; King, P.; Gullotta, TP.; Bloom, M., editors. A blueprint for the promotion of prosocial behavior in early childhood. Kluwer Academic/Plenum Press Publishers; New York, NY: 2003. p. 13-50.

Doll B, Haack K, Kosse S, Osterloh M, Siemers E. The dilemma of pragmatics: Why schools don't use quality team consultation practices. Journal of Educational and Psychological Consultation. 2005; 16:127–155.

Dornbusch SM, Ritter PL, Mont-Reynaud R, Chen Z. Family decision making and academic performance in a diverse high school population. Journal of Adolescent Research. 1990; 5:143–160.

Elias M, Lantieri L, Patti J, Shriver T, Walberg H, Weissberg R, Zins JE. No new wars needed! Reclaiming Children and Youth: The Journal of Strength-Based Interventions. 2001; 10:29–32.

Elias MJ, Wang MC, Weissberg RP, Zins JE, Walberg HJ. The other side of the report card: Student success depends on more than test scores. American School Board Journal. 2002; 189:28–31.

Elias, MJ.; Zins, JE.; Weissberg, RP.; Frey, KS.; Greenberg, MT.; Haynes, NM., et al., editors. Promoting social and emotional learning: Guidelines for educators. Association for Supervision & Curriculum Development; Alexandria, VA: 1997.

Enders CK, Bandalos DL. The relative performance of full information maximum likelihood estimation for missing data in structural equation models. Structural Equation Modeling. 2001; 8:430–457.

Goodenow C, Grady KE. The relationship of school belonging and friends' values to academic motivation among urban adolescent students. Journal of Experimental Education. 1993; 62:60–71.

Greenberg MT, Weissberg RP, O'Brien MU, Zins JE, Fredericks L, Resnik H, et al. Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. American Psychologist. 2003; 58:466–474. [PubMed: 12971193]

Gregory A, Weinstein RS. Connection and regulation at home and in school: Predicting growth in achievement for adolescents. Journal of Adolescent Research. 2004; 19:405–427.

Guay F, Marsh HW, Botvin M. Academic self-concept and academic achievement: Developmental perspectives on their causal ordering. Journal of Educational Psychology. 2003; 95:124–136.

Guyll M, Spoth R, Redmond C. The effects of incentives and research requirements on participation rates for a community-based preventive intervention research study. Journal of Primary Prevention. 2003; 24:25–41.

Hawkins, JD.; Farrington, DP.; Catalano, RF. Reducing violence through the schools. In: Elliott, DS.; Hamburg, BA., editors. Violence in American schools: A new perspective. Cambridge University Press; Cambridge, UK: 1998. p. 188-216.

Hawkins JD, Guo J, Hill KG, Battin-Pearson S, Abbott RD. Long-term effects of the Seattle Social Development Intervention on school bonding trajectories. Applied Developmental Science. 2001; 5:225–236. [PubMed: 17955057]

Hoelter JW. The analysis of covariance structures: Goodness-of-fit indices. Sociological Methods and Research. 1983; 11:325–344.

Hong S, Hsiu-Su H. Direct and indirect longitudinal effects of parental involvement on student achievement: Second-order latent growth modeling across ethnic groups. Journal of Educational Psychology. 2005; 97:32–42.

Hoover-Dempsey KV, Sandler HM. Why do parents become involved in their children's education? Review of Educational Research. 1997; 67:3–42.

Horn WF, Packard T. Early identification of learning problems: A meta-analysis. Journal of Educational Psychology. 1985; 77:597–607.

Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling. 1999; 6:1–55.

Hymel, S.; Ford, L. School completion and academic success: The impact of early social-emotional competence. In: Tremblay, RE.; Barr, RG.; Peters, RD., editors. Encyclopedia on early childhood development. Centre of Excellence for Early Childhood Development; Montreal, Quebec, Canada: 2003. p. 1-7.Retrieved September 9, 2006, from http://www.excellence-earlychildhood.ca/documents/Hymel-FordANGxp.pdf

Jimerson SR, Campos E, Greif JL. Toward an understanding of definitions and measures of school engagement and related terms. The California School Psychologist. 2003; 8:7–27.

Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE. Monitoring the future national survey results on drug use, 1975-2003: Vol. 1. National Institute on Drug Abuse; Bethesda, MD: 2004. Secondary school students (NIH Publication No. 04 -5507)

Kandel DB, Yamaguchi K, Chen K. Stages of progression in drug involvement from adolescence to adulthood: Further evidence for the gateway theory. Journal of Studies on Alcohol. 1992; 53:447–457. [PubMed: 1405637]

Kelloway, EK. Using LISREL for structural equation modeling: A researcher's guide. Sage; Thousand Oaks, CA: 1998.

Kumpfer, KL.; Molgaard, V.; Spoth, R. The Strengthening Families Program for the prevention of delinquency and drug use. In: Peters, RD.; McMahon, RJ., editors. Preventing childhood disorders, substance abuse, and delinquency. Sage; Thousand Oaks, CA: 1996. p. 241-267.

Libbey HP. Measuring student relationships to school: Attachment, bonding, connectedness, and engagement. Journal of School Health. 2004; 74:274–283. [PubMed: 15493704]

Malecki CK, Elliot SN. Children's social behaviors as predictors of academic achievement: A longitudinal analysis. School Psychology Quarterly. 2002; 17:1–23.

Martin RA, Velicer WF, Fava JL. Latent transition analysis to the stages of change for smoking cessation. Addictive Behaviors. 1996; 21:67–80. [PubMed: 8729709]

Mattingly DJ, Prislin R, McKenzie TL, Rodriguez JL, Kayzar B. Evaluating evaluations: The case of parent involvement programs. Review of Educational Research. 2002; 72:549–576.

Molgaard, V.; Kumpfer, K.; Fleming, B. The Strengthening Families Program: For Parents and Youth 10-14. Iowa State University Extension; Ames, IA: 1997.

Molgaard, VM.; Spoth, R.; Redmond, C. Competency training: The Strengthening Families Program for Parents and Youth 10-14. U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention; Washington, DC: 2000. OJJDP Juvenile Justice Bulletin (NCJ 182208)

Mulhall PF, Flowers N, Mertens SB. Understanding indicators related to academic performance. Middle School Journal. 2002; 34:56–61.

Muthén, LK.; Muthén, BO. Mplus user's guide. Third Edition. Author; Los Angeles, CA: 2004.

O'Farrell SL, Morrison GM. A factor analysis exploring school bonding and related constructs among upper elementary students. The California School Psychologist. 2003; 8:53–72.

O'Neil R, Welsh M, Parke RD, Wang S, Strand C. A longitudinal assessment of the academic correlates of early peer acceptance and rejection. Journal of Clinical Child Psychology. 1997; 26:290–303. [PubMed: 9292387]

Osterman KF. Students' need for belonging in the school community. Review of Educational Research. 2000; 70:323–367.

Peterson JL, Zill N. Marital disruption, parent-child relationships, and behavior problems in children. Journal of Marriage & the Family. 1986; 48:295–307.

Redmond, C.; Spoth, R.; Shin, C. Adolescent propensity to use alcohol: Long term outcomes of a universal family-focused preventive intervention; Symposium paper presented at the Society for Prevention Research Sixth Annual Meeting; Park City, UT. 1998;

Redmond C, Spoth R, Shin C, Lepper H. Modeling long-term parent outcomes of two universal family-focused preventive interventions: One year follow-up results. Journal of Consulting and Clinical Psychology. 1999; 67:975–984. [PubMed: 10596519]

Russell DW, Kahn JH, Spoth R, Altmaier EM. Analyzing data from experimental studies: A latent variable structural equation modeling approach. Journal of Counseling Psychology. 1998; 45:18–29.

Schafer JL, Graham JW. Missing data: Our view of the state of the art. Psychological Methods. 2002; 7:147–177. [PubMed: 12090408]

Smith, BH.; Hawkins, JD.; Catalano, RC. Academic achievement through youth development. 2004. Manuscript in preparation

Spoth R, Clair S, Greenberg M, Redmond C, Shin C. Toward dissemination of evidence-based family interventions: Maintenance of community-based partnership recruitment results and associated factors. Journal of Family Psychology. 2007; 21(2):137–145. [PubMed: 17605536]

Spoth R, Greenberg M, Bierman K, Redmond C. PROSPER Community-university partnership model for public education systems: Capacity-building for evidence-based, competence-building prevention. Prevention Science. 2004; 5:31–39. [PubMed: 15058910]

Spoth R, Guyll M, Lillehoj CJ, Redmond C, Greenberg M. PROSPER study of evidence-based intervention implementation quality by community-university partnerships. Journal of Community Psychology. in press.

Spoth, R.; Molgaard, V. Project Family: A partnership integrating research with the practice of promoting family and youth competencies. In: Chibucos, TR.; Lerner, R., editors. Serving children and families through community-university partnerships: Success stories. Kluwer Academic; Boston: 1999. p. 127-137.

Spoth R, Redmond C. Effective recruitment of parents into family-focused prevention research: A comparison of two strategies. Psychology and Health: An International Journal. 1994; 9:353–370.

Spoth, R.; Redmond, C. Illustrating a framework for rural prevention research: Project Family studies of rural family participation and outcomes. In: Peters, RD.; McMahon, RJ., editors. Preventing childhood disorders, substance abuse, and delinquency. Sage; Thousand Oaks, CA: 1996. p. 299-328.

Spoth R, Redmond C. Project Family prevention trials based in community-university partnerships: Toward scaled-up preventive interventions. Prevention Science. 2002; 3:203–221. [PubMed: 12387555]

Spoth R, Redmond C, Kahn J, Shin C. A prospective validation study of inclination, belief, and context predictors of family-focused prevention involvement. Family Process. 1997; 36:403–429. [PubMed: 9543661]

Spoth R, Redmond C, Lepper H. Alcohol initiation outcomes of universal family-focused preventive interventions: One- and two-year follow-ups of a controlled study (Invited article for *Alcohol and the Family: Opportunities for Prevention* [Special issue]). Journal of Studies on Alcohol, Suppl. 1999; 13:103–111.

Spoth R, Redmond C, Shin C. Direct and indirect latent-variable parenting outcomes of two universal family-focused preventive interventions: Extending a public health-oriented research base. Journal of Consulting and Clinical Psychology. 1998; 66:385–399. [PubMed: 9583342]

Spoth R, Redmond C, Shin C. Reducing adolescents' aggressive and hostile behaviors: Randomized trails effects of a brief family intervention four years past baseline. Archives of Pediatrics and Adolescent Medicine. 2000; 154:1248–1257. [PubMed: 11115311]

Spoth R, Redmond C, Shin C. Randomized trial of brief family interventions for general populations: Adolescent substance use outcomes four years following baseline. Journal of Consulting and Clinical Psychology. 2001; 69:627–642. [PubMed: 11550729]

Spoth RL, Goldberg C, Redmond C. Engaging families in longitudinal preventive intervention research: Discrete-time survival analysis of socioeconomic and social-emotional risk factors. Journal of Consulting and Clinical Psychology. 1999; 67:157–163. [PubMed: 10028221]

Spoth RL, Greenberg MT. Toward a comprehensive strategy for effective practitioner-scientist partnerships and larger-scale community benefits. American Journal of Community Psychology. 2005; 35(3/4):107–126. [PubMed: 15909789]

Symons CW, Cinelli B, James TC, Groff P. Bridging student health risks and academic achievement through comprehensive school health programs. Journal of School Health. 1997; 67:220–227. [PubMed: 9285867]

Taylor TK, Biglan A. Behavioral family interventions for improving child-rearing: A review of the literature for clinicians and policy makers. Clinical Child and Family Psychology Review. 1998; 1:41–60. [PubMed: 11324077]

Teo A, Carlson E, Mathieu PJ, Egeland B, Sroufe LA. A prospective longitudinal study of psychosocial predictors of achievement. Journal of School Psychology. 1996; 34:285–306.

Tucker LR, Lewis C. A reliability coefficient for maximum likelihood factor analysis. Psychometrika. 1973; 38:1–10.

U.S. Department of Education. Office of Safe and Drug Free Schools. Underage drinking: Too costly to ignore. The Challenge, 11. 2003. SummerRetrieved September 9, 2006, from http://www.thechallenge.org/11-v11no4/v11n4-drinking.htm

Ullman, JB.; Bentler, PM. Structural equation modeling. In: Schinka, JA.; Velicer, WF., editors. Handbook of psychology: Research methods in psychology. Vol. 2. Wiley; New York, NY: 2003. p. 607-634.

Vitaro, F. Linkages between early childhood, school success, and high school completion [Electronic version]. In: Tremblay, RE.; Barr, RG.; Peters, RD., editors. Encyclopedia on Early Childhood Development. Centre of Excellence for Early Childhood Development; Montreal, Quebec, Canada: 2003. p. 1-7.Retrieved September 9, 2006, from http://www.excellence-earlychildhood.ca/documents/VitaroANGxp.pdf

Wang, MC.; Haertel, GD.; Walberg, HJ. Learning influences. In: Walberg, HJ.; Haertel, GD., editors. Psychology and educational practice. McCatchan; Berkeley, CA: 1997. p. 199-211.

Weissberg RP, Kumpfer KL, Seligman MEP. Prevention that works for children and youth: An introduction. American Psychologist. 2003; 58:425–432. [PubMed: 12971188]

Welsh M, Parke RD, Widaman K, O'Neil R. Linkages between children's social and academic competence: A longitudinal analysis. Journal of School Psychology. 2001; 39:463–482.

Wentzel KR. Does being good make the grade? Social behavior and academic competence in middle school. Journal of Educational Psychology. 1993; 85:357–364.

Zins, JE.; Bloodworth, MR.; Weissberg, RP.; Walberg, HJ. The scientific base linking social and emotional learning to school success. In: Zins, JE.; Weissberg, RP.; Wang, MC.; Walberg, HJ., editors. Building academic success on social and emotional learning: What does the research say?. Teachers College Press; New York, NY: 2004. p. 3-22.

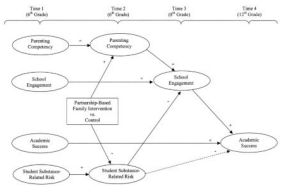

Figure 1.
The model of family competency training effects on school engagement and academic scores.

Figure 2.

Latent variable structural equation model of effects of family competency training on school engagement and academic success. MLR χ^2 (302, N = 445) = 440.23, p < .001 (CFI = .97, TLI = .96, RMSEA = .032, SRMR = .055 and CN = 341). Results presented are standardized structural parameter estimates (** p < .01; * p < .025). Indicators and their loadings are presented in Table 2.

Table 1

Response Ranges, Means, and Standard Deviations of Model Indicator Measures

		Time 1		Time 2	
Variable	**Range**	***M***	***SD***	***M***	***SD***
ISFP condition					
Parenting competency					
Parent rules	1-5	3.76	.74	4.13	.57
Parent involvement	1-5	3.85	.50	3.97	.44
Parent anger management	1-5	3.27	.57	3.46	.55
Parent communication	1-5	3.96	.43	4.05	.38
Student substance-related risk					
Alcohol initiation index	0-4	.22	.65	.24	.73
Alcohol use attitude	1-4	1.06	.34	1.10	.36
Peer pressure	1-5	1.19	.63	1.31	.75
		Time 1		**Time 3**	
School engagement					
Behavioral	1-5	4.49	.54	4.26	.60
Affective	1-5	3.82	.74	3.55	.78
Cognitive	1-5	3.93	.74	3.74	.81
		Time 1		**Time 4**	
Academic success					
Grades—Student	1-9	7.37	1.36	7.44	1.39
Grades—Mother	1-9	7.34	1.45	7.33	1.51
Grades—Father	1-9	7.31	1.49	7.26	1.77
		Time 1		**Time 2**	
	Range	*M*	*SD*	*M*	*SD*
Control condition					
Parenting competency					

Variable	Range	Time 1 *M*	Time 1 *SD*	Time 2 *M*	Time 2 *SD*
Parent rules	1-5	3.84	.70	4.01	.59
Parent involvement	1-5	3.81	.50	3.79	.45
Parent anger management	1-5	3.33	.57	3.30	.52
Parent communication	1-5	3.94	.40	3.96	.37
Student substance-related risk					
Alcohol initiation index	0-4	.27	.63	.41	.85
Alcohol use attitude	1-4	1.10	.39	1.17	.44
Peer pressure	1-5	1.14	.39	1.37	.70
		Time 1		**Time 3**	
School engagement					
Behavioral	1-5	4.44	.56	4.14	.68
Affective	1-5	3.83	.75	3.38	.93
Cognitive	1-5	3.81	.75	3.64	.79
		Time 1		**Time 4**	
Academic success					
Grades—Student	1-9	7.37	1.49	7.40	1.44
Grades—Mother	1-9	7.17	1.60	7.43	1.61
Grades—Father	1-9	7.25	1.54	7.52	1.49

Table 2

Latent Variable Construct Measurement Model Results—Indicator Loadings (λ)[a]

	ISFP		Control	
Construct/indicators	**Time 1**	**Time 2**	**Time 1**	**Time 2**
Parenting competency				
Rules	.47[b]	.55[b]	.50[b]	.53[b]
Involvement	.72	.72	.73	.69
Anger management	.57	.55	.58	.57
Communication	.79	.81	.85	.82
Student substance-related risk				
Alcohol initiation index	.40[b]	.51[b]	.37[b]	.47[b]
Alcohol use attitude	.58	.79	.44	.67
Peer pressure	.59	.66	.83	.77
	Time 1	**Time 3**	**Time 1**	**Time 3**
School engagement				
Behavioral	.72[b]	.72[b]	.82[b]	.79[b]
Affective	.58	.60	.68	.61
Cognition	.64	.60	.69	.74
Academic success	**Time 1**	**Time 4**	**Time 1**	**Time 4**
Grades-mother	.95[b]	.91[b]	.92[b]	.93[b]
Grades-father	.92	.91	.94	.94
Grades-target	.88	.87	.82	.92

[a] Parameter estimates are from the standardized solution; measurement model identification and equivalence constraints are described in the text.

[b] These indicator loadings were fixed to 1.0 (unstandardized) for model identification; significance tests are not conducted for fixed parameters. All estimated loadings' $p < .01$.

Table 3

Latent-Variable Constructs in Intervention Effects Model—Indicator Loadings (λ)[a]

Construct/indicators	Time 1	Time 2
Parenting competency		
Rules	.48[b]	.54[b]
Involvement	.72	.71
Anger management	.58	.56
Communication	.83	.82
Student substance-related risk		
Alcohol initiation index	.39[b]	.49[b]
Alcohol use attitude	.51	.72
Peer pressure	.66	.71
	Time 1	**Time 3**
School engagement		
Behavioral	.77[b]	.77[b]
Affective	.61	.60
Cognition	.67	.68
Academic success	**Time 1**	**Time 4**
Gender-mother	.94[b]	.92[b]
Gender-father	.93	.93
Gender-target	.85	.89

[a] Parameter estimates are from the standardized solution; measurement model identification and equivalence constraints are described in the text.

[b] These indicator loadings were fixed to 1.0 (unstandardized) for model identification; significance tests are not conducted for fixed parameters. All estimated loadings $p < .01$.