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Universal Prevention Exposure as a Moderator of the Community Context: Findings from the PROSPER Project

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Abstract

This study examined how participation in a universal family skills-building program may interact with community risks and resources to produce youth outcomes. Prior research has noted community-level variability in risk and protective factors, but thus far no study has examined the role that participation on a community-wide intervention may play in moderating the effects of community risks or resources. The study included 14 communities (7 in Iowa, 7 in Pennsylvania) that implemented a family focused evidence-based program as part of the PROSPER project. Community level variables included both risk factors (percent of low income families, the availability of alcohol and tobacco, norms regarding adolescent substance use, incidence of drug-related crimes) and community resources (proactive school leadership, availability of youth-serving organizations, and student involvement in youth activities). The proximal youth and family outcomes included youth perceptions of their parents' management skills, parent-child activities, and family cohesion. Results indicated that the Strengthening Families Program:10-14 may have moderated the impact of the community risks and resources on community-level youth outcomes; risk levels meaningfully associated with community-level change of program participants, though these results varied somewhat by outcome. Generally, higher levels of resources also meaningfully associated with more positive change after participating in the family-focused intervention. These results suggest that the effect of some evidence-based programs may be even stronger in some communities than others; more research in this area is needed.

Introduction

The field of prevention science is increasingly focused on challenges related to the effective translation of evidence-based programs (EBPs) to community settings with the goal of improving public health. In the area of substance abuse prevention for youth, a number of effective programs have been identified, including both school and family-focused programs (National Research Council and Institute of Medicine, 2009). These programs target a

number of key individual, family, and peer-level risk and protective factors, including parent-child warmth and communication, social skills, and resistance skills associated with peer influence. However, consideration of contextual factors is rarely included in the logic models of EBPs.

Research indicates that communities vary widely in terms of their overall rates and patterns of risk and protective factors (RPFs), and these differences have been linked to a host of outcomes for children and youth, ranging from school readiness to substance abuse (Hawkins, Van Horn, & Arthur, 2004). Furthermore, the importance of particular RPFs seems to vary by context; a risk factor that appears strongly linked to particular youth outcomes in one community may have little or no relation to those outcomes in a different context (Feinberg, Jones, Cleveland, & Greenberg, 2012). These findings may have implications for how communities prioritize, select, and possibly adapt EBPs to fit their local circumstances. Moreover, these findings suggest that program effects might vary based on community context, yet very little research has examined how community characteristics and prevention program participation may interact. Here, we explore the associations between community RPFs and changes in proximal outcomes for youth who had participated in a family-focused EBP as part of the PROSPER project. This program, the Strengthening Families Program: 10-14 (SFP:10-14), promotes positive parent-child relationships, appropriate child management skills, and family resilience, which in turn is linked to reduced substance use and other problematic youth behaviors (Spoth, Greenberg, Bierman, & Redmond, 2004; Spoth et al., 2011). We chose several to focus on proximal outcomes closely related to the SFP:10-14 logic model; namely, children's reports of their parents' discipline practices, their sense of family cohesion, and the frequency of joint parent-child activities.

Community Characteristics and Youth Outcomes

A number of studies have examined the relations between community level RPFs and indices of child well-being, including substance use, delinquency, health, and school attainment (Brooks-Gunn & Duncan, 1997; Ennett et al., 2008; Hawkins et al., 2004). Consistent with other researchers, we examined community attitudes and norms favorable toward substance use (Brown et al., 2013; Chilenski, Greenberg, & Feinberg, 2010), high rates of poverty (Brooks-Gunn & Duncan, 1997; Costello, Compton, Keeler, & Angold, 2003), availability of tobacco, alcohol, and drugs within the community (Chilenski, 2011; Dent & Biglan, 2004; Zhu, Gorman, & Horel, 2004), and high crime rates (Sampson, Raudenbush, & Earls, 1997). Protective resources within communities offer youth alternatives to substance use, and can include the availability of organizations to support positive youth development (e.g., clubs and sports) as well as actual youth engagement in these activities (Eccles & Gootman, 2002; Hawkins, 1999). Additionally, schools with a strong leadership and a positive presence in the community that serve as a hub of advocacy for children and families can also function as a protective factor (Gottfredson, 1986; Mulford & Silins, 2003).

While findings indicate that community-level factors are uniquely related to youth outcomes, the patterns of relations are often complex and may not be generalizable across

communities. Feinberg and colleagues (2012) examined associations between school level RPFs and alcohol use in multiple communities, and found evidence for the specificity of individual RPFs. Although the largest effects were for individual-level RPFs, community-level factors also had a small and unique effect. Community norms regarding substance use as well as availability of substances fairly consistently predicted youth substance use outcomes, as did school level variables including poverty, but there were considerable differences across communities. Based on this, Feinberg et al. questioned the assumption that RPFs have consistent implications across diverse contexts; thus, it may be important for communities to take additional steps to match or tailor EBPs with their local risk profiles and needs (Feinberg et al., 2012).

Similarly, Chilenski & Greenberg (2009) examined the relations between community-level RPFs and youth outcomes, and found specificity in the linkages between RPFs and youth outcomes. For example, poverty was associated with smoking, while community level crime rates were associated with vandalism but not with smoking. Additionally, this study found that protective factors appeared to operate independently of community risks and were also somewhat outcome specific; the presence of youth-serving organizations in the community was protective only for adolescent alcohol use, whereas perceptions of the strength of school district leadership was associated with lower levels of alcohol use, smoking, aggressive behavior, and property destruction.

The role of protective factors has received less research attention than risk factors, and studies examining the relative salience of risk vs. protective factors are rare, however, the available data suggest that protective factors are less consistently associated with youth outcomes than risk factors. In a study that directly addressed this issue, Pollard, Hawkins & Arthur (Pollard, Hawkins, & Arthur, 1999) found that risk factors, including community norms favorable to substance use and ready availability of substances, were more predictive of youth problem behavior than were protective factors such as opportunities for engagement in prosocial activities. Although risk and protection were highly dependent (i.e., youth with highest levels of risk also had the lowest levels of protective factors), it appeared that the impact of protective factors was largest at the highest risk levels and had fewer effects at lower levels of risk.

EBPs in Community Settings

Very little is known about how particular EBPs interact with community characteristics to influence youth and family outcomes. Factors such as community poverty, local norms, common parenting practices, or even characteristics of the built environment may affect how an EBP works in a community. EBPs typically target specific individual- and family-level RPFs without consideration of community profiles. Characteristics of the communities within which EBPs have been implemented are usually documented, but not included in program logic models or evaluation designs that test how the EBP affects youth outcomes.

If one considers exposure to an EBP as a protective factor, then the evidence that RPFs have moderating effects on one another for some youth outcomes suggests that community-level factors may modify (or moderate) the outcomes of EBPs. For example, Cleveland and colleagues (2010) found evidence for a “protective but reactive” interaction between risk and

protective factors. Specifically, extra-individual factors that protected youth against substance use (family, school, and community resources) were less influential when individual-level adolescent risk factors were elevated than when they were low. On the other hand, Chilenski and Greenberg (2009) found the opposite pattern when examining the interaction between community risks and resources in predicting levels of youth property destruction: community resources had a larger protective effect on youth in communities with more risks, suggesting a buffering effect.

We can also look at the literature that examines the relations between individual-level risk factors and EBP response, which indicates variability in program impact based on initial youth risk profiles. For example, evidence-based programs can have stronger effects even several years later for higher-risk youth, compared to low-risk youth (Kellam et al., 2014; McVey, Tweed, & Blackmore, 2007; Spoth et al., 2013). Specifically, the SFP:10-14 program and in-school drug prevention program, Life Skills Training (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990), had stronger effects in preventing prescription drug misuse in higher-risk youth than in those with lower levels of personal risk. Similar results were also found for cigarette use, alcohol use, problems related to alcohol use, and illicit substance use for youth in communities that received the SFP:10-14 intervention and Life Skills Training, or Life Skills Training only (Spoth, Trudeau, Redmond, & Shin, 2014). It is possible that community-level risks operate the same way; EBPs may be relatively more effective at impacting youth outcomes when community risks are higher.

Considering the community level RPFs identified for this study, it is possible that enhanced parent management strategies, including increased monitoring and supervision and less reliance on harsh or inconsistent discipline, might be most impactful in communities where crime is frequent or where substances are readily available (Elder, Eccles, Ardel, & Lord, 1995; Jarrett, 2008). Similarly, an EBP such as SFP:10-14 that strengthens family cohesiveness might be particularly helpful in high-crime or high-poverty environments (Gorman-Smith, Tolan, & Henry, 2000). When the availability of community resources such as youth-serving organizations is low and youth are less engaged in extracurricular activities, an EBP that emphasizes positive parent-child activities might be particularly valuable.

Evaluation of a multicomponent teacher and parenting training program showed impoverished youth experienced stronger effects on some outcomes (school achievement, attachment to school, drinking and driving) and weaker effects on other outcomes (pregnancy and becoming a parent), compared to middle- and working-class youth (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999). High risk youth benefited the most when participating in a universal eating disorders prevention program (McVey et al., 2007) and a universal combined child and parent-training program (Losel, Stemmler, & Bender, 2013). Lastly, another study revealed that high-risk males benefitted the most from the implementation of an in-school universal program, the Good Behavior Game (Kellam et al., 2014).

The Current Study

The PROSPER project offers a unique opportunity to examine the relations among community level RPFs and EBP outcomes. In PROSPER, all communities in the

intervention condition chose to deliver the SFP:10-14 program to 6th grade youth and their families. In each intervention community, we were able to assess youth outcomes at pre- and posttest through an in-school survey as well as to measure a number of community-level risk factors that are typically considered important predictors of youth substance use and problem behavior (Hawkins, Catalano, & Miller, 1992). These community measures included percent of low income families in the school district, the density of alcohol and tobacco retailers in the community, norms within the community favorable to substance use, and rates of narcotic crimes within the community. Similarly, we identified potential community-level resources, including positive perceptions of school district leadership, the presence of youth-serving organizations within the community, and youth participation in structured extracurricular activities (Chilenski & Greenberg, 2009).

Because of our interest in how community factors and EBP participation might interact, we examined changes in the proximal youth and family outcomes that were closely tied to the logic model of the SFP:10-14 intervention. Despite some inconsistencies in the literature, we tentatively hypothesized a buffering effect of SFP:10-14 on levels of community risk. Specifically, we expected that there would be more positive change in family cohesion, parent-child activities, and positive discipline strategies in communities with higher levels of risks. Second, we expected that the SFP:10-14 intervention would enhance community resources in a synergistic way, thus we expected to see positive associations between community resources (i.e., protective factors) and change. Based on the findings of Pollard, Hawkins & Arthur (1999), we expected that community-level risk factors would have stronger and more consistent associations with our dependent variables than community-level resources.

Method

This paper draws from the PROSPER (PROmoting School-university-community Partnerships to Enhance Resilience) project in Pennsylvania and Iowa. PROSPER is a community-level randomized trial of a novel dissemination system for empirically validated prevention programs. In this system, the Cooperative Extension System [CES] and public school system play central roles (Spoth, Greenberg, et al., 2004): Local CES educators collaborate with the local public school system to build a community team knowledgeable about the needs of youth and families. This team is connected to educational resources and technical assistance at the university and state-level by prevention coordinators (PCs). The community team selects an empirically validated prevention program, receives training, and oversees the implementation of the program with support from the PCs and university resources.

The original eligibility criteria for communities included in the PROSPER trial were (a) total school district enrollment (K-12) between 1301-5200 students located in non-metropolitan areas; (b) at least 15% of families eligible for free or reduced lunches; (c) less than half of the population employed by or attending a university; and (d) not involved in other university-affiliated, youth-focused prevention research projects. Both universities' Institutional Review Boards (IRBs) approved the study before participant recruitment began. For the PROSPER efficacy trial, half of the communities (N=14) were randomly assigned to

receive the SFP:10-14 intervention, whereas the other half were assigned to a comparison condition and did not form teams, deliver EBPs, or receive technical assistance from PCs.

Procedures

Intervention Activities—In each of the communities assigned to the intervention condition, PROSPER teams were responsible for choosing, and then implementing, two EBPs from a menu of programs targeting prevention of youth substance use. First, all communities chose to offer the SFP:10-14 program to 6th grade students and their families. This program involves seven sessions that are jointly attended by parents and youth. During these sessions, parents and youth meet separately for an hour and then come together for a one-hour family session. Parent sessions emphasize positive discipline, effective parent-child communication, and spending quality time together with youth. Youth sessions involve perspective taking, recognizing and avoiding risky situations, and using peer resistance in a socially skilled manner. In the PROSPER project, families were considered “graduates” of SFP:10-14 if they attended at least four of the seven sessions. Because SFP:10-14 is a voluntary extracurricular program involving parents, participation rates are typically low. In the two consecutive grade cohorts studied, SFP:10-14 participants comprised approximately 17% of the eligible 6th graders and their families in the 14 PROSPER intervention communities (Spoth, Clair, Greenberg, Redmond, & Shin, 2007).

Research Procedures—Data for this project were collected from a total of seven different sources: 1) in-school surveys collected from two consecutive cohorts of 6th grade students, 2) interviews with key community leaders, 3) interviews with directors of human service agencies, 4) interviews with youth activity experts, 5) Uniform Crime Report data, 6) other archival data sources, and 7) data derived from GIS technologies. Individuals involved in survey data collection were recruited in a variety of ways and at different time points to limit respondent burnout and improve data validity (see below). Table 1 contains a listing of the measures, the targeted sample for each measure, and the time point at which each construct was collected.

Student sample—The youth sample included a total of 603 sixth graders across the two cohorts who completed the SFP:10-14 program, for an average of 43 students per community (range = 17 to 138). Respondents’ average age was 11.8 years old ($SD = 0.37$) at the first wave of data collection (pretest; fall of 6th grade). 48.6% were male and 89.9% Caucasian; 2.9% Hispanic/Latino, 2.0% African American, 1.3% Native American, 0.3% Asian, and 3.5% “other”. Eighty-two percent of the sample resided in two-parent families and 28.3% self-reported receiving a free or reduced price lunch at school.

The students were recruited along with their non-SFP participating peers from all sixth grade classes during the 2002-2003 and 2003-2004 school-year. A passive parental consent process which allowed parents to decline participation for their student that was approved by IRBs in both states was implemented prior to the 45-minute in-school survey. In an effort to obtain a population-level measure of adolescent substance use and delinquency, the research team held make-up sessions in every district. These efforts resulted in a nearly 90% participation rate of district enrolled 6th-grade students. Student surveys were administered

in the Fall of 6th grade prior to the implementation of SFP:10-14, and again in the Spring once the program had completed.

Community team members—The community team members provided information about the community context in structured interviews and questionnaires. The community team member sample included 120 individuals recruited in the spring of 2002. They were drawn from local PROSPER project stakeholders and included Cooperative Extension and school district personnel, mental health and substance abuse agency representatives, and parents. Respondents ranged in age from 24-59 years ($M = 42.7$, $SD = 8.29$), 33.3% of respondents were male, and 100% were white. Most respondents were college educated (90.8%) and most (87.5%) lived in or near the school district involved with the PROSPER project.

Agency directors—The agency directors also provided information about the community context. Agency directors were 38 individuals also recruited in the spring of 2002. These individuals served as directors of human service agencies or the school district (e.g. supervisor of mental health, substance abuse, cooperative extension, etc.); at times this person was also a member of the PROSPER partnership community team. Respondents ranged in age from 31-62 years ($M = 49.9$, $SD = 8.59$), 73.7% of the sample was male, and 100% were white. Most had obtained at least a college degree (94.7%).

The community team members and agency directors were recruited by local extension educators and school district representatives. These individuals participated in annual, one-hour, computer-assisted face-to-face interviews beginning in 2002, for which they were compensated \$20.

Youth activity experts—The youth activity expert sample consisted of 52 individuals directly involved in planning and/or leading a variety of activity programs for middle school students (e.g. Extension 4-H youth development educators, physical education teachers, local parks and recreation and/or a YMCA employees, youth ministers, etc.). Thirty-six percent of the sample was male. Youth activity experts participated in a 45 minute interview.

Geographic information systems (GIS) methods—As described below, there were several measures that used GIS methods. GIS software matched specific street address locations of local tobacco/alcohol retailers and youth activity sites to particular latitude and longitude by using a comprehensive street-file database (i.e. to *geocode* an address). All address locations were geocoded by a GIS specialist using ArcGIS 9.1 (Environmental Systems Research Institute, 2005); 20% of the geocoded address locations were checked for quality control with online mapping services. In all, 87% of the identified youth activity locations, 88% of the tobacco retail locations, and 95% of the alcohol retail locations were successfully geocoded.

Measures

Youth reported outcomes—Youth data for this paper were drawn from the in-school student survey. For the purposes of this study, we focused on three variables that were closely tied to the SFP:10-14 program activities and logic model. Change scores were

created such that positive scores indicated that outcomes improved (i.e., became more positive) over time and negative scores indicated outcomes worsened (i.e., scores on protective factors declined) from pre to post-test. *Family cohesion* (5-items, $\alpha = .72-.74$) assessed youth perceptions of the quality of relationships within their families. An example item is, “Family members rarely become openly angry.” Items were scored on a 5-point scale, from (1) *Strongly disagree* to (5) *Strongly agree*. *Parent-child activities* (6-items, $\alpha = .87$) assessed youth perceptions of the frequency with which they and their parents participate in activities together. One example items is, “During the past year, how often did you and your mom or dad work on homework or a school project together?” Items were scored on a 6-point scale, from (1) *Not during the past month* to (6) *Every day*. Measures were drawn from the Iowa Youth and Families Project (Conger, 1989; McMahon & Metzler, 1998; Spoth, Redmond, & Shin, 1998). *General child management* (13-items, $\alpha = .73-.78$) assessed parental awareness of the youth’s activities and parent-youth interactions around discipline. Two example items are, “When my parents discipline me, the kind of discipline I get depends on their mood (*reversed*)” and “My parents know when I do something really well at school or someplace else away from home.” Items were scored on a 5-point scale, from (1) *Never* to (5) *Always*.

Community risk factors—*District low income* was measured as the percentage of students receiving a free or reduced price lunch within the school district; data were gathered from state department of education webpages and inquiries to the school district administration. The *density of tobacco retailers* and *density of alcohol retailers* measure the average number of retail locations per 10 km of roadway (Chilenski & Greenberg, 2009). The alcohol measure included both on-premise and off-premise alcohol sale locations. Densities per 10 km of roadway were used because they best represent physical availability of the substance (Gruenewald, Ponicki, & Holder, 1993). These data were derived from information provided by the PA Department of Revenue, PA Liquor Control Board, and the IA Alcohol Beverages Division.

Community leaders reported on *community norms* regarding local resident acceptance of adolescent substance use (6-items, $\alpha = .83$; (Beebe, Harrison, Sharma, & Hedger, 2001). Example items include, “Adults in [this community] think the use of alcohol is a normal part of growing up.” (response scale: (1) *Very wrong* to (4) *Not wrong at all*); and “In this community, how wrong do most adults feel it is for adolescents to smoke cigarettes?” (response scale: (1) *Strongly disagree* to (4) *Strongly agree*).

Drug-related crime rates were computed drawing from the FBI’s Uniform Crime Reporting System (Coco, 2005; Pennsylvania State Police, 2005). Three years of recorded drug crimes were averaged to compute an estimated annual rate of drug related crime incidents in each community (Chilenski & Greenberg, 2009).

Community resources—Community leaders and agency directors reported on the efficacy and proactive nature of *School leadership* (4-items, $\alpha = .80$; (Chilenski, Greenberg, & Feinberg, 2007); an example item is: “The middle school does a good job of reaching out to parents.” Response scale?

The *rate of structured activities* assesses the number of structured youth activities available per 1,000 middle school students. This scale was created by counting each unique organization and activity type reported in interviews by activity experts, then dividing by each district's student population and multiplying by 1,000 (Chilenski & Greenberg, 2009). The categories of activities were developed based on the individual-participation literature (Coatsworth, Palen, Sharp, & Ferrer-Wreder, 2005; Eccles & Barber, 1999).

The *density of youth-serving organizations* per 10 km of roadway (Chilenski & Greenberg, 2009) was derived through searches of online phone books and through the national YMCA main webpage (YMCA, 2005). Details on how the search was conducted are available in Chilenski and Greenberg (2009).

Preliminary Analyses

To better understand our sample, we explored the similarities and differences between our SFP:10-14 graduate sample from non SFP:10-14 graduates (i.e., those that attended fewer than 4 sessions, including those that attended zero sessions) on our selected dependent variables at wave 1 before conducting our hypothesis tests. There were no differences in family cohesion or general child management. A difference was found for parent-child activities; those that graduated SFP:10-14 reported higher levels of parent-child activities at wave 1 compared to non SFP:10-14 graduates ($M = 4.30$ vs. 3.80 ; $p = .048$).

Analysis Plan

Hypothesis testing was conducted using community-level correlations rather than multi-level models with individual data at the level of students due to several considerations. We did not have sufficient power at Level 2 (community $N=14$) to utilize longitudinal multi-level models. Second, prior research utilizing the PROSPER RCT design indicated a strong, clear, and significant intervention effect favoring communities receiving EBIs (Redmond et al., 2009; Spoth et al., 2007, 2011). Thus, the goal of the current study was not to demonstrate the efficacy of PROSPER interventions, but to determine the degree to which variability in program effect was related to measures of community risk and resources. A correlation analysis was most useful, as a correlation is a direct assessment of the effect size of the association between two variables. Given the elevated risk of Type II error with our small sample size, we interpreted associations equal to or greater than $\pm .35$ as meaningful because an association of this size represents over 10% of the variance (Feinberg, Greenberg, Osgood, Anderson, & Babinski, 2002; Perkins et al., 2011).

Hypothesis tests were conducted in two steps. First, Pearson correlations between our youth outcome change scores and all community risk and resource measures were calculated. Next, partial correlations that controlled for state (Iowa vs. Pennsylvania) were estimated. Partial correlation results mirrored non-partial correlation results, but because these represent a more conservative analysis, only partial correlation results are presented below. In order to help with data interpretation after hypothesis testing, we examined the data with graphs that depicted the average amount of change in each outcome separately for high versus low risk/resource communities. We rank-ordered community scores on each risk variable and took the top and bottom six communities to derive high and low risk

communities for each variable to help visualize the difference in community-level change scores.

Results

Descriptive statistics

Descriptive statistics of all measures are listed in Table 1. Average rates of community risks are generally below national averages of similar measures (Federal Bureau of Investigation, 2004; US Census, 2000). Rates of community resources cannot be compared due to the lack of available standardized measures. The community mean change scores show a small degree of change in a negative direction between pre and post intervention; this is expected given that a negative trajectory for protective factors typically begins with the onset of early adolescence. Further, prior research using SFP:10-14 and other EBPs in early adolescence demonstrate that these programs flatten (rather than reverse) the increases in negative outcomes and decreases in positive factors typically observed in non-intervention control groups (Spath, Redmond, Shin, & Azevedo, 2004).

Community-level Correlations

Our first hypothesis was that there would be a positive correlation between youth-reported family outcomes and higher rates of community risk. Secondly, we hypothesized that community risk factors would have stronger and more consistent associations with youth outcomes than would community resources. The results revealed some support for both hypotheses. Correlations between mean change scores for family cohesion, general child management and parent-child activities and the community risk and resource variables are presented in Table 2.

Family cohesion—Correlations presented in Table 2 reveal that change in family cohesion had positive, strong meaningful correlations with all community risk variables, suggesting some buffering effect of the intervention. Examination of the average change for higher- versus lower-risk communities in Figure 1a reveal that more positive changes in high risk communities for all five of the community risk factors.

Parent-child activities—Correlations presented in Table 2 reveal that change in parent-child activities also was meaningfully positively associated with community risks. Specifically, district low income, density of tobacco retailers, and community norms favoring substance use were positively correlated with changes in parent-child activities. Examination of the average change for higher- versus lower-risk communities in Figure 1b reveal that more positive change occurred in high risk communities for four of the five community risk factors. When community risks were higher, more positive changes in parent-child activities were observed in SFP graduates.

General child management—Correlations presented in Table 2 reveal that changes in general child management were not meaningfully correlated with any of the community level risk factors. The graphical depiction of the communities collapsed into high and low risk groups (Figure 1c), however, makes it look like more positive change occurred in general

child management in high risk communities for two community risk measures (district low income, presence of alcohol retailers).

Associations with risks compared to associations with resources—Our second hypothesis involved the consistency of relations between changes in the outcome variables for risks versus protective factors. As we expected, community resources had less consistent associations with changes in the three outcomes (see Table 1). None of the community resources were meaningfully associated with changes in general child management. Only the rate of structured activities was meaningfully associated with change in family cohesion. All three community resources (proactive school leadership, availability of youth-serving organizations, and student involvement in youth activities) were meaningfully associated with community change in activities with child.

Post-hoc analyses—Because of the importance of implementation quality for achieving positive effects for EBPs (Domitrovich & Greenberg, 2000), we conducted post-hoc analyses to see if implementation quality explained the differences in outcome change experienced by higher risk communities. Community-level correlational analysis found that (a) communities with higher scores on outcome variables at Wave 1 had higher fidelity ratings; (b) fidelity ratings were inconsistently associated with change in general child management, family cohesion, and activities with child; and (c) controlling for fidelity did not change the associations between community risk and change in our dependent variables. Results are available from the first author.

Discussion

Research on the impact of EBPs typically emphasizes mean differences in youth outcomes between communities that do and do not implement EBPs (i.e., PROSPER & CTC cites), which may obscure community-level differences in program effectiveness. Although, variability in the effectiveness of EBPs has been linked to individual or family level risks, including youth behavior problems, family poverty or disorganization, or parent psychopathology (Feinberg & Kan, 2008; Kellam et al., 2014; McVey et al., 2007; Spoth et al., 2014), much less is known about how community level factors may impact the effectiveness of EBPs at a community-level. This makes it challenging for community stakeholders to address the question “Will this work in our community?”

Prior research suggests that patterns of RPFs and their relations to youth outcomes vary widely by community, and that these relations may be outcome-specific (Chilenski & Greenberg, 2009; Cleveland, Feinberg, & Greenberg, 2009; Feinberg et al., 2012), leading us to question how community risk and protective factors may relate to youth outcomes of EBPs. In addition, in our experience community stakeholders compare their local circumstances to those of the research sample when making decisions about EBPs. Consequently, our goal was to explore the relations between community-level RPFs and outcomes of EBPs.

We examined three proximal outcomes – family cohesion, general child management, and parent-child activities - that were closely tied to the logic model of the SFP:10-14 program.

Research on the development of risk and protective factors across adolescence suggest that as youth get older, risks increase and protective factors decrease (Feinberg, Jones, Greenberg, Osgood, & Bontempo, 2010; Hawkins et al., 2008). Consistent with this, we found that the overall mean levels of general child management, family cohesion, and parent-child activities showed negative changes from the fall to spring of 6th grade. However, there was considerable variability across communities, with some communities showing increased levels of these positive family factors over time.

We expected to find a buffering effect of the SFP:10-14 intervention such that less negative changes in the family factors would be found for higher risk communities. In other words, that the SFP:10-14 intervention protected against poor community-level outcomes that otherwise may be expected in higher risk communities. Some evidence of this pattern was found in our analyses with two of the three examined outcomes. In the correlational analyses, more positive (or less negative) changes in family cohesion were found in communities with higher levels of all risk factors. Similarly, for parent-child activities, positive change was associated with higher rates of low income, tobacco outlets, and community norms favoring substance use. The graphical depiction of the comparisons between low and high risk groups of communities helped visualize these findings.

Results for general child management were different. Community-level correlations did not reveal a meaningful relation between community risk and change in general child management. However, when we grouped communities into high and low risk categories, positive change looked associated with higher levels of risk for two variables (rates of low income and number of alcohol retailers). Unlike the other two outcomes, there was very little mean level change in child management across the time period studied, which may account for the lack of associations. Generally, our results are consistent with those of other researchers who find that relations among specific RPFs and youth outcomes are variable (Chilenski & Greenberg, 2009; Feinberg et al., 2012; Van Horn, Hawkins, Arthur, & Catalano, 2007).

In the intervention literature generally, there is evidence to suggest that high risk *individuals* are particularly likely to benefit from universal EBPs (Hawkins et al., 1999; Kellam et al., 2014; Losel et al., 2013; McVey et al., 2007; Spoth et al., 2014), but this finding has not been extended to community-level risk and community-level outcomes. Although a fairly extensive (although not always consistent) literature exists that links community level factors to *rates* of youth substance use, delinquency and other problem behaviors, to date this literature has not considered the ways in which community characteristics affect *changes* in these outcomes over time. Future studies could extend the research on whether changes, particularly positive changes associated with EBPs, are enhanced or mitigated by community characteristics, and if so, how this occurs. Additionally, future research should continue to examine the role of community factors in moderating the impacts of EBPs, beyond the effects of individual- or family-level risk.

Regarding community resources which could be conceptualized as protective factors, associations between school leadership, the rate of structured activities and the density of youth-serving organizations were positively meaningfully associated to changes in parent-

child activities. SFP:10-14 emphasizes the importance of parent-child activities, and positive changes in this variable may be easier to make in communities where more activity resources are available. As hypothesized, however, there were fewer meaningful associations between community resources and either family cohesion or general child management.

This study did have a number of limitations. The community was the level of randomization in the PROSPER study, and individual youth and families within communities were not randomly assigned to receive the SFP:10-14 intervention. The intervention was also experienced by an average of 17% of the possible population. Because of this, we tested for differences between SFP:10-14 graduates from non-graduates. The only significant difference we found was that those who participated in the intervention reported higher levels of parent-child activities at Wave 1, before participating in the intervention. The patterns of change and the meaningful associations with community RPFs observed in this study might be different from results of programs where all youth participate (e.g., compulsory school based interventions), or even if a larger or smaller proportion of the population attended the program participated. On the other hand, unless different self-selection factors played a role in determining participation across communities, or unless the sample composition changed in some way that would change the expected outcomes of the intervention, our results should be generalizable to voluntary family prevention programs.

The outcome measures consist of youth reports of parents' management strategies, family cohesion, and parent-child activities. It would be useful to broaden this type of research to include parent and observer measures of change in outcomes. PROSPER was implemented in largely working class, rural and small-town communities with mostly Caucasian families. It is unknown whether the relations observed would be similar in urban communities or those with greater ethnic or cultural diversity. The size of the PROSPER sample limits our ability to make strong statements about statistical significance. Although PROSPER was a large study involving nearly 11,000 youth at each wave of in-school data collection from 28 school districts, only half the communities were assigned to the intervention. We have limited our analyses to avoid concerns regarding the stability of the statistical models, to aid in interpretation of the results, and because of the community-level nature of our research question. However, correlations do not account for the shared variance among independent variables. If possible, future research should continue to explore this research question with more complex models. Given the costs associated with large-scale prevention trials such as PROSPER, this limitation may continue to be a challenge for research examining community-level factors associated with EBPs.

In summary, the results of the current study suggest that the community-level changes youth experience as the result of a family-focused prevention program may be affected by the degree and types of risk and protective factors in their communities. In other words, EBPs may lead to more change in some communities than in others, and these results suggest that it may be possible that SFP:10-14 had a particularly beneficial effect in communities with higher levels of various risks and higher levels of selected resources. The degree to which community factors influence the impact of EBPs is a largely unexplored question, but certainly one that warrants further investigation. The "first generation" of research on EBP effectiveness in community settings highlighted the importance of program adherence and

implementation quality in determining the success of EBPs at achieving desired outcomes (Domitrovich & Greenberg, 2000). This work has been followed by studies indicating that careful EPB adaptation in response to local circumstances might facilitate program uptake and sustainability (Castro, Barrera, & Martinez, 2004; Chen, Reid, Parker, & Pillemer, 2013; Kumpfer, Pinyuchon, de Melo, & Whiteside, 2008). Recent research suggests that RPFs may have different implications for youth development in different communities (Feinberg et al., 2012), but it is unclear how community stakeholders should use this information to make decisions regarding EBP adoption and adaptation. Our findings represent a preliminary step in understanding the efficacy in prevention across communities. These findings suggest that EBPs may work differently when certain community risks and resources are high vs. low, that community risks should be considered separately from community resources, and that interactions between community risks, resources, and interventions may be more important for some outcomes than others. Clearly, more research is needed to address this complicated scenario. Better understanding how the community context is likely to affect intervention outcomes, and proactively adapting programs to address those needs are likely to improve community buy-in and support of EBPs and their public health impact.

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Figure 1. Graphs depicting the average change for each dependent variable for the 6 highest and 6 lowest communities on each independent variable.

Table 1

Listing of measured constructs, data source, time point at which the measure was collected, and descriptive statistics of all scales

Measure	N	Mean	Std	Min	Max
Community Risks					
District Low Income	14	28.96	9.84	10.40	48.00
Density of Tobacco Retailers	14	0.54	0.63	0.02	2.02
Density of Alcohol Retailers	14	0.88	1.06	0.07	3.97
Community Norms	14	2.29	0.24	1.85	2.79
Narcotic Crime Rates	14	217.29	122.80	82.49	454.07
Community Resources					
School Leadership	14	3.15	0.25	2.68	3.57
Rate of Structured Activities	14	11.27	4.58	6.05	19.73
Density of Youth Organizations	14	0.15	0.15	0.01	0.50
Community Means of Adolescent Targeted Program Outcomes					
General Child Management					
Time 1	14	3.9697	0.14	3.75	4.24
Time 2	591	3.9638	0.13	3.68	4.15
Change Score	14	-0.0059	0.09	-0.13	0.19
Family Cohesion					
Time 1	570	3.5643	0.12	3.37	3.73
Time 2	570	3.5339	0.18	3.18	3.87
Change Score	14	-0.0304	0.11	-0.19	0.14
Activities with Child					
Time 1	598	4.2458	0.17	3.85	4.52
Time 2	598	4.1139	0.23	3.66	4.38
Change Score	14	-0.1319	0.20	-0.55	0.24

Table 2

Community-level correlations between community context variables and changes in youth mediators of substance use, partial out state

	Change in Family Cohesion	Change in Activities with Child	Change in General Child Management
Community Risk Factors			
District Low Income	0.55 **	0.46 ⁺	-0.06
Density of Tobacco Retailers	0.54 *	0.42 ⁺	-0.28
Density of Alcohol Retailers	0.50 *	0.24	-0.20
Community Norms	0.63 **	0.49 *	-0.28
Narcotic Crime Rates	0.51 *	0.31	-0.15
Community Protective Factors			
School Leadership	0.32	0.52 *	-0.06
Rate of Structured Activities	0.51 *	0.41 ⁺	-0.33
Density of Youth Organizations	0.30	0.40 ⁺	-0.23

⁺ meet meaningful criterion threshold of +/-0.35;

* meet meaningful criterion threshold of $p \leq .10$;

** $p \leq .05$