



Published in final edited form as:

*Prev Sci.* 2014 April ; 15(2): 125–137. doi:10.1007/s11121-012-0347-5.

## The Impact of a Prevention Delivery System on Perceived Social Capital: the PROSPER Project

**Sarah M. Chilenski,**

Prevention Research Center, The Pennsylvania State University, University Park, PA, USA. 135 E Nittany Ave, Suite 402, State College, PA 16801, USA

**Patricia M. Ang,**

University of Nottingham Malaysia, Semenyih, Malaysia

**Mark T. Greenberg,**

Prevention Research Center, The Pennsylvania State University, University Park, PA, USA

**Mark E. Feinberg,** and

Prevention Research Center, The Pennsylvania State University, University Park, PA, USA

**Richard Spoth**

Partnerships in Prevention Science Institute, Iowa State University, Ames, IA, USA

Sarah M. Chilenski: sarah.chilenski@gmail.com

### Abstract

The current study examined the impact of the PROSPER delivery system for evidence-based prevention programs on multiple indicators of social capital in a rural and semi-rural community sample. Utilizing a randomized blocked design, 317 individuals in 28 communities across two states were interviewed at three time points over the course of 2.5 years. Bridging, linking, and the public life skills forms of social capital were assessed via community members' and leaders' reports on the perceptions of school functioning and the Cooperative Extension System, collaboration among organizations, communication and collaboration around youth problems, and other measures. Longitudinal mixed model results indicate significant improvements in some aspects of bridging and linking social capital in PROSPER intervention communities. Given the strength of the longitudinal and randomized research design, results advance prevention science by suggesting that community collaborative prevention initiatives can significantly impact community social capital in a rural and semi-rural sample. Future research should further investigate changes in social capital in different contexts and how changes in social capital relate to other intervention effects.

### Keywords

Social capital; Community collaboration; Prevention team; Cooperative Extension System; School–community partnership

---

The success of collaborative community initiatives to promote health is frequently measured in terms of actions taken such as planned events or changed policies, or improvements in

---

© Society for Prevention Research 2013

Correspondence to: Sarah M. Chilenski, sarah.chilenski@gmail.comsem268@psu.edu.

Electronic supplementary material The online version of this article (doi:10.1007/s11121-012-0347-5) contains supplementary material, which is available to authorized users.

targeted outcomes. An additional benefit may be improvement in community social capital, which includes the qualities of the connections among individuals and organizations. Given that collaborative community health initiatives involve coordination among multiple individuals and organizations within a community, improvements in social capital are possible outcomes of these efforts (Currie et al. 2005; Petersen 2002); initial evidence supports this link (Brown et al. 2007; Hausman et al. 2005; Javdani and Allen 2011).

A growing body of research demonstrates that improvements in social capital may lead to improved health outcomes for individuals and communities. At an individual level, higher amounts of social capital have been associated with higher levels of education, occupational success, economic status (Furstenberg and Hughes 1995), health (Linden-Bostrom et al. 2010; Nieminen et al. 2010), and mental health (De Silva et al. 2007). At a community or state level, higher amounts of social capital have been associated with lower rates of crime (Sampson 1997), mortality (Kawachi et al. 1997), and adolescent problem behaviors (Chilenski and Greenberg 2009; Youngblade et al. 2006). Although the direction of effects cannot be isolated due to the correlational nature of prior research, it seems reasonable that collaborative community health initiatives could make improvements in social capital, which might lead to improvements in the health and well-being of individuals and communities (Egan et al. 2008). To examine whether collaborative community health initiatives may increase social capital, this paper expands prior research by using a longitudinal and experimental design to examine the impact of the PROSPER delivery system (Spoth et al. 2004) on indicators of social capital in rural and semi-rural communities.

## Social Capital

### Social Capital and Prevention

Social capital is described as the “social fabric” of a community, which includes the qualities of the connections among individuals, between individuals and organizations, and among organizations, themselves. In other words, social capital generally describes the structure of a community’s “social organization” (Sampson and Graif 2009). Social capital, therefore, encompasses qualities such as social trust, cooperation, and action (Petersen 2002; Putnam 1993; Coleman 1988).

Some researchers have found it useful to categorize social capital into bonding, bridging, linking (Szreter and Woolcock 2004), or public life skills (Lappe and Du Bois 1997). Bonding refers to the connections and relationships that exist between members of a group that are seemingly similar, whereas bridging refers to horizontal connections and relationships that exist between individuals or organizations that seem different from each other yet are equal in status and power (Szreter and Woolcock 2004). Applied to the prevention context, the relationships that are created among parents attending a universal family-focused program would be categorized as bonding social capital if the parents were of the same age, ethnicity, and/or socioeconomic group. On the other hand, relationships created among parents would be bridging social capital if the parents were of different ages or ethnicities, yet were from the same socioeconomic group.

Linking is a special type of bridging social capital that describes the connections and relationships between individuals or organizations that have different levels of authority or power (Kawachi et al. 2004; Szreter and Woolcock 2004). Linking connections are vertical and can help individuals access resources (Dominguez and Arford 2010). For example, the trust and respect that builds between community members and those that deliver health-related services through personal interactions, classroom instruction, and/or through Extension can be considered linking social capital (Dominguez and Arford 2010; Szreter

and Woolcock 2004). The quality of these connections likely has impact on individuals' well-being in all communities, yet the effect may be especially important in poor communities.

Applied to prevention, the relationships that are created between parents that attend a universal family-focused program and the program's sponsor, frequently the school district or the Cooperative Extension System (CES), would be categorized as linking social capital. Parents may be more likely to attend these programs if they trust the sponsoring organization and feel it respects them and understands their needs. Families' willingness to attend the program would likely improve their well-being, to the extent that the delivered program is effective.

Social capital has also been described as *collective intelligence*, defined as the collective capacity of the population to build a desirable society through both informal and formal means (Lappe and Du Bois 1997). Collective intelligence includes a sense of optimism and hope, meaningful opportunities for involvement, and strong "public life skills" such as active listening, mediation, and evaluation. It is theorized that when all three aspects come together, a community is more likely to have greater ability to create positive social change. Applied to the prevention context, the collective intelligence of participants in prevention programs would be expected to increase to the extent that the program is effective at improving their communication and other interpersonal skills, building their positive outlook, and is perceived as a meaningful opportunity.

### **Social Capital and Community Collaborative Prevention Initiatives**

Given that social capital is inherently interpersonal and given that comprehensive community health initiatives typically foster teamwork among individuals and organizations from different sectors, it is possible that social capital would be nurtured in such initiatives through the cooperation and trust that can emerge from repeated interactions among those involved (Currie et al. 2005; Petersen 2002). The repeated interactions could allow members to build positive relationships with each other outside of the project, to deepen their understanding of similarities and differences, and may even lead to changes in perceptions of an organization's motives, effectiveness, or expertise.

More specifically, these characteristics specifically situate collaborative community health initiatives to affect (positively or negatively) the bridging and linking types of social capital. For example, if members of the collaborative have different areas of expertise yet have similar levels of power or authority, an increased number of collaborative relationships and the trust and feelings of efficacy that can be created among the representatives involved in a community collaborative would be examples of bridging social capital. On the other hand, increased perceptions that the school system respects and values family involvement would be an example of linking social capital, as the public school system is likely to have authority and power within a community and perceptions of how the school system values families could affect the families' participation in social or health programs that are delivered at the school(s). Initially, change in social capital would likely be limited to those individuals and organizations directly involved; however, it is possible that given enough time and enough community partners, improvements in social capital could spread and be experienced community-wide.

Specific to collective intelligence (Lappe and Du Bois 1997), community collaborative health initiatives may be considered meaningful opportunities for involvement, and it is possible that, if successful, it would lead to greater optimism and hope among collaborative partners (i.e., a form of bridging social capital). Community collaborative activities also frequently involve training and technical assistance (Chinman et al. 2008; Feinberg et al.

2004, 2002; Spoth et al. 2004) which might increase skills. There is some research to support this chain of events (Crowley et al. 2012). Given this set of characteristics, community collaboratives have the potential to build social capital or, in other words, to build collective intelligence, capacity of a community to create positive change. This social capital also has the potential to connect participating organizations to external resources (Minkler and Wallerstein 2005).

### **Social Capital as a Target for Intervention**

Research has begun to examine social capital as an intervention target and has largely found positive effects. For example, bonding and bridging social capital was assessed in one study that found 30 % of polled individuals reported changes in public spaces increased social interactions between individuals in low- to moderate-income communities in Portland, Oregon (Semenza and March 2009). Another study used a cluster randomized trial in rural South Africa to assess whether improving bridging social capital would reduce women's vulnerability to intimate partner violence and HIV. The researchers found that membership in community organizations, perceived community support, solidarity, and collective action increased as a result of the intervention (Pronyk et al. 2008). Two case studies also suggest that civic engagement, trust, and forming relationships among individuals were affected through community change efforts (Farquhar et al. 2005; Onyx and Leonard 2010). A recent cross-sectional study has shown positive associations between perceptions of change in knowledge and relationships and improvements for victims of intimate partner violence (Javdani and Allen 2011), and one study found increases in collaboration in communities participating in Communities That Care, compared to control communities (Brown et al. 2007). In summary, the evidence seems to suggest that collaborative community health initiatives are a potential context within which the bonding, bridging, linking, and public life skills dimensions of social capital could increase. Longitudinal and further experimental research is needed to illuminate these causal processes (Egan et al. 2008).

### **The Current Study: PROSPER and Social Capital**

We examine whether a university-school-community partnership called PROSPER increased social capital in intervention communities over time when compared to control communities. The PROSPER delivery system is a collaborative community health initiative designed to decrease adolescent problem behaviors in rural and semi-rural communities by utilizing existing community systems to deliver evidence-based prevention programs (EBPs). Local leaders from the CES and the public school system recruit a set of community representatives to form a prevention team. The team then selects and implements evidence-based family-focused and school-based programs designed to reduce adolescent substance use and other problem behaviors and to promote youth competence (Spoth et al. 2004).

To this end, team leaders from the CES and school district examine their community and build a prevention team that has the needed expertise and resources and includes individuals from influential sectors appropriate for the team's activities. Initially, team members are drawn from local health and mental health agencies, substance abuse, and prevention agencies and also include parents and youth. As the team evolves, it often includes businesses, law enforcement, faith-based institutions, parent groups, the juvenile justice system, and/or the media. Prevention Coordinators serve as proactive technical assistance providers, linking PROSPER community teams to education and prevention resources at the university. All community teams select and receive training in EBPs from a menu of classroom and family-focused programs shown to reduce adolescent substance use; local teams oversee the implementation and sustained use of EBPs for sixth and seventh grade students and families. Therefore, PROSPER is a collaborative community health initiative that involves individuals and organizations that have similar interests and goals, yet the

involved individuals and organizations bring their differing expertise and resources toward a common goal. Given this combination, it would be expected that public life skills, bridging, and linking social capital could be changed as a result of the PROSPER effort.

Because the CES and the public schools are influential community organizations involved in the partnership, we expect that being involved in PROSPER would change perceptions of linking aspects of social capital: the qualities of the connections between community resident families and these influential organizations over time. As a result, we hypothesize that individuals participating on a community team and their supervisors would perceive an increased commitment of the school and the CES to addressing youth and family issues, fostering youth and family resilience, and responding to their needs. Indeed, earlier longitudinal analyses with a limited sample have demonstrated an improved reputation of the CES in the first few years of PROSPER (Mincemoyer et al. 2008).

Similarly, because of the collaborative and community-wide focus of PROSPER in promoting positive youth outcomes, we expect that being involved in PROSPER would change perceptions of bridging aspects of social capital: the quality of the connections among PROSPER partners and among community members. As a result, we hypothesize that individuals participating on a PROSPER community team and their supervisors would develop more positive expectations of the general effectiveness of their school district and of their communities' capacity for positive change. Such individuals would likely develop a stronger belief that the school district can effectively handle challenges and that community members are committed to working together around prevention issues and can indeed enact positive change.

Because a central focus of PROSPER is to coordinate prevention-oriented efforts related to adolescent problem behaviors across different sectors within the community, we expect that being involved in PROSPER would change two additional bridging aspects of social capital: the sense of collaboration and commitment to prevention and the density of collaborative relationships (Hausman et al. 2005; Hogue et al. 1995). As a result, we hypothesize that PROSPER would increase the sense that there is a committed network of organizations and individuals working on prevention, and the number of collaborative relationships among involved community organizations would increase.

Because PROSPER team members represent their organizations within a prevention initiative structured to promote a bidirectional flow of information to and from the university and local communities, we expect that being involved in PROSPER would change team member perceptions of public life skills within their home organization. As a result, we expect changes in knowledge and support for prevention within involved organizations. Specifically, we hypothesize participating individuals would begin to perceive a greater knowledge of and support for prevention in their workplaces.

These hypotheses are examined within the context of PROSPER, a rural and semi-rural sample (Spoth et al. 2004). These areas typically do not have enough resources to adequately serve their targeted population (National Advisory Committee on Rural Health and Human Services 2008; Olden and Szydlowski 2004), yet the school district can have a significant impact on adolescent outcomes (Chilenski and Greenberg 2009). Collaboration among existing entities has been highlighted as a possible solution (Olden and Szydlowski 2004; Provan et al. 2003), and the CES has been identified to play a key role (Molgaard 1997; Riley 2008; Spoth et al. 2004). Partnerships between the CES and the public school system are expected to be useful in rural areas due to the reach of educators and CES programming in these areas (Spoth and Greenberg 2005). Though little is known about collaboration in rural areas, recent research has suggested that it may reduce disparities in



access to health services (Beatty et al. 2010). The current study will further this research by examining outcomes of a collaborative community health initiative led by the CES in rural and semi-rural areas. In summary, we hypothesize that PROSPER team member participants, as well as their supervisors in their home agency or organization, would report enhanced social capital compared to similar informants in randomly assigned control communities.

## Method

Twenty-eight communities throughout Pennsylvania and Iowa were engaged in the PROSPER project (Spath et al. 2004). Eligible communities fit four criteria: (a) total school district enrollment between 1,301 and 5,200 students located in non-metropolitan areas, (b) a minimum of 15 % of students eligible for free/reduced price lunches, (c) less than 50 % of the population employed by or attending a university, and (d) not involved in any other university-prevention research project. The participating universities' institutional review boards approved the study.

PROSPER is being evaluated through a randomized design in which communities are the primary level of assignment and analysis. Communities were blocked on size and location before being randomly assigned to the intervention (PROSPER) or control (normal programming) conditions. Overall, the communities involved in this study are representative of rural and semi-rural school districts in the Northeast and Midwest areas of the USA. The communities are largely White ( $M=95.6\%$ ,  $SD=3.2\%$ ). On average, communities in the study have 19,100 residents ( $SD=9,842$ ). The median household annual income of the community sample is \$37,081 ( $SD=5,475$ ), and the average rate of families living below the poverty level is 6.81 % ( $SD=1.93$ ).

## Procedures

Decisions about PROSPER project activities, in other words decisions about family recruitment strategies, implementation, and sustainability of the programs, were made by each community team; the Prevention Coordinators answered questions and provided support throughout the process. Teams met monthly to plan activities, team leaders had a minimum of biweekly contact with their Prevention Coordinators, and Prevention Coordinators attended the majority of the teams' monthly meetings. Prevention Coordinators were supported by prevention researchers, practitioners, CES faculty, and administrators at the university/state-level.

PROSPER intervention team members participated in a series of training activities as part of a proactive technical assistance model. The organizational phase lasted 9 months. It began with training for the team leader from the CES and the co-leader from the public middle school. These two team leaders began selecting team members and mobilizing their team after that training. Shortly after the team leaders recruited their team members, all intervention teams attended a statewide meeting (May 2002) where they participated in team-building activities and learned about the mission and goals of the CES, successful collaboration, prevention science, family recruitment strategies, and the evidence-based programs on the PROSPER menu. Teams selected their family-focused program after the statewide meeting and began planning for the program's implementation. Team activities during this time included hiring program facilitators, receiving training in the program, creating promotional materials, planning recruitment strategies, and coordinating recruitment activities with the school.

Teams entered the Operations Phase in January 2003 when they began to implement the family-focused program to the first sixth grade cohort. Many community teams utilized the

middle-school building as the location for the evening family-focused program. As implementation of the family-focused program neared completion, teams selected the school-based program, attended another statewide meeting, received training in the school-based program, and began coordinating with the school for its implementation to the first seventh grade at the start of the following school-year (September 2003). That fall, teams also continued planning to implement the family-focused program to a second cohort of sixth grade students the following winter (January 2003). Table 1 contains a general timeline of intervention activities; please see previous publications for more information (Perkins et al. 2011; Spoth et al. 2004, 2007).

## Participants

The sample for this study included 317 individuals that participated in one or more waves of data collection over a 2.5-year period between the spring of 2002 through the fall of 2004 (see Table 1). Two groups of respondents were recruited: *team members* and *agency directors*. In the intervention communities, team members consisted of local stakeholders recruited for the PROSPER community teams (e.g., representatives of the CES, middle school teachers or staff, mental health and substance abuse agency representatives, parents). Agency directors consisted of the head administrator of each key organization involved on the community team. Generally, these individuals were county-level CES directors, school superintendents or principals, and directors of county mental health and substance abuse agencies. In the control communities, team members consisted of equivalent persons who would have served on a PROSPER team had the community been randomized to receive the intervention; similarly, agency directors were the head administrators of key organizations that would have been involved.

Recruitment of participants for the research commenced with the beginning of the project. Our sample reflects the natural turnover of human sector positions. Consequently, recruitment continued throughout the project as individuals left and were replaced in their respective positions; 170 individuals (53.6 %) participated in all three waves of data collection. Turnover between the two conditions were similar, with 103 out of 196 (52.6 %) intervention respondents and 67 out of 121 (55.4 %) control respondents interviewed at all three waves. Respondents ranged in age from 23 to 65 ( $M=44.0$ ,  $SD=9.25$ ), 41.3 % were male, and 99.0 % self-identified as White. Ninety-five percent of respondents had a minimum of a college degree, and 82.1 % lived in or near the school district that organized the PROSPER community team.

The average number of respondents per community over the three waves of data collection was 14 (ranging from 10 to 23) for intervention communities and nine in control communities (ranging from five to 14). Fewer control community participants were intentionally recruited, since the purpose was primarily to compare community characteristics and outcomes rather than initiate a community team. At each wave of data collection (wave 1=project initiation; wave 2=18 months into the project; wave 3=30 months into the project), individuals participated in 1-h computer-assisted, in-person interviews and were compensated with \$20. Interview questions were selectively asked of team members and/or agency directors to reduce respondent burden. Over 98 % of targeted individuals participated in the study.

## Measures

**Dependent Variables**—Indicators of social capital were collected across a variety of dimensions. Table 2 lists the sample size, reliability information, and descriptive statistics for each measure; additional details are found in the supplementary material.

All team members and agency directors responded to two measures that assessed linking social capital. The first scale, *school proactive* (Chilenski et al. 2007), assessed the degree to which the school leadership is perceived as proactive in involving families and respected. The second scale, *Cooperative Extension reputation* (Mincemoyer et al. 2008), assessed the degree to which respondents perceived the CES as a leader of quality youth and family programming.

All team members and agency directors responded to two measures that assessed bridging social capital. The first scale, *school problems* (Chilenski et al. 2007), assessed the degree to which the school is perceived to be plagued with problems. The second scale, *changes in community* (Taylor-Powell 1998), assessed the degree to which individuals within their community were perceived to have the capacity for positive change.

All agency directors responded to six measures that assessed bridging social capital. *Collaboration around prevention* assessed whether community organizations communicated about and worked together on prevention issues. *Agency collaboration involvement* assessed the presence/absence of collaborative relationships with eight different organizational sectors. In addition, each agency director rated the presence/absence of four specific types of collaborative relationships with the eight organizational sectors: *formal contracts*, active *grant writing*, *co-sponsoring* events or activities, and *joint planning* of events or activities.

All team members (except parent representatives) and agency directors responded to two measures that assessed public life skills within their organizations. Agency's *knowledge of prevention* assessed perceptions of their supervisor and staff's knowledge of prevention programming. Agency's *support of prevention* assessed the degree to which individuals perceived that the colleagues in their agency supported prevention activities.

*Covariates* Community-level poverty was used as a covariate because of its importance in predicting prevention team functioning (Feinberg et al. 2007; Greenberg et al. 2007). Community-level *poverty* indicated the percentage of families within the school district that had an income in 1999 that was below the federal poverty level (US Census Bureau 2000).

## Analysis Plan

Two sets of preliminary analyses were conducted. First, each measure was tested for significant differences between the experimental conditions at wave 1. Only the formal contract scale was significantly different between intervention and control communities (Cohen's  $d=0.70$ ,  $p=0.006$ ); least squared mean estimates showed that control communities reported an average of 2.27 and intervention communities reported an average of 1.13 formal contract collaborations at wave 1. A second set of preliminary analyses tested for differential attrition between the intervention and control conditions; it is possible that team members with less favorable attitudes at wave 1 dropped out from the intervention sample after wave 1 more so than in the control sample. No significant differences were found between the participation groups; more information about this analysis is located in the supplementary materials.

Next, we considered the longitudinal data. These data had a three-level hierarchical structure. Time (level 1) was repeated up to three occasions for each individual (level 2), which were nested within communities (level 3). Because PROSPER is an ongoing collaborative prevention system, we are interested in community change, and sample turnover was expected; all individuals were included in the analyses. As a result, the sample was not balanced; many individuals provided information at one or two waves. Multilevel models utilizing proc mixed in SAS 9.2 were thus used to conduct analyses using the full



information maximum likelihood approach which uses all available data without biasing estimates (Snijders and Bosker 2003).

Analyses utilized a combined theoretical- and data-driven approach to test hypotheses while ensuring the best model fit (Singer and Willett 2003). As a result, analyses first assessed the degree of dependence in the data to finalize model structure. This included using the unconditional means model (i.e., the empty model) to confirm the need for three-level models for all variables. As expected, three-level models had the best fit to the data and were utilized for school proactive, school problems, extension reputation, and changes in community. Two-level models that specified time as repeated within individuals had the best fit and were utilized for all other scales; more information about these analysis is located in the supplementary materials.

Next, hypothesis testing began with fitting two unconditional growth models (i.e., time as the only predictor) alternatively with models that included interactions with experimental condition. The unconditional growth models were baseline models since natural change over time was expected, and we were interested in examining the change process rather than differences in change at discrete intervals. Because it was likely that intervention effects would be linear yet natural change over time may be curvilinear, this process included testing four nested models for each dependent variable. The unconditional growth models included: (1) the outcome predicted by a linear effect of time and (2) the outcome predicted by linear and quadratic effects of time. With the exception of the changes in community scale, the tests for experimental condition included: (3) the outcome predicted by a linear effect of time, a main effect for condition, and an interaction term between time and condition and (4) the outcome predicted by linear and quadratic effects of time, a main effect for condition, and an interaction between the linear effect of time and condition. Alternatively, a significant main effect for the changes in community measure indicated an intervention effect for that measure. Models were estimated using the maximum likelihood, and the significance tests of the added fixed effects, the deviance tests using the changes in the log likelihood and degrees of freedom, and the Akaike information criterion and Bayesian information criterion were used to select the best model (Snijders and Bosker 2003).

Once final models were decided, one follow-up analysis was conducted to see if accounting for levels of community poverty changed the results. Lastly, Cohen's *d* was calculated for the intervention versus control condition means at wave 3 for scales with significant intervention effects; this provided an estimate of the size of the difference between intervention and control observed means at wave 3. The final models were assessed with the restricted maximum likelihood (Snijders and Bosker 2003). The Satterthwaite degrees of freedom method was utilized, and because 12 tests were conducted to assess change in communities' social capital, we used a slightly more stringent statistical significance criterion of  $p < 0.01$  when assessing the statistical significance.

## Results

Descriptive statistics of all measures at each wave are presented in Table 2. The means for multiple scales (e.g., school proactive, extension reputation, etc.) suggest nonlinear change over time, whereas others (e.g., school problems) suggest linear change. Results from multi-level mixed models testing the comparability of change over time for both experimental conditions are displayed in Table 3. Significant intervention effects (intervention $\times$ time) were found for school proactive (wave 3  $d=0.57$ ), extension reputation (wave 3  $d=1.46$ ), and school problems (wave 3  $d=0.39$ ). A significant main effect of condition was found for changes in community (wave 3  $d=1.31$ ). Because significance levels did not change after

controlling for levels of community poverty, only final models which controlled for community poverty are presented. Figures of demonstrating the significant effects are available in supplementary material.

### Linking Social Capital

Models for *school proactive* and *extension reputation* demonstrated significant main linear and quadratic effects of time that differed by experimental condition, such that initial increases between the start and 1.5 years into the project for school proactive and extension reputation were maintained 2.5 years into the project, and the degree of initial improvement was much greater for intervention communities than it was for control communities.

### Bridging Social Capital

The model for school problems indicated a significant main effect for time, such that levels of *school problems* decreased over time and that decrease was much greater in intervention communities. Change over time was relatively level in control communities. A significant main effect of condition was found on *changes in community* such that individuals in intervention communities perceived more improvements related to optimism, well-being, and prevention collaboration over the last year. This difference was shown both at 1.5 ( $d=1.43$ ) and 2.5 years after PROSPER began ( $d=1.31$ ). There were no other significant intervention effects.

### Public Life Skills

There were no significant intervention effects on public life skill measures. This includes the agency prevention knowledge and support for prevention scales.

### Discussion

This study examined the impact of the PROSPER delivery system on indicators of social capital, as social capital indicators are important proximal outcomes of community initiatives (Currie et al. 2005; Petersen 2002). Using an experimental design, results indicate that PROSPER communities improved in multiple indicators of social capital over time compared to control communities. Two types of social capital, bridging and linking, show at least some change over time (Kawachi et al. 2004; Szreter and Woolcock 2004).

More specifically, linking social capital measures that assessed perceptions of the school and extension system significantly improved in PROSPER intervention communities compared to controls. Bridging social capital measured by perceptions of their communities' school district and their communities' capacity for positive change were also higher in PROSPER intervention communities over time compared to controls. Individuals in intervention communities generally reported improvements in these aspects over the 2.5-year period, where reports from control communities decreased or were stable over time. These analyses expanded previous theoretical, qualitative, descriptive, and cross-sectional work (Dominguez and Arford 2010; Egan et al. 2008; Farquhar et al. 2005; Hausman et al. 2005; Javdani and Allen 2011; Onyx and Leonard 2010; Pronyk et al. 2008; Semenza and March 2009) by examining indicators of social capital as a result of a collaborative community health initiative with quantitative measures in a longitudinal experimental study design. They expand research on the collaborative process and its outcomes in rural areas (Beatty et al. 2010; Olden and Szydlowski 2004; Provan et al. 2003). Results suggest that youth prevention and health promotion collaborative efforts may positively impact social capital in rural and semi-rural communities. These results are salient due to the expansive reach of the CES and the relative importance of the school district in these areas (Chilenski and Greenberg 2009; Molgaard 1997; Spoth and Greenberg 2005).

## Linking Social Capital

Longitudinal mixed models demonstrated that PROSPER team members and their supervisors reported significant improvements in school functioning and leadership over time compared to matched control community survey participants. More specifically, school leadership in PROSPER communities was perceived as more effective at meeting the needs of youth and families and at reaching goals over time. Change over time was quadratic; the largest gain occurred during the first 1.5 years; gains were maintained the next year. The difference in the level of school proactive between conditions was moderate at wave 3.

There are multiple pathways through which these changes may have occurred. First, the schools were a primary partner in this effort. A middle school staff member served as the PROSPER team's co-leader. The school was the locus of intervention as effective family recruitment required school cooperation and the family program frequently was held at the school. Further, middle school teachers implemented the school-based program. These activities likely conveyed the message to local team members and agency directors that the school values parent participation and involvement. Perceptions regarding the school's reputation also likely improved over time as the schools were actively involved in a youth and family-focused skills—building effort that achieved its goals; recruitment rates of families, fidelity ratings of program implementation, and student outcomes were positive (Redmond et al. 2009; Spoth et al. 2007, 2011).

Findings also demonstrated more positive perceptions of the CES over time in participating team members and supervisors. These findings extend earlier analyses (Mincemoyer et al. 2008). Survey participants in intervention communities perceived the CES as providing higher quality services to youth and families, as leaders in improving the lives of youth and families and as more committed to partnerships with schools. Change over time was quadratic; the largest gain occurred during the first 1.5 years. These gains were maintained the next year. The difference in the ratings of CES' reputation between conditions was large at wave 3. Thus, as CES educators led the PROSPER team and county directors supported these efforts, the CES was seen as more involved and effective. In addition, team members and agency directors likely learned more about the mission and goals of the CES through the repeated interactions between members and team leaders, which likely impacted their perceptions. Finally, the repeated messages about the CES' youth development and family resilience priorities at project training sessions and the positive press the CES received from participating in PROSPER would have likely contributed to improved perceptions of involved team members.

In summary, the PROSPER team members and agency directors would have had multiple opportunities to learn about the mission and goals of the school and CES through their involvement in PROSPER. They would have also had repeated positive interactions with school and CES personnel. The positive assessment of their leadership and their proactive focus on youth and family programming may be related to the repeated interactions, mission and awareness-building efforts, and the crucial role the school and CES played in PROSPER.

## Bridging Social Capital

Significant differences were found for school problems, a measure of bridging social capital which assessed project partner perceptions of the school district's ability to effectively handle challenges. Individuals and agencies involved in PROSPER reported that the school district was less overwhelmed with problems and less strapped for resources over the 2.5 years. Similar to the linking measures, the difference between conditions was moderate at wave 3.

Changes in community were significantly different as well, which assessed perceptions of the community's capacity for change. One and one-half years into the project, PROSPER team members and their supervisors perceived that their communities had a greater capacity to actualize positive change in their communities, compared to matched individuals in control communities. This effect was replicated 2.5 years into the project. More specifically, individuals in intervention communities perceived that there were improvements in the awareness of youth prevention programs; that planning efforts were more systematic, comprehensive, and collaborative; and that people were prepared to work together and could make a difference. This measure tapped individual views of optimism and well-being. In addition, this measure included perceptions that the quality of local programs had improved. It is likely that these differences are due to the sense of synergy that can occur when individuals from different sectors come together to work toward a common goal, as one underlying assumption of community partnerships is that individuals and organizations can and will be more effective as a whole unit, rather than when they work separately. It is also likely that this specific aspect of social capital was affected by the sharing of evaluation data over the course of the grant; involved community members received a yearly data report and presentation that summarized their processes, from the quality of their team meetings to information regarding their effectiveness of family recruitment.

### Public Life Skills

Longitudinal mixed models did not demonstrate any significant intervention effects in agency prevention knowledge or support of prevention in PROSPER communities. It is likely that knowledge of and perceived support for prevention in partnering agencies requires more time to permeate across individuals' workplaces associated with PROSPER.

### Limitations

There are a number of limitations that should be noted. First, this sample includes rural and semi-rural communities. Consequently, generalization can safely occur within similar communities. Second, PROSPER's leadership structure is unique; these specific findings will not necessarily generalize to other community coalitions such as such as Communities that Care or Drug Free Community coalitions. Third, though these data are part of an ongoing trial, the data contained in this study were collected approximately 8 years ago. Despite this timeframe, we expect these data and findings to continue to be relevant today due to the importance of the CES, the school district, and health-related collaborations in rural and semi-rural areas (Beatty et al. 2010; Chilenski and Greenberg 2009; Molgaard 1997; Spoth and Greenberg 2005).

In terms of internal threats to validity, this study is slightly under powered for the agency director scales. It is possible that reduced power hindered our ability to find significant intervention effects on these scales. It is also possible that changes in these scales were smaller in magnitude due to their more distal project role. Generally, a few of the scales also had slightly lower than desirable ratings of internal consistency at one or more waves of data collection. This is not surprising given that internal consistency is highly dependent on the number of items in the scale; however, low reliability would make it more difficult to find significant differences.

Change in social capital was tested with 12 measures, leading to a slightly inflated experimentwise type I error rate. These hypotheses and corresponding tests were a priori, and we employed a slightly more stringent statistical significance criterion of  $p < 0.01$  to address this concern. However, there is an 11.4 % chance that at least one intervention effect was incorrectly accepted as significant with 12 dependent variables. Though not ideal, we feel that employing this more stringent statistical significance criterion provides an

appropriate balance between type I and type II error given the combination of a priori hypotheses, the strength of the experimental design, and the statistical power available to test these research questions.

It is possible that there could be systematic sampling differences between the control and intervention communities over time unrelated to PROSPER that could be the source of the observed significant changes. In addition, there was natural and expected turnover in the sample mostly due to changes in professional positions. Sample fluctuations over time could also be a source of null effects if knowledge and attitude changes did not transfer to new participants. Another possibility is that team members who dropped out had lower perceptions than those that stayed in the sample, and these individuals were replaced by individuals that had more favorable attitudes; however, analyses suggest differential attrition did not occur. It is also possible that the perceptions of the respondents in the intervention communities became more favorable towards the CES, school, and their communities because they were able to discern the CES, school, and community context as targets for change; data collection staff was separate from the intervention and researcher staff in order to prevent this type of bias from occurring.

## Conclusion

The current study integrated research and theory on social capital and community prevention in rural settings to examine how the PROSPER system may have impacted the involved communities' social capital. This study expands prior research by using a randomized and longitudinal design. The present findings indicate that it is likely possible for community collaborative prevention initiatives to increase indicators of bridging and linking social capital in rural and semi-rural communities. More specifically, PROSPER team members and their supervisors reported more positive perceptions of the reputations, leadership, and trust in the school and CES. They also perceived that they had a greater capacity to create positive change compared to similar participants in control communities.

Future research should examine relevant social capital outcomes in other collaborative community health initiatives and in other community contexts. Additionally, the maintenance of these changes over time and how these systemic changes relate to other intervention effects such as collaborative team process, the effectiveness of family recruitment, implementation ratings, and youth outcomes should be investigated. Additional research that includes the perspectives of those not directly involved in the community health initiative would also test how broadly these changes spread across each community and advance the study of how community health initiatives can affect levels of social capital.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Acknowledgments

Work on this paper was supported by research grant R01DA013709 from the National Institute of Drug Abuse. We thank Chungyeol Shin, Lesa Hoffman, Damon Jones, and D. Wayne Osgood for their input on our analysis plan.

## References

- Beatty K, Harris JK, Barnes PA. The role of interorganizational partnerships in health services provision among rural, suburban, and urban local health departments. [Article]. *J Rural Heal.* 2010; 26:248–258.10.1111/j.1748-0361.2010.00285.x



- Brown EC, Hawkins JD, Arthur MW, Briney JS, Abbot RD. Effects of Communities That Care on prevention services systems: Findings from the community youth development study at 1.5 years. *Prev Sci.* 2007; 8:180–191.10.1007/s11121-007-0068-3 [PubMed: 17602298]
- Chilenski SM, Greenberg MT. The importance of the community context in the epidemiology of early adolescent substance use and delinquency in a rural sample. *American Journal of Community Psychology.* 2009; 44:287–301.10.1007/s10464-009-9258-4 [PubMed: 19838797]
- Chilenski SM, Greenberg MT, Feinberg ME. Community readiness as a multidimensional construct. *Journal of Community Psychology.* 2007; 35:347–365.10.1002/jcop.20152 [PubMed: 18714368]
- Chinman M, Hunter SB, Ebener P, Paddock SM, Stillman L, Imm P, Wandersman A. The getting to outcomes demonstration and evaluation: An illustration of the prevention support system. *American Journal of Community Psychology.* 2008; 41:206–224.10.1007/s10464-008-9163-2 [PubMed: 18278551]
- Coleman JS. Social capital in the creation of human capital. *American Journal of Sociology.* 1988; 94(Suppl 95):S95–S120.
- Crowley DM, Greenberg M, Feinberg ME, Spoth R. The effect of the PROSPER partnership model on cultivating local stakeholder knowledge of evidence-based programs: A five year longitudinal study of 28 communities. *Prevention Science.* 2012; 13:96–105.10.1007/s11121-011-0250-5 [PubMed: 21986990]
- Currie M, King G, Rosenbaum P, Law M, Kertoy M, Specht J. A model of impacts of research partnerships in health and social services. *Evaluation and Program Planning.* 2005; 28:400–412.10.1016/j.evalprogplan.2005.07.004
- De Silva MJ, Huttly SR, Harpham T, Kenward MG. Social capital and mental health: A comparative analysis of four low income countries. *Social Science & Medicine.* 2007; 64:5–20.10.1016/j.socscimed.2006.08.044 [PubMed: 17045716]
- Dominguez S, Arford T. It is all about who you know: social capital and health in low-income communities. *Heal Sociol Rev.* 2010; 19:114–129.
- Egan M, Tannahill C, Petticrew M, Thomas S. Psychosocial risk factors in home and community settings and their associations with population health and health inequalities: A systematic meta-review. [Review]. *BMC Publ Health.* 2008; 8(13) doi:23910.1186/1471-2458-8-239.
- Farquhar SA, Michael YL, Wiggins N. Building on leadership and social capital to create change in 2 urban communities. *Am J Public Health.* 2005; 95:596–601.10.2105/ajph.2004.048280 [PubMed: 15798115]
- Feinberg ME, Greenberg MT, Osgood DW, Anderson A, Babinski L. The effects of training community leaders in prevention science: Communities That Care in Pennsylvania. *Evaluation and Program Planning.* 2002; 25:245–259.10.1016/S0149-7189(02)00019-8
- Feinberg ME, Greenberg MT, Osgood DW. Technical assistance in prevention programs: correlates of perceived need in communities that care. *Evaluation and Program Planning.* 2004; 27:263–274.10.1016/j.evalprogplan.2004.04.001
- Feinberg ME, Chilenski SM, Greenberg MT, Spoth RL, Redmond C. Community and team member factors that influence the operations phase of local prevention teams: The PROSPER project. *Prev Sci.* 2007; 8:214–226.10.1007/s11121-007-0069-2 [PubMed: 17602297]
- Furstenberg FF Jr, Hughes ME. Social capital and successful development among at-risk youth. *Journal of Marriage and the Family.* 1995; 57:580–592.10.2307/353914
- Greenberg MT, Feinberg ME, Meyer-Chilenski S, Spoth RL, Redmond C. Community and team member factors that influence the early phase functioning of community prevention teams: The PROSPER project. *J Prim Prev.* 2007; 28:485–504.10.1007/s10935-007-0116-6 [PubMed: 18058234]
- Hausman AJ, Becker J, Brawer R. Identifying value indicators and social capital in community health partnerships. *Journal of Community Psychology.* 2005; 33:691–703.10.1002/jcop.20078
- Hogue, T.; Perkins, DF.; Clark, R.; Bergstrom, A.; Slinski, M., et al. Collaboration framework: Addressing community capacity 25 pages. 1995. Retrieved from <http://crs.uvm.edu/ncco/collab/framework.html>

- Javdani S, Allen NE. Proximal outcomes matter: A multilevel examination of the processes by which coordinating councils produce change. *American Journal of Community Psychology*. 2011; 47:12–27.10.1007/s10464-010-9375-0 [PubMed: 21052823]
- Kawachi I, Kennedy BP, Lochner K, Prothrow-Stith D. Social capital, income inequality, and mortality. *Am J Public Health*. 1997; 87:1491–1498.10.2105/AJPH.87.9.1491 [PubMed: 9314802]
- Kawachi I, Kim D, Coutts A, Subramanian SV. Health by association? Social capital, social theory, and the political economy of public health—commentary: Reconciling the three accounts of social capital. *International Journal of Epidemiology*. 2004; 33:682–690.10.1093/ije/dyh177 [PubMed: 15282222]
- Lappe FM, Du Bois PM. Building social capital without looking backward. *Natl Civ Rev*. 1997; 86:119–128.
- Linden-Bostrom M, Persson C, Eriksson C. Neighbourhood characteristics, social capital and self-rated health—a population-based survey in Sweden. *BMC Publ Health*. 2010; 1010.1186/1471-2458-10-628
- Mincemoyer C, Perkins D, Ang PMM, Greenberg M, Spoth R, Redmond C, Feinberg M. Improving the reputation of Cooperative Extension as a source of prevention education for youth and families: the effects of the PROSPER model. *J Ext*. 2008; 46:15.
- Minkler, M.; Wallerstein, N. Improving health through community organization and community building: A health education perspective. In: Minkler, M., editor. *Community organizing and community building for health*. 2. Piscataway: Rutgers University Press; 2005. p. 26-50.
- Molgaard VK. The extension service as key mechanism for research and services delivery for prevention of mental health disorders in rural areas. *American Journal of Community Psychology*. 1997; 25:515–544.10.1023/a:1024611706598 [PubMed: 9338957]
- National Advisory Committee on Rural Health and Human Services. The 2008 report to the secretary: Rural health and human services issues. Washington, DC: US Department of Health and Human Services; 2008.
- Nieminen T, Martelin T, Koskinen S, Aro H, Alanen E, Hyypä MT. Social capital as a determinant of self-rated health and psychological well-being. *International Journal of Public Health*. 2010; 55:531–542.10.1007/s00038-010-0138-3 [PubMed: 20361226]
- Olden PC, Szydowski SJ. Health promotion and disease prevention by small rural hospitals: Reasons, obstacles, enablers. *J Healthc Manag*. 2004; 49:89–101. [PubMed: 15074118]
- Onyx J, Leonard R. The conversion of social capital into community development: An intervention in Australia's outback. *International Journal of Urban and Regional Research*. 2010; 34:381–397.10.1111/j.1468-2427.2009.00897.x [PubMed: 20726148]
- Perkins DF, Feinberg ME, Greenberg MT, Johnson LE, Chilenski SM, Mincemoyer CC, Spoth RL. Team factors that predict to sustainability indicators for community-based prevention teams. *Evaluation and Program Planning*. 2011; 34:283–291.10.1016/j.evalprogplan.2010.10.003 [PubMed: 21168213]
- Petersen DM. The potential of social capital measures in the evaluation of comprehensive community-based health initiatives. *Am J Eval*. 2002; 23:55–64.10.1016/S1098-2140(01)00167-9
- Pronyk PM, Harpham T, Busza J, Phetla G, Morison LA, Hargreaves JR, Porter JD. Can social capital be intentionally generated? A randomized trial from rural South Africa. *Social Science & Medicine*. 2008; 67:1559–1570.10.1016/j.socscimed.2008.07.022 [PubMed: 18771833]
- Provan KG, Nakama L, Veazie MA, Teufel-Shone NI, Huddlestone C. Building community capacity around chronic disease services through a collaborative interorganizational network. *Health Education & Behavior*. 2003; 30:646–662.10.1177/1090198103255366 [PubMed: 14655861]
- Putnam RD. The Prosperous Community: Social capital and public life. *The American Prospect*. 1993; 4(13):35–42.
- Redmond C, Spoth R, Shin C, Schainker L, Greenberg M, Feinberg M. Long-term protective factor outcomes of evidence-based interventions implemented by community teams through a community–university partnership. *J Prim Prev*. 2009; 30:513–530.10.1007/s10935-009-0189-5 [PubMed: 19669885]

- Riley P. Collaboration for prevention of chronic disease in Kentucky: the Health Education Through Extension Leaders (HEEL) Program. *Nurs Clin N Am*. 2008; 43:329–340.10.1016/j.cnur.2008.04.007
- Sampson RJ. Collective regulation of adolescent misbehavior: Validation results from eighty Chicago neighborhoods. *J Adolesc Res*. 1997; 12:227–244.10.1177/0743554897122005
- Sampson RJ, Graif C. Neighborhood social capital as differential social organization resident and leadership dimensions. *Am Behav Sci*. 2009; 52:1579–1605.10.1177/0002764209331527
- Semenza JC, March TL. An urban community-based intervention to advance social interactions. *Environ Behav*. 2009; 41:22–42.10.1177/0013916507311136
- Singer, JD.; Willett, JB. *Applied longitudinal data analysis*. New York: Oxford University Press; 2003.
- Snijders, TAB.; Bosker, RJ. *Multilevel analysis: an introduction to basic and advanced multilevel modeling*. London: Sage; 2003.
- Spoth RL, Greenberg MT. Toward a comprehensive strategy for effective practitioner–scientist partnerships and larger-scale community health and well-being. *American Journal of Community Psychology*. 2005; 35:107–126.10.1007/s10464-005-3388-0 [PubMed: 15909789]
- 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. *Prev Sci*. 2004; 5:31–39.10.1023/B:PREV.0000013979.52796.8b [PubMed: 15058910]
- 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. *J Fam Psychol*. 2007; 21:137–146.10.1037/0893-3200.21.2.137 [PubMed: 17605536]
- Spoth R, Redmond C, Clair S, Shin C, Greenberg M, Feinberg M. Preventing substance misuse through community–university partnerships: Randomized controlled trial outcomes 4½ years past baseline. *American Journal of Preventive Medicine*. 2011; 40:440–447.10.1016/j.amepre.2010.12.012 [PubMed: 21406278]
- Szreter S, Woolcock M. Health by association? Social capital, social theory, and the political economy of public health. *International Journal of Epidemiology*. 2004; 33:650–667.10.1093/ije/dyh013 [PubMed: 15282219]
- Taylor-Powell, E. Community group member survey: Using the results. 1998. Retrieved from <http://learningstore.uwex.edu/Assets/pdfs/G3658-09.pdf>
- US Census. Public Law 94-171 Redistricting Data. 2000. from <http://www.census.gov/rdo/www/>
- Youngblade LM, Curry LA, Novak M, Vogel B, Shenkman EA. The impact of community risks and resources on adolescent risky behavior and health care expenditures. *J Adolesc Heal*. 2006; 38:486–494.10.1016/j.jadohealth.2005.07.016

**Table 1**  
 PROSPER assessment schedule and intervention community activities, 2002–2004

Year	2002	2002	2002	2002	2003	2003	2003	2003	2003	2004	2004	2004	2004	2004
Quarter	April– June	July– Sept	Oct– Dec	Jan– March	April– June	July– Sept	Oct– Dec	Jan– March	April– June	July– Sept	Oct– Dec	Jan– March	April– June	July– Sept
Data collection timeline	Wave 1													
Intervention communities	O													
Number of respondents	n=158													
Respondents left														
Respondents replaced														
Control communities	O													
Number of respondents	n=97													
Respondents left														
Respondents replaced														
Activities in intervention communities														
Organizational phase <sup>a</sup>	X	X	X											
Operations phase <sup>b</sup>														
Family program														
Cohort 1				X										
Cohort 2								X						
School program														
Cohort 1										X				
Cohort 2											X			
														X

<sup>a</sup>The organizational phase includes team formation and program planning

<sup>b</sup>The implementation phase for PROSPER community teams began in 2003 and continued for all 14 intervention communities for multiple cohorts over multiple years beyond the assessment period described here. Each cohort of students was offered a family-focused intervention in year 1 (grade 6) and school-based intervention in year 2 (grade 7)

**Table 2**

Reliability information and descriptive statistics for all scales

Scale	Wave	n	Reliability <sup>b</sup>	Mean (SE) intervention	Mean (SE) control
Linking social capital					
School proactive	Wave 1	246	$\alpha=0.81$	3.11 (0.06)	3.15 (0.06)
	Wave 2	229	$\alpha=0.71$	3.57 (0.06)	3.38 (0.07)
	Wave 3	220	$\alpha=0.75$	3.48 (0.06)	3.33 (0.07)
Extension reputation	Wave 1	234	$\alpha=0.78$	3.23 (0.06)	3.05 (0.07)
	Wave 2	228	$\alpha=0.81$	3.56 (0.06)	3.17 (0.07)
	Wave 3	218	$\alpha=0.78$	3.57 (0.06)	3.14 (0.07)
Bridging social capital					
School problems	Wave 1	240	$r=0.33$	2.54 (0.08)	2.46 (0.09)
	Wave 2	222	$r=0.36$	2.25 (0.09)	2.43 (0.10)
	Wave 3	217	$r=0.16$	2.26 (0.09)	2.43 (0.10)
Changes in community	Wave 2	234	$\alpha=0.83$	3.91 (0.05)	3.57 (0.06)
	Wave 3	220	$\alpha=0.86$	3.94 (0.05)	3.61 (0.07)
Collaboration around prevention	Wave 1	99	$\alpha=0.90$	3.02 (0.07)	3.21 (0.08)
	Wave 2	88	$\alpha=0.82$	3.25 (0.07)	3.18 (0.09)
	Wave 3	98	$\alpha=0.90$	3.17 (0.07)	3.16 (0.08)
Collaboration involvement <sup>d</sup>	Wave 1	66	–	5.15 (0.30)	5.69 (0.38)
	Wave 2	43	–	5.94 (0.36)	6.02 (0.43)
	Wave 3	59	–	5.68 (0.31)	5.97 (0.39)
Formal contracts <sup>d</sup>	Wave 1	66	–	1.19 (0.29)	2.16 (0.36)
	Wave 2	43	–	2.36 (0.34)	2.25 (0.41)
	Wave 3	59	–	1.51 (0.30)	1.56 (0.38)
Grant writing <sup>d</sup>	Wave 1	66	–	1.06 (0.28)	1.83 (0.36)
	Wave 2	43	–	1.71 (0.34)	1.37 (0.41)
	Wave 3	59	–	1.44 (0.29)	1.41 (0.37)
Co-sponsor events/activities <sup>d</sup>	Wave 1	66	–	3.03 (0.37)	3.47 (0.47)
	Wave 2	43	–	3.22 (0.45)	4.11 (0.54)
	Wave 3	59	–	2.14 (0.39)	3.44 (0.49)



Scale	Wave	n	Reliability <sup>b</sup>	Mean (SE) intervention	Mean (SE) control
Joint planning <sup>a</sup>	Wave 1	66	-	4.14 (0.34)	5.00 (0.43)
	Wave 2	43	-	4.80 (0.40)	5.09 (0.49)
	Wave 3	59	-	4.16 (0.35)	4.70 (0.44)
Public life skill social capital	Wave 1	206	r=0.61	3.22 (0.05)	3.34 (0.07)
	Wave 2	191	r=0.46	3.35 (0.05)	3.24 (0.08)
	Wave 3	212	r=0.41	3.29 (0.05)	3.28 (0.06)
Agency knowledge of prevention	Wave 1	207	$\alpha$ =0.56	3.65 (0.04)	3.66 (0.06)
	Wave 2	192	$\alpha$ =0.59	3.46 (0.04)	3.37 (0.06)
	Wave 3	212	$\alpha$ =0.56	3.74 (0.04)	3.65 (0.05)

<sup>a</sup>Chronbach's alpha was used as the measure of reliability for all scales that had three or more items; Pearson's correlations are reported for two-item scales

<sup>b</sup>The collaboration scales are count scales; therefore, no reliability estimate is reported

Table 3

Longitudinal mixed model results of all social capital measures

	School proactive		Extension reputation		School problems <sup>a,b</sup>		Changes in community <sup>a,b</sup>		Collaboration around prevention <sup>d</sup>		Collaboration involvement <sup>d</sup>		Collaboration: formal contracts		Collaboration: grant writing <sup>d</sup>		Collaboration: co-sponsor		Collaboration: joint planning <sup>d</sup>		Agency prevention knowledge <sup>d</sup>		Agency support of prevention	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	3.06***	0.15	3.06***	0.17	-2.40***	0.22	3.41***	0.18	3.02***	0.17	3.77***	0.72	1.09	0.73	0.22	0.69	1.58	0.91	2.65*	0.83	3.26***	0.12	3.56***	0.09
Time	0.39***	0.05	0.20***	0.06	-0.01*	0.03	0.03	0.06	-0.02	0.04	0.11	0.16	0.93*	0.42	-0.19	0.15	1.03	0.56	-0.11	0.18	-0.02	0.03	-0.43***	0.06
Condition	-0.02	0.09	0.19	0.10	0.06	0.13	0.33**	0.08	-0.16	0.11	-0.51	0.46	-0.90	0.46	-0.69	0.44	-0.45	0.58	-0.83	0.52	-0.09	0.09	-0.003	0.07
Time:condition	0.09*	0.03	0.11**	0.03	-0.11*	0.04	-	-	0.09	0.05	0.11	0.22	0.40	0.20	0.35	0.20	-0.34	0.26	0.14	0.23	0.06	0.04	0.04	0.03
Time*time	-0.13***	0.02	-0.07*	0.02	-	-	-	-	-	-	-	-	-0.48	0.16	-	-	-0.42	0.22	-	-	-	-	0.17***	0.02
Poverty	0.01	0.02	-0.002	0.02	0.01	0.03	0.01	0.02	0.03	0.02	0.28*	0.09	0.15	0.09	0.23*	0.09	0.27	0.11	0.34*	0.10	0.01	0.02	0.01	0.01

\* p=0.01;  
 \*\* p=0.001;  
 \*\*\* p=0.0001

<sup>a</sup>Quadratic effects did not significantly improve model fit for these variables; consequently, quadratic effects were not included in the final estimated models

<sup>b</sup>The changes in community scale was only measured post baseline