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## Examining the highs and lows of the collaborative relationship between technical assistance providers and prevention implementers

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### Abstract

The PROSPER model uses a three-tiered community partnership, university researcher, and Cooperative Extension-based technical assistance system to support the delivery of evidence-based interventions in communities. This study examines the trajectory and predictors of the collaborative relationship between technical assistance providers and community teams across the three phases of organization, implementation and sustainability. Members of 14 PROSPER community teams and directors of local agencies rated communities' levels of readiness and adolescent substance use norms. Technical assistance providers rated their collaborative relationship with their teams at 14 occasions across 4.5 years. Results from mixed models show that levels of collaboration were stable until the sustainability phase, when they increased significantly. Team differences in change were significant during the implementation phase. Community readiness predicted levels of the collaborative relationship over time: high community readiness was associated with a high level of collaboration during organization, but a decline in collaboration during implementation. These results provide a more nuanced understanding of the relationship between technical assistance provision and community prevention teams and lead to recommendations to improve dissemination models to achieve a greater public health impact.

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#### Compliance with Ethical Standards

**Disclosure of potential conflicts of interest:** The authors declare that they have no conflict of interest.

**Ethical approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent:** Informed consent was obtained from all research participants included in the study.

## Keywords

technical assistance; community prevention system; collaboration; longitudinal analysis; multi-level modeling

The challenges of replicating impacts of evidence-based interventions (EBIs) are considerable in applied settings, where many barriers exist and few factors can be controlled. As a result, interventions may be poorly implemented and not sustained, contributing to the persistent research-to-practice gap (August, Bloomquist, Lee, Realmuto, & Hektner, 2006; Glasgow, Lichtenstein, & Marcus, 2003). Recent advances in translational science have sought to address these barriers by identifying factors that contribute to high-quality implementation and sustainability of EBIs. Among these advances include the use of collaborative, community-based coalitions to deliver and monitor programs (Clark et al., 2014; Hawkins, Oesterle, Brown, Abbott, & Catalano, 2014), as well as the provision of technical assistance (TA) directly to implementers of EBIs (Chinman et al., 2008;).

The goals of TA to EBIs and community coalitions are complementary. The goal of TA to EBI implementers typically focuses on building capacities to support high-quality program implementation, needed for positive outcomes. TA provided to community coalitions typically includes increasing awareness and understanding of evidence based practice, the importance of risk and protective factors, and the role that high quality implementation plays in producing outcomes. In addition, TA to coalitions may emphasize the development of capacity related to evaluation, collaboration, and fundraising. Together, this host of TA is expected to decrease the research-to-practice gap, support sustainability, and maximize EBI impact on public health. Recent research has identified links between TA and the quality and sustainability of both community coalitions themselves and the EBIs they support (Chilenski et al., 2016; Chinman et al., 2008). Thus, this paper builds on prior work demonstrating that the collaboration that develops between community coalitions and their TA providers is linked to team's productivity and internal processes (Chilenski et al., 2016). A next step is to understand how the relationships between coalition members and TA providers evolve over time as coalitions advance through different phases of their work, confronting new and different challenges.

## Defining Technical Assistance

TA involves external expertise and guidance designed to support the effective translation of EBIs into real-world settings (Forman, Olin, Hoagwood, Crowe, & Saka, 2009; Wolff, 2001). TA providers typically share their specialized knowledge and expertise in particular interventions with the ultimate goal of maximizing intervention impact. The term "TA" encompasses a wide range of activities, supports, and resources, such as training, coaching, consulting, modeling, assessing, problem solving, providing feedback, and assisting with evaluations (Becker, Bradshaw, Domitrovich, & Ialongo, 2013; Fixsen, Naom, Blase, Friedman, & Wallace, 2005). TA varies considerably. There is little agreement on exactly how much or what types of activities best characterize effective TA. Generally, outcomes of TA include improved implementation quality of evidence-based programs (Becker et al., 2013; Chinman et al., 2008; Durlak & DuPre, 2008; Fixsen et al., 2005; Kelly et al., 2000).

At the coalition level, amount of TA is linked to higher quality of team internal process (Feinberg, Ridenour, & Greenberg, 2008). Mitchell and colleagues (2004) found evidence that coalitions became more effective over time when supported by TA, regardless of the amount. Another study indicated that the TA provider-team collaborative relationship related to the quality of internal coalition processes (Chilenski et al., 2016).

## The TA Provider – Team Collaborative Relationship

### Importance

Research on characteristics of effective collaborative relationships and their effects on community-based programming come from diverse fields. Extrapolating from the motivational interviewing literature, collaborative relationships may be most effective when TA providers use encouragement, support and sensitivity to empower communities, and respond to the unique needs of particular groups working to implement various programs (Fixsen et al., 2005). Furthermore, within corporate settings, TA is often provided through executive coaching, in which success is maximized through the development of supportive, collaborative interactions (Kilburg, 1996). The field of prevention science has just begun to explore these topics, and findings thus far are inconclusive. One study found that the collaborative relationship between the TA provider and lead implementer/team related positively to future coalition internal processes (Chilenski et al., 2016). In addition, Becker and colleagues (2013) found small but significant links between coaching-based technical support activities and improved program implementation within school settings. However, a similar analysis of the same project found that the quality of the collaborative working relationship between the TA provider and lead implementer (i.e., teacher) was unrelated to the quality of evidence-based program implementation, though the study was slightly under powered at the level of the teacher (Domitrovich et al., 2015).

### Measurement

Collaborative working relationships have a history of measurement in the field of Prevention Science. The quality of the working relationship between the TA provider and lead implementer(s) at the level of a program is sometimes described broadly as an alliance. More specifically, in studies of school-based EBI, the quality of the working relationship between the TA provider and teacher has been described as the teacher-coach alliance, and measured by teachers (Wehby, Maggin, Moore Partin, & Robertson, 2012). Another study found four sub-dimensions within the teacher-coach alliance when measured from the teacher's perspective: quality of the working relationship, descriptions of the coaching process, perceived investment in the coaching experience, and perceived benefits of the coaching experience. Ratings from coaches and teachers on the same dimensions have been found to correlate moderately, suggesting some overlap but also some unique understandings from the two differing perspectives (Johnson, Pas & Bradshaw, 2016).

The quality of working relationships among TA providers and coalition leaders/members have been operationalized in a variety of ways. Most often, indicators of successful, collaborative, productive working relationships are measured among coalition members without considering the quality of the working relationship with the technical assistance

provider. Measures typically have included member participation, meeting productivity, effective leadership, communication, group cohesion, shared decision-making, and supportive environments (Butterfoss, Goodman, & Wandersman, 1996; Wolff, 2001).

Other than our prior work (Chilenski et al., 2016), the quality of the working relationship between the TA provider and coalition leader or members has only just started to gain more attention as a contributor to positive coalition outcomes. Most often, it is measured qualitatively with an emphasis on developing a partnership (Cheadle, et al., 2016; Le, Anthony, Bronheim, Holland, & Perry, 2016; Katz & Wandersman, 2016).

## Contextual and Developmental Considerations

The associations between TA, coalition functioning, and EBI outcomes may be further influenced by a number of factors, including developmental phase and contextual variables (Butterfoss & Kegler, 2002). More specifically, the phases of team functioning, as well as contextual factors such as community readiness, norms, and economic circumstances are likely to be salient for the coalition-provider relationship.

### Developmental considerations

The activities of coalitions theoretically progress through a number of phases. As others, we consider three broad phases of coalition functioning that can be cyclical: organization, implementation, and sustainability (Butterfoss & Kegler, 2002; Livet & Wandersman, 2005). Each of these phases is associated with different challenges and tasks. The first phase, organization, typically involves team formation activities and planning activities. In this “startup” phase, a group of stakeholders comes together to focus around a particular set of goals, sets its operational procedures, and receives training. The second phase focuses on implementation. In this phase, the coalition begins its operations, actively planning, implementing EBIs, and monitoring implementation quality. The third phase, sustainability (and maintenance), is where activities become routine; longer-term funding sources are pursued.

Given that the nature of TA will vary by phase of coalition development (Butterfoss & Kegler, 2002), the collaborative working relationship between the TA provider and lead implementers would also likely change over time. In an earlier study, we found that the quality of the TA provider-community team working relationship at the implementation phase predicted the team’s functioning at the sustainability phase (Chilenski et al., 2016).

### Contextual considerations

From the start, readiness factors identifiable prior to coalition formation may influence the coalition’s subsequent success. For example, Feinberg, Greenberg, and Osgood (2004) found that a readiness index—including community leaders’ ability and willingness to collaborate, the community’s history of successfully addressing problems, and the extent to which community members were engaged in their communities— predicted later ratings of coalition effectiveness. Furthermore, internal team functioning, involving the relationships among team members and their ability to work together effectively, mediated this

association. Greenberg and colleagues partially replicated this finding later with a new set of coalitions and longitudinal design (Greenberg et al., 2007).

Levels of community poverty and community norms may also influence the relationship between the TA provider and the coalition. For example, community-level poverty has been identified as a factor contributing to reduced effectiveness of community coalitions, possibly because of scarce resources and relatively weak or unstable infrastructures such as schools in low-income communities (Brown, Feinberg, & Greenberg, 2010; Greenberg et al., 2007). Community-level norms, beliefs, and attitudes have been shown to impact the functioning of coalitions (Brown et al., 2010; Feinberg et al., 2007). For example, Feinberg et al. (2007) found that team members' perceptions of community norms favorable to youth substance use were associated with better team leadership and work efficiency, and were negatively related to tensions between team members. Although this seems initially counterintuitive, it is possible that this perception galvanizes team members to prepare for an "uphill battle" and motivates them to engage more collaboratively with the TA provider.

## The Current Study

Here we investigate the quality of the collaborative working relationship between TA providers and community coalitions within the context of the PROSPER project (Spoth, Greenberg, Bierman, & Redmond, 2004). PROSPER utilizes community coalitions to conduct large-scale implementation of EBIs for the prevention of youth substance abuse and problem behaviors. This dissemination system for empirically validated prevention programs connects local Cooperative Extension System Educators with a representative of the local public school system to build a community team committed to the health and well-being of youth and families. This community team meets monthly and is connected to information and resources regarding prevention at the university and state-level by Extension Prevention Coordinators who provide a wide variety of technical assistance to the community team. Teams were provided with long-term TA (5+ years) that spanned each phase of the initiative's process, including organization, implementation, and sustainability.

We utilized 4.5 years of data from the PROSPER project to closely examine the TA process over time and to assess four hypotheses (Spoth et al., 2004). First, we tested different growth models to find the best statistical model to fit the longitudinal trajectory of the team-TA provider collaborative working relationship over time. We hypothesized that a longitudinal model that accounts for the phases of team functioning rather than a linear model or polynomial growth model would best describe the observed data. Second, we tested the predictive relationship of three key community characteristics, community readiness, community poverty, and perceived adolescent substance use norms, with trajectories of the team-TA provider collaborative working relationship. Specifically, we expected that: (a) communities with higher levels of poverty would have lower ratings of team-TA provider collaboration; (b) communities with higher levels of readiness would have higher ratings of team-TA provider collaboration, and (c) communities with more accepting norms towards adolescent substance use would have higher ratings of team-TA provider collaboration.

## Method

PROSPER Project intervention communities (n = 14) in Pennsylvania and Iowa composed the sample (Spoth et al., 2004). Eligible communities had school district enrollment of 1301–5200 students in non-metropolitan areas. At least 15% of the students were eligible for free and/or reduced price lunches. Fewer than 50% of their population were employed by or attending a university. Communities were also not actively involved in other university-affiliated prevention research projects. Each school district and local Extension office agreed to be randomized to participate in PROSPER programming or into the comparison condition. Human participant research was approved by both universities' Institutional Review Boards.

The overall PROSPER project included a longitudinal mixed method evaluation design to assess the public health impact of this innovation. To date, PROSPER has demonstrated effectiveness at improving public health and community social capital (Chilenski et al., 2014; Spoth et al., 2014). As prior research demonstrated the importance of TA-reported collaboration with the teams in predicting later team functioning, the current study aims to understand the ebbs and flows of that relationship.

### Technical Assistance Model

PROSPER intervention community teams participated in a series of formal and informal TA activities as part of a proactive TA model; see Chilenski et al. (2016) for more details. Each community team partners with a specific TA provider called a Prevention Coordinator who has expertise in coalition development and implementation of evidence-based programs. The Prevention Coordinator “links” the community-level team to knowledge and resources that are typically available at the state/university-level (Spoth et al., 2004). Each Prevention Coordinator designated 25% FTE per team. During the timeframe of the current study, the Prevention Coordinator undertook multiple responsibilities, from attending their teams' monthly meetings, to biweekly phone calls with the community team leader, to conducting additional, as-needed communications with team leaders or members. The PROSPER model also included an annual statewide meeting to promote professional development, and learning communities began 2.5 years into the project. Prevention Coordinators received supervision and support from University/state-level prevention researchers and Extension faculty at least weekly.

### Research Participants & Procedures

Data for this project were collected from: 1) Prevention Coordinators, 2) community prevention team members, 3) directors of local service organizations, and the 4) U.S. Census. See Table 1 (online) for an overview of the intervention and assessment schedule timeline.

**Prevention Coordinators**—Ten Prevention Coordinators worked with the 14 community teams across the 4.5 years studied (30% male; 100% White). They had an average of 19.4 years of experience implementing evidence-based or prevention programs. Prevention Coordinators responded to several questions in a web-based questionnaire for each of their

teams at 14 different time points. Intervals between measurement occasions ranged from once every three to six months. The Prevention Coordinator staff was quite stable over time.

**Team Members**—One hundred and twenty PROSPER Community Team members participated in one-hour computer-assisted in-person interviews before embarking upon the PROSPER process. Team members typically included representatives of the Cooperative Extension System, middle school teachers or staff, local mental health and substance abuse agency representatives, parents, and other key community leaders or members. Respondents ranged in age from 24 to 59 ( $M = 42.7$ ,  $SD = 8.29$ ), 33.3% were male, and 100.0% self-identified as White. Ninety percent of respondents indicated having obtained a minimum of a college degree, and 87.5% lived in or near the school district that organized the PROSPER intervention team. Participants were compensated \$20.

**Agency Directors**—Fifty-nine directors of human service agencies involved in the PROSPER project participated in a one-hour, in-person, computer assisted interview at Wave 1. Generally, these individuals included county-level CES directors, school superintendents or principals, and directors of county-level mental health and substance abuse agencies. Respondents ranged in age from 31 to 62 ( $M = 49.1$ ,  $SD = 8.06$ ), 39% were male, and 100.0% self-identified as White. Ninety-two percent of respondents indicated having obtained a minimum of a college degree, and 57.6% lived in or near the school district that organized the PROSPER intervention team. Participants were compensated \$20.

## Measures

**The Collaborative Working Relationship**—*TA Collaboration* (7 items;  $\alpha = .84$ ; range  $r_s = 0.14 - 0.78$ ; average  $r = .45$ ) was rated by the Prevention Coordinator. It described the degree to which the team communicated and worked effectively with the Prevention Coordinator. Items specifically assessed the key dimensions of collaborative relationships outlined earlier in this paper: coalition member participation and satisfaction; and coalition productivity. Team member participation and satisfaction was assessed through reports of the team's cooperation with TA, how often the team leaders promptly returned calls and emails and shared necessary developments; and how often the teams showed resistance to suggestions. Productivity was assessed through reports of the timeliness of reports, applications, and materials, other project intervention staff and procedures, and project research protocols (reversed). We relied on TA provider reports of these constructs; we did not have reports from coalition members or leaders. Items were standardized ( $M=0$ ;  $SD=1$ ) before averaging to create the scale value.

**Community Context**—Three measures described the community context. *Community poverty* assessed the percent of families living below the poverty threshold (National Center for Education Statistics, 2003; US Census, 2000). Agency directors responded to 15 items grouped across four subscales (1–4 scale, strongly disagree to strongly agree) assessing *community readiness* at Wave 1. The first subscale, community attachment (3-items,  $\alpha = .56$ ) measured the level of resident investment and closeness in a community. The second subscale, *community initiative* (4-items,  $\alpha = 0.65$ ) measured the level of active engagement of community members. The third subscale, *community efficacy* (4-items,  $\alpha = 0.66$ )

measured the ability of community members to work together for community benefit. The fourth subscale, *community leadership* (4-items,  $\alpha = 0.81$ ) measured the effectiveness of community leadership. Altogether, these subscales come together to describe the pre-existing capacity of a community to implement a successful collaborative change effort (average subscales,  $\alpha = .75$ ; Chilenski, Greenberg, & Feinberg, 2007). *Substance use norms* (6 items,  $\alpha = .75$ ), measured at Wave 1 by Team Members, assessed the perceived acceptance by adults of adolescent substance use (average items, 1–4 scale, strongly disagree to strongly agree). The scale was composed of responses to the following two questions for alcohol, cigarettes, and marijuana, “In this community, how wrong do most adults think it is for adolescents to [use/drink]...?” and “Adults in [community name] think the use of ... is a normal part of growing up.” These data were not assessed at the later waves needed for this study, hence we only consider these variables as Wave 1, characteristics of the local context that could affect the intervention effort.

### Analysis Strategy

**Understand levels of TA collaboration**—The first hypothesis investigated the developmental trajectory of the collaborative working relationship as rated by the Prevention Coordinator over time. A series of unconditional longitudinal models with maximum likelihood estimation were estimated using proc mixed in SAS, Version 9.2 (Hoffman, 2015). Model fit indices, including the AIC and BIC, and where appropriate the  $-2$  Log Likelihood deviance, were compared across several different types of models that used data from all 14 data points, including: (a) the empty model (i.e., model specifying only a random intercept); (b) polynomial growth models; (c) polynomial growth models that included random slopes; (d) piecewise models that allowed for different slopes and starting points to be estimated for each phase of team functioning, and then finally (e) piecewise models that included random slopes for each of the three phases.

**Predictors of TA collaboration**—The second goal investigated the predictors of the collaborative relationship with the TA provider over time by examining whether community rates of poverty, community readiness, or perceived community norms of adolescent substance use predicted initial levels of TA collaboration and change over time. The influence of each predictor was tested in two conditional longitudinal models using Proc Mixed with restricted maximum likelihood estimation in SAS, Version 9.2. The first model for each predictor added a main fixed effect to the best fitting piecewise growth model identified in analyses for the first hypothesis. The second model for each predictor added an interaction term between the conceptual predictor and the slope for the implementation phase.

## Results

### Descriptive Analyses

TA Collaboration fluctuates over time (grand mean = 0.00; SD = 0.72; Min =  $-2.67$ ; Max = 0.93). The communities have a relatively low percentage of families that are living below the federal poverty threshold ( $M = 6.95$ ; SD = 2.49) and report slightly favorable perceptions of readiness ( $M = 2.79$ ; SD = 0.28). Levels of community norms of adolescent substance use



indicate that individuals slightly disagreed that adolescent substance use was a normal in their communities ( $M = 2.29$ ;  $SD = 0.24$ ).

### Understanding Levels of TA Collaboration

Table 2 displays the results for our first hypothesis, the model fit statistics for the baseline, Random Intercept-Only (i.e., Empty) Model, and the four next best-fitting models. The best-fitting model is the piecewise model that allows for different slopes to be independently estimated across each phase of team functioning. The fit statistics of the piecewise model that allows a random slope during the implementation phase are the lowest across all models (also see Figure 1, available online). Indeed, ratings of TA-team collaboration were relatively stable across all teams during organization. Then, levels of collaboration generally decreased during implementation and the degree and direction of change differed by community. Levels of collaboration then increased equivalently for all teams during sustainability.

### Predictors of TA Collaboration

Table 3 summarizes the results of hypotheses 2a, 2b, and 2c. The only community characteristic that predicted levels of TA Collaboration was readiness rated by Agency Directors ( $B = 1.49$ ,  $p = .007$ ). Readiness predicted initial levels of TA Collaboration. The interaction between AD-rated readiness and the slope of TA Collaboration ( $B = -1.27$ ,  $p = .02$ ) during the implementation phase significantly predicted variation in community differences in how levels of TA Collaboration changed over the implementation phase (see Figure 2). Specifically, communities with high ratings of readiness had the highest levels of team-PC collaboration during the organization phase, but had the greatest decrease during the implementation phase. Teams with average levels of readiness had moderate levels of team-PC collaboration during organization and demonstrated a small decrease during implementation. However, communities with the lowest ratings of readiness had the lowest ratings of collaboration during the organization phase but increased their levels of collaboration during the implementation phase.

## Discussion

This paper explored the changes in the quality of TA collaboration over time for community coalitions implementing a new prevention initiative. Findings suggest that over time there is some natural ebb and flow in the quality of the team-technical assistance provider collaborative working relationship, and this associates with the initial level of readiness and the phase of the effort. Results also indicate that readiness has a complex association with TA collaboration over time.

### Phases of Coalition Development

We hypothesized that a model that accounted for the distinct phases of coalition development would be the best way to describe the data; this hypothesis was supported. This finding adds to prior evidence of measureable differences across phases in community coalition prevention or public health efforts (Butterfoss & Kegler, 2002; Welsh et al, 2016). Specifically, TA collaboration is relatively high during organization and decreases during

implementation, then increases again during sustainability. Based largely on conversations with Prevention Coordinators and Team Leaders over the duration of the PROSPER project, we speculate that this ebb and flow may relate to the different responsibilities and challenges faced by Team Leaders in different phases. At the time that PROSPER began, most Team Leaders were largely unfamiliar with prevention science principles or research protocols. While organization involved many meetings and discussions that were not particularly demanding, implementation involved responsibility for a wide array of new and time-consuming tasks, from recruiting families to attend programming to supervising program facilitators, monitoring implementation, and continuing to coordinate the community team. During this phase, many Team Leaders expressed feeling overwhelmed and indicated that PROSPER had too many “moving parts.” Thus, the overall decline in collaboration observed during the implementation phase was related to the stress associated with these experiences.

Activities became more routine 2.5 years into the project. At that point teams had two years of family program implementation and one year of school-based program implementation completed; no new programs were added. Hence, this time period began the transition into sustainability. Teams had also been working with their assigned Prevention Coordinators for a length of time. During the transition to sustainability, collaborative learning communities began. The learning communities brought together community team leaders within each state, Prevention Coordinators, state-level prevention experts, and at times other experts in specialized topics relevant to the challenges of sustaining youth programming. Organization and planning of these learning communities initially was conducted by the Prevention Coordinators and state-level prevention experts, but this changed over time to being driven by community team leaders (Mincemoyer, Perkins, & Santiago, 2008). A culture of honest, supportive and constructive discussion was created. The TA process became more reflective and oriented towards professional development, rather than task-specific. Perhaps the collaborative working relationship may have improved because the Team Leaders and members now recognized the value of TA at helping them to hone the new and relevant skills to this phase.

### **Community Characteristics**

We hypothesized that community characteristics would be related to the quality of the collaborative coalition-TA provider working relationship. Specifically, prior research led us to anticipate that community-level poverty would pose a barrier to effective collaboration, but higher levels of readiness and social norms endorsing youth substance use would lead to an improved relationship. This hypothesis was largely unsupported. Neither community level poverty nor social norms were related to collaboration. Unlike community team members, Prevention Coordinators were typically “outsiders” who were familiar with, but did not live in, the PROSPER communities. Perhaps, the internal team dynamics are more sensitive to community-specific factors (e.g., poverty and social norms) than the team-TA relationship.

Our data suggest that associations between community readiness and TA collaboration were interesting and complex. There is substantial community-level variability in how much and in what direction TA collaboration changed over time. Examining these changes based on

initial levels of readiness, the sites rated highest in readiness at the start of the project also started out high in collaboration, but experienced relatively steep declines during the implementation phase, and ended up having the lowest levels of collaboration during the sustainability phase. The lowest readiness sites were the lowest in collaboration initially, but steadily improved over time, ending up with the highest levels of collaboration during the sustainability period. There are several possible interpretations of these findings. First, perhaps leaders of low readiness teams may have had more difficulty getting their initiative off the ground, and this rough beginning was reflected in their poorer initial ratings of collaboration with their Prevention Coordinators. However, as time progressed, these Team Leaders were able to form good collaborative relationships around program implementation and sustainability. For these teams, a low level of confidence and readiness at the outset may have created fertile ground for a supportive and helpful TA provider that then endured over time. Yet, the decline in collaboration observed in the highest-readiness teams may have occurred because these Team Leaders were more confident at the start and did not perceive the need for or value TA. During the implementation phase, then, they may have perceived TA as bothersome during a busy time (Feinberg et al., 2004).

### Implications for Community-based Prevention

Based on these findings, we conclude that the collaborative relationship between a TA provider and community prevention teams may be a critical component for the success of coalitions over time, supporting their positive impact on public health. Thus, we recommend:

**Assess readiness**—If possible, readiness should be assessed at the outset of the effort. Low readiness may be an indication that a team needs more support in order to get organized and successfully implement and sustain their programs.

**Team-TA collaboration across phases**—Recognizing the importance of a collaborative working style for the team’s functioning at different phases, TA providers should be aware of the different challenges that coalitions confront at different phases, and be prepared to provide support appropriate to that phase. Sometimes TA providers may need to arrange for outside supports to address sustainability needs, and for TA providers to recognize “what they don’t know” when it came to helping teams navigate the different phases (e.g., marketing and communications).

**Learning communities**—This project initiated “learning communities” at the beginning of the sustainability phase to promote cross-learning and capacity building between teams within each state. This coincided with a steady increase in team-TA collaboration. In addition to the possible effect demonstrated in this paper, the learning communities were beneficial in many ways (Mincemoyer, Perkins, & Santiago, 2008). We recommend creating a collaborative “community of practice” environment as soon as it is realistically feasible. The TA provided through the learning community structure is a value-added component of the TA process. There are several reasons why learning communities may have been important, from providing space for the team leader to step outside of the day-to-day program implementation challenges, to supporting collaborative peer learning, to providing

positive reinforcement, to connecting the team leaders with additional specialized TA experts when appropriate, among other things.

### Limitations

There are a few limitations in this study. This is a relatively small sample of community prevention teams who were all focused on reducing and delaying early adolescent substance use with very similar strategies. This focused sample may have reduced potential variability in the data which could weaken statistical power. These findings are most confidently generalized to community prevention teams in similar contexts. It is also possible that there were some unmeasured differences in implementation that affected the quality of the collaborative relationship. We were limited to the number of variables that we could investigate simultaneously; as a result, we constrained our analyses to investigate one community characteristic at a time. We also do not have team leader or team member ratings of the PC-team collaborative relationship to validate the ratings with a different reporter. Future research with a larger number of community prevention teams is desirable. Longitudinal data and different reporters for the independent and dependent variables in this study contribute to its strength.

### Conclusion & Future Directions

Our study examined community characteristics and their association to TA collaboration, as well as the way in which this collaboration ebbed and flowed over time. Future studies should extend our research by exploring the relations between collaboration and phase-specific outcomes. Additionally, research on TA to community coalitions could examine the role of specific TA strategies and styles for community prevention team functioning and outcomes of their initiatives. Additional knowledge in these areas will help evidence-based interventions achieve their full potential on improving public health.

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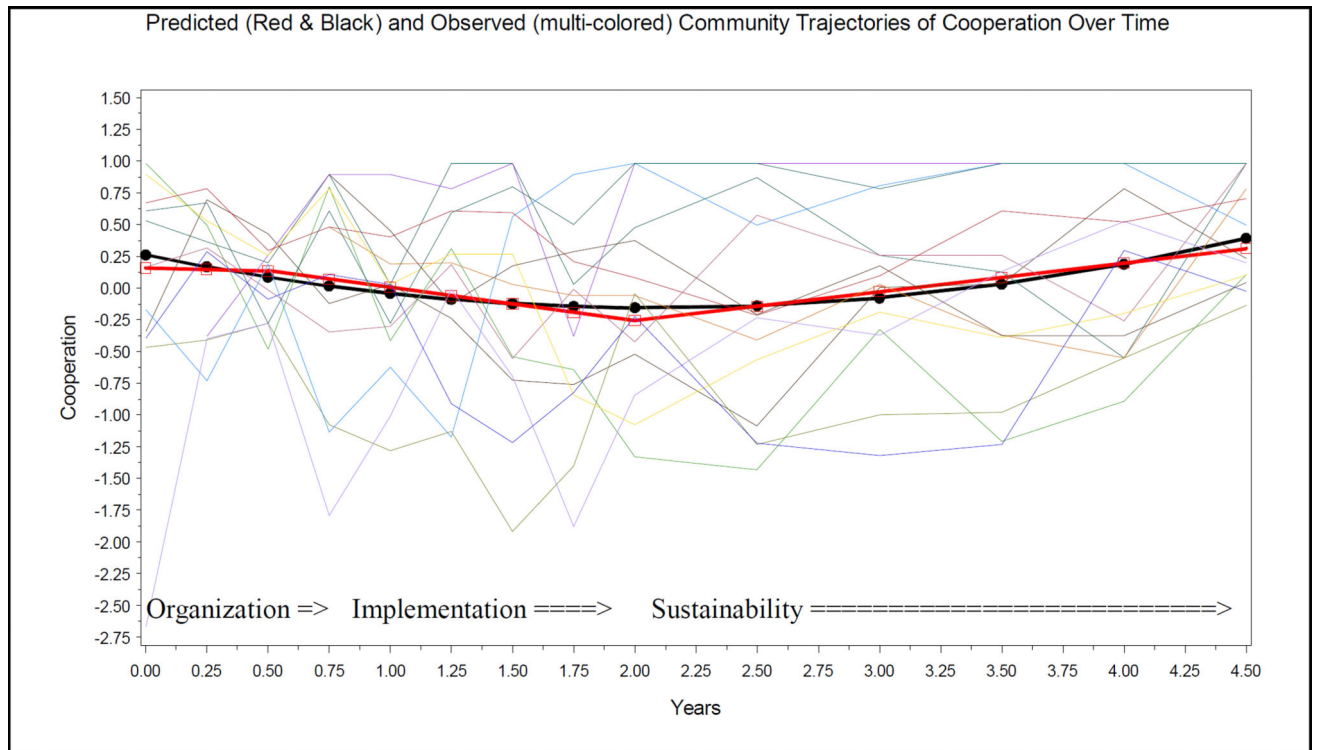
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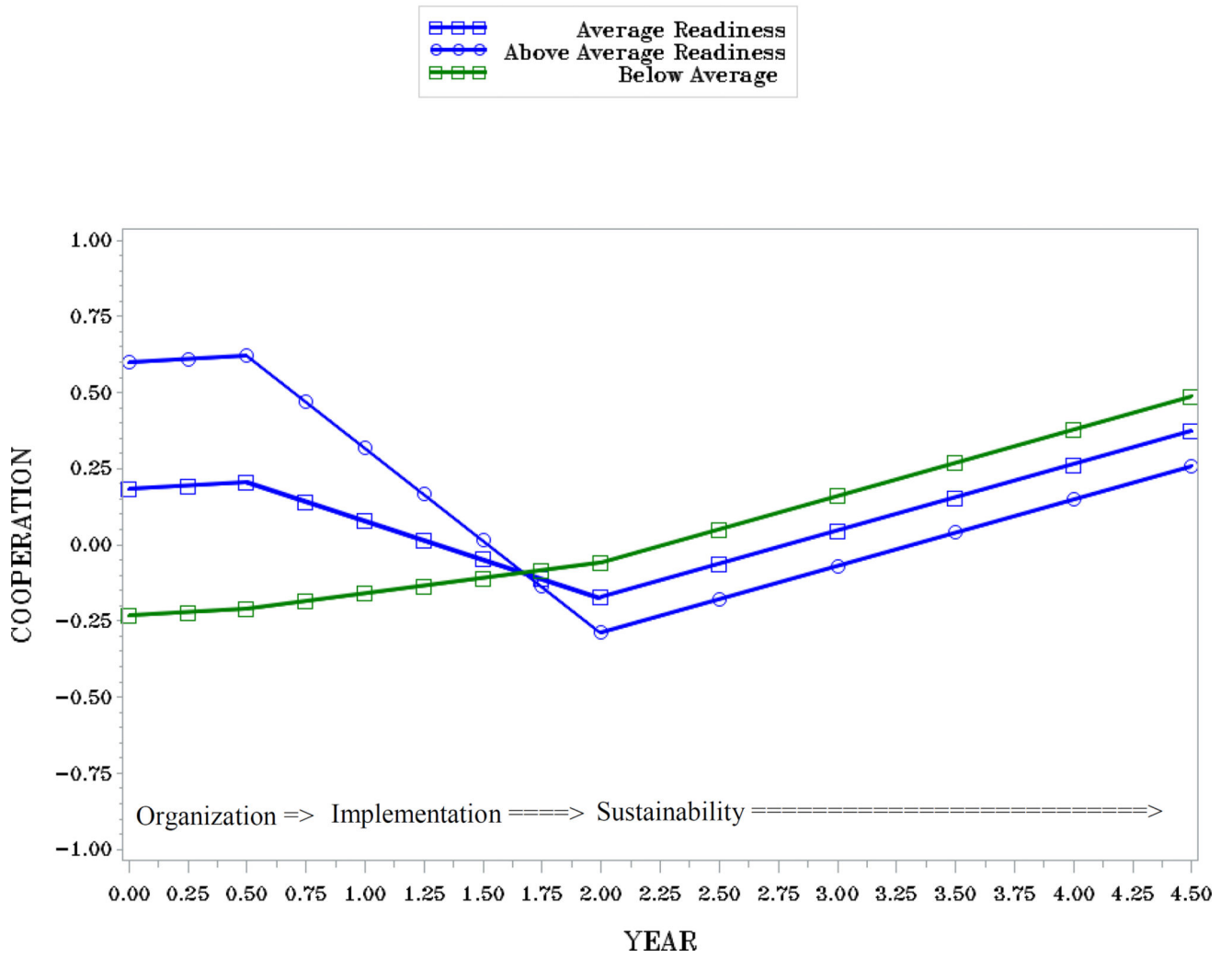
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**Figure 1. Line graph of observed trajectories and best predicted models of TA Collaboration**

Note: Figure 1 shows all observed data trajectories and the two best fitting models: (a) quadratic with random intercept and linear slope terms (black), versus (b) the piecewise model with random intercept and slope during the implementation/operations phase (red). In the best-fitting model (red), ratings of TA-team collaboration were relatively stable across all teams during organization. Then, levels of collaboration generally decreased during implementation; the degree and direction of change differed by community. Levels of collaboration then increased equivalently for all teams during sustainability.

### PREDICTED PC COOPERATION OVER TIME



**Figure 2.** Predicted trajectories of TA Collaboration for average-rated, high-rated, and low-rated readiness at Wave 1 by Local Human Service/Social Service Agency Directors

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**Table 1**

Overview of PROSPER project timeline and waves of data collection

	2002			2003			2004			2005			2006							
	Apr- Jun	Jul- Sept	Oct- Dec	Jan- Mar	Apr- Jun	Jul- Sept	Oct- Dec	Jan- Mar	Apr- Jun	Jul- Sept	Oct- Dec	Jan- Mar	Apr- Jun	Jul- Sept	Oct- Dec	Jan- Mar	Apr- Jun	Jul- Sept	Oct- Dec	
<b>Intervention Activities</b>																				
Phase of Team Functioning	Organization ==>			Implementation =====>						Sustainability=====>										
First meetings / trainings	X		X																	
Family Program Implementation				X	X			X	X			X	X			X	X			
School Program Implementation							X	X	X		X	X	X		X	X	X		X	
<b>TA Activities</b>																				
Biweekly calls / contacts	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Attend Monthly Team Meetings	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Annual Meeting	X				X				X				X				X			
PC Receive Support*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Learning Communities										X	X	X	X	X	X	X	X	X	X	
<b>Assessment Timeline</b>																				
Agency Director Interviews	W1																			
Team Member Interviews	W1																			
PC Rate TA Collaboration*	W1	W2	W3	W4	W5	W6	W7	W8	W9		W10		W11		W12		W13		W14	

\* Note: PC = Prevention Coordinators

Model fit statistics and parameter estimates for the best four multi-level longitudinal unconditional growth models testing how TA Collaboration changes over time, compared to the Random Intercept Only (i.e., empty) model

**Table 2**

	Random intercept only	Time quadratic	Time quadratic with random linear slope~	Piecewise fixed effects only	Piecewise with Random Slope Implementation+
<b>Model Fit Statistics</b>					
-2 Log Likelihood	355.5	341.3	321.7	342.0	309.4
AIC	361.6	351.3	335.7	354.0	325.4
BIC	363.4	354.5	340.2	357.8	330.5
Degrees of Freedom	3	5	7	6	8
<b>Parameter Estimates</b>					
<b>Fixed Effects</b>					
Intercept	0.0106	0.216	0.260	0.106	0.150
Time: Linear Slope Term	--	-0.360**	-0.397***	--	--
Time: Squared Slope Term	--	0.088***	0.095***	--	--
Time: Slope for Organization Phase	--	--	--	0.019	-0.045
Time: Slope for Implementation Phase	--	--	--	-0.240*	-0.205
Time: Sustainability	--	--	--	0.225***	0.227***
<b>Random Variances</b>					
Intercept	0.181	0.186	0.315	0.185	0.300
Intercept-Slope Covariance	--	--	-0.062	--	-0.160
Linear Slope	--	--	--	--	--
Slope Implementation Phase	--	--	--	--	0.219
Residual	0.338	0.311	0.322	0.312	0.226

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

\*\*\*\*  $p < .0001$

Best fitting model, depicted with red line in Figure 1  
Second best fitting model, depicted with black line in Figure 1

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**Table 3**

Model fit statistics and parameter estimates testing predictors of the collaborative TA relationship

	Predictor: Community Poverty	Predictor: Community Readiness rated by ADs	Predictor: Community Norms re Adolescent Substance Use
Fixed Effects			
Intercept	0.15	0.18	0.16
Time: Slope for Organization Phase	-0.05	0.04	-0.05
Time: Slope for Implementation Phase	-0.25	-0.25 <sup>*</sup>	-0.25
Time: Slope for Sustainability	0.23 <sup>****</sup>	0.23 <sup>****</sup>	0.23 <sup>****</sup>
Main Effect	-0.03	1.49 <sup>**</sup>	-0.34
Main × Slope for Implementation Phase	-0.01	-1.27 <sup>*</sup>	0.20
Random Variances			
Intercept	0.35	0.13	0.35
Intercept-Slope Covariance	-0.20	-0.15	-0.19
Slope Implementation Phase	0.26	0.15	0.26
Residual	0.23	0.23	0.23

\*  
 $p < .05$ \*\*  
 $p < .01$ \*\*\*  
 $p < .001$ \*\*\*\*  
 $p < .0001$