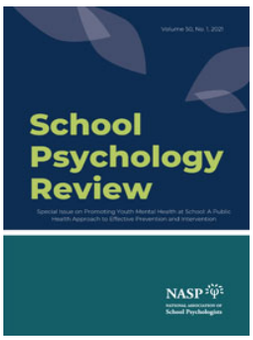

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SPECIAL SERIES

Designing Interventions for Implementation in Schools: A Multimethod Investigation of Fidelity of a Self-Monitoring Intervention

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ABSTRACT

Interventions for youth are often studied in school settings, yet there are barriers that hinder schools from actively participating in the research studies. To ensure interventions are studied in the context they are intended for, adopted in a timely manner, and regularly used in practice as designed, researchers can conduct studies in a manner that reflects the dynamic needs of schools. Participatory action research, which engages participants in the research process, and coproduction of interventions, which involves end users in the development of interventions, are complementary frameworks that may increase the utility and flexibility of school-based interventions while also improving engagement and fidelity of intervention implementation. This study explored the implementation of a self-monitoring intervention, *Self-Management And Regulation Training Strategy* (SMARTS), developed using these approaches. Using multiple methods, findings indicate that school counselors (i.e., natural treatment agents) valued helping in the development of SMARTS and were able to implement it in school settings with fidelity. In fact, the quality with which they implemented components of the intervention was significantly related to students' engagement in intervention procedures. Implications and limitations are discussed.

IMPACT STATEMENT

It is difficult for school personnel to implement evidence-based interventions with fidelity. Methods, such as participatory action research and coproduction of interventions, engage school personnel in the intervention development process and may address some of the existing concerns with fidelity. This study examined fidelity of an intervention developed using these methods and found that quality of implementation was correlated with students' participation and engagement in the intervention.

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Schools provide a meaningful context to understand and intervene in the development of social, emotional, and behavioral problems in childhood and adolescence. Conducting research in schools has advanced our understanding of mental health problems in youth and led to the development of evidence-based interventions that promote healthy functioning (National Association of School Psychologists, NASP, 2020). However, the goals, objectives, and procedures of many research studies do not always align with those of schools. To propose a study, researchers first develop a scientifically salient and fundable idea. Researchers then seek out schools interested in participating if the study is funded, and a letter of support from schools is submitted along with other documentation in a proposal. Next, the merits, methods and personnel submitting the proposal are weighed in a lengthy scientific peer review process. Even when a proposal is funded, several tasks need to be accomplished before the research can be conducted in school settings (e.g., hiring staff, recruitment, informed consent and randomization procedures).

The lag between proposing a study and the implementation of research procedures contributes to the persistent gap between scientifically based knowledge and daily evidence-based practice in schools – an estimated 17 years from science to practice (Morris et al., 2011). Indeed, schools' use of evidence-based interventions (EBIs) is limited (Ennett et al., 2003). Among Nationally Certified School Psychologists, Hicks et al. (2014) found that more than 80% reported *rarely* or *never* using EBIs although the majority of training programs provide coursework and instruction in this area (Reddy et al., 2017). Even when schools adopt EBIs, they can encounter barriers to implementation that may compromise the fidelity with which the intervention is used, including school personnel's lack of time and resources to implement interventions

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appropriately and an incompatibility of the intervention with existing routines and procedures (Forman et al., 2013; Long et al., 2016). Most teachers report that they are responsible for implementing multiple interventions at a given time (Bambara et al., 2009; Cho & Nadow, 2004; Kincaid et al., 2007; Long et al., 2016; Winnail & Bartee, 2002). Moreover, school personnel indicate the compatibility of interventions with the existing school context is a powerful predictor of implementation (Bosworth et al., 1999; Durlak & DuPre, 2008; Long et al., 2016). Above and beyond motivational factors (e.g., self-efficacy), teachers report one of the primary problems integrating interventions into daily routines is the misalignment between the intervention procedures and existing classroom practices and schedules (Long et al., 2016). There is a greater likelihood that interventions will be sustained if they are tailored to local contexts, and school personnel have the flexibility to address problems encountered during implementation (Berkel et al., 2011).

This leads to a dilemma when developing and testing school-based interventions: how do we design interventions and research studies that are potent and rigorous, but also have enough flexibility to ensure fit and utility within the school context (Leykum et al., 2009)? Hughes (2003) argued that one way to develop sustainable school-based interventions is to engage the school community in the process. At the heart of engaging the school community is soliciting, understanding, and incorporating perspectives of school personnel into the intervention and research study design. Participatory action research (PAR) and coproduction (CP) of interventions are complementary, partnership-oriented frameworks that allow researchers and stakeholders to work collaboratively to design interventions and research studies. The use of PAR methods and CP strategies may increase the utility and flexibility of school-based intervention research (Mertler, 2019). These approaches can help develop evidence-based interventions while simultaneously addressing criticisms that research may fail to meet the needs of schools, personnel, and students (Alibali & Nathan, 2010).

The purpose of this study is to illustrate how PAR and CP methods can be used to develop and design interventions and research studies in a manner that may maximize the fit of the intervention and the fidelity with which the intervention is used. We do this by describing how PAR and CP methods informed the development of a school-based self-monitoring intervention for upper elementary youth with disruptive behavior called the *Self-Management And Regulation Training Strategy* (SMARTS; Thompson, 2014) as well as explore how SMARTS was implemented by natural treatment agents (i.e., school support personnel) in a randomized controlled trial designed to test the intervention. In the remaining introductory sections, we describe how PAR and CP methods can be used in the context of intervention development and testing and illustrate how these methods informed the development of SMARTS and the subsequent research study to test this intervention. The methods and results explore quantitative (e.g., fidelity, social validity) and qualitative (e.g., focus group) data to examine the implementation and use of the SMARTS in schools by natural treatment agents.

PARTICIPATORY ACTION RESEARCH (PAR)

PAR is a cooperative, colearning, consumer-driven process where end users are viewed as long term partners in identifying key drivers of problems (Shalowitz et al., 2009). PAR approaches began in the 1940s and are credited to social and organizational psychologist, Kurt Lewin (Holkup et al., 2004). In several ways, PAR approaches differ from traditional social science methods. For example, PAR seeks to engage consumers of research knowledge to define problems, structure methods to study, and analyze data in the context where problems occur. PAR directly involves stakeholders in the research process to improve outcomes in the very settings in which the research will be used (Baum et al., 2006). In schools, PAR uses relevant wisdom from personnel who understand the unique contextual demands, cultural influences, and idiosyncrasies that an intervention must account for to function as intended (Baum et al., 2006; Chevalier & Buckles, 2019). Moreover, PAR corrects the power imbalance often experienced by some research participants as PAR methods rely on partnership, cooperation, and trust between researchers and participants. Compared to studies designed solely by researchers, PAR developed studies have demonstrated greater levels of engagement and productivity as well as improved outcomes (Holkup et al., 2004). In fact, a systematic review of healthcare interventions developed through action research found that use of over half of these interventions persisted over time and some of them were expanded to be used in other, relevant settings (Waterman et al., 2001).

COPRODUCTION OF INTERVENTIONS (CP)

If PAR methods are the way we identify the problem, precursors, methods of study, and possible solutions; coproduction of interventions (CP) requires researchers to work with personnel to design, refine, and finalize intervention procedures and materials (McIsaac et al., 2018). CP embodies a similar spirit and approach as PAR but is focused on shaping the components, materials, and

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procedures of an intervention. The concept of CP is newer than PAR with its origins in the 1970s philosophies underlying manufacturing and shared-governance in the United States (Madden et al., 2020). CP in manufacturing of consumer goods has been described as the intermixing of productive efforts of consumers and producers to yield more functional products (Parks et al., 1981) whereas CP in shared governance is described as a process of interactions between institutions and citizens as an arrangement to improve strategies that address community challenges (Ostrom, 1996). When developing a school-based intervention to meet the needs of a diverse set of implementers (e.g., school counselors, psychologists, social workers, teachers, students\) some degree of CP of intervention materials and procedures is necessary. School personnel have demands on their time and resources that need to be considered for interventions to be implemented as designed. In fact, school personnel often report difficulty implementing evidence-based interventions due to the complexity of interventions, competing responsibilities, and the preparation, skills and materials required to implement an intervention (Long et al., 2016). CP has the potential to overcome these challenges by using stakeholders' knowledge and expertise to develop intervention materials and procedures, thereby, maximizing the acceptability, feasibility and fit of the intervention within a school setting (Hawkins et al., 2017).

PAR and CP methods have a history in educational research. As early as the 1940s, educational researchers were advocating for methods that would engage school personnel as active participants in the research process, suggesting these approaches were necessary to effect meaningful change in educational institutions (Jacobs, 2016). These approaches grew in popularity in education after the seminal work of Paulo Friere which highlighted the importance of equity and partnerships in learning and teaching (Jacobs, 2016). Among psychological and educational researchers, these approaches have been argued as critical to developing interventions that can sustain over time (Hughes, 2003; Weissberg & Greenberg, 1998). In fact, researchers have suggested integrating these approaches within randomized controlled trials (RCTs) to create interventions that will effectively translate into local contexts (Leykum et al., 2009).

PAR AND COPRODUCTION METHODS IN A SCHOOL-BASED INTERVENTION RESEARCH STUDY

Consistent with established procedures to integrate action research into RCTs (Leykum et al., 2009), SMARTS (Thompson, 2014) is a recent intervention that has been developed through PAR and CP informed methods. SMARTS is a selective behavior support intervention for upper elementary youth with challenging behaviors designed by, and for the use of school support personnel (SSP; e.g., school psychologists, school counselors, social workers). SMARTS integrates self-monitoring, frequent feedback, and social-emotional learning to address students' disruptive behaviors and build their prosocial skills. The intervention is delivered by SSPs through three phases: *student training, self-monitoring and feedback,* and *processing*, each of which requires SSPs to teach students' key social-emotional skills (e.g., emotion regulation, goal setting, problem-solving). Previous research has demonstrated that SMARTS reduces challenging behaviors at school and improves students' social competencies and relationships with teachers (Thompson, 2014).

PAR and CP approaches were used to engage school counselors in the development process of SMARTS and a funded research study to evaluate the intervention through an iterative cycle of gathering feedback, revising and refining intervention and study procedures, and testing the alterations. Specifically, this process included: (a) an initial focus group to review study and intervention procedures and solicit feedback from school counselors; (b) revision of study procedures and intervention materials based on feedback; (c) a focus group to review revisions and gather additional feedback; and (d) testing revised procedures and materials using an RCT.

The PAR process began by first examining all study methods. When the study was funded, investigators led two hour-long group meetings with SSP implementers. In the first meeting, investigators described study procedures (i.e., screening, consent, randomization, pretest, posttest, follow-up data collection) and provided copies of all measures to be collected. As study operations were reviewed, distinctions were made between modifiable surface elements (e.g., consent process, data collection process, specific measures, etc.) from non-modifiable core study elements (e.g., screening, research design, randomization, etc.). Feedback was solicited, recorded, and considered for feasible changes to all surface study methods. For example, lengthier measures were replaced by equally reliable but shorter scales. Though SSP implementers understood and agreed to the core study method of randomization—they did request the ability to organize student groups and to offer the intervention to any student not meeting inclusion criteria. Investigators agreed to these surface modifications, sought approval from program officers, and helped counselors define procedures to avoid contamination of treatment and control groups.

Once changes to the study method were agreed upon, CP procedures began.

CP procedures to adapt intervention materials with input from implementers followed a similar iterative review, feedback, revise, and test approach. CP of intervention materials started by describing the SMARTS theory of change and identifying the core mechanisms of the intervention. Similar to PAR guidelines, a distinction was made between modifiable surface intervention features and non-modifiable core features (Goldstein et al., 2012). For example, modifiable surface features included terminology, group size and make-up, and activities. Non-modifiable core features were those dictated by; (a) the intervention's theory of change; (b) features that contribute to therapeutic change; and (c) the intervention's core mechanisms of change (i.e., proposed mediators/moderators; Goldstein et al., 2012). Existing materials (i.e., lesson plans, group behavior management plan, self-monitoring app, etc.) were reviewed and feedback was collected from SSP implementers on revisions.

PURPOSE AND AIMS OF PRESENT STUDY

The current study uses a multi method approach to explore the implementation of a PAR randomized controlled trial (RCT) that used CP methods to adapt a manualized self-monitoring intervention (i.e., SMARTS) for use by SSP implementers. The overall purpose of the current study is threefold: (1) describe how PAR and CP methods can be used in the context of an intervention development study; (2) illustrate the use of PAR and CP methods during the development of SMARTS; and (3) explore quantitative (e.g., fidelity) and qualitative (e.g., focus group) data to examine the implementation and use of the SMARTS during the RCT. The latter aim is achieved in the remaining sections, which examine the quantitative and qualitative data that was collected to examine the implementation of SMARTS.

METHOD

This study took place within the context of a four-year randomized controlled trial (RCT) funded by the US Department of Education. The primary aim of the RCT was to understand the impact of SMARTS, developed through PAR and CP-informed methods, on proximal outcomes of student autonomy, relations with peers and teachers, and social competencies, as well as changes in distal behavior, academic engagement and academic performance outcomes.

For the present study, a multimethod approach was used to examine the implementation of SMARTS during the RCT. SMARTS was developed using PAR and CP methods to maximize the fit, utility, and, ultimately, the implementation of the intervention by SSPs. Exploring fidelity, or the extent to which an intervention is implemented as designed by the original developers, provides a way to understand how the use of PAR and CP may have impacted the implementation of SMARTS by natural treatment agents. Both quantitative and qualitative approaches were used to provide a better understanding of the implementation of SMARTS. Specifically, quantitative fidelity data, including direct observations of adherence to SMARTS sessions and quality of delivery were explored in relation to ratings of student engagement and participation in intervention sessions. Qualitative data regarding SSPs experience implementing SMARTS was gathered through a focus group. Taken together, this information provides a rich descriptive illustration of the implementation of SMARTS. In the following sections, we describe the participants in the study, the specific intervention procedures, used in SMARTS, along with the relevant measures, a description of the focus group, and the analyses conducted.

PARTICIPANTS

The study included twenty-three elementary school counselors in 19 school buildings who acted as SSP implementers to train students in SMARTS. All counselors held master's degrees, 96% were female and they had a mean of 8.76 years of experience in school settings. These school counselors were working with 170 student participants who were randomly assigned to the SMARTS condition—another 170 not included here were randomized to the control condition. All students in the study were in Grade 5 and, through a multigated screening and assessment process, were identified to have clinical levels of externalizing behavior (i.e., T-score > 60 on the Behavioral Assessment System for Children-3; Reynolds & Kamphaus, 2015). The average age of students in the study was 10 years, 2 months, 73% were male, and students in the sample self-identified as White or European-American (44%), Black or African American (40%), Hispanic American (6%), Asian American (2%), or Multiracial (8%).

PROCEDURES

The SMARTS intervention was implemented in three phases by SSP implementers. In Phase I, SSP implementers trained small (4-6) groups of students using ten scripted lessons in: (1) *Group Expectations*; (2) *Assessing & Defining Problems*; (3) *Generating & Weighing Alternative Solutions*; (4) *Writing Goals to Implement Solutions*; (5) *Recording Goal Progress*; (6) *Evaluating Goal Progress*; (7) *Perspective*

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Taking; (8) *Reframing Mistakes*; (9) *Managing Internal Responses to Problems*; and (10) *Managing External Responses to Problems*. In Phase II, students and teachers monitored student performance at preset daily intervals on goals developed by students and SSP during the Phase I training. Students and teachers entered a "*yes,*" *"sometimes,*" or "*no*" reflecting the student's goal performance during the prior interval using the SMARTS application. After a week of daily ratings, students were ready for the Phase III processing where SSP implementers met with SMARTS students for 10-15 minutes to review the SMARTS app-based dashboard display of daily student and teacher graphs and percentages. SSP implementers reviewed the data with students using motivational prompts inviting students to reflect on behaviors contributing to discrepancies and use data to revise their goal. With the revised goal, Phases II and III were repeated.

MEASURES AND FOCUS GROUP

Fidelity Observations

Given that SMARTS contains multiple components, the model for measuring fidelity relied on a framework proposed by Gersten et al. (2005). Gersten and colleagues suggest a fidelity model should capture multiple dimensions of implementation by monitoring the quantity (i.e., adherence and dosage) of the intervention received, quality of the intervention delivery, and engagement in the intervention by implementers and participants.

Direct observations of SMARTS sessions were conducted by independent coders to assess fidelity. Coders rated SSP implementers (i.e., school counselors) adherence, or extent to which implementers completed of core components of the intervention (e.g., introduction of skill, session activities, reflecting on skill, modeling skill use, coaching on use of skill, practice of skill, and behavior management) and the quality of the delivery of these core components. Observations were conducing during SMARTS Phase I and Phase III sessions and used a 4-point Likert type scale (α = .78; 1 = *Poor*, 4 = *Excellent*). Coders were trained research assistants, pursuing graduate degrees in social work, school psychology, and counseling. Coders were trained by an expert observer with previous experience conducting observations and were required to achieve 80% agreement with a master coder prior to conducting observations independently.

Student Engagement and Participation

Engagement represents a unique, yet often overlooked, dimension of fidelity (Wanless et al., 2015). It is both a component of the delivery of an intervention as well as an outcome of that delivery. That is, implementers' engagement in providing the intervention is a critical dimension of fidelity that likely impacts how well received the intervention is by participants. Just as a teacher delivery a lesson is linked to students' engagement in that lesson, participants' engagement and participation in intervention sessions can be considered an important outcome of how well the session was facilitated, as it is in this study.

Informed by research supporting the reliability, utility, and ease of single items rating scales, we requested SSP implementers rate students' levels of engagement and participation following each SMARTS training lesson (Stormont et al., 2017). SSP implementers rated student engagement and participation in SMARTS using a 10-point Likert type scale (1 = *Never or Seldom*, 10 = *Always*).

Qualitative Focus Group

The qualitative component of the study involved a 1-hour posttest focus group with 12 SSP implementers in the study (a subset of SSP implementers were unable to participate in the focus group due to scheduling conflicts or changes in their role). Several prompts were preplanned and probed their general reflections on SMARTS intervention materials, facilitating SMARTS as an intervention, and participating in a research study.

ANALYSIS

To analyze the fidelity and engagement data, we relied on descriptive statistics and correlations conducted using SPSS and all associations being appraised at a p-value =/< .05. All focus group data were examined using a content and theme analysis approach. Specifically, the focus group was recorded and comments from school counselors that appeared most often in their feedback were counted and grouped into themes, with themes having higher counts associated with counselor comments being prioritized over others.

RESULTS

We provide the descriptive results of the current study by first examining the means, variability, and correlations between the fidelity measures. Next, we offer a summary of the posttest implementation focus group with SSP implementers.

FIDELITY RESULTS

Table 1 provides the overall mean level of adherence for SMARTS sessions and quality of delivery of core

Table 1. Mean, Standard Deviation, and Range for Fidelity Dimensions During SMARTS Skill and Processing Sessions

Fidelity Dimension	Mean	*sd*	Range
Fidelity to Skill Lessons (Phase I)[a]			
Adherence[b] to Skill Lesson	3.42	0.58	1.50 – 4.00
Quality[c] of Delivery of Skill Lesson Components			
Skill Introduction	3.30	0.49	2.00 – 4.00
Skill Activities	3.25	0.50	2.00 – 4.00
Skill Reflection	2.87	0.67	1.00 – 4.00
Skill Modeling	2.66	0.66	1.00 – 3.67
Skill Coaching	3.09	0.67	2.00 – 4.00
Opportunities to Practice Skill	3.27	0.51	2.00 – 4.00
Behavior Management	3.20	0.57	2.00 – 4.00
Fidelity to Processing Data (Phase III)[a]			
Adherence[b] to Processing Data	3.10	0.87	1.00 – 4.00
Quality[c] of Processing Data			
Processing Student Data	3.01	0.55	2.00 – 4.00
Processing Teacher Data	2.79	0.86	1.00 – 4.00
Assessing Differences in Data	2.77	0.89	1.00 – 4.00
Reflecting on Performance Goals	2.88	0.94	1.00 – 4.00
Modeling of Processing	2.46	0.86	1.00 – 4.00
Coaching of Processing	3.08	0.85	1.00 – 4.00
Opportunities to Practice Processing	2.47	1.00	1.00 – 4.00
Behavior Management	3.41	0.69	1.67 – 4.00

Note. [a]SMARTS consists of three main phases. The information presented reflects fidelity for the main phases in which school counselors were responsible for leading. [b]Adherence was measured via direction observation using a 4-point Likert-type scale (1 = *Poor*, 4 = *Excellent*). [c]Quality was measured via direction observation using a 4-point Likert-type scale (1 = *Poor*, 4 = *Excellent*).

components of SMARTS sessions. On average, observations yielded adequate levels of adherence to SMARTS Phase I training (M = 3.42, SD = 0.58, corresponding to a rating of "good" adherence) and SMARTS Phase III processing (M = 3.09, SD = 0.87, corresponding to a rating of "good" adherence). Quality of delivery of core components of skill lessons in Phase I ranged from 2.67 (for modeling of the skill) to 3.30 (for introduction of the skill), suggesting overall "good" quality of delivery. Similarly, quality of delivery for processing sessions in Phase III ranged from 2.50 (for modeling) to 3.40 (for behavior management).

Table 2 provides descriptive statistics and correlations among student engagement, participation, and quality of delivery of core components of SMARTS sessions. For SMARTS skill lessons in Phase I, a significant correlation emerged between observations of the quality of opportunities to practice and SSP implementers report of student participation in the lesson ($r = .301$, $p = .05$). Similarly, a significant correlation emerged between observations of quality of behavior management and SSP implementers report of student engagement ($r = .374$, $p = .016$) in training sessions. No other correlations were significant.

FOCUS GROUP RESULTS

Focus group questions centered on SSP implementers perceptions of the SMARTS materials, facilitation of training, and participation in research. Several themes emerged. Overall, participants reported high satisfaction with SMARTS materials with the top theme being that they all highly appreciated taking part in designing the lesson content. The participants noted that this allowed them flexibility to adapt pieces of the intervention while still implementing its' core components with fidelity. One SSP indicated, "We had control over how we set up our groups and we had a situation in my school which required me to change the format. The flexibility helped me deliver the intervention with fidelity and also meet the needs of the students." Participants all agreed that that participating in the development of intervention lessons helped them understand the core components of the intervention better, which helped them engage their students. One participant stated, "In my opinion it was organized, adaptable, and engaging for students. The activities helped kids make a connection and it was really clear for them," which generated agreement among other participants. Overall, the agreement indicates that having the capacity to weigh in on the activities embedded within the lessons helped to facilitate their own and students' understanding and interest in the content. They also agreed that their level of understanding of the intervention was critical by indicating that their understanding of the intervention impacted students' learning of the concepts. SSP implementers also noted the importance of participating in developing a common group behavior management strategy (e.g., creating the *SMARTS Jar*, a group behavior management strategy developed by the investigators with input from the implementers). One SSP indicated, "Having a strategy to keep kids engaged was key to the success of the intervention." This was another sentiment that was agreed upon by all focus group participants. In fact, the *SMARTS Jar* behavior management component

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Table 2. Correlations Between Skill Lessons and Processing Adherence and Quality and Student Participation in Lessons, Engagement in Lessons, and Intervention Acceptability

	Student Participation[c]	Student Engagement[c]
Fidelity to Skill Lessons		
Adherence[a]	0.25	0.17
Quality[b] of Skill Introduction	−0.01	0.01
Quality of Activities	0.12	0.01
Quality of Reflection	−0.05	−0.17
Quality of Modeling	0.16	0.10
Quality of Coaching	0.10	−0.01
Quality of Practice	0.31*	0.24
Quality of Behavior Management	0.21	0.37*
Fidelity to Processing Data		
Adherence[a]	0.03	0.20
Quality[b] of Student Data	0.15	0.14
Quality of Teacher Data	0.04	-.0.01
Quality of Assessing	0.06	0.08
Quality of Processing	−0.34	−0.36
Quality of Modeling	−0.13	−0.21
Quality of Coaching	−0.16	−0.10
Quality of Practice	−0.09	−0.03
Quality of Behavior Management	0.07	0.14

Note. [a]Adherence was measured via direct observation using a 4-point Likert-type scale (1 = *Poor*, 4 = *Excellent*). [b]Quality was measured via direction observation using a 4-point Likert-type scale (1 = *Poor*, 4 = *Excellent*). [c]Counselor report of student participation and engagement was on a 10-point Likert-type scale (1 = *Never or Seldom*, 10 = *Always*). * $p < .05$, ** $p < .01$.

of this study was so successful it is now a key support in the SMARTS intervention.

Conversely, some of the feedback from the focus group contained constructive criticism. For example, several SSP implementers indicated the length of the training lessons for students as well as the number of topics to be covered in a single session could make facilitating a group difficult. For example, one participant stated, "The lessons didn't fit into thirty-minute sessions, sometimes I found it would even take me an hour to get through a session." Seven out of 12 implementers agreed with this sentiment, and it gave the intervention developer some indication to review the content of each lesson with to shorten the lessons without altering the goal of each lesson. Relatedly, four of the SSP implementers agreed that some students responded differently to the content and they often had to differentiate their teaching based on the student's concerns (e.g., disruptive behavior, attention difficulties). One of these SSP implementers noted, "One of my students got the concepts really, really quickly and the other students needed more examples, I needed to rephrase things, we had to go over vocabulary more so that kind of created a disconnect." When others were asked if they agreed with this sentiment, the remaining SSP implementers seemed to think this was just a common difference between students. It was suggested that some modifications or suggestions be applied to the treatment manual to assist future implementers with guiding student learners through content that was challenging—for example, some students with aggressive behavior needed increased guidance when asked to suggest prosocial alternatives for solving problems. These comments will shape additional content for the manual to provide differentiated guidance for implementers who work with youth who experience a range of challenging behaviors (e.g., externalizing, internalizing).

DISCUSSION

Schools experience barriers to adopting and implementing EBIs (Long et al., 2016). One the most challenging barriers is that interventions designed to address common concerns experienced by youth are often incompatible with the school setting. That is, successful implementation is in conflict with the structure and routines present in schools (Forman et al., 2013). One possible solution is developing interventions and research studies in collaboration with school personnel who represent the end user of these interventions (Dishion, 2011). PAR methods and CP strategies are complementary frameworks that can be used to design and conduct school-based research studies by cocreating interventions and research studies with key stakeholders to ensure developed interventions meet the needs of students and SSP implementers. The purpose of this study was to illustrate the use of PAR and CP methods during the development of SMARTS and explore quantitative (e.g., fidelity, social validity) and qualitative (e.g., focus group) data to examine the implementation and use of the SMARTS during an RCT. The descriptive analyses suggest that SMARTS can be implemented with adequate fidelity. Moreover, the results indicate the quality of implementation was associated with student participation and

engagement—though more research is needed to determine if PAR and CP drive these associations.

The quantitative analyses are consistent with the qualitative data collected from SSP implementers where they reported having input on activities used in SMARTS sessions helped facilitate a deeper engagement in the study and their own understanding of SMARTS. This engagement was also reflective of a deeper interest in both the study methods, the intervention materials, and contributed to the quality of their own student training groups. Similarly, SSP implementers indicated the importance of a collective behavior management system, the *SMARTS Jar*, as an effective tool to facilitate SMARTS student training sessions. These observations align with significant correlations between observations of the quality of the of behavior management used by school counselors and students' engagement in SMARTS sessions and the focus group feedback collected after the close of the study.

STUDY LIMITATIONS

Several limitations of the study lend themselves to future areas of research that should be considered. First, consistent with feedback from the focus group, there is a need to further discern the components of SMARTS that are necessary to produce effects. A viable line of research would empirically derive the core intervention elements of SMARTS. The exploratory analyses presented suggest associations between the fidelity with which some components of SMARTS are implemented and student participation and engagement in the intervention. Although these results are promising to uncovering *potential* intervention components that may be important to successful implementation of SMARTS, these results are correlational in nature and limited by a small sample size. Thus, additional research is necessary to rigorously test the impact of SMARTS components. By systematically analyzing the presumed core intervention elements, researchers could determine the operative features of SMARTS (Sheridan et al., 2013). Empirically determining the elements of SMARTS that are modifiable and non-modifiable would provide implementers guidance on which components are critical to implement and which components can be tailored to context in which the intervention is being used.

A related line of research could systematically analyze PAR and CP procedures. Results from this study suggest that natural implementers viewed the intervention as favorable and were able to implement SMARTS with fidelity. However, we are unable to determine the unique impact of PAR and CP procedures on the faithful implementation of SMARTS. Future research focused on unpacking the procedures of PAR and CP that result in acceptable, feasible, and evidence-based interventions could help researchers identify the strategies needed to develop interventions that fit the context in which they are being implemented.

Aligned with focus group feedback on the length of intervention sessions, a nuanced examination of the dosage of SMARTS could be beneficial. This study focused on adherence and quality of delivery; however, understanding threshold and saturation levels could aid in the effective implementation of the intervention. In particular, exploring the levels of SMARTS implementation needed to produce optimal outcomes (i.e., the level at which significant effects can be expected) along with the points at which the effects of the intervention may have been reached, can provide valuable information to the level of intervention implementation that is required, optimal or unnecessary to produce effects (Sheridan et al., 2013).

IMPLICATIONS

PAR and CP may be promising approaches for developing, refining, and disseminating school-based interventions that fit the contextual needs of schools. Through an iterative process using PAR and CP, SMARTS has evolved into a dynamic intervention that school personnel perceive as feasible, relevant, and impactful. They also can achieve high levels fidelity of implementation with minimal support—and though more research is needed to fully determine whether this is true—there is some anecdotal focus group evidence to suggest this type of research engagement with natural school implementers may confer positive effects for students. One thing is for certain, PAR and CP approaches to developing and studying the effects of intervention materials cooperatively developed alongside real school-based implementers positions observed study effect sizes of an intervention within true contexts they will be used in the future as opposed to effect sizes observed in highly controlled studies. It is clear natural school implementers view this approach to school-based intervention development and research as value added—a value that may transfer positive effects to students. In this way, SMARTS and future interventions developed in a similar manner hold promise as one method to help address the persistent research to practice gap in education.

DISCLOSURE

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