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Predictors of Healthy Youth Relationships Program Implementation in a Sample of Canadian Middle School Teachers

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Abstract

Implementation of evidence-based, Tier 1 social-emotional learning (SEL) programming that supports healthy relationships skills is recognized as a key mental health promotion and violence prevention strategy for youth. However, work specifically exploring how to support the high-quality implementation of such programming with Canadian teachers and schools is just beginning to emerge. Drawing on implementation frameworks that emphasize the importance of setting, provider and implementation process characteristics for understanding program implementation outcomes, this prospective, longitudinal study explores implementation of the Fourth R, a SEL-based healthy relationships program, in a Western Canadian province using a sample of middle school teachers. The aim of this mixed-methods study was to illuminate relationships among teachers' attitudes towards evidence-based programming, perceptions of organizational climate and training experience with program implementation outcomes (dosage, quality, fidelity). Findings of this exploratory study identified that these characteristics influenced implementation dosage, quality and fidelity in differential ways. Qualitative data drawn from teacher interviews supported quantitative findings, and highlighted the importance of organizational support for high-quality implementation. We discuss areas for further study, given that there are significant gaps in knowledge about teachers' attitudes towards evidence-based programming, school climate and other systemic factors in the Canadian context, as well as relevance of study findings to the field of school psychology.

Keywords: adolescent, healthy relationships, program implementation, school climate, social-emotional learning

Introduction

Universal, Tier 1 resources (e.g., efforts focused on universal strategies, such as social-emotional learning (SEL) programs, and designed to meet the needs of 80-85% of students in the building; Alberta Education, 2017) implemented by teachers in the classroom as part of daily teaching practice are an important part of integrated school mental health strategies (Short, 2016). However, the implementation of these resources has not traditionally been a focus within Canadian educators' scope of practice, and thus questions exist as to how ready teachers and schools are to implement these programs in the field. This issue is critical because a growing body of literature within implementation science indicates the importance of high-quality program implementation to achieving positive student outcomes (Wanless & Domitrovich, 2015). Thus, information on factors predicting implementation of Tier 1 programs is important for school-based mental health teams as part of strategy development and training. This paper uses mixed methods to explore teacher factors and implementation quality in a sample of 79 Canadian teachers who were implementing an evidence-based, Tier 1 SEL program for middle school students.

Importance of Implementation Quality

Across multiple disciplines, there is now recognition that the implementation of interventions with evidence of effectiveness (i.e., evidence-based programs, EBPs) is a critical part of health promotion and prevention (Brownson, Baker, Leet, & Gillespie, 2003; Flay et al., 2005; McCall, 2009). However, while such programs may be a necessary part of strategies to improve child and adolescent well-being, having access to manuals alone is not sufficient (Gottfredson et al., 2015). Particularly, how to promote the real-world implementation of such interventions is a growing topic of interest among school-based researchers and practitioners,

given both the failure to move EBPs into practice (Fixsen, Blase, Naoom, & Wallace, 2009), and the critical links between implementation and youth outcomes (Durlak & DuPre, 2008; Wanless & Domitrovich, 2015). In seminal research on the link between implementation and program outcomes, Durlak and DuPre (2008) reviewed studies examining over 540 health promotion/prevention interventions that also reported implementation data, finding that effect sizes were two to three times higher when programs were implemented with good⁴ dosage (i.e., extent of the original program delivered) and fidelity (i.e., delivery that resembles the original program). Since Durlak and DuPre's (2008) work, multiple other papers have demonstrated the importance of the implementation-outcome link, including in the school context (e.g., Bradshaw, Koth, Thornton, & Leaf, 2009; Durlak, 2015; Forman et al., 2013; Wanless & Domitrovich, 2015).

Predictors of Implementation Outcomes

In the same paper, Durlak and DuPre (2008) also noted that, while high-quality implementation overall predicted better outcomes, there was a large degree of variability in implementation across individual providers. Given this, research in implementation science increasingly focuses on exploring how various characteristics at the level of the intervention itself, at the provider level and at the larger school/macro level impact implementation outcomes, in order to understand potential points of intervention for improving implementation quality (Domitrovich et al., 2008). To summarize these characteristics and their influence on implementation in a systematic way, implementation frameworks, such as the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009), can be used.

⁴ 'Good' is not specifically defined in this study, but the authors' note that "expecting perfect or near-perfect implementation is unrealistic. Positive results have been obtained with levels around 60%; few studies have attained levels greater than 80%. No study has documented 100% implementation for all providers" (p. 331).

Developed from a review of implementation theories, the CFIR specifies how five key domains – the outer setting (e.g., external characteristics, target population needs), the inner setting (e.g., implementation climate, organizational culture), provider characteristics (e.g., knowledge and beliefs, self-efficacy for intervention use), intervention characteristics (e.g., adaptability, relative advantage, cost), and the process of implementation (e.g., planning for implementation, the ability to carry out implementation according to the plan) – influence overall program implementation. Such frameworks give a conceptual basis for studies of implementation in school mental health, and can be used to help organize findings from the school-based implementation literature.

To date, some work has explored the association between provider and intervention characteristics and program implementation in school-based settings. Looking at the implementation quality of a universal SEL program for elementary students, Domitrovich et al. (2015) found that two characteristics influenced implementation – emotional exhaustion (a provider characteristic, associated with poorer implementation quality) and whether the intervention structure fit well with their teaching style (an intervention characteristic, associated with higher implementation quality). Similarly, in a sample of K-8 teachers from Chicago, Malloy et al. (2015) found that attitudes towards SEL programs (a provider characteristic) predicted program dosage. Beliefs around program effectiveness and flexibility of program content were also related to implementation fidelity of a substance use prevention program in a U.S. national sample of middle school teachers (Ringwalt et al., 2003).

Work on implementation of school-based mental health programs also points to the potential role of perceptions of organizational characteristics in supporting high implementation quality (i.e., inner setting characteristics; Gottfredson & Gottfredson, 2002; Han & Weiss, 2005;

Wanless & Domitrovich, 2015). For example, in a sample of teachers from 20 elementary schools in Hawaii, Beets and colleagues (2008) found that perceived school climate predicted teacher beliefs about their responsibility to deliver school-based prevention programs, and that in turn, these beliefs predicted the amount of curriculum actually delivered. Gregory and colleagues (2007) also found that more supportive perceived school climate was associated with dosage of violence prevention programming in a sample of teachers from 10 elementary and two middle schools in Chicago and area. A solid body of research also identifies the importance of perceived principal support to universal program implementation quality (e.g., Johnson, Pas, Loh, Debnam, & Bradshaw, 2017; Ringwalt et al., 2003); in the larger mental health services field, leadership qualities have also been demonstrated as key to promoting a positive implementation climate (i.e., shared understanding of the type of practices and behaviors that are rewarded, supported and expected in the organization; Aarons, Ehrhart, Farahnak, & Sklar, 2013), and positive provider attitudes about program adoption (Aarons, 2006). In the Canadian context, work in the school setting has primarily focused on the implementation of positive behavior interventions at the elementary level (Kelm, McIntosh, & Cooley, 2014; McIntosh, Moniz, Golby, & Steinwand-Deschambeault, 2014). Thus, there is a need to examine the implementation of SEL programs in Canadian secondary school settings.

Current Research

Since 2012, we have been involved in the provincial (Alberta) scale-up of a program called the Fourth R (Dozois, Wells, & Crooks, 2016; Exner-Cortens, Wells, Lee, & Spiric, 2019). This program is designed to promote healthy relationships and prevent dating violence among middle school students through the acquisition of SEL skills (Crooks, Zwarych, Hughes, & Burns, 2015). Consistent with universal program principles, the Fourth R is implemented as

part of regular curriculum (i.e., is not an add-on or stand-alone program), and is aligned with curricular expectations (including hours requirements) in all provinces and territories. While multiple versions of the Fourth R are available (e.g., a version for Grades 9-12 English, an Indigenous Perspectives version), the most widely implemented version is delivered as part of regular health/physical education curriculum in grades 7-9. Multiple studies now demonstrate the efficacy of the Fourth R for promoting healthy relationships when implemented in the context of evaluation studies (Crooks et al., 2015; Crooks, Scott, Ellis, & Wolfe, 2011; Wolfe, Crooks, Chiodo, Hughes, & Ellis, 2012; Wolfe et al., 2009).

Exploring implementation in a sample of teachers from six provinces who had been trained in the Fourth R in the previous two to eight years ($n=197$), Crooks, Chiodo, Zwarych, Hughes and Wolfe (2013) found that 72% of respondents had implemented the Fourth R in the past year, and that the majority of the sample (64.6%) were able to implement 60% or more of the program (see Footnote 1). However, a number of barriers to implementation were also present, including timeframes that were difficult to meet, and difficulties implementing role plays (a core component of the program). In this sample, self-reported high-fidelity implementation (i.e., implementation rates over 80%) was predicted by preparedness following training, perceiving more benefits of the program, and greater systems-level support/accountability (i.e., provider and inner setting characteristics), although all of these were measured retrospectively.

Over the past six years, we have noted a number of similar implementation barriers in the Alberta context (Dozois et al., 2016). However, while prior Fourth R implementation work provides some guidance for how to approach implementation barriers, the majority of the sample included in this past work was not from Western Canada (only 11.7% were from Alberta, with

approximately half the sample from Ontario), and differences in the policy and educational environments, as well as geography, between provinces may mean that what facilitates or challenges implementation in one setting is not as relevant in another. This prior work was also entirely retrospective. Given this, the purpose of this preliminary, exploratory investigation was to prospectively explore the associations between provider characteristics and the implementation of the Fourth R as part of a provincial scale-up effort, in order to more systematically understand implementation challenges in this context.

Methods

Participants and Procedures

All participants in this study were trained to implement the evidence-based Fourth R program (Wolfe et al., 2009), a program developed in Canada. In this study, 96% offered the program as part of health/physical education curriculum in grades 7-9; the remainder taught the Grade 9 and Grade 11 English curriculums. The Fourth R is recognized as a complementary program in the CASEL (2015) guide for effective middle and high school SEL programs, and is on the Public Health Agency of Canada's Canadian Best Practices Portal as a promising practice for violence prevention. Fourth R teacher training takes place one time over a half- or full-day, and focuses on increasing familiarity with program content; building capacity to facilitate skill-building activities with students; and discussing the importance of high-quality implementation to program success (for more details on program content, training and implementation, please see Crooks et al., 2015). Schools in this project received training as part of a larger, six year initiative called the Alberta Healthy Youth Relationships (AHYR) Strategy (full details on the strategy are available in Exner-Cortnens et al., 2019). In brief, at the beginning of the initiative, the AHYR project team contacted schools and school jurisdictions to let them know that they

could access free Fourth R training (as long as they provided staff release time), but as the initiative grew, schools/school jurisdictions would contact the AHYR team to receive training. Training was provided at the school or school division, at a time that was convenient for participating schools. Trainings were all conducted by Fourth R Master Trainers, who are certified to provide Fourth R program training and prepare teachers for implementation. All schools received free Fourth R training, as well as free Fourth R program manuals for implementing teachers; however, no additional formal implementation support from the AHYR team was part of the initial strategy (though teachers could and did reach out to the project team with questions, and received informal consultation through this mechanism). At the time this research was conducted, Fourth R training had been offered to 903 teachers in 35 school divisions across the province. This project was approved by a university research ethics board.

Qualitative. We began our implementation study by collecting semi-structured, individual interview data from 11 currently implementing Fourth R teachers in Alberta in spring 2016. The purpose of these interviews was to more deeply understand experiences with Fourth R implementation prior to proceeding with the quantitative implementation study described below (for more details on the qualitative methodology, please see Supplemental Materials). We recruited interview participants in spring 2016, by asking currently implementing teachers if they were willing to participate in a telephone interview. All interviews were conducted by a doctoral-level project research assistant. Prior to the interview, the 11 teachers completed a short survey asking them to rank their top three perceived barriers to Fourth R implementation, and these barriers were then explored more deeply during telephone interviews that lasted approximately 30 minutes.

Quantitative. Participants for the quantitative portion of this study were 79 middle school teachers. Between August 2015 and December 2016, teachers who were trained in the Fourth R were asked to take part in surveys exploring implementation in Alberta. The consent rate across all trainings in 2015 and 2016 was just over 50% (n=197). In order to increase the reach of this project, we also sent a recruitment email to all teachers who had been trained in the Fourth R in Alberta between June 2012 and June 2015 and for whom we had contact information, to ask them to participate in the project. The consent rate from teachers trained during this period was 15% (n=63). Together, this eligible sample size (N=260) represented 29% of all teachers trained since the initiative started in June 2012. In September 2016, all teachers who had consented to the research project were sent a start-of-year implementation survey by email. This survey was completed by 151 teachers (response rate=58%). In April 2017, teachers who had responded to the start-of-year implementation survey were sent an end-of-year implementation survey by email.

Quantitative Measures

Implementation characteristics. Three characteristics were selected based on a review of the implementation literature, as well as pilot data from the 11 teachers who participated in project interviews.

- 1) ***Process of implementation characteristic: Time since training.*** Providers indicated how many years it had been since they received their initial Fourth R training (less than 1 year; between 1-2 years ago, between 2-3 years ago, between 3-4 years ago).
- 2) ***Provider characteristic: Attitudes towards EBPs.*** No scale that assessed these items with teachers in the context of school mental health was located. Thus, we created an 11-item Attitudes Towards EBP scale by combining relevant items from several

existing scales (Mathiesen & Hohman, 2013; Melnyk, Fineout-Overholt, Feinstein, Sadler, & Green-Hernandez; Rice, Hwang, Abrefa-Gyan, & Powell, 2010; Ubbink, Guyatt, & Vermeulen, 2013). Example items include “when implementing evidence-based programs, it is very important to include all the elements as outlined by the program manual” and “the use of evidence-based programs is ‘cookbook’ teaching that disregards practical experience” (1=strongly disagree, 5=strongly agree; $\alpha=.73$). Exploratory factor analysis demonstrated that a one-factor solution was appropriate.

- 3) *Inner setting characteristic: Perceptions of organizational climate.* Teachers responded to five items from the Chicago Public Schools 5Essentials Teacher Survey (UChicago Impact, 2017). Example items include “we have so many different programs in this school that I can’t keep track of them all” and “once we start a new program in this school, we follow up to make sure that it’s working” (1=strongly disagree, 4=strongly agree; $\alpha=.66$).

Implementation outcomes. We included three implementation outcomes on the end-of-year survey (Durlak & DuPre, 2008). Dosage was assessed by asking “Thinking about all the Fourth R programs you taught this year, approximately what percentage of program lessons were you able to implement?” (less than 25%; between 25-50%; approximately 50%; between 50-75%; between 75-100%; 100%). Based on the sample distribution, this item was dichotomized for analyses (1=less than 50%; 0=more than 50%). Quality was assessed by asking teachers to think about 13 characteristics that might have made the Fourth R difficult to implement (e.g., time frames difficult to meet), and to select all that applied (where 1=yes and 0=no; there was also space for teachers to write in additional reasons). Fidelity was assessed by asking teachers to report the extent to which they completed core Fourth R skills practice activities (active

listening, assertive communication, delay/negotiation/refusal skills) with their students.

Response choices were did not attempt; attempted but not complete; and completed. Based on the sample distribution, this item was dichotomized for analyses (1=completed; 0=did not complete (did not attempt or attempted but did not complete)). All measures come from standard Fourth R implementation surveys (Crooks et al., 2015).

Analysis

Qualitative. Detailed notes were taken during each interview, and used as the basis for analyses. Audio-recordings of each interview were also taken and used to supplement hand written notes, in order to ensure that the interview was captured accurately. Notes were themed using deductive qualitative content analysis techniques (Sandelowski, 2000). First, the first author and the doctoral-level project research assistant independently reviewed interview notes, and met to discuss emerging themes. From this discussion, three theme areas were identified: Barriers to Implementation; Supports for Implementation; and Understandings of Evidence-Based Programs. The project research assistant then reviewed the interview notes to categorize the data under each of these broad themes, and identify sub-themes (e.g., under Barriers, the sub-themes of role plays, time frames, support staff, external influences, content, format). Data comprising themes and sub-themes were then reviewed by the first author.

Quantitative. Data for the full sample were first summarized using descriptive statistics. We then explored associations between implementation outcomes and characteristics in the subsample of participants who had implemented Fourth R in the 2016-17 school year (n=57) using bivariate statistics. If more than one characteristic was associated with an implementation outcome, both were subsequently included in a logistic regression model. We also calculated

effect sizes for each outcome variable using Cohen's d for continuous variables and Cramer's V for categorical variables.

Results

Sample Descriptives

Qualitative. The 11 interviewees represented six school divisions (public and Catholic) and two private schools. Respondents represented several areas in the province, though most were from two large population centres (72.7%).⁵ These participants had all taught the Fourth R in the 2015-16 academic year and had on average 18 years of experience working with youth, but had only been teaching the Fourth R for on average one year (81.8% were trained in the last year, 18.2% were trained 3-4 years ago).

Quantitative. Participants who responded to the Fall 2016 survey (N=151) represented 20 school divisions (public and Catholic) and two private schools, though most came from two large population centres (68.2%). Of these participants, 68.9% said they planned to teach Fourth R programming in the coming year (reasons for not teaching again were primarily because their workload/teaching assignment had changed). Of those who also completed the Spring 2017 survey (n=79), just over half (54.4%) had received training in the past year, with the remainder receiving training in the 2015/2016 academic year (25.3%) or between the 2012/13-2014/15 academic years (20.3%). Based on training data (available for 115 participants), the participants were predominately female (74.8%) and had on average 14 years of experience working with youth (SD = 7.31, range 1-32 years).

⁵For comparison, in the 2016 census, approximately 67% of the population lived in the metropolitan area for these two cities (Statistics Canada, 2017).

Implementation Outcomes: Triangulating Quantitative and Qualitative Findings

Implementation barriers. Of the 79 participants who completed surveys in fall 2016 and spring 2017 (see Supplemental Material for a comparison of these two groups), 72.2% (n=57) implemented the Fourth R in the 2016/17 school year (i.e., reported that they had taught Fourth R programming in the past school year; Table 1). Among this group, only 40.4% were able to implement more than 50% of Fourth R materials over the course of the academic year; related to this, the two most common barriers to implementation quality were that timeframes were difficult to meet and that the facilitators encountered external influences (e.g., disruptions, assemblies; Table 1). In terms of skills implementation, the largest number of facilitators reported that they completed the active listening skills activities, followed by communication skills activities, and finally delay/refusal/negotiation skills activities (Table 1). The order of completion parallels the order in which these skills are taught in the curriculum, and also represents increasing complexity across the three skills. Thus, it is difficult to know whether this decline in implementation fidelity was because teachers ran out of time, or due to the increasing complexity of later skills.

The data we collected from 11 Fourth R teachers in spring 2016 mirror the survey data in terms of common barriers to implementation.⁶ In this sample, trouble meeting time frames was the most commonly listed barrier to implementation (with over half the interview sample listing this as one of their top three barriers). Explaining why this barrier existed, most teachers described problems with health scheduling, including short duration of their classes, the schedule cycle and infrequent health class scheduling as the reason for time barriers. Less common time-

⁶ Please see Supplemental Materials for full qualitative findings with supporting quotes.

related challenges included the additional time it takes to present the lessons to youth who are learning English, time required to prepare Fourth R lessons, and class sizes.

The second most common barrier in the interview sample was external influences (45.5% of the interview sample listed this as a top three barrier). External influences included assemblies, other programs/groups that were scheduled to present during health time and “all the extra things that occur at the school”. Together, qualitative data also support the lower level of dosage reported in quantitative survey data: “The program is never difficult to implement, it is just difficult to get through the lessons and the units...I don’t ever get through the Fourth R. Ever. This is a consistent issue year to year.”

In terms of skill implementation, a substantial minority of interview respondents listed “role plays difficult to carry out” and “youth resisted role play exercises” as top three implementation barriers. Reasons for these difficulties included immaturity/youth having trouble taking the role plays seriously (e.g., “the training I did was really good...but in those videos, the kids are awesome. They are ideal. They acted so perfect. In reality, we have more resistance – and with immaturity, even more so”), as well as a lack of social media-based scenarios. As role plays are a key component of delay/refusal/negotiation skill development (core Fourth R skills), potential issues with role plays may in part explain the lower quality score for this activity in the survey sample.

Associations with implementation characteristics. In the survey sample, dosage was associated with the year the provider was trained, such that providers were somewhat more likely to implement greater than 50% of the program in the 2016/17 school year if they had been trained prior to 2015 ($d=.31$, $p=.072$, standardized residual, trained before 2015 and implemented more than 50% = 1.6; Table 2). Implementation fidelity (both the completion of communication

and delay/refusal/negotiation skills) was associated with more positive attitudes towards EBPs ($d=0.56$, $p=.052$, mean difference (MD)=0.21, 95% CI (-0.0016, 0.43) and $d=0.52$, $p=.069$, MD=0.20, 95% CI (-.016, 0.42) respectively; Table 3). Finally, providers were less likely to say timeframes were difficult to meet if they also reported more positive attitudes towards EBPs ($d=-0.50$, $p=.081$, MD=-0.20, 95% CI (-0.42, 0.025); Table 3), and if they perceived a better organizational climate ($d=-0.67$, $p=.025$, MD=-0.24, 95% CI (-0.44, -0.031); Table 3). For this outcome, perceived organizational climate remained a predictor in a model controlling for the provider's EBP perception scores (OR=0.11, $p=.024$, 95% CI (0.016, 0.75)); however, EBP perceptions themselves no longer predicted implementation quality once controlling for perceived organizational climate (OR=0.33, $p=.15$, 95% CI (0.067, 1.51)). The three characteristics considered in this study were not associated with the number of external influences the provider encountered when implementing the Fourth R.

In the interview sample, we asked about facilitator's own understanding/perceptions of EBPs, as well as their perception of organizational attitudes toward EBPs. In terms of their own understanding, the majority (nine out of 11) knew what EBPs were (i.e., could provide a general definition), and once the definition was clarified for the two respondents that did not know/were unsure, all 11 respondents stated that a program being an EBP was an important designation when they decided about resource adoption for their classroom. However, interviewees did not feel as confident about their school's perception of EBPs; only half (six of 11) thought it was probably or definitely important, with the other five stating maybe, that they didn't know/were unsure, or that they perceived that it wasn't. Several respondents also commented that although EBPs were important to them personally, they weren't as sure about other teachers in their building: "other teachers – they don't seem to trust it." Thus, as in the survey sample, there are

differences in organizational climate for EBP adoption and implementation that are important over and above the provider's own attitudes.

Discussion

In our prospective survey of Western Canadian middle school teachers, we found that having more positive attitudes towards EBPs was associated with somewhat better implementation quality and fidelity, and that perceiving a stronger organizational climate was associated with higher implementation quality, specifically around time issues. Finally, providers who had been trained less recently (and presumably had thus been implementing longer/had the ability to continue implementing) reported better implementation dosage. In interview data, additional support was provided for the top implementation barriers noted in the survey sample, and the importance of own versus organizational perceptions about EBPs was also highlighted.

Although preliminary due to the small sample size, this mixed-methods, prospective study demonstrates the importance of assessing provider's own attitudes towards EBPs, as well as perceptions of the larger organizational climate, two variables that are less frequently studied overall in the school-based implementation literature. However, we note that these characteristics have been frequently studied in the larger mental health services field, with support for the relationship between these two characteristics, and their importance in understanding implementation (Aarons et al., 2013; Novins, Green, Legha, & Aarons, 2013). For example, Aarons and Sawitzky (2006) assessed attitudes towards evidence-based practices in a sample of 301 mental health service providers, and found that positive provider attitudes were associated with supportive, motivating and achievement-focused organizational cultures, supporting our findings around the connection between these two characteristics.

In terms of interpreting effect sizes from this study, Tanner-Smith, Durlak and Marx (2018) present mean effect size distributions for universal prevention programs (while these effect sizes are for program outcomes and not implementation, we feel their use as a benchmark is an improvement over acontextual, universal effect sizes), and report that, “with few exceptions, the median average effect of universal prevention programs for various outcomes tended to fall within the range of 0.07-0.16 standard deviations” (p. 1098). Median effect sizes in our study were 0.14 for fidelity, 0.21 for quality and 0.31 for dosage, or within the range of and slightly larger than those in the Tanner-Smith et al. (2018) review. To provide a more definitive benchmark, similar work exploring average effect sizes for program implementation is needed.

Our quantitative findings reflect and extend prior work on Fourth R implementation nationwide (Crooks et al., 2013). The past-year implementation rate in our study (72.2%) was identical to the implementation rate in the national study (72%), and reasons for not implementing in the past year were also very similar (e.g., primarily because teaching assignment had changed). Main barriers in both our quantitative and qualitative samples also replicated those in the national study (time frames, external influences, role plays). However, our dosage was much lower than in this prior study; in the national study, approximately 40% of respondents implemented more than 80% of the program, whereas in our study, only 17.5% of respondents indicated that they implemented more than 75% of the program. Reasons for this difference may represent policy or other structural differences between provinces, a topic deserving further study. However, qualitative and quantitative findings highlighted that actual time allocated to required health classes in Alberta, as opposed to the recommended number of hours listed as part of curricular expectations for junior high (which in Alberta is 50 hours; Alberta Education, 2016), is a barrier to successfully completing all program sessions in many

schools. Since the recommended number of hours exceeds the number of hours required to implement all Fourth R lessons (~20-30 hours, depending on grade level⁷), we feel this implementation challenge speaks to broader issues of lack of prioritization and accountability for health education. Other implementation research we have conducted demonstrates that this lack of accountability is a problem nationally (author citation). School teams preparing to implement the program can thus think about how they will ensure adequate dosage given potential scheduling constraints, a factor which is important to consider as the match between class time and required programming time has been shown to influence implementation quality and dosage in other research (Mihalic, Fagan, & Argamaso, 2008). School teams can also take on an advocacy role, to ensure that required health education is viewed as parallel in importance to the implementation of more traditional subjects like literacy and numeracy, and that the recommended number of hours are devoted to health education within their school setting.

In terms of dosage, our findings suggest that those providers who were still implementing the Fourth R two or more years after training were able to get through more of the program. While time since training is not typically studied as a process of implementation characteristic, we included it as we felt it was an indicator of implementation planning within the school. Indeed, in other work we have done exploring the implementation of the Fourth R in Alberta, we have found that implementation rates drop off substantially the year after the provider is trained, primarily due to a number of school- and system-level barriers (most commonly, changes to teaching assignment, indicating a lack of planning for implementation); this is also true at the national level (Crooks et al., 2013). Thus, providers who are still implementing are potentially in environments with more effective implementation planning and execution (e.g., where health

⁷ See <https://youthrelationships.org/health> for details on number of lessons and time requirement in grades 7-9.

scheduling is done to accommodate the program; where the recommended number of hours are given to health education), and planning is linked to higher implementation quality (e.g., Spoth, Gyll, Redmond, Greenberg, & Feinberg, 2011). Per our qualitative data, it is also possible that more supportive systems recognize the importance of allowing a teacher the time needed to develop expertise in implementing an EBP (e.g., ensure that teachers receive the same teaching assignment for several years), encouraging more sustainable implementation.

In terms of fidelity, the two skills that were associated with positive attitudes towards EBPs (i.e., communication and delay/refusal/negotiation skills) both require role-plays for successful completion, and role-plays may be a difficult teaching format for some educators, potentially due to time or personal comfort barriers (Haignere, Culhane, Balsley, & Legos, 1996), or lack of training/experience in implementing these types of scenarios; thus, the one-time training offered as part of this project may not have been enough to build role-play capacity for teachers who were not already comfortable. Our qualitative data also specifically highlighted youth resistance as a potential reason for difficulty implementing role plays. When asked about potential strategies for overcoming this barrier, interview respondents discussed additional training on role plays as an important support (e.g., “examples of where the kids haven’t bought in – what are ways we can deal with this?” (Grade 9 teacher)), again suggesting the need for longer training/greater implementation support.

It is also possible that promoting more positive attitudes about the importance of EBPs may help providers overcome internal barriers to role play implementation. To our knowledge, attitudes towards EBPs have received limited attention in the Canadian literature, but the findings of this study suggest they are an important provider characteristic for inclusion in future research (and as noted above, they have been shown to be important in the larger mental health

services field). However, it is important to note that not all teachers faced issues with implementing role plays. As one teacher commented, “the kids loved it, their demonstrations and examples of passive, aggressive, assertive...their role play was well done. It was easy to see they totally got it” (Grade 8 teacher). Thus, as role play is a key feature of many effective prevention programs (Nation et al., 2003), future research can also focus more deeply on determining provider and classroom characteristics that predict difficulties with role play implementation, in order to suggest potential strategies for addressing this barrier.

Finally, in terms of quality, we found that better perceived organizational climate was associated with providers facing less time pressure, and that associations with organizational climate mattered over and above the provider’s own attitudes towards EBPs; this reflects prior research in the larger mental health services field highlighting the key relationship between inner setting characteristics (e.g., leadership; organizational climate) and positive provider attitudes towards EBPs (Aarons, 2006; Aarons & Sawitzky, 2006). As suggested by this literature, even if a provider’s own attitudes are positive, it is difficult to implement well if organizational climate doesn’t support implementation (as also highlighted in our qualitative data). In their study of the effects of school climate on implementation (10 elementary, two middle schools), Gregory and colleagues (2007) found that supportive climate was associated with higher implementation dosage, whereas in our study, it was associated with quality. This may be because of differences between the structure of elementary and middle school environments (e.g., in middle school, the teacher likely only has the student for class once (or less) a day, meaning there is less time to make up content (a dosage factor) across the day). In addition to a supportive climate, in one of the few studies looking at non-elementary programming, Johnson et al. (2017) found that greater principal support was associated with greater openness to adopt new SEL practices among high

school teachers in Maryland, and qualitative work by Barwick, Barac, Akrong, Johnson and Chaban (2014) also found that a key motivator for practice change among Canadian educators included organizational support for implementation, such as administrator buy-in. Thus, organizational climate may function in multiple ways in the school setting, and is deserving of additional study.

Limitations

There were several limitations to the present study. First, our sample sizes for both quantitative and qualitative data were small, and as such, these findings should be considered exploratory. For the quantitative data, because of the small sample size and sampling strategy, generalizability is limited. Our small sample size also meant we had limited power to detect significant effects. Specifically, power analysis indicated that to detect an effect size of 0.12 (the middle of the effect size range in the Tanner-Smith et al. (2018) study) in an independent samples t-test with power=0.80 and alpha=0.05, the needed sample size was approximately 2182 people (R V3.2.4). Given our actual final sample size of Fourth R implementers (n=57), the actual effect size we would be able to detect in this type of test with power=0.80 and alpha=0.05 was 0.76; thus, our sample size was much smaller than desirable, but reflects what we were realistically able to capture as part of a voluntary program implementation strategy and evaluation project. However, we feel that our findings nonetheless speak to the importance of considering not just individuals who are implementing but the systems within which they are implementing. Our response rate was also fairly low, but likely typical for this type of research. Finally, although we had prospective quantitative data, our interview data represented retrospective reflection on Fourth R implementation. We also developed our own measure to assess attitudes towards EBPs; while items on our measure are similar to the Divergence and

Openness sub-scales of the original Evidence-Based Practice Attitude Scale (EBPAS; Aarons et al., 2010), as mentioned above, we did not find any existing measures that fit the school context, and so needed to develop a school-specific measure. To assess organizational climate, we were unable to administer any measure that was perceived as evaluative; however, we acknowledge that in future work, the use of more detailed organizational climate scales, such as the Implementation Climate Scale (Lyon et al., 2018), would be beneficial. Dosage and fidelity were also self-reported, and are thus subject to social desirability bias.

Relevance to the Practice of School Psychology

School psychologists in Canada are increasingly asked to help their divisions plan integrated mental health strategies and scale-up Tier 1 programs. Discussion of implementation is a critical piece of strategy planning (Bradshaw, Debnam, Koth, & Leaf, 2009; Owens et al., 2014), and as our results highlight, also need to accompany large scale-up efforts. The current research demonstrates that factors that impact time for delivery (whether because of the structure of the school day or because of external influences) are potentially key factors to address when deciding on the adoption of universal resources as part of tiered approaches, as time issues have key implications for implementation dosage and fidelity. For example, school psychologists can prompt questions like, do the implementation requirements of this program (e.g., number and length of sessions) fit with our current school context? If not, what changes might need to be made (and are those changes feasible)? School psychologists can also advocate for the prioritization of health education within the school building. The potential for school psychologists to provide local coaching and technical assistance (e.g., around role play implementation) can also be explored (Owens et al., 2014; Reinke, Stormont, Herman, & Newcomer, 2014).

The current research also points to the importance of considering process of implementation, provider and inner settings characteristics as part of successful implementation of school mental health initiatives. We see school psychologists as playing a key role in helping school divisions think through implementation planning as part of strategy development, and feel the results of this research demonstrate the importance of attending to potential implementation challenges during this process. To this end, we recommend school psychologists use the CFIR, or other structured implementation frameworks, as part of a systematic implementation planning process when new resources come into the building. Finally, we note that the one-time training model used in this project was not optimal, and does not represent best practice in program implementation; however, our funding was designated for the purpose of scale-up (i.e., training as many teachers as possible) in response to high rates of domestic violence in the province, and did not support more in-depth fidelity monitoring (even though fidelity monitoring is key to implementation success; Novins et al., 2013). This represents a tension in real-world practice (i.e., using resources to get the program to as many teachers as possible via training with no monitoring vs. using resources to train a smaller number of teachers but offering more implementation support) that needs to be navigated with both funders and practitioners. In our own practice, we have moved away from the large scale-up model towards an implementation support structure because of the issues identified in this paper (author citation), and use the data we have collected to advocate for why funding scale-up alone is not enough to effectively solve social problems. For Fourth R nationally, focus has also moved to testing different implementation support models as part of larger scale-up. We thus encourage school psychologists who work in these spaces to use our study to continue to advocate for resourcing for both training and implementation support.

Conclusions

This study is the first to prospectively explore the implementation of a middle school SEL program in a Western Canadian province, and also one of the first to present data on teacher perceptions of organizational climate in Canada, both of which are important to the design of professional development and mental health strategy planning activities. Overall, quantitative and qualitative data highlight the need for systematic and comprehensive approaches to the scale-up of EBPs. This includes a need to consider multiple systems and their interactions. Future work is needed to more deeply understand how service providers are influenced by multiple interacting factors as they implement EBPs in the school setting.

Table 1

Descriptives for Dependent and Independent Variables in Implementation Sample (n=57)

Variable	% (n) or mean (SD)
<u>Implementation Outcomes</u>	
Dosage (% yes (n), >50% of program lessons implemented)	40.4 (23)
Fidelity (% (n), completed active listening skills)	64.9 (37)
Fidelity (% (n), completed communication skills)	56.1 (32)
Fidelity (% (n), completed delay/refusal/negotiation skills)	47.4 (27)
Quality (% yes (n), timeframes difficult to meet)	36.8 (21)
Quality (% yes (n), external influences)	36.8 (21)
<u>Implementation Characteristics</u>	
Training date (% (n), past year)	63.2 (36)
Attitudes towards evidence-based programs (mean (SD))	3.53 (0.40)
Perceived organizational climate (mean (SD))	2.91 (0.37)

Table 2

Bivariate Statistics and Effect Sizes for Associations between Year Trained and Implementation Outcomes

	Dosage: >50% of program lessons implemented		Fidelity: Completed active listening skills		Fidelity: Completed communication skills		Fidelity: Completed delay/refusal/ negotiation skills		Quality: Timeframes difficult to meet		Quality: External influences present	
	% Yes (n)	p-value; ES ^a	% Yes (n)	p-value; ES	% Yes (n)	p-value; ES	% Yes (n)	p-value; ES	% Yes (n)	p-value; ES	% Yes (n)	p-value; ES
Year Trained												
2016-17	33.3 (12)	$p = .072$ ES=0.31	62.9 (22)	$p = .58$ ES=0.14	55.6 (20)	$p = .92$ ES=0.068	42.9 (15)	$p = .47$ ES=0.17	44.4 (16)	$p = .27$ ES=0.22	38.9 (14)	$p = .92$ ES=0.056
2015-16	42.9 (6)		78.6 (11)		57.1 (8)		57.1 (8)		20.0 (3)		33.3 (5)	
Prior to 2015	83.3 (5)		66.7 (4)		66.7 (4)		66.7 (4)		33.3 (2)		33.3 (2)	

EBP=evidence-based program. ES=effect size. Percentages are number of ‘yes’ responses of those trained in a given year.

^aEffect size is Cramer’s V .

Table 3

*Bivariate Statistics and Effect Sizes for Associations between Continuous Implementation Characteristics and Implementation**Outcomes*

	Dosage: >50% of program lessons implemented			Fidelity: Completed active listening skills			Fidelity: Completed communication skills			Fidelity: Completed delay/refusal/ negotiation skills			Quality: Timeframes difficult to meet			Quality: External influences present		
	Yes ^a	No	p- value; ES ^b	Yes	No	p- value; ES	Yes	No	p- value; ES	Yes	No	p- value; ES	Yes	No	p- value; ES	Yes	No	p- value; ES
Attitudes towards EBPs	3.55 (0.38)	3.49 (0.41)	$p=.59$ ES= 0.15	3.51 (0.33)	3.55 (0.52)	$p=.81$ ES= -0.086	3.61 (0.38)	3.39 (0.40)	$p=.052$ ES= 0.56	3.61 (0.40)	3.41 (0.38)	$p=.069$ ES= 0.52	3.41 (0.45)	3.60 (0.35)	$p=.081$ ES = -0.50	3.48 (0.33)	3.56 (0.44)	$p=.53$ ES= -0.18
Organizational climate	2.98 (0.34)	2.85 (0.38)	$p=.25$ ES= 0.34	2.90 (0.38)	2.88 (0.34)	$p=.85$ ES= 0.055	2.93 (0.40)	2.86 (0.33)	$p=.49$ ES= 0.20	2.89 (0.42)	2.91 (0.32)	$p=.85$ ES= -0.053	2.76 (0.42)	3.00 (0.32)	$p=.025$ ES = -0.67	2.86 (0.35)	2.94 (0.39)	$p=.49$ ES= -0.20

EBP=evidence-based program. ES=effect size.

^aMean(SD).^bEffect size is Cohen's *d*.

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