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Evaluating Foundational Professional Development Training for Trauma-Informed Approaches in Schools

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Trauma-informed schools reflect a national movement toward implementing organizational practices and systems-change strategies that support trauma-exposed individuals. Although frameworks for trauma-informed schools delineate key features for navigating implementation processes, methods of installing these features in schools require additional study. Although foundational professional development (FPD) training is often utilized to prepare schools for implementing trauma-informed approaches, few researchers have examined whether such training influences factors known to promote implementation success: staff knowledge of and perceptions of acceptability for these approaches. The current study utilized a pre–post design to evaluate a 2-day FPD training as a tool for enhancing teacher knowledge of trauma-informed approaches prior to implementation. The study also examined whether gains in knowledge following the training were associated with teacher perceptions of acceptability of trauma-informed approaches and whether perceived alignment of trauma-informed approaches with existing school norms and practices, or system fit, moderated that relationship. Participants included 183 teachers from six schools who completed the training. Knowledge was assessed at pre- and posttraining, and perceptions of acceptability and system fit were assessed at posttraining. Results indicated significant knowledge growth following the training. Among teachers who perceived better system fit, knowledge growth was associated with increased acceptability for trauma-informed approaches. However, among teachers perceiving less system fit, knowledge growth was associated with decreased acceptability. Implications for the installation and implementation of trauma-informed approaches in schools are discussed.

Keywords: acceptability, professional development, trauma-informed schools, knowledge, implementation science

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As many as 46 million children living in the United States have experienced psychological trauma (Listenbee et al., 2012). Traumatic exposure in childhood has been associated with negative school outcomes that include lower cognitive functioning, academic performance, and school connectedness, and higher rates of grade retention, special education placement, and absenteeism (Perfect, Turley, Carlson, Yohanna, & Saint Gilles, 2016; Porche, Costello, & Rosen-Reynoso, 2016). Given the educational and developmental ramifications of trauma exposure, trauma-informed approaches in schools are increasingly cited at state and federal policy levels as a necessary response to this public health epidemic (Children's Law Center of Washington, DC, 2015; National Center on Safe Supportive Learning Environments, 2015). These calls are fueled by preliminary reports of the success of trauma-informed approaches in schools, including dramatic reductions in student behavior issues, suspensions, and expulsions (e.g., Dorado, Martinez, McArthur, & Leibovitz, 2016).

Trauma-informed approaches represent a systems-level framework for realizing, recognizing, and responding to the impacts of trauma in ways that promote healing and avoid retraumatization (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). In schools, trauma-informed approaches provide a framework for systems-change strategies that weave foundational knowledge of trauma into the staff knowledge base, school culture, and systems of student support (Cole, Eisner, Gregory, & Ristuccia, 2013). Best-practice guidelines for creating trauma-informed schools are rooted in the evidence base for promoting mental health supports school-wide (Cowan, Vaillancourt, Rossen,

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& Pollitt, 2013; Greenberg, Domitrovich, Graczyk, & Zins, 2005). However, it is necessary to evaluate procedures for introducing these features in schools.

Foundational professional development (FPD) training is one common method for introducing a new system-wide initiative in schools. This staff-wide training orients staff to the rationale and principles of a new initiative. By providing essential knowledge, FPD training seeks to motivate staff toward integrating the new initiative into their classroom practices and school policies (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Han & Weiss, 2005).

FPD training in trauma-informed approaches provides knowledge of the prevalence, implications, and supports for student trauma exposure (Cole et al., 2013). Preliminary evidence suggests FPD training can build knowledge, understanding, and use of trauma-informed approaches in clinical settings, all of which can bolster subsequent implementation efforts (Brown, Baker, & Wilcox, 2012; Green et al., 2015). Yet the use of FPD training to improve teacher knowledge related to trauma-informed approaches has been minimally evaluated. Initial studies demonstrated promising increases in knowledge of trauma-informed approaches among school personnel (Anderson, Blitz, & Saastamoinen, 2015; Dorado et al., 2016; Perry & Daniels, 2016). However, these studies relied on staff-reported increases of knowledge rather than an objective knowledge measure. Furthermore, studies have only measured knowledge following FPD training. A methodological design accounting for prior knowledge of trauma-informed approaches would more definitively evaluate FPD training as a tool for transmitting knowledge.

Knowledge about trauma and trauma-informed approaches may increase the enthusiasm and motivation of teachers to implement the approaches (Han & Weiss, 2005). Research has supported an association between teacher knowledge and acceptability for a variety of school-based intervention methods (McKee, 1984; Vereb & DiPerna, 2004). However, this association has not been explored for school-based trauma-informed approaches. Brown et al. (2012) found that knowledge gained in FPD training co-occurred with more favorable attitudes toward trauma-informed approaches among staff in child congregate care settings. It is the premise of FPD training that a similar association occurs among educators, but this relationship has yet to be empirically established.

The perceived fit of a new approach with school practices and norms, or system fit, could influence the proposed association between teacher knowledge and acceptability of trauma-informed approaches (Flaspohler, Duffy, Wandersman, Stillman, & Maras, 2008; Han & Weiss, 2005). For example, a teacher may connect new knowledge of trauma-informed approaches to the school's mission statement, leadership expectations, or their job description. These positive perceptions of fit between trauma-informed approaches and system practices or norms may strengthen the relationship between knowledge and acceptability. Alternatively, if the teacher perceives the approach to misalign with system practices or norms, benefits of knowledge on acceptability may be attenuated. Studies have shown that negative teacher perceptions of various dimensions of system fit are associated with reduced implementation quality of socioemotional programs (Cochrane & Laux, 2008; Wanless, Patton, Rimm-Kaufman, & Deutsch, 2013). It is possible that system fit also moderates the relationship between knowledge and teacher perceptions of acceptability during preimplementation.

Importantly, the associations between teacher knowledge, system fit, and acceptability may be influenced by setting and demographic characteristics. Studies suggest that teacher's age influences their attitudes toward new practices (Downer, Locasale-Crouch, Hamre, & Pianta, 2009; Orlando, 2014). Educator gender and school level may also be associated with distinct patterns of attitudes among educators (Avramidis, Bayliss, & Burden, 2000). Teachers' experiences of school features, like class size and access to professional development opportunities, can qualitatively differ between elementary, middle, and high schools; such variation in experiences can shape different attitudes and beliefs (Goldring, Gray, & Bitterman, 2013). Finally, schools themselves may contribute to distinctions in teacher knowledge and attitudes. Hypotheses about a potential association between knowledge and acceptability among teachers should be examined in light of potential differences in educator background and experiences within and between schools.

Current Study

The current study evaluated a 2-day FPD training as a tool for enhancing teacher knowledge and acceptability of trauma-informed approaches. This study built upon initial work with a pre–post design and an objective assessment of knowledge growth. It examined whether growth in teacher knowledge was associated with teacher perceptions of acceptability of trauma-informed approaches and whether perceived system fit moderated that relationship. It was hypothesized that teachers would demonstrate knowledge growth following the training. It was also hypothesized that knowledge growth would be positively associated with acceptability ratings for trauma-informed approaches and that this association would be stronger among teachers reporting high system fit than those reporting lower system fit. Associations between demographic and school variables, including teacher age, teacher gender, and school level (primary school serving kindergarten through eighth grades, or secondary school serving ninth through 12th grades), and knowledge, knowledge growth, system fit, and acceptability, were also examined.

Method

Participants

The current study used archival data from a FPD training in trauma-informed approaches provided for 210 primary and secondary teachers from six New Orleans public charter schools in July and August of 2015. All six schools were participating in a Trauma-Informed Schools Learning Collaborative coordinated by the New Orleans Health Department (described in the Procedures section).

Six teachers did not complete pretraining measures and 21 did not complete posttraining measures, resulting in the study sample of 183 teachers with pre–post data. Table 1 provides demographic information for the overall sample and by participating school. Supplementary Table 1 of the online supplemental materials presents results for independent-samples *t* tests and chi-square tests for independence comparing the demographics of study participants

Table 1
Demographic Characteristics

Demographic category	Total *n* (%) (*N* = 183)	School *n* (%)					
		School 1	School 2	School 3	School 4	School 5	School 6
School level							
Primary	105 (57.4)	—	47 (25.7)	24 (13.1)	34 (18.6)	—	—
Secondary	78 (43.6)	21 (11.5)	—	—	—	26 (14.2)	31 (16.9)
Gender							
Female	129 (70.5)	14 (66.7)	33 (70.2)	19 (79.2)	26 (76.5)	17 (65.4)	20 (64.5)
Male	54 (29.5)	7 (33.3)	14 (29.8)	5 (20.8)	8 (23.5)	9 (34.6)	11 (35.5)
Age category (years)							
18–24	42 (23.0)	6 (28.6)	12 (25.5)	6 (25.0)	5 (14.7)	2 (7.7)	11 (35.5)
25–34	110 (60.1)	13 (61.9)	23 (48.9)	15 (66.7)	23 (67.6)	18 (69.2)	17 (54.8)
35–44	15 (8.2)	2 (9.5)	4 (8.5)	2 (8.3)	3 (8.8)	3 (11.5)	1 (3.2)
45–54	13 (7.1)	—	7 (14.9)	—	2 (5.9)	2 (7.7)	2 (6.5)
55–64	3 (1.6)	—	1 (2.1)	—	1 (2.9)	1 (3.8)	—
Race/ethnicity[a]							
White/Caucasian	102 (55.7)	10 (47.6)	30 (63.8)	14 (58.3)	12 (35.3)	17 (65.4)	19 (61.3)
Black/African American	68 (37.2)	10 (47.6)	12 (25.5)	9 (37.5)	21 (61.8)	7 (26.9)	9 (29.0)
Hispanic/Latino	17 (9.2)	1 (4.8)	7 (14.9)	3 (12.5)	2 (5.9)	1 (3.8)	3 (9.7)
American Indian/Alaska Native	6 (3.3)	1 (4.8)	—	2 (8.3)	—	1 (3.8)	2 (6.5)
Asian	8 (4.4)	2 (9.5)	1 (2.1)	3 (12.5)	—	—	2 (6.5)
Other	9 (4.9)	—	3 (6.4)	2 (8.4)	—	2 (7.7)	2 (6.5)
Native Hawaiian/Other Pacific Islander	1 (.5)	—	—	1 (4.2)	—	—	—
Education							
Completed high school or GED	2 (1.1)	—	—	—	2 (5.9)	—	—
Some college	10 (5.5)	—	1 (2.1)	—	4 (11.8)	1 (3.8)	4 (12.9)
Completed college	94 (51.4)	12 (57.1)	29 (61.7)	11 (45.8)	13 (38.2)	11 (42.3)	18 (58.1)
Some graduate school	28 (15.3)	1 (4.8)	6 (12.8)	6 (25.0)	8 (23.5)	4 (15.4)	3 (9.7)
Completed graduate school	49 (26.8)	8 (38.1)	11 (23.4)	7 (29.2)	7 (20.6)	10 (38.5)	6 (19.4)
Years in school							
<1	75 (41.0)	8 (38.1)	17 (36.2)	13 (54.2)	14 (41.2)	8 (30.8)	15 (48.4)
1–5	100 (54.6)	13 (61.9)	26 (55.3)	11 (45.8)	17 (50.0)	17 (65.4)	16 (51.6)
6–10	7 (3.8)	—	4 (8.5)	—	3 (8.8)	—	—
11–15	—	—	—	—	—	—	—
16–20+	1 (.5)	—	—	—	—	1 (3.8)	—
Years in education field							
<1	18 (9.8)	3 (14.3)	2 (4.3)	3 (12.5)	4 (11.8)	2 (7.7)	4 (12.9)
1–5	118 (64.5)	13 (61.9)	29 (61.7)	13 (54.2)	21 (61.8)	17 (65.4)	25 (80.6)
6–10	31 (16.9)	3 (14.3)	11 (23.4)	8 (33.3)	6 (17.6)	2 (7.7)	1 (3.2)
11–15	10 (5.5)	2 (9.5)	2 (4.3)	—	2 (5.9)	3 (11.5)	1 (3.2)
16–20+	6 (3.2)	—	3 (6.4)	—	1 (2.9)	−2 (7.7)	—

Note. GED = General Equivalency Diploma.
[a] Percentages for racial and ethnic categories sum over 100%, as participants could select multiple categories.

and teachers excluded because of incomplete participation. The samples were found to differ only by school, as the largest school contributing to the participant pool also had the fewest teachers with missing data.

Measures

Demographic information. Teacher demographic information was collected on several variables, including school level (primary or secondary), gender, and age.

Knowledge of trauma-informed approaches. This 14-item multiple-choice measure was completed at pre- and posttraining. It was adapted from the knowledge measure developed by Brown and colleagues (2012) using content delivered in the FPD training. Items assessed teacher knowledge of the prevalence of trauma (two items), the neurobiological impact of trauma (two items), recognizing the need for behavioral and learning supports among trauma-exposed youth (four items), the key principles of trauma-informed approaches as laid out by SAMHSA (three items), and addressing secondary traumatic stress in educators (three items).

Pre- and posttraining knowledge scores were calculated by totaling the number of correct responses provided at each time point. The knowledge measure demonstrated adequate internal consistency for pretraining administration ($\alpha = .82$) and modest internal consistency at posttraining administration ($\alpha = .55$). Mastery performance was defined as scoring at or above a threshold of 80% correct items.

Acceptability and system fit. The acceptability and system climate scales from the Usage Rating Profile-Intervention Revised (URP-IR; Briesch, Chafouleas, Neugebauer, & Riley-Tillman, 2013) were completed at posttraining. The measure was developed as a consultation tool for predicting teacher usage of behavioral interventions. The full 29-item measure comprises six subscales representing factors that might influence whether a teacher uses an intervention in his or her work (Acceptability, Understanding, Feasibility, Family–

School Collaboration, System Climate, and System Support). All subscales were validated using a study sample of over 1,000 kindergarten through 12th grade teachers and have demonstrated good internal consistency ($\alpha \geq .70$; Briesch et al., 2013).

The Acceptability and System Climate subscales were slightly adapted for use in the current study, as items specifically asked about perceptions relating to trauma-informed approaches (e.g., "The *trauma-informed approach* is an effective choice for addressing a variety of problems"). The nine-item Acceptability subscale assessed teachers' approval and enthusiasm for implementing trauma-informed approaches, with higher scores indicating positive perceptions of acceptability. The Acceptability subscale demonstrated sufficient internal consistency ($\alpha = .85$) in the study sample.

The five-item System Climate subscale indicates perceived system fit of trauma-informed approaches. Although the subscale is termed *System Climate*, the items in this subscale represent only three of the standard school climate dimensions relating to staff and institutional environment (National School Climate Center, 2017). Therefore, the authors understand this subscale to represent a narrower construct of "system fit" of trauma-informed approaches. The System Climate subscale also demonstrated adequate internal consistency in the current study sample ($\alpha = .73$).

Acceptability and System Fit scores were represented by averaging ratings on subscale items, with a possible score range of 1 to 6 for both subscales.

Procedures

All 81 New Orleans public schools were invited to apply for membership in the New Orleans Trauma-Informed Schools Learning Collaborative, a joint initiative between the New Orleans Health Department and several community agencies and institutions. This learning collaborative was created to bring implementation science, systems consultation, staff training, and peer consultation to local schools working to become trauma-informed. Of the 13 applications received in Spring 2015, six schools were selected based on preliminary indicators of readiness, such as prior implementation of a social-emotional learning curriculum and leadership commitment to the new approach. All six of the selected schools are public charter schools. Public charter schools served 93% of New Orleans public school students the year the learning collaborative was established (Sims & Rossmeier, 2015). Students served by the six schools were representative of the public school student population in New Orleans, with at least 80% of students identifying as Black or African American, approximately 5% to 15% of students qualifying for special education services, and at least 80% of students receiving free or reduced lunch, a proxy measure for the percentage of students living in poverty (Cowen Institute, 2015; New Orleans Parents' Guide, 2016).

The all-staff 2-day FPD training was developed and delivered in the summer of 2015 by faculty representatives of the learning collaborative. Training content was structured around the four key assumptions of trauma-informed systems outlined by SAMHSA (2014). Content also drew from existing resources for creating trauma-informed schools (e.g., Cole et al., 2013). Table 2 illustrates the content modules comprising the training.

This study was approved through a university institutional review board. To protect participant anonymity, all pre- and post-training data were collected anonymously and matched over time using a participant-generated coding scheme. Participants also received a passive informed consent document at pretraining. Completion of the survey measures indicated consent to participate.

Participants completed pretraining measures in the morning before training began. These measures included a demographic form and the knowledge measure. Immediately upon completing the second day of the training, study participants completed the knowledge measure and the URP-IR (Briesch et al., 2013) assessing the perceived acceptability and system fit of trauma-informed approaches.

Analytic Approach

Representing knowledge growth. Knowledge growth was represented by a continuous knowledge difference score, which was calculated for each participant by subtracting the pretraining

Table 2
Training Components of Foundational Professional Development Training in Trauma-Informed Approaches

Training goals and learning objectives	Training component
Create a common understanding of trauma and its impacts.	a. National, local, and school-specific prevalence rates of childhood trauma exposure.
School staff will realize the prevalence of trauma and its widespread impacts.	b. Negative impacts of childhood trauma exposure: neurobiological development, psychosocial development, long-term health.
	c. National movement to create trauma-informed schools.
Build consensus for trauma-informed approaches.	a. Relationship between trauma triggers and student behavior.
School staff will recognize the signs of trauma and the need for learning supports.	b. Avoiding and responding to trauma triggers.
Highlight key principles of trauma-informed care and their application to create safe and supportive environments for all students and teachers.	a. Applying trauma-informed approaches in the classroom.
School staff will respond to trauma-exposed students by integrating principles of trauma-informed care into classroom practices that resist retraumatization.	b. Six key principles of trauma-informed approaches (SAMHSA): Safety: Trustworthiness and Transparency; Peer Support; Collaboration and Mutuality; Empowerment, Voice, and Choice; Cultural, Historical, and Gender Issues.
School staff will respond to own needs for self-care.	c. Staff focus: secondary traumatic stress, self-care, and accessing systems of support.

Note. Developed from materials provided by SAMHSA (2014) and Cole and colleagues (2013). SAMHSA = Substance Abuse and Mental Health Services Administration.

knowledge score from the posttraining knowledge score. Positive difference scores represented knowledge growth from pre- to posttraining, with larger values representing more growth. Knowledge difference scores were considered an appropriate measurement of change in this study because pretraining scores demonstrated greater variance than posttraining scores ($variance_{pretest} = 12.19$; $variance_{posttest} = 3.03$), indicating nonidentical score distributions (Rogosa & Willett, 1983; Williams & Zimmerman, 1996). To account for the potential confound of pretraining knowledge on the difference score, the pretraining knowledge score was included as a control variable when analyzing the associations between knowledge growth, system fit, and acceptability.

Evaluating potential demographic and school control variables. Zero-order correlations between demographic variables and study variables indicated control variables for testing the associations between knowledge growth, system fit, and acceptability (see Table 3). Younger teachers tended to perform better on the knowledge measure at both pre- and posttraining. Female teachers were more likely to perceive trauma-informed approaches as acceptable and better fitting with their school context. Secondary school teachers were less positive about the fit of trauma-informed approaches in their schools than teachers in primary schools. Based on these associations, age, gender, and school level were included as control variables when analyzing the associations between knowledge growth, system fit, and acceptability.

To determine whether nesting participants within schools was necessary, one-way analyses of variance (ANOVAs) were conducted, with school as the fixed factor and pretraining knowledge, posttraining knowledge, knowledge growth score, acceptability, and system fit as the dependent variables. When indicated, Fisher's Least Significant Difference post hoc tests were used to probe one-way ANOVA results. Results revealed no significant differences between schools for pretraining knowledge, $F(5,177) = 2.02$, $p = .08$, posttraining knowledge, $F(5,177) = 1.43$, $p = .22$, acceptability, $F(5,177) = .72$, $p = .61$, or system fit, $F(5,177) = 1.38$, $p = .23$. Knowledge growth scores significantly differed by school, $F(5, 177) = 3.20$, $p = .01$, as teachers in School 6 ($M = 3.00$, $SD = 2.49$) had significantly less knowledge growth than teachers in Schools 2 ($M = 5.47$, $SD = 3.43$), 3 ($M = 5.21$, $SD = 3.18$), 4 ($M = 5.41$, $SD = 3.18$), and 5 ($M = 5.12$, $SD = 3.66$). However, knowledge growth scores did not significantly differ between Schools 1, 2, 3, 4, or 5, and School 6 did not systematically differ from the other schools on any demographic variables. A preliminary analysis used a dummy control variable representing school to evaluate the potential impact of school on the associations of interest. School did not significantly predict the variance in acceptability ratings, $F(5, 182) = .72$, $p = .61$. Based on these findings, nonnested analyses were used for hypothesis testing and school was not used as a control variable.

Main analyses. Variables of interest included the knowledge growth difference score, posttraining acceptability rating, and posttraining system fit rating. To test the first hypothesis, a paired-samples *t* test assessed for growth in knowledge of trauma-informed approaches from pre- to posttraining. To test the second hypothesis, a moderated multiple regression analysis (Aiken & West, 1991) evaluated whether system fit moderated an association between growth in teacher knowledge of trauma-informed approaches and teachers' acceptability ratings. Control variables entered on the first step of the regression analysis included school level, gender, age, and the pretraining knowledge score. The predictor of interest, knowledge difference score, and the potential moderator, system fit, were entered on the second step of the analysis. Mean-centered terms for the knowledge difference score and system fit ratings were multiplied to create a two-way interaction term. The interaction term was entered in the third step of the analysis. Standardized regression coefficients are presented throughout.

Data Screening

Prior to conducting analyses, data were screened to identify and address missing cases and outliers. In total, there were five instances of missing data, representing 0.07% of the total possible number of item responses. Participants with missing data were slightly older and less educated than participants with complete cases (see Supplementary Table 2 of the online supplemental materials). Given the low rate of missingness, missing data were imputed using mean substitution. One outlier score was detected for acceptability and posttraining knowledge test scores, respectively. Winsorization (Kline, 2011) was applied to both outlier scores. Pre- and posttraining knowledge, knowledge growth, acceptability ratings, and system fit ratings did not demonstrate significant skew or kurtosis.

Results

Changes in Knowledge

First, we tested the hypothesis that teachers would demonstrate knowledge growth following the FPD training. A paired samples *t* test indicated that performance on the knowledge measure immediately following the FPD training ($M = 11.91$, $SD = 1.74$) significantly increased from pretraining and demonstrated a large effect size ($M = 7.10$, $SD = 3.49$), $t(182) = -20.51$, $p < .01$, $d =$

Table 3
Intercorrelations Between Demographic Variables and Study Variables

Variable	Age	Gender (0 = male, 1 = female)	Education	Years in current school	Years in education field	School level (0 = primary schools, 1 = secondary schools)
Pretraining knowledge	−.26**	.01	.08	−.04	−.13	.17*
Posttraining knowledge	−.36**	.07	.10	−.04	−.20**	−.04
Knowledge growth difference score	.09	.03	−.03	.02	.02	−.22*
Acceptability	−.05	.27**	−.05	.03	.02	−.11
System fit	−.02	.15*	−.02	−.09	−.07	−.15*

* $p < .05$. ** $p < .01$.

1.52. Mastery performance was demonstrated by about 20% of teachers at pretraining and 70% of teachers at posttraining.

Knowledge Growth, System Fit, and Prediction of Posttraining Acceptability Scores

The second tested hypothesis held that knowledge growth would be positively associated with acceptability ratings for trauma-informed approaches and that perceived system fit would moderate this association. Table 4 presents zero-order correlations, means, and ranges for study variables. Both pre- and posttraining knowledge were significantly correlated with teacher ratings of acceptability. Teacher ratings of acceptability were positively and significantly correlated with system fit. Results for the regression analysis are presented in Table 5. The overall model explained 54% of the variance in acceptability ratings, $F(7, 182) = 29.16$, $p < .01$. Gender and pretraining knowledge were significant predictors of acceptability ($\beta = .26$, $p < .01$, and $\beta = .27$, $p < .01$, respectively); women and people who had higher pretraining scores also had higher acceptability ratings. Teachers' knowledge growth was not associated with acceptability ratings ($\beta = -.06$, *ns*). However, teachers' perceptions of system fit predicted acceptability ratings ($\beta = .62$, $p < .01$), and there was a significant Knowledge Growth × System Fit interaction ($\beta = .20$, $p < .01$) that explained 3.7% of the variance in acceptability ratings.

The significant interaction between knowledge growth and system fit was plotted at the +1/–1 standard deviations for mean-centered knowledge growth and system fit ratings (see Figure 1). Knowledge growth was associated with more favorable acceptability ratings in those systems in which teachers perceived better fit with trauma-informed approaches, $t(175) = 3.40$, $p < .01$. Among teachers who perceived less system fit, more knowledge growth was associated with lower acceptability ratings, $t(175) = -4.03$, $p < .01$.

Discussion

The present study is one of the first reports of the effectiveness of a common component of trauma-informed approaches in schools: FPD training. We first hypothesized that FPD training would promote teacher knowledge of trauma-informed approaches. Our findings demonstrated that teacher knowledge of trauma-informed approaches grew significantly from pre- to posttraining. In fact, the percentage of teachers who answered at least 80% of the test items correctly increased from just 20% pretraining to 70% posttraining. These results align with subjective teacher reports of knowledge growth in trauma-informed approaches following FPD training in prior studies (Anderson et al., 2015; Dorado et al., 2016; Perry & Daniels, 2016) and improve upon prior methods of assessing knowledge of trauma-informed approaches by using a more comprehensive, objective measure and a pre–post design.

Knowledge of a new approach provides an opportunity for school staff to understand it as effective, appropriate, and necessary within their schools. Such perceptions can increase the acceptability of the approach and promote high quality implementation (Allinder & Oats, 1997; Vereb & DiPerna, 2004). Accordingly, we hypothesized that knowledge growth would be associated with acceptability and that this association would be moderated by perceived system fit of trauma-informed approaches. In fact, exploratory analysis of main effects in the regression analysis indicated that pretraining knowledge was significantly and positively associated with acceptability. Above and beyond the impact of pretraining knowledge scores and demographic control variables, higher posttraining knowledge scores and knowledge growth did not have the same effect. However, knowledge growth was related to acceptability when considered in the context of perceived system fit between trauma-informed approaches and present school norms and practices.

We found that when system fit scores were higher, knowledge growth was associated with increased acceptability. As teachers learned about trauma-informed approaches, those reporting a strong system fit may have seen that fit as a type of support for implementation. On the other hand, for individuals reporting lower system fit scores, increased knowledge may have highlighted system barriers rather than supports and ultimately led to lower acceptability scores, contradicting the intended effect of the training. This finding reflects the substantial literature base that cites elements of system fit, including perceived administrator and colleague support, as critical determinants of teacher implementation behaviors (e.g., Beets et al., 2008; Wanless et al., 2013). The current study extends that literature to the context of teacher attitudes prior to implementation of a new approach.

Our findings highlight that the broader ecology of school norms can impact individual outcomes among educators. Knowledge growth is certainly a meaningful indicator of the effectiveness of FPD training, as knowledge of a practice is a necessary requirement for delivering it. However, teachers appear to interpret that knowledge through the lens of larger system norms. Initial pretraining planning with school stakeholders that elaborates how trauma-informed approaches align with the current mission and systems governing a school, and facilitates school-wide understanding of that alignment, is recommended to maximize the benefits of FPD training. Further study that examines how to assess and address system fit of trauma-informed

Table 4
Descriptive Statistics and Intercorrelations Between Study Variables

Variable	Pretraining knowledge	Posttraining knowledge	Knowledge growth difference score	Acceptability	System fit	*M*	*SD*	Range
Pretraining knowledge	—	.43**	−.87**	.24**	.12	7.10	3.49	0 to 13
Posttraining knowledge	—	—	.08	.17*	.19*	11.90	1.74	7 to 14
Knowledge growth difference score	—	—	—	−.17*	−.04	4.80	3.17	−1 to 14
Acceptability	—	—	—	—	.67**	5.36	.55	3.56 to 6
System fit	—	—	—	—	—	5.31	.58	3.40 to 6

Note. Means and ranges have been provided for study variables.
* $p < .05$. ** $p < .01$.

approaches before investing school resources in training would promote these benefits.

These study results must be considered in the context of limitations that may impact their generalizability. The study sample was comprised of teachers new to the field, employed by schools that sought support for implementing trauma-informed approaches. It is possible that teachers already held positive perceptions of trauma-informed approaches at pretraining. Future work should include more diverse samples of teachers and schools and collect pretraining measurements of acceptability and system fit to truly evaluate FPD training as a tool for shifting perceptions. Moreover, although study variables did not systematically vary by school in this study, educator ratings are inherently nested within the larger school environment. Exploring how schools shape individual teachers' perceptions about trauma-informed approaches will advance our understanding of the practical implications associated with this nesting.

The current study also included some measurement limitations. Acceptability and system fit were highly correlated, calling into question the independence of the constructs as measured by Briesch and colleagues (2013). Also, although the knowledge measure demonstrated a high internal consistency value at pretraining ($\alpha = .82$), it had questionable internal consistency at posttraining ($\alpha = .55$). Posttraining scores demonstrated little variance and a high percentage of scores demonstrated mastery. These scores certainly exceeded pretraining scores, supporting the likelihood that the training promoted knowledge growth. However, because posttraining scores were so consistently high, it is likely that we did not capture the true variance among participants. The study is also limited by shared method variance, as the measures in the study were based on teacher report.

Finally, the goal of our study was to measure early ratings of acceptability as an indicator of teacher attitudes prior to the implementation of trauma-informed approaches. It is important to understand factors that promote positive teacher attitudes before implementation begins, as this support generates enthusiasm for initiating the work. However, other implementation factors may become relevant to educator attitudes during formal implementation, such as ease of delivery (Dart, Cook, Collins, Gresham, & Chenier, 2012). Therefore, our study results may not generalize to schools for which formal implementation has begun.

Table 5
Main Effect of Knowledge Growth and Moderating Effect of System Fit on Acceptability Ratings (N = 183)

Variable	R^2	ΔR^2	Standardized beta weights (β)
Step 1	.15	.15**	
Age			.02
Gender			.26**
School level			−.13
Pretraining knowledge test score			.27**
Step 2	.50	.35**	
Knowledge growth			−.06
System fit			.62**
Step 3	.54	.04**	
Knowledge Growth × System Fit			.20**

** $p < .01$.

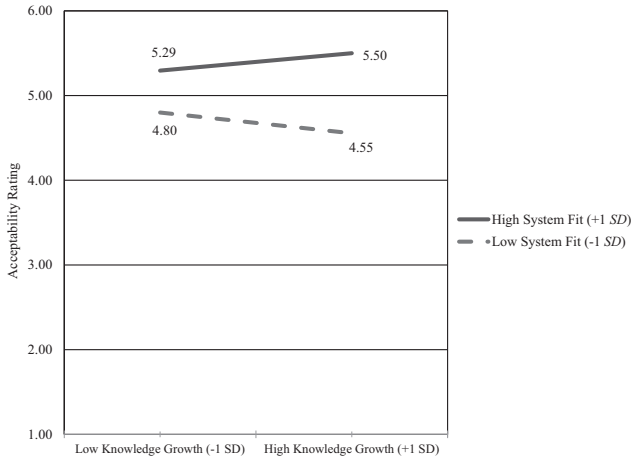

Figure 1. Knowledge Growth × System Fit interaction effect on posttraining acceptability ratings.

Study limitations notwithstanding, the current study provides a novel analysis of FPD training and the potential mechanisms that influence acceptability of trauma-informed approaches in a sample of educators who were mostly new to the field of education. FPD training appears to create a supportive environment for the implementation of trauma-informed approaches by fostering knowledge and positive staff attitudes, but these effects are sensitive to teacher perceptions of the larger system context. Further study is necessary to identify components of FPD training that promote acceptability and to identify additional valuable outcomes of such training.

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