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Perceived lack of training moderates relationship between healthcare providers' personality and sense of efficacy in trauma-informed care

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Abstract

Background and Objectives: Medical patients often have trauma histories that are not routinely assessed, which can adversely affect health outcomes. Despite growing awareness of this issue, there is limited understanding of factors that influence provider competency in trauma-informed care (TIC). The study examined healthcare providers' personality traits in relation to their sense of TIC efficacy, taking into account perceived barriers to TIC and professional quality of life.

Study Design: The study used cross-sectional survey methods to examine our central hypothesis that provider personality traits and perceived barriers to TIC would be associated with TIC-efficacy, and to explore interactions among study variables.

Methods: Survey data were collected from 172 healthcare providers examining TIC knowledge, TIC-efficacy, perceived barriers to TIC, personality traits, and professional quality of life.

Results: TIC-efficacy was positively correlated with “intellectence/openness” and inversely correlated with “neuroticism” and perceived lack of training as a barrier. “Intellectence/openness” interacted with perceived lack of training to predict TIC-efficacy, suggesting that providers with lower “intellectence/openness” report greater TIC-efficacy when lack of training is not perceived as a barrier.

Conclusions: Provider personality traits and perceived barriers to TIC appear related to providers' TIC-efficacy. Implications for overcoming barriers to TIC through training and implementation are discussed.

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Keywords

Trauma-informed care; traumatic stress in medical settings; big 5 personality traits; healthcare providers; professional quality of life

Introduction

The effect of healthcare practices on medical outcomes of patients with trauma histories has surged in recent years (Bloom, 2010; Harris & Fallot, 2001; Ko et al., 2008; Rivard et al., 2003). Healthcare researchers now commonly recognize that medical treatments – more specifically how they are performed – can be invasive, distressing, and can activate symptoms of posttraumatic stress disorder (PTSD; Dziadzko, Dziadzko, Johnson, Gajic, & Karnatovskaia, 2017; Hollander et al., 2017; Kassam-Adams et al., 2015a) among patients with histories of trauma, including childhood abuse, sexual assault, and intimate partner violence (Clardie, 2004; Fallot & Harris, 2008; Harris & Fallot, 2001; Kassam-Adams, Marsac, Hildenbrand, & Winston, 2013). As a result, a healthcare model of trauma-informed care (TIC) was developed with a set of organizational practices that could be disseminated widely across settings (SAMHSA, 2014). TIC is an organizational service model designed to minimize trauma-evoking aspects of medical care, reduce PTSD symptoms, and improve physical and mental health outcomes, with convincing empirical support (Black, Woodworth, Tremblay, & Carpenter, 2012; Kassam-Adams et al., 2015b; Muskett, 2014). Nevertheless, empirical support has not yet translated to the widespread uptake of TIC among healthcare providers. A theory-based examination of this organizational shift in healthcare is important for effective TIC implementation. In this study, we used a social-cognitive framework to examine provider-specific factors, namely personality traits, related to providers' sense of efficacy in adhering to TIC practices and whether these relationships were moderated by perceived barriers TIC. We were further interested in examining these relationships while taking into account providers' professional quality of life.

TIC practices in medical settings involve patient-centered communication, knowledge of trauma and mental health history (e.g., PTSD, depression, substance abuse), and coaching patients through invasive or coercive medical procedures (e.g., restraints, sedation, insertion of objects into patients' genitalia), to minimize additional stress elicited by these procedures and enhance patients' coping (Kassam-Adams et al., 2015a). Patients in trauma-informed systems have been shown to have reduced time in treatment prior to discharge, improved rates of discharge to a lower level of care, and improved mental health and substance abuse outcomes (Greenwald et al., 2012; Hodgdon, Kinniburgh, Gabowitz, Blaustein, & Spinazzola, 2013; Morrissey et al., 2005). Although TIC has contributed to improved health outcomes in various patient populations (SAMHSA, 2014), TIC implementation remains hampered by lack of training programs and materials that have been tested in actual healthcare settings. For example, a search for "trauma-informed care" in the *Journal of Teaching and Learning Resources* for medical education (MedEd PORTAL) yielded only one result (see Siegel et al., 2017). Moreover, studies have shown lack of perceived self-competence among healthcare providers in caring for traumatized patients without fear of re-traumatizing them, even when they are provided with trauma-informed treatment toolkits

(Bruce et al., 2018; Kassam-Adams et al., 2015b; Stuber, Schneider, Kassam-Adams, Kazak, & Saxe, 2006). A better understanding of the factors that specifically relate to providers' sense of efficacy may inform the development of effective TIC implementation and training programs (Hobfoll et al., 2013).

The primary aim of this study is to examine factors that predict healthcare providers' sense of efficacy for adhering to TIC practices. We chose this outcome for its practical implications and because skill efficacy is an important outcome of healthcare provider education that is associated with more effective use of clinical skills (Bruce et al., 2018). To ensure our exploration of these associations is solidly grounded in theory we adopted a social-cognitive framework, widely-used in organizational research. Social-cognitive theory is a useful framework for examining healthcare providers' sense of TIC efficacy because it takes into account both individual and environmental/situational factors (as perceived by the individual) in predicting behavior (Barrick, 2005; Hampson, 2012). For example, personality traits have been shown to predict the performance of both healthcare providers and their trainees in medical education settings (Phillips et al., 2018; Scheepers, Lombarts, Van Aken, Heineman, & Arah, 2014; Schreckenbach et al., 2018). For example, medical education scholars have recommended diversifying healthcare teaching teams allowing trainees to benefit from the relative strengths and weaknesses of supervisors' personalities and personality "fit" with various teaching roles (Scheepers et al., 2014). Other research supports assessing healthcare trainees' personality traits and teaching interpersonal skills that specifically build upon dispositional interest in interpersonal encounters (i.e., extraversion), ultimately leading to more empathic patient-centered care (Schreckenbach et al., 2018). In other words, the personality traits of both learners and teachers may be relevant to the design and implementation of TIC programs.

Regarding the implementation of TIC in healthcare practice, several personality influences are worth considering. For example, attending to patients' psychological distress may be especially difficult for providers with high levels of "neuroticism," given that individuals with greater neuroticism are more likely to experience stress contagion and, thus, avoid highly charged emotional encounters with patients (O'Mahony et al., 2017). In contrast, providers who exhibit high levels of openness, empathy, and agreeableness may be more motivated to address patient trauma and likely feel more comfortable doing so (Figley, 2002; Stamm, 2009). Personality traits and organizational/environmental factors are known to interact, as shown in a range of social-cognitive research (O'Mahony et al., 2017; Stamm, 2009). These interactions sometimes lead to stress, burnout, and difficulties coping with the demands of the professional caregiving role (Kwarta et al., 2016; McManus, Keeling, & Paice, 2004; Mullola et al., 2019; O'Mahony et al., 2018).

A rather extensive body of research has demonstrated how the interaction between healthcare providers and their environments are associated with relative compassion satisfaction versus compassion fatigue, which, in turn, predicts adverse outcomes such as provider burnout (see Stamm, 2009). Caring for patients is itself emotionally challenging and can evoke providers' own grief, sadness, anger, and even symptoms of vicarious PTSD (Figley, 2002; McNutt, Carlson, Gagen, & Winterbauer, 1999; Rodriguez, Bauer, McLoughlin, & Grumbach, 1999; Stamm, 2009; Von Korff et al., 1987). Moreover,

productivity requirements, rigid quality care metrics, and resource limitations exert significant influence over any individual provider's ability to follow TIC practices (SAMHSA, 2014). A non-supportive organizational culture and lack of specific training grounded in TIC principles present additional barriers to providers' sense of efficacy in TIC practices. Thus, providers' overall sense of professional well-being as well as their experience of organizational barriers are important factors to consider in the context of the provider personality-TIC efficacy linkage.

The current study sought to examine these relationships by first examining provider personality traits and providers' sense of efficacy in adhering to TIC practices, hereafter referred to as TIC-efficacy. We also sought to examine whether providers' perceptions of healthcare environment barriers to delivering TIC influenced these relationships, while taking into account providers' overall sense of professional well-being. We conducted the study using a diverse sample of healthcare providers with the goal of informing future training and implementation of TIC within diverse healthcare settings. We hypothesized that both personality traits and perceived healthcare environment barriers would be correlated with providers' TIC-efficacy. Specifically, we expected that neuroticism would be inversely correlated with TIC-efficacy, whereas intellectence/openness would be positively correlated with TIC-efficacy. To examine healthcare environment barriers to TIC (as perceived by the providers), we assessed perceived support from colleagues and whether providers received training in TIC or perceived lack of training as a barrier, and expected these factors to be associated with TIC-efficacy. Finally, we conducted exploratory analyses consistent with a social-cognitive framework, to examine whether any significant interactions emerged between personality traits and healthcare environment barriers as predictors of TIC-efficacy. We examined each of these relationships while taking into account providers' sense of professional well-being, including levels of professional burnout.

Method

Participants

One-hundred seventy-two healthcare professionals from a wide range of healthcare disciplines responded to the survey. The majority of participants were female (76.2%). The average age was 38.45 years ($SD = 11.18$). Providers varied in number of years of experience providing medical care (range: <1 years to 41 years; median = 7.0 years). With regard to healthcare discipline, approximately half of participants were physicians (49.4%) while the remaining participants were either nurses or physician assistants (36%) or identified as some other healthcare provider (13.4%). Approximately one-third of the sample (32%) consisted of medical trainees (either resident physicians or fellows) while a smaller proportion (17.4%) identified as supervising or attending physicians. Participants varied widely in terms of healthcare specialty, with obstetrics/gynecology being most represented (16.3%) followed by pain/palliative medicine (10.5%). Additional information about the characteristics of participants and their areas of healthcare specialty are reported in Table 1.

Procedure

The procedures for the study were reviewed and approved by the Rush University Medical Center Institutional Review Board. Inclusion criteria were participants who identify as “medical provider/healthcare professional” (e.g., physicians, physician assistants, nurse practitioners, nurses, etc.) at any level of training (e.g., attending, resident, fellow, or other trainee status). Inclusion criteria also included proficiency in English and current employment. Potential participants were invited to complete a one-time, 95-item electronic survey via the Research Electronic Data Capture (Harris et al., 2009) platform. Participants were recruited via targeted emails sent out across a variety of medical institutions, medical listservs, posts on medically-oriented social media platforms (i.e., Facebook pages of medical and healthcare-related organizations) and through word of mouth. Targeted emails and posts provided a brief description of the study, an overview of questionnaire content, information about the anonymity of responses, the estimated length of completion time (10–15 min) and information about study personnel.

A research information sheet was included at the beginning of the survey and served as the informed consent to participating in the study. It delineated the study purpose and procedures, information about the confidentiality of their responses, and specified that their participation is voluntary and they may withdraw at any time. National mental health hotlines information was also provided and participants were encouraged to call should they experience any symptoms of distress. Invited respondents were informed that by signing the information sheet and completing the survey, they are providing their consent to partake in the study.

Measures

The survey was comprised of 95-items across five domains: (1) Provider Background Information; (2) Self-reported TIC-efficacy; (2) Personality Dimensions; (3) Professional Quality of Life/Burnout; and (4) Perceived Barriers to TIC.

Provider background information—This section included information on respondents’ age, gender, the state in which they practice, the number of years they have practiced in healthcare, their role in the healthcare field, their specialty, and their trainee status and level of training. Providers were also asked a series of questions to assess their knowledge regarding the healthcare of patients who have been traumatized (items adapted from Kassam-Adams et al., 2015b; Bruce et al., 2018). These questions were designed to serve as an indicator of providers’ level of familiarity with basic TIC principles. Questions such as “There is a common profile for the PTSD patient” and “There are effective screening measures for assessing traumatic stress that providers can use in practice” were presented with 4-point Likert responses ranging from 1 = *Strongly Disagree* to 4 = *Strongly Agree*. Specific items, such as “Patients with significant posttraumatic stress reactions usually show obvious signs of distress,” are flagged with “correct” answers meaning that the respondent has to select either “Disagree” or “Strongly Disagree” to receive a correct response (Bruce et al., 2018).

Self-reported trauma-informed care-efficacy—Items were adapted from the provider survey developed by Kassam-Adams et al. (2015b) assessing TIC among pediatric providers to fit our sample of providers practicing in a wide range of healthcare disciplines and specialties. Thirteen items were adapted to assess provider's sense of efficacy in following TIC practices. Respondents were asked to rate each item statement on a Likert-type scale from 1 to 3, where 1 = *Not Competent* and 3 = *Very Competent*. Items reflected respondents' perceived level of efficacy in engaging in specific behaviors when working with patients with a trauma history (e.g., "Responding calmly and without judgment to a patient's strong emotional distress," "Avoiding or altering situations within the hospital that a patient might experience as traumatic," "Eliciting details of a trauma and/or abuse from a patient without re-traumatizing them," and "Instructing others in the room to help the patient cope"). Internal consistency for self-reported TIC-efficacy items was $\alpha = .89$.

Personality dimensions—Personality facets were assessed with 20-items of the Mini International Personality Item Pool (*Mini-IPIP*) (Donnellan, Oswald, Baird, & Lucas, 2006). The *Mini-IPIP* is a self-report questionnaire, adapted from the 50-item IPIP (Goldberg, 1999) that assesses respondent personality traits from the theoretical perspective of the Five Factor Model of Personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism and Intellectence/Openness (Costa & McCrae, 1992). Respondents rated item statements reflecting each one of these personality traits on Likert scale from 1 to 5, where 1 = *Very Inaccurate*, and 5 = *Very Accurate*. Internal consistency was $\alpha = .77$ for neuroticism, $\alpha = .68$ for agreeableness, $\alpha = .83$ for extraversion, $\alpha = .71$ for conscientiousness and $\alpha = .66$ for intellectence/openness.

Professional quality of life/burnout—The Professional Quality of Life Scale (ProQOL; Stamm, 2009) is self-report measure intended to assess respondents' levels of compassion satisfaction (CS), feeling satisfied with and effective in their caregiver role (e.g., "I believe I can make a difference through my work"); burnout (BO), reflecting hopelessness and difficulty managing role as caregiver (e.g., "I feel trapped by my job as a helper") and secondary traumatic stress (STS) reflecting secondary-trauma exposure in the caregiver role (e.g., "I feel as though I am experiencing the trauma of someone I have helped"). Item statements are rated on a 5-point Likert scale, where 1 = *Never* and 5 = *Very Often*. Higher scores across the three subscales indicate higher levels of CS, BO and STS. Internal consistency reliability for the three scales in the current study as measured by Cronbach's alpha was $\alpha = .89$ for CS, $\alpha = .81$ for BO, $\alpha = .80$ for STS. Raw scores on these scales can be converted to Z scores and T scores for interpretation of cut scores (Stamm, 2009). Cut scores for the 75th percentile on each subscale are 57 for CS, 56 for BO and 56 for STS.

Perceived barriers to trauma-informed care—Perceived barriers to TIC provision were assessed with 7 items, 4 of which were adapted from the aforementioned Kassam-Adams et al. (2015b) assessment. Respondents were asked to rate the item statements on a Likert-type scale from 1 to 3, where 1 = *Not a Barrier* and 3 = *Significant Barrier*. These items included barriers related to "time constraints," "lack of training," and "worry about further upsetting or re-traumatizing patients." Internal consistency was not computed

because the presence of one barrier does not necessarily entail or increase the probability of other barriers.

Data analysis

Demographic variables and survey items were examined with descriptive statistics, including the proportion of respondents endorsing survey items. Associations among study variables and demographics were examined using Pearson correlations, t-tests, and chi-square. Primary analyses examining predictors of provider's TIC-efficacy were conducted with hierarchical regression models. Interaction effects were assessed with moderation models.

Results

Participant characteristics were examined to ascertain whether any variables were associated with self-reported TIC-efficacy. TIC-efficacy was not correlated with participants' age ($r = .09, p = .271$) or years of practice in healthcare ($r = .09, p = .271$). Male and female participants reported similar levels of TIC-efficacy such that the mean levels of TIC-efficacy did not differ significantly by gender, $t(160) = -.41, p = .680$. For the physicians in our sample ($n = 76$) mean levels of TIC-efficacy were also similar for trainees (i.e., residents and fellows) and attending physicians, $t(74) = -.74, p = .460$. Thus, preliminary analyses indicated that physicians who had completed their training did not appear to report higher levels of TIC-efficacy compared to physicians still in training. It should be noted that the provider background survey did not identify trainee status for other professional roles such as nurses or physician assistants.

Responses to questions pertaining to specific knowledge of TIC principles were scored and calculated to identify the percentage of the sample offering a "correct" versus "incorrect" response to the items (see Bruce et al., 2018). Results are shown in Table 2 demonstrating that a majority of our sample was familiar with the basic principles of TIC, with participants answering correctly approximately two-thirds to three-quarters (66.8–80.8%) of the time, depending on the item. Fully 36.6% answered all four items correctly and 33.1% answered three of the four items correctly. We examined whether there were any differences in TIC knowledge based on number of years of practice in healthcare using a series of independent samples *t*-tests. Participants who answered items correctly were similar to those who answered incorrectly in terms of average number of years in healthcare practice (all p s $> .05$). Overall, this sample may be characterized as possessing basic knowledge of TIC irrespective of years of practice as a healthcare provider.

Further characterizing our sample of healthcare providers, Table 2 reports results of scores on the Professional Quality of Life (ProQOL) measure, which assessed the degree to which participants report that they derive pleasure from being able to do their work well (i.e., Compassion Satisfaction or CS), feel overwhelmingly hopeless or ineffective in doing their work (i.e., Burnout or BO), or experience work-related, secondary exposure to extremely stressful or traumatic events (i.e., Secondary Traumatic Stress or STS). Scores on each scale have been converted to T scores with an average of 50 and standard deviation of 10. Scores above 57 on the CS subscale indicate that respondents derive a good deal of professional satisfaction from their jobs, as was the case for a quarter (25.5%) of our sample with the

majority (51.9%) reporting average levels of compassion satisfaction. Burnout and secondary traumatic stress affected less than a quarter of the sample with 19.8% and 19.2% scoring above the 75th percentile, respectively. Taken together, results suggest our sample of healthcare providers consisted individuals who were generally satisfied with their professional work as well as a smaller proportion, roughly one-fifth, who reported experiencing significant difficulties in their professional care of patients.

Table 3 presents correlations among study variables. We hypothesized that personality traits would be correlated with provider's self-reported TIC-efficacy. In terms of specific personality facets, as expected, self-reported TIC-efficacy was positively correlated with intellectence/openness traits ($r = .28, p < .001$), positively correlated with extraversion ($r = .21, p < .05$), and was inversely correlated with neuroticism ($r = -.18, p < .05$). In addition, trait neuroticism was positively correlated with burnout ($r = .57, p < .001$) and secondary traumatic stress ($r = .41, p < .001$) and inversely correlated with compassion satisfaction ($r = -.44, p < .001$). Finally, TIC-efficacy was positively correlated with compassion satisfaction ($r = .22, p < .05$), inversely correlated with burnout ($r = -.22, p < .05$), and uncorrelated with secondary traumatic stress ($r = .06, p > .05$).

Also included in Table 3 are all seven perceived barriers to TIC and their correlations with other study variables. Although no *a priori* hypotheses were made regarding perceived barriers and their association with provider personality traits and professional quality of life, a few significant correlations emerged. Results revealed a small positive correlation between trait agreeableness and fear of retraumatizing patients as a barrier to TIC ($r = .17, p < .05$), a small correlation positive correlation between trait neuroticism and having to alter the medical environment as a barrier to TIC ($r = .19, p < .05$), and a small inverse correlation between conscientiousness and perceived time constraints as a barrier to TIC ($r = -.18, p < .05$). Otherwise, provider personality traits were uncorrelated with perceived barriers to TIC.

More detailed information about providers' responses regarding perceived barriers to the delivery of TIC are reported in Table 4, along with their correlations with TIC-efficacy. Nearly all participants endorsed time constraints (93.6%) and a lack of training (92.4%) as perceived barriers to the delivery of TIC (i.e., participants endorsed these as either "somewhat a barrier" or "a significant barrier"). The majority of participants endorsed barriers presented by the worry of further upsetting patients (80.8%), having to alter the healthcare environment (73.3%), confusing evidence on TIC (70.9%), and not having anyone to turn to for help with a patient experiencing trauma or abuse (61.6%). More than one-third of participants (36%) described disagreement with peers regarding the importance of TIC as a barrier. In examining associations of these barriers with providers' self-reported TIC-efficacy, perceived lack of training as a barrier was significantly inversely correlated ($r = -.35, p < .001$). Contrary to our expectations, support from colleagues as a barrier was not significantly correlated with TIC-efficacy. Perhaps unexpectedly, perceived disagreement with peers as a barrier was positively correlated with TIC efficacy, although the correlation was low ($r = .16, p < .05$). A key purpose of this study was to gain information about provider factors that may inform TIC implementation (particularly as related to TIC

training), thus, we examined perceived lack of training as a barrier to TIC as a moderator of the relationship between personality traits/facets and TIC-efficacy.

As a final step in our analyses, we examined whether any interactions emerged between personality traits/facets and perceived lack of training as predictors self-reported TIC-efficacy. To examine this, we conducted a series of moderation models to determine how personality factors combined with providers' perceived barriers to training impacted self-reported TIC-efficacy. To account for the influence of the degree to which participants were currently experiencing feelings of hopelessness, ineffectiveness, or fatigue in caring for their patients, we included burnout as a covariate as assessed by the BO subscale of the ProQOL. There was a significant interaction between intellectence/openness and whether lack of training was perceived as barrier in predicting levels of provider TIC-efficacy, with burnout included as a covariate in the model. As shown in Table 5, predictors explained 20% of the variance in TIC-efficacy, with the interaction explaining 2.1% of the variance. As demonstrated in Figure 1, providers with low levels of intellectence/openness who perceived training as a significant barrier reported the lowest TIC-efficacy compared to those who did not perceive training as a barrier. Simple slopes analysis indicated that the slope of intellectence was significant when barriers to training were rated as significant ($B = .68$, $SE = .19$, $p < .001$). By way of comparison the slope of intellectence was not significant when lack of training was rated as somewhat of a barrier ($B = .25$, $SE = .15$, $p = .105$), or rated as not a barrier ($B = -.18$, $SE = .32$, $p = .564$). Said another way, when lack of training was not seen as a barrier, intellectence/openness was not associated with self-reported TIC-efficacy. Parallel models were repeated with the remaining four personality factors. However, these factors did not significantly interact with training barriers to predict TIC-efficacy, indicating that the interaction is specific to intellectence.

Discussion

Results of the current study can help aid our understanding of factors that may affect implementation and training in trauma-informed care, by examining provider-level factors related to self-reported TIC-efficacy and how this relationship is influenced by providers' perceived barriers to TIC. TIC-efficacy was associated with higher levels of open-minded personality traits and less neuroticism. These findings are consistent with research suggesting that individuals who are open to experience tend to be more psychologically flexible and more comfortable addressing psychosocial issues among patients that may be considered too nebulous or abstract by others (Kashdan & Rottenberg, 2010). Importantly, a sense of openness is linked to higher levels of creativity and compassionate behavior under stressful situations (Kashdan & Rottenberg, 2010; McCrae, 1996; O'Brien & DeLongis, 1996). In the case of healthcare practice, providers who are more open to experience may be more inclined to elicit and understand patient perspectives, and, in turn, more likely to remain open and empathic in the midst of stressful patient encounters.

Importantly, our results demonstrate that when lack of training was perceived as a barrier, low intellectence/openness was associated with less TIC-efficacy. This suggests that providers who feel well-trained in TIC may have similar levels of TIC-efficacy regardless of their level of trait openness. Although our analyses are exploratory, this finding has

implications for TIC implementation and training, such that effective training programs may help compensate for lower openness, resulting in increased sense of efficacy in caring for traumatized patients. Specific elements of training content and teaching methods most likely to be effective require further exploration and testing. However, one interpretation of our findings is that healthcare providers with lower openness may benefit from training, and perhaps that training and education are effective, in part, because they broaden providers' views and perspectives regarding complex clinical situations involving patients' histories of trauma.

The interaction between neuroticism and perceived lack of training as a barrier was not statistically significant in predicting TIC efficacy. Moreover, the correlation between trait neuroticism and TIC-efficacy was lower than for trait openness ($-.18$ vs. $-.28$), suggesting that neuroticism may be less strongly related to providers' sense of efficacy in trauma-informed practice than it is to their overall sense of professional well-being when caring for traumatized patients. Trait neuroticism was positively correlated with both secondary traumatic stress ($r = .41$) and burnout ($r = .57$) in our sample, suggesting that when providers struggle to regulate their own emotional experiences (as a broader pattern of neuroticism) they may be more prone to be emotionally triggered by traumatized patients. Our results can be interpreted from the standpoint of Psychological Flexibility Theory, which posits that a clinician's willingness to remain present with their own distress is often mirrored in their willingness to remain engaged with the concerns and distress of their patients (Gerhart et al., 2016; Hayes, Strosahl, & Wilson, 2011). Clinicians prone to neurotic responding may also be more inclined to ruminate over poor patient outcomes and also experience complicated emotions of guilt, anxiety and anger. Research suggests that people with higher levels of neuroticism tend to use avoidant coping strategies (Watson & Clark, 1984), often resulting in distress (Cañadas-De la Fuente et al., 2015).

Despite the nonsignificant interaction between neuroticism and perceived lack of training as a barrier predicting TIC-efficacy, our findings nevertheless suggest that providers with high trait neuroticism would probably benefit from organizational supports in their roles as caregivers, particularly as caregivers of traumatized patients. These supports are important for helping providers understand vicarious traumatization and its effects, in addition to supporting self-care and personal resilience, which may, in turn, increase providers' ability to deliver trauma-informed care. Education regarding vicarious trauma, self-care, and resilience are, not surprisingly, common features inherent to TIC training (Figley, 2002; Gerhart et al., 2016; O'Mahony et al., 2016). Thus, TIC implementation may have a dual impact on improving providers' interaction with and care of patients who have experienced trauma as well as fostering their own personal resilience in the face of emotionally-charged patient care experiences.

Taken together, our results build upon findings from previous studies of TIC-efficacy, which has focused almost exclusively on pediatric care providers, by examining these variables in a more diverse sample of healthcare providers who treat patients at various stages of the lifespan from the perinatal period to end-of-life care (Bruce et al., 2018; Kassam-Adams et al., 2015b; Ward-Begnoche et al., 2006). Most providers endorsed concerns that discussing patients' past traumas could be upsetting. Nearly all providers reported time constraints and

lack of training as significant barriers to TIC. Lack of training in TIC was moderately correlated with self-reported TIC-efficacy, while disagreement with peers was inversely correlated with self-reported TIC-efficacy, although the correlation was low ($r = -.16$). The inverse association between disagreement with peers as a barrier and TIC-efficacy may invite further exploration, despite the low effect size. It is possible that providers who see their peers as barriers to TIC may have had more experience confronting their peers and may feel more “practiced” as a result.

Collectively, results from this study highlight the need for the development of effective training materials that will bolster TIC implementation efforts in medical settings, with particular attention to supporting provider resilience, openness, and sense of efficacy. TIC has been demonstrated to build knowledge, change attitudes, foster provider resilience, and increase patient-centered healthcare (Brown, Baker, & Wilcox, 2012; Green et al., 2015). This study addressed some of the limitations cited in the aforementioned research by expanding the study sample beyond pediatric care providers to include healthcare providers who generalize to the broader healthcare community.

Results of the study and its implications can be qualified by several limitations. First, given that the data are cross-sectional, we cannot infer causality. Second, the study’s assessment of organizational barriers to TIC was limited in scope to include only seven perceived barriers and can only reflect the perspective of individual providers (i.e., these were *perceived* not actual or objective assessment of barriers). Other organizational barriers such as the lack of institutional resources, space, or special medical equipment needed for particular healthcare circumstances were not assessed. The study also did not assess whether providers who participated in the study had been exposed to any formal or informal TIC training or programing. Instead, we did assess provider knowledge of basic TIC principles, which helped characterize a diverse sample of healthcare providers representing varied healthcare institutions in terms of its familiarity with TIC. However, the lack of information regarding the healthcare settings and institutions in which these providers work precluded examining the role of institutional culture and its influence on TIC efficacy. The survey also did not assess providers’ quantity of direct patient contact hours, types of exams and procedures typically performed in the course of patient care, and whether providers had previous encounters with patients with trauma histories. Given that the survey was entirely self-report, no conclusions can be drawn regarding providers’ actual patient care delivery or competence in delivering healthcare to traumatized populations. Finally, this was a convenience sample of providers who volunteered to complete an online survey and findings may have limited generalizability to the population of healthcare providers as a whole.

Despite these limitations our study has several strengths. The study was conducted with a sample of healthcare provider from different medical centers across the United States. The study utilized validated measures and adapted a previously constructed instrument to learn about unique aspects of provider experiences, including perceived barriers and sense of efficacy in providing trauma-informed care. We also assessed providers’ professional quality of life including levels of compassion satisfaction, burnout, and secondary traumatic stress, which would be expected to influence the variables of interest in this study. More research is needed to examine healthcare provider knowledge, efficacy, and TIC practices, with a focus

on testing TIC training effectiveness and assessing outcomes for both providers (e.g., objective measures of TIC competence) and their patients (e.g., PTSD symptoms, medical regimen adherence, and satisfaction with care).

In summary, this study explored unique provider-level and perceived healthcare environment factors that may impact providers' sense of efficacy in using TIC. These findings highlight provider training as a promising avenue for future TIC implementation research. Implementation research, particularly research focused on training, needs to build upon providers' dispositional strengths and relative weaknesses toward increasing TIC-efficacy while also overcoming barriers in the existing healthcare system (Laraque et al., 2004). Moreover, TIC implementation research will also need to take into account the influence of provider burnout secondary traumatic stress and consider integrating preventive efforts and organizational supports to address this problem. Such trauma-informed training programs would offer knowledge and resources to offset some of the perceived barriers to TIC and support providers in ameliorating the negative effects of trauma and PTSD in medical settings.

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Figure 1. Intelligence/openness interacts with perceived lack of training to predict TIC-efficacy.

Table 1.

Sample characteristics of health care providers.

	Sample (N =172)
Age ^a	38.5 years (11.56)
Gender ^b	
Female	131 (76.2)
Male	39 (22.7)
Years of Practice	
25th Percentile	4.0
50th Percentile	7.0
75th Percentile	14.75
Occupational Role ^b	
Physician ^c	85 (49.4)
Attending	30 (17.4)
Fellow	8 (4.7)
Resident	47 (27.3)
Nurse Practitioner/Advanced Practice Nurse	14 (8.1)
Physician Assistant	5 (2.9)
Other Health Care Role	23 (13.4)
Medical Specialty ^b	
Obstetrics & Gynecology/Women's Health	28 (16.3)
Pain/Palliative Medicine	17 (10.5)
Oncology	15 (8.7)
Pediatrics (any subspecialty)	13 (7.6)
Psychiatry	12 (7.0)
Internal Medicine	10 (5.8)
Physical Medicine & Rehabilitation	10 (5.8)
Surgery (any subspecialty)	9 (5.2)
Emergency Medicine	8 (4.7)
Clinical Psychology/Other mental health	8 (4.7)
Social Work/Case management	7 (4.1)
Neurology	5 (2.9)
Anesthesia	4 (2.3)
Chaplaincy/Spiritual Care	4 (2.3)
Other Specialty Type	14 (8.1%)
Adolescent Health	1
Ambulatory	1
Dental Medicine	1
Dermatology	1
Gastroenterology	1
Geriatrics	1

	Sample (<i>N</i> =172)
Hepatology	1
Interventional Radiology	2
MICU/ICU	1
Otolaryngology	1
“N/A” or Missing	3
Combination of more than one specialty	7 (6.4)

^a*M*(*SD*);

^b*n* (%);

^cIncludes resident, fellows, attending physicians.

Table 2.

Providers' knowledge of trauma informed care and professional quality of life scores.

Knowledge of trauma-informed care*	Correct response <i>n</i> (%)
1. Patients with significant posttraumatic stress reactions usually show obvious signs of distress.	115 (66.8)
2. There is a common profile for the PTSD patient.	129 (75.0)
3. It is inevitable that most patients who experience trauma and/or abuse will go on to develop significant posttraumatic stress or PTSD.	123 (71.5)
4. There are effective screening measures for assessing traumatic stress that providers can use in practice.	139 (80.8)
Professional quality of life	<i>n</i> (%)
<i>Compassion satisfaction</i>	
Low (<25th percentile)	39 (22.6)
High (>75th percentile)	44 (25.5)
<i>Burnout</i>	
Low (<25th percentile)	36 (20.9)
High (>75th percentile)	34 (19.8)
<i>Secondary traumatic stress</i>	
Low (<25th percentile)	38 (22.1)
High (>75th percentile)	33 (19.2)

* Items 1–3 correct response = disagree/strongly disagree, item 4 correct response = agree/strongly agree.

Table 3.

Descriptive statistics and pearson correlations among study variables.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 TIC-Efficacy	27.87	5.32															
2 Extraversion	13.12	3.49	.21**														
3 Agreeableness	16.89	2.41	-.04	.25**													
4 Conscientiousness	15.43	3.01	.03	-.12	.17*												
5 Neuroticism	10.67	3.49	-.18*	-.19**	-.05	-.10											
6 Intellectence/Openness	14.94	2.92	.28***	-.13*	.19**	.08	-.11										
7 Compassion Satisfaction	40.76	5.29	.22**	.30**	.22**	.15*	-.44***	.00									
8 Burnout	22.60	5.23	-.22**	-.32***	-.28***	-.18*	.57***	-.06	-.70***								
9 Secondary Traumatic Stress	21.37	5.35	-.06	-.17*	-.00	-.14*	.41***	.00	-.25***	.58***							
<i>TIC Barriers:</i>																	
10 Time Constraints	2.47	.62	-.08	-.01	-.02	-.18*	.12	-.07	-.07	.29**	.29***						
11 Fear of re-traumatizing patients	1.92	.58	-.10	.01	.17*	.00	-.08	.00	.03	-.04	.15	.06					
12 Lack of training	2.27	.60	-.35***	-.04	.07	.10	.09	-.10	-.05	.07	.18	.12	.19*				
13 Confusing evidence	1.81	.64	-.10	-.04	-.09	-.01	.09	-.14	-.04	-.01	-.05	.01	.15	.35***			
14 Having to alter environment	1.88	.66	-.12	-.16*	-.04	.00	.19*	-.08	-.07	.17*	.20*	.11	-.01	.24**	.25**		
15 Disagreement with peers	1.44	.60	.16*	-.03	-.05	-.08	.06	-.05	.08	.05	.21**	.05	.15	.12	.24**	.28***	
16 Not having anyone to turn to for help	1.73	.70	.04	-.08	-.03	-.08	.05	-.10	-.13	.19*	.12	.19*	.05	.22**	.21**	.39***	.39***

Notes: TIC = Trauma-informed Care; *SD* = standard deviation.* $p < .05$,** $p < .01$,*** $p < .001$.

Table 4.

Perceived barriers to TIC and correlations with TIC efficacy.

Provider ratings of perceived barriers	<i>n</i> (%)	Correlation with TIC Efficacy (<i>r</i>)
Time constraints		-.08
Not a barrier	11(6.4)	
Somewhat of a barrier	64(37.2)	
A significant barrier	86(50)	
Worry about further upsetting or re-traumatizing patients		-.10
Not a barrier	33(19.2)	
Somewhat of a barrier	106(61.6)	
A significant barrier	21(12.2)	
Lack of training		-.35***
Not a barrier	13(7.6)	
Somewhat of a barrier	92(53.5)	
A significant barrier	57(33.1)	
Confusing information/evidence on trauma-sensitive practices		-.10
Not a barrier	50(29.1)	
Somewhat of a barrier	90(52.3)	
A significant barrier	20(11.6)	
Having to alter the environment		-.12
Not a barrier	46(26.7)	
Somewhat of a barrier	89(51.7)	
A significant barrier	26(15.1)	
Disagreement with peers about using trauma-sensitive care		.16*
Not a barrier	99(57.6)	
Somewhat of a barrier	53(30.8)	
A significant barrier	9(5.2)	
Not having anyone to turn to for help with a patient experiencing trauma and/or abuse		.04
Not a barrier	66(38.4)	
Somewhat of a barrier	72(41.9)	
A significant barrier	23(13.4)	

Notes: Correlation coefficients between each perceived barrier rated on a 3-point scale and TIC efficacy total score.

*
 $p < .05$;**
 $p < .01$;***
 $p < .001$.

Table 5.

Intellectence/openness interacts with perceived training barriers to predict TIC-efficacy.

Model		<i>B</i>	Std. Error	Beta	<i>t</i>	Sig.	<i>R</i> ²	<i>R</i> ² Change	<i>F</i> change
1	(Constant)	33.07	1.90		17.45	.000	.05	.05	8.06
	Burnout	-.24	.08	-.22	-2.84	.005			
2	(Constant)	25.61	2.89		8.88	.000	.11	.06	11.27
	Burnout	-.21	.08	-.19	-2.58	.011			
	Intellectence	.46	.14	.25	3.36	.001			
3	(Constant)	32.43	3.13		10.37	.000	.21	.10	19.88
	Burnout	-.19	.08	-.18	-2.48	.014			
	Intellectence	.41	.13	.22	3.10	.002			
	Lack of training	-2.82	.63	-.32	-4.46	.000			
4	(Constant)	48.11	8.31		5.79	.000	.23	.21	4.14
	Burnout	-.19	.08	-.18	-2.49	.014			
	Intellectence	-.62	.52	-.34	-1.19	.238			
	Lack of training	-9.42	3.31	-1.06	-2.85	.005			
	Interaction	.43	.21	.89	2.03	.044			