Exploring the Dimensionality of Trauma-Informed Care: Implications for Theory and Practice.

Travis Hales

University at Buffalo School of Social Work

Nancy Kusmaul

University of Maryland Baltimore County

Thomas Nochajski

University at Buffalo School of Social Work

Abstract

The current study expands research on trauma-informed care by exploring the theoretical model proposed by Harris and Fallot (2001). In previous research the dimensions of trauma-informed care were found to have large correlations (Kusmaul, Wilson & Nochajski, 2015), suggesting the dimensions may share an underlying dimension. This assumption was tested in the current study through administering the trauma-informed climate scale to six human service agencies (N=641) and assessing the instrument's dimensionality using structural equation modeling. The results indicate that Harris and Fallot's dimensions are unique but strongly related, sharing an underlying dimension. Implications for theory and practice are discussed.

Background

A majority of the United States population will experience at least one traumatic event in their lifetime (Centers for Disease Control and Prevention, 2010). Trauma has become a major public health concern because it is associated with poor outcomes in physical and mental health, decreased socio-economic status, and a variety of social issues across populations (Kuo, Goldin, Werner, Heimberg, & Gross, 2011; Park et al., 2014). The majority of persons who experience substance-use disorders have a history of trauma, and have worse treatment outcomes than their counterparts who have not experienced a traumatic event (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014; Koenon, Stellman, Sommer, & Stellman, 2008; Driessen et al., 2008; Najavits et al., 2007).

Recognition of the pervasiveness of trauma has caused a variety of health and human service systems to adopt trauma-informed approaches (Bloom & Farragher, 2011). Trauma Informed Care (TIC) is an organizational model that presumes everyone (from staff to clients) has experienced trauma (Fallot & Harris, 2008). A trauma-informed organization understands the

impact of trauma on staff and clients and is responsive to their respective needs by imbedding this knowledge within the organization's policies, procedures and practices (SAMHSA, 2014). However, service sectors are frequently overcome by environmental and internal stressors impeding the implementation of TIC. As a result, systems designed to enhance human growth and development often exacerbate trauma symptomatology through the rigidity of structures and the use of coercive policies and procedures (Whitley, Harris, Fallot, & Berley, 2008; Salasin, 2005; Bloom & Farragher, 2011).

TIC was first introduced in inpatient and juvenile mental health facilities (Bills & Bloom, 1998; Bloom & Sreedhar, 2008). It has been expanded to a variety of settings including juvenile justice (Burrell, 2013), addictions (Wellbank, 2007), foster care (Klain & White, 2013), and has been suggested for use in developmental disability populations (Keesler, 2014), homelessness services (Hopper, Bassuk, & Olivet, 2010) and long term care facilities (Kusmaul & Waldrop, 2015). Despite its implementation, formal research on the outcomes of TIC is limited. Early implementers report improved outcomes for both clients and staff (Rivard et al., 2003). Some reported benefits include fewer restraints and less use of seclusion in psychiatric settings, greater collaboration with patients, and less perceived stress experienced by patients in trauma informed settings (Muskett, 2014).

Implementation of trauma informed care requires comprehensive staff education, sustained leadership support (Van Dam, Oreg, & Schyns, 2008), and ongoing structural resources (Kramer, Sigel, Conners-Burrow, Savary, & Tempel, 2013; Bloom & Farragher, 2011). Despite overall benefits to the organizational system, the implementation of trauma informed care is not experienced the same by all members of the service delivery system (Wolf, Green, Nochajski, Mendel, & Kusmaul, 2014; Kusmaul, Wilson, & Nochajski, 2015). Since

staff members are the ones delivering trauma informed services to vulnerable clients, it is important to understand how they experience the factors of trauma informed care.

Harris and Fallot's (2001) Five-Dimensional Model

Of the existent models of TIC, Harris and Fallot's (2001) five dimensional model remains one of the most saliently discussed in the literature. Harris and Fallot have developed a theoretical argument that trauma-informed environments should be characterized by five guiding principles: safety, trustworthiness, choice, collaboration and empowerment. These principles represent the direct opposite conditions of persons who have experienced traumatic events. That is, the safety and experience of freedom and empowerment of those who have experienced trauma was compromised, leading to a distrust of others (Harris & Fallot, 2001). While Harris and Fallot's model of TIC seems plausible, its validity has rarely been tested in empirical research. Kusmaul et al. (2015) were among the first to empirically explore the dimensions proposed by Harris and Fallot. This research expands upon Kusmaul et al.'s findings to assess the relationship between Harris and Fallot's dimensions.

Initial Research, Conceptual Model, and the Present Study

The Trauma-Informed Climate Scale (TICS) was designed in consultation with Roger Fallot and based on Harris and Fallot's (2001) five dimensional model of TIC. In Kusmaul et al.'s (2015) structural exploration of the instrument, the sample was not large enough to conduct a factor analysis of the entire scale. Instead, they conducted exploratory factor analyses on each of the five dimensions indicated by Harris and Fallot. They found two of the dimensions had subscales: safety fell into separate factors for emotional and physical safety while empowerment was partitioned by support for trying new things and a desire for more training. Kusmaul et al.

concluded that TIC may consist of more dimensions than Harris and Fallot suggested. Thus, the first aim of the paper will be to confirm the factor structure of the TICS.

Next, while Harris and Fallot (2001) proposed the dimensions of TIC, they did not define how they were related. For instance, many proponents of trauma-informed care prioritize safety (e.g., Hopper et al., 2010), suggesting that the dimensions of trauma-informed care may have a hierarchy of importance similar to Maslow's (1943) hierarchy of needs with physical safety as the base. Such considerations suggest that interventions aimed towards helping organizations become trauma-informed should begin with an emphasis on safety, building the remaining principles of its foundation. However, if the principles within TIC are interconnected then intervention in any one of Harris and Fallot's domains will lead to changes in the others. Along this line of reasoning, it is unclear whether or not TIC is a unidimensional or multidimensional construct. The previous study (Kusmaul et al., 2015) found extremely high correlations between the TICS' factors, suggesting that TIC may be either be a unidimensional construct, where all items load on a single dimension (Segars, 1997), or a multidimensional construct, where the factors share a higher-order construct underlying the five dimensions (Law, Wong, & Mobley, 1998). Either of these considerations would help to explain the correlations found by Kusmaul et al. (2015).

The second aim of the paper involves comparing the respective fit of a multidimensional and unidimensional model of TIC. The multidimensional model will be tested using CFA (confirmatory factor analysis) by loading the previously discovered TIC factors on a single dimension. In addition, all of the items of the TICS will be loaded on a single factor to assess whether or not TIC is actually a unidimensional construct. Figure 1 below provides a visual representation of the theoretical models being compared in the second aim. The diagram with the

single TIC factor indicates TIC as a unidimensional construct, where all of the items are loaded on a single factor. The second diagram, where each of the TIC factors are loaded on a single TIC construct, represents a multidimensional model where the TIC factors share a single underlying dimension.

[Insert Figure 1 about here].

Methods

Description of the Instrument

The TICS is composed of 30-items that measure staff's psychological perceptions of the work environment based on Harris and Fallot's (2001) characterization of TIC. The scale is based on a 5-point Likert rating with scores ranging from 'strongly disagree' (1) to 'strongly agree' (5). As noted, the instrument contains five scales (safety, trust, choice, collaboration, and empowerment), with the safety and empowerment scale each having two subscales. The safety scale includes both physical and emotional safety, while the empowerment scale contains both support for trying new methods and a desire for more training subscales. The number of items per scale ranged from four to six items (see Table 2 for a complete listing of scale items).

In general, the TICS measures the extent that staff experience the five principles of TIC in their respective work environments. For instance, an item from the physical safety subscale asks for respondents' agreement on the following statement: 'I often fear for my safety while at work.' An additional example of an item from the collaboration scale includes: 'staff input pertaining to program decision-making is often disregarded.' The latter item on collaboration is one of fourteen items within the scale that is a negative item and is reverse-scored for analyses (all reverse-coded items are marked with the symbol '(R)' in Table 2).

Design and Sample

The data was collected using a cross-sectional design. The TICS was administered to human service staff from agencies who provide a variety of services to both children and adults. All staff members from participating organizations were sent an email containing a brief description of the study and a link to the online survey. The survey contained an information sheet explaining the voluntary nature of participation amongst other ethical considerations, the 30-item TICS, and a brief demographic questionnaire. The study was approved by the University at Buffalo's Institutional Review Board.

The sample includes a total of 641 respondents from six human service agencies. The six agencies were all private, non-profit 501(c)(3) organizations located in the Western New York region. As noted, the missions of the organizations were heterogeneous, containing a mixture of crisis, mental health, and substance use services in both inpatient and outpatient capacities for adolescents and adults. In regards to the position participants held within their respective organizations, a total of 540 (84.2%) provided information. The majority of respondents were characterized as direct-care staff (N=352; 54.9%), with direct-care staff referring to those persons who are directly involved in the delivery of services. The second largest cluster of respondents identified as support staff (N=108; 16.8%), with fewer persons identifying as senior (N=31; 4.8%) or middle-line (N=49; 7.6%) managers. Further, the majority of the sample was white (N=460; 71.8 %) and female (N=430; 67.1%). Slightly more than half of the respondents held either a Bachelor's or Master's degree (N=342; 53.3%) and had an average of 12.72 (SD=9.64) years in human service. Age was collected categorically, with approximately equal number of respondents within the 20-30, 31-40, 41-50 and 51-60 age ranges.

Analytical Procedures

To confirm the TICS' factor structure, confirmatory factor analysis using structural equation modeling (SEM) was performed in Mplus V7. SEM is an umbrella term referring to a host of statistical procedures testing causal relationships amongst variables (Kline, 2011). The uniqueness of SEM is found in its combination of confirmatory factor analysis (Jöreskog, 1967) with path analysis (Duncan, 1966), allowing associations among variables to be tested at the latent level. 'Latent' variables refer to the constructs that underlie the observed items in a scale, comprised of the shared variances of a given scale's items. Traditional SEM approaches consist of developing a measurement model through confirmatory factor analysis, followed by testing causal relationships of latent relationships (Anderson & Gerbing, 1988). However, we were only interested in confirming the factor structure of competing theoretical models of TIC. Thus, we conducted a series of confirmatory factor analyses to assess the scale's factor structure and test the alternative models of TIC.

Due to multivariate non-normality, maximum likelihood estimation with robust standard errors (MLR) was the selected estimation method. Practitioners of SEM suggest using a variety of indexes to test model fit, including absolute and comparative fit indexes (Hu & Bentler, 1999; Kline, 2011). In consequence, the fit indices used to test the model include Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), root mean squared error of approximation (RMSEA) and standardized root mean square residual (SRMR). Further, contemporary SEM practitioners have argued against Hu and Bentler's (1999) 'Golden rules' in interpreting fit indices, stating that the use of cut-off values for hypothesis testing is often too simplistic (Marsh, Hau, & Wen, 2004; Barrett, 2007) and the criteria too conservative, often leading to the rejection of plausible theoretical models in early stages of their development (Markland, 2007). Because TIC is early in its development and the employment of stringent cut-off values may run the risk of discarding

feasible theoretical models, we chose to use the more liberal cutoff scores as a benchmark index to confirm the scale's factor structure and compare the competing models. The use of multiple fit indices allows the reader to gain a sufficient sense of each of the model's relative fits.

Results

Confirming the Factor Structure

The initial results did not appear to confirm the TICS' factor structure. The comparative fit indices were below the more liberal 0.90 cutoff, with CFI = 0.89 and TLI = 0.88. However, the RMSEA and SRMR were within acceptable ranges (both < 0.05). Despite two of the four tests of model fit falling within acceptable range, these results provide support that the TICS has a poor factor structure. Through requesting modification indices in the Mplus output, allowing three pairs of item residuals to co-vary and one item to cross-load would significantly improve the model fit. While allowing residuals to co-vary a-posteriori violates best practices in SEM (Kline, 2011), upon inspecting the items it was theoretically plausible that the indicator's unique variances would correlate. For example, items 'I often fear for my safety while at work' and 'Areas within the building sometimes make me feel trapped or unsafe' each deal with fear in relation to physical safety. A second model was run allowing the modifications and the model improved. The comparative fit indices improved reached the more liberal 0.90 threshold, and RMSEA and SRMR remained within acceptable ranges. The exact fit statistics and factor loadings for the modified model are presented below in Tables 1 and 2.

[Insert Table 1 about here].

[Insert Table 2 about here].

The full scale's Cronbach Alpha was .94. The Cronbach Alphas for the sub-scales ranged from .61 to .84, suggesting the scale has relatively good internal consistency. The scale alphas

were as follows: all safety items (α = .73), emotional safety (α = .61), physical safety (α = .61), trust (α = .72), choice (α = .84), collaboration (α = .81), all empowerment items (α = .83), desire for more training (α = .66) and support for trying new things (α = .78). The reliability estimates for the current study were nearly identical to those found by Kusmaul et al.'s (2015) initial investigation of the TICS, with only the choice and collaboration scales expressing mild variation (± .03). Consistent with Kusmaul et al.'s findings the correlations between the factors were large, ranging from .70 to .99.

[Insert Table 3 about here].

Comparing the Unidimensional and Multidimensional Models

To address the second aim of the study pertaining to whether TIC is a unidimensional or multidimensional construct, two CFAs were tested. The first examined the fit of the multidimensional model where the seven identified factors loaded on a higher-order, underlying factor. The second model examined the fit of the unidimensional model where all of the TICS items loaded on a single factor. The model chi-squares and fit indices suggest that the multidimensional model provides a slightly better fit of the data. This is evident from the 146.69 chi-square increase from the unidimensional to multidimensional models, and the CFI and TLI of the multidimensional model reaching the liberal threshold of 0.90. However, it should be noted that the two models while remarkably different have more or less similar fit indices. The unidimensional model, where all items are loaded on a single construct represents a decent fit to the data. This finding suggests that the dimensions of TIC are strongly associated with one another. However, the multidimensional model presenting a better fit to the data suggests that there are multiple dimensions with TIC which appear to share an underlying higher-order dimension.

[Insert Table 4 about here]

Discussion

This study expands Harris and Fallot's (2001) dimensional model of trauma-informed care. The results of the CFAs indicate that the dimensions proposed by Harris and Fallot (i.e., safety, trustworthiness, choice, collaboration and empowerment) are both unique and interrelated, sharing a single underlying dimension. From an intervention standpoint, while safety is often prioritized as a base similar to Maslow's (1943) physical foundation in the hierarchy of human needs upon which the remaining principles must be built, this research suggests that each of the dimensions of TIC are equally important and interrelated. Considering that the principles of TIC share an underlying dimension, it is plausible that development within any of the domains will lead towards the enhancement of the others, and that change initiatives and strategies need not give initial primacy to safety. In consequence, those wishing to create trauma-informed environments may prioritize program development on any of Harris and Fallot's dimensions. This study also provides support for the factor structure of the TICS, enabling its use in future research.

Limitations

The primary limitation in this study is the sample. The sample was primarily composed of white, female respondents who held either a bachelor or master's level degree. The influence of race, gender and education on the scale's factor structure cannot be known. It is possible the factor structure of the TICS may differ as a function of race, gender or education. Due to the other race, gender and educational values not having enough occurrences in the dataset (samples for each < 300), differences in factor structures could not be assessed using SEM. Future

research should address whether or not the scale's factor structure is retained for different samples.

Future Research Directions

Considering that particular groups likely experience the five dimensions of trauma-informed care in various ways, future research will assess whether or not gender or race influence the factor structure of the scale. For instance, one group of gender and race values may not differentiate between emotional safety and trust, whereas a comparative group might. These would result in differences in how well the current models fit the observed values. Above and beyond variation in staff's experiences of the five dimensions, because the TICS has sufficient validity future research could test the relationship between TIC and characteristics of significance to the human service sector. Such future research might assess if the experiences of the core components of trauma-informed care (i.e., safety, trust, choice, collaboration and empowerment) influence the organizational variables of turnover, satisfaction and performance. These considerations may provide support for the creation of trauma-informed working environments characterized by Harris and Fallot's (2001) dimensions.

Conclusion

This study provides support that Harris and Fallot's (2001) dimensions of trauma-informed care all share a single underlying dimension. While it remains feasible for organizational interventionists to focus on each of the five domains in efforts to create trauma-informed systems, this study provides support that change in any of the dimensions will affect change in the others. That is, because the TIC principles of safety, trust, choice, collaboration and empowerment share a single underlying dimension, no single principle need be prioritized above and beyond the rest. The domains of Harris and Fallot are not independent but

interconnected with one another. This study furthers theory and research on TIC by expanding Harris and Fallot's dimensional model and providing evidence of validity for the Trauma-Informed Climate Scale to be used in future research.

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