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Western Michigan University

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DEVELOPMENT OF THE TRAUMA INFORMED SYSTEM CHANGE INSTRUMENT: EVALUATION OF FACTORIAL VALIDITY AND IMPLICATIONS FOR USE

by

Margaret M. Richardson

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Interdisciplinary Ph.D. in Evaluation
Advisor: Chris Coryn, Ph.D.

Western Michigan University
Kalamazoo, Michigan
December 2010
This paper outlines the process of developing and evaluating an instrument measuring the extent to which a complex community system has changed as a result of a community initiative, and for purposes of this research, doing this within the content area of developing local trauma informed child welfare systems in specific communities in Michigan. The instrument was designed for the Southwest Michigan Children’s Trauma Assessment Center’s (CTAC) SAMHSA-funded initiative to bring a trauma informed perspective to professionals working with children in child welfare. Because there is not a standard set to define what constitutes trauma informed treatment of children in the child welfare system, this instrument serves a dual purpose - to address a gap in evaluation methodology and practice as well as to guide interventions seeking to change child welfare systems in becoming trauma informed. An instrument was developed with the input of experts in trauma informed system change. Two distinct parts of the study were carried out: evaluation of the instrument, and an impact study for the first year of the initiative, utilizing the pilot version of the instrument. The sample used for the study was obtained from the pool of professionals attending community-based trainings provided by CTAC on trauma informed system change. Following the
two tracts of the study, two distinct tracts of analyses were conducted. For the validity study, the two parts of the instrument – Community Characteristics and Individual Characteristics – were analyzed separately using the Maximum Likelihood method and confirming results with Weighted Least Squares Means and Variances. A three factor model was fit for Community Characteristics and a two factor model for Individual Characteristics, with goodness of fit and parsimony indices within the acceptable range for both sections of the instrument and reliability using Cohen’s alpha adequate to good. The impact study was conducted by comparing means utilizing the valid factor structure and triangulating results with qualitative data from the project evaluation. Although adequate factorial validity was obtained for the instrument, specific items on the instrument that were problematic in fitting the model were identified, and suggestions for revising the instrument for improved functionality are offered, as are other potential uses of the instrument.
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ACKNOWLEDGMENTS

Over the course of four years, there are so many kind souls for whom I have deep gratitude for supporting me in reaching this point. Sometimes it only took a smile or a word of encouragement to move me through a rough period. Those fellow students going through their own doctoral journeys, from both the Interdisciplinary Health Doctoral Program and the Interdisciplinary Evaluation Doctoral Program, come first to mind. It is my hope to return the support and positive intentions for each and every one of the people whose paths have crossed with mine. Deep thanks to Barb Howes. Thanks to all of the kindred spirits at CTAC. You provided kindness and support through thick and thin. Thanks to my family for the words of encouragement. Thanks very much to both of my children. Nina doesn’t know what it’s like to have a mother who isn’t in school. Here’s to being a more present mom for you! And to Drew, for the support, the presence, and the very real help with keeping track of Nina! Heartfelt thanks to Mary Ramlow, whose wisdom and experience helped me make sense of it all. Thanks to my chair, Chris Coryn. It was the Foundations of Evaluation class that made me enter this program. Your help and vision throughout my dissertation process has been invaluable. Thanks to Yvonne Unrau, whose keen intellect and sharp evaluation skills are coupled with good energy and cheer, and move me always to think and go further.

My deepest gratitude for Jim Henry, for everything.

Margaret M. Richardson
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CHAPTER I

STATEMENT OF NEED

Purpose

Hundreds of thousands of children are cared for within the child welfare system in the United States—at-risk children living in marginal family systems, children removed from caregivers due to abuse and neglect, and children who have histories of maltreatment who have become entangled with the juvenile justice system (Administration for Children and Families, 2005). Children having been maltreated within the caregiving system have a predictable consistent sequelae of behaviors and emotional reactions that are indicative of their traumatization, and often these behaviors/emotions are contrary to stable functioning in a home and academic environment (Cook et al., 2003). Treatment from agencies within the child welfare system that does not address behaviors for what they are—consequences of traumatization—are at the least, ineffective, and at the worst, at risk of compounding the problem through system trauma (Taylor & Sigfried, 2005). Yet, there is little guidance for agencies to provide trauma informed intervention, as the process of defining a trauma informed child welfare system is only in its infancy. There are not yet tools or methods to gauge the level to which a child welfare system has become trauma informed.

The purpose of the work documented in this paper is to outline the process of developing and evaluating an instrument that measures the extent to which complex community systems have changed when integrating a paradigm shift, and for purposes of
Currently, federal child outcomes are designed to monitor broad categories of “well being, permanency, and safety” for children (Adoption and Safe Families Act, 1997), but these are individual level measures, and do not monitor change at an agency or a community level. As well, the federal standards, which drive evaluation at the state and local levels, do not address the impact of trauma for these children. There is not an evaluation system in place to measure the extent to which child welfare agencies are becoming trauma informed. Indeed, there is not a standard set to define what constitutes trauma informed treatment of children in the child welfare system. An instrument to measure change in the child welfare system could serve a dual purpose - to address this gap in evaluation methodology and practice as well as to guide interventions seeking to change child welfare systems in becoming trauma informed.

Significance

Contribution to Evaluation Methods and Practice

A valid and reliable instrument to measure system change within the complexity of the child welfare system will make a significant contribution to both improving methods of system evaluation as well as contributing to evaluation practice, specifically in the child

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1 This instrument was developed within the context of a SAMHSA-funded initiative through the Southwest Michigan Children’s Trauma Assessment Center (CTAC) to help local child welfare systems in Michigan function in a more trauma informed way. Throughout this document, references will be made to “trauma informed system change,” from which the need for measurement of change led to the initial development of this instrument. To clarify, however, although the seminal intent of the instrument was to measure “trauma informed change in child welfare systems,” the design of the instrument is the measurement of systems as they move to a different paradigm; and this is explored through the specific application with child welfare systems becoming trauma informed. Given this clarification, for ease of discussion, “trauma informed system change” is frequently referenced.
welfare system. There are instruments to measure characteristics of an agency (Glisson, 2002), but not of the agency as part of a larger whole. An instrument measuring a community system would serve a vital function on several levels within the child welfare system and within interventions aimed at changing the system. For purposes of measuring change in child welfare within the context of the current trauma informed initiative, at the most basic level, a sound instrument can serve the fundamental purpose of reporting evaluation data after a trauma informed intervention has taken place – an improvement in evaluation methods. More significant in the field of system change in child welfare is the role to be played within utilization focused and participatory evaluation practice (Cousins & Whitmore, 1998; Patton, 1997), as such an instrument can serve to define the system to be measured, focus the intervention, and provide feedback for efficacy of the intervention.

Understanding how to make child welfare systems more trauma informed is an area of inquiry that is in its infancy (NCTSN Child Welfare Committee, 2007; Taylor & Sigfried, 2005). Although the idea of changing systems and measuring change in systems is not new, applying this to the area of becoming trauma informed within a community system is new. There is a paucity of research on how child welfare systems are becoming more trauma informed and how to intervene to create sustained trauma informed system change in child welfare. The process of developing an instrument contributes to research and practice at the ground level for changing complex community systems, as identifying and defining the constructs that constitute change in systems is necessary in order to measure the constructs for change. A trauma informed child welfare system has not yet been defined, not with

---

2 As well, as this instrument fundamentally is designed to capture the extent to which a community system is incorporating a paradigm shift, but specific to this research, applied in the context of trauma informed child welfare systems, it could be modified for application to other fields of study.
consistency, although some efforts have begun (Taylor & Sigfried, 2005), so that this instrument is a seminal application in this context.

In addition to helping define a trauma informed system, a valid instrument can play a central role when used as a tool to create change in the system. An instrument is significant at three stages of intervention to create change. For child welfare, first, an instrument can document the current trauma informed status of a child welfare system and serve a "diagnostic" function, allowing an intervention to be honed to the specific and unique needs of local community child welfare systems. Initial inquiry into the needs of the system can be documented and addressed systematically with the use of a valid instrument, so that intervention is targeted to the specific needs of the system. Once an instrument has aided interventionists in targeting needs, the same instrument can be employed to determine effectiveness of the intervention, providing the instrument is valid and sensitive to changes in the system. The instrument can determine whether change has occurred, and in what areas (or constructs). Finally, the instrument can be used to adjust the intervention, in as many iterations as is necessary, to best produce the desired outcomes within the local community. Once the intervention is completed, the original fundamental purpose of the instrument will become relevant - measuring final outcomes. It is the intent of this work to begin the process of creating and then evaluating an instrument that is valid and sensitive for these purposes.

The overarching contribution of the development and evaluation of this instrument is in the ability to measure systems as they currently function prior to the introduction of the different paradigm (i.e., as being trauma informed), target the intervention in the gaps that are revealed and what areas need improvement, and then to provide data to determine
whether or not trauma informed change is occurring.

Contribution of an Instrument to Produce Practice Change

Although the purpose of this work is to contribute to evaluation methodology and practice, there are benefits to be reaped from a valid trauma informed child welfare instrument in the area of clinical and professional child welfare practice as well.

Understanding the needs of children in the child welfare system is vital to effective treatment. Practice change secondary to this understanding is important on an individual level, but to create and sustain change for all children within child welfare, understanding of traumatic impact to these children must be system wide. When this understanding integrates as common language and practice by all the systems with which a child interacts, this shared understanding of the child's experience would be expected to result in lowered behavioral and emotional symptoms in children. Program theory suggests this process is the case, and the impact of such change has tremendous implications for the well-being of children and reduction of cost to society. One problem comes in measuring the various causal links that theory suggests, and this work has potential to fill that need.

Standardized instruments exist to measure change in child symptoms (Briere, 2006). There are also measures of attitudes regarding evidence based practices in individual clinicians (Aarons, 2005). There are system measures to gauge organizational change (Allred, 2005; Glisson, 2002). Yet there are currently no measures that address the systemic change in a shift to trauma informed practice across agencies that impact a child's experience. Without moving toward valid measurement of this link in the program theory logic, achieving empirical support for the role of a trauma informed child welfare system in impacting child
outcomes is hampered, although clinical research does support that such a system is vital (Lewandowski & GlenMaye, 2002; Pires, 2008a; Taylor & Siegfried, 2005).

This paper documents the development and evaluation of a system change instrument and examines the role the instrument serves in contributing to the evaluation of a trauma informed child welfare system change initiative. The foundation for this work has been provided through research supporting the need for trauma informed child welfare systems, i.e., research that promotes understanding of the traumatic impact on maltreated children, understanding of the need for trauma informed practice, understanding and evaluation of system processes, and understanding and evaluation of change in complex systems. The next step comes in combining this wealth of research with measurement to produce a valid and reliable instrument in order to capture trauma informed change in a child welfare system. This paper is the culmination of the work in taking that next step.

To understand the need for this instrument, it must be contextualized with an understanding of what trauma does to children. From this foundation, the case can be made regarding systemic impact on children who are traumatized, the need for change at the system level as it adopts a new paradigm, and thus, the need for a valid instrument to measure the system as it changes, in this case, as it becomes more trauma informed.

The following details this process from the importance of the content area (recognizing the impact of traumatic stress) to the final goal of this paper—the development and evaluation of an instrument to measure complex system change, specifically within the context of trauma informed child welfare system change.
Children's Trauma Experiences

Children in the child welfare system by definition have experienced maltreatment at the hands of their parents or other caregivers (Michigan Compiled Laws, 1975). Experiencing maltreatment within the intimate family system has potential for long-lasting impact on a child’s neurological and emotional development (Cook, Blaustein, Spinazzola, & van der Kolk, 2003). Children who have experienced abuse and neglect by the very people charged with their care are at risk for having chronic and ongoing trauma experiences. It is important to note the components of traumatic stress: threat or perceived threat of serious harm or death, re-experiencing the events (in ways of flashbacks, nightmares, etc.), hyperarousal (inability to attend, increased sensitivity to harm in the environment, etc.), and avoidance behaviors (American Psychiatric Association, 2000). As Cook et al. (2003) explains, for children, the experience of trauma impacts their development, emotions, and behaviors in a chronic, long-lasting manner.

Experiencing maltreatment during early developmental growth creates neurological pathways that are adaptive to maltreating environments (Perry, 2001b). Removal of the child from these environments and placement with non-abusive caregivers may suggest that children will then adapt to the new, non-threatening environment. However, neurological changes have happened due to the need to survive the maltreatment, and moving the child to a safe environment does not logically lead to reduction in adaptive behaviors by the child, as structural adaptations in brain development have occurred (Teicher, 2003). Without understanding this, conflict can arise in the foster or relative homes that provide placement for these children, as expectations are for children to simply adapt to what appears to be a nonthreatening environment, and for children to “appreciate” the new safe home they've
been given.

These expectations are not in line with what trauma theory would tell us. Trauma theory informs that children undergo physiological changes due to their traumatic experiences, and these changes are enduring and long-lasting (Cook et al., 2005). Neurological differences due to trauma impact a child’s ability to regulate their emotional experiences, so that they are likely to have low tolerance for frustration and stress. They may become excessively labile (angry, crying, laughing) or excessively withdrawn and affectively flat. They may experience difficulty in modulating their emotional reactions and their behaviors (Schore, 2003a). Attention and memory are likely going to be delayed (Henry, Sloane, Black-Pond, 2007; Perry, 1999). When adult expectations are particularly high, or come in the way of a more traditional authoritarian perspective, this makes greater stress for the child when the child has difficulty modulating stress to begin with. Increased frustration on the part of the child may increase lack of control over behavior, which, in the traditional sense, increases parental response to control the child. For a traumatized child and their caregiver, this can become a vicious cycle that ends in frustration and resentment for both child and caregiver. It is this cycle that can exacerbate the potential for abusive behaviors in controlling the child (Harris, Lieberman, & Marans, 2007). For children in foster care placements, this means placement changes as families cannot manage the traumatic symptoms, children fail in school as there are consequences of traumatization that inhibit school success, and children who have developed survival behaviors may act out in such ways that break the law or put self/others at risk (Ford, Chapman, Hawke, & Albert, 2007). All of this is at an immeasurable human and financial cost to society.

Other trauma responses from children can also be misunderstood by caregivers.
Dissociative coping, for example, involves a child’s “checking out” when under stress, so that they go to a different part of their mind in an unconscious manner (Freyd, 1994). Whatever is happening in the present is missed by the child, as they are escaping the current perceived stress by mentally leaving it (van der Kolk, 2005). However, to an observer, it may appear that the child is purposefully ignoring their environment or their parent, intentionally tuning out, and thus being disrespectful or oppositional. This often increases controlling responses by parents, which only heightens the stress that the child experiences and increases likelihood of reliance on previous learned coping mechanisms, such as traumatic dissociative coping (DePrince, 2005).

Both scenarios described above involve a misunderstanding of the child’s experience from the child’s view of the world. Instead, it involves treatment of the child from an adult perspective that does not consider the impact of trauma. Projecting an adult’s view of what might constitute traumatic experience onto the child may misinterpret the true experience of the child. This in turn sets up the relationship for misunderstanding, misinterpretation of intent, and consequences not suited to the etiology of the behavior (Heide & Solomon, 2006).

Experiences of Children in the Child Welfare System

Children who become involved in the child welfare system are particularly vulnerable to experiencing traumatic stress and having traumatic stress reactions. This is largely due to the almost universal experience of these children of “complex trauma,” which refers to overwhelming and perceived life threatening experiences within the family system. In this environment, children experience early multiple, overlapping, and chronic events, and by
definition, these children all have experienced some form of maltreatment from parents or caregivers (Cook et al., 2003; MCL, 1975). This brings impact to wide ranging areas of development, among which include a child’s ability to modulate emotion and control behavior, both of which are biologically based. Additionally, attachment and the ability to form trusting relationships are often severely impacted (Bowlby, 1980; Schore, 2003a).

This relational basis for traumatic impact differs from children having experienced single events or limited exposure to traumatic events. Even if one-time events occurred within the family, the impact is different than the relational impact on children who have experienced chronic exposure to repeated and overlapping traumatic events within the family. Those children having experienced these traumatic events early in life are most impacted, as the earlier the trauma and the closer the relationship with the perpetrator of the trauma, the more impactful the experience is on the child’s development (Scannapieco & Connell-Carrick, 2002). For children in the child welfare system, by the time the situation has reached a crisis point warranting court intervention, the child has often sustained a high percentage of their life exposed to a maltreating environment (Walker & Weaver, 2007).

Forms of maltreatment are often overlapping and the likelihood of experiencing increasing types of maltreatment events increases with age (Richardson, Henry, & Black-Pond, 2007). As all of these children by definition have been abused and/or neglected by those in charge of their care, maltreatment is not just a matter of experiencing terrifying events, it involves betrayal by the caregiver (Freyd, 1994).

Betrayal trauma involves a whole other layer of harm to the child. It involves disruption of the attachment relationship (Freyd, 1994; Goldberg & Freyd, 2004; Walker, 2007). It is through the attachment process that children learn to modulate their emotion
through the modeling and comfort given by a caregiver, learn self-worth, as a caregiver responds when they protest as infants that needs are not being met, and learn to explore their world from a safe base provided by the caregiver (Bowlby, 1980). If the child/caregiver relationship is impaired, the child is in serious danger of not learning basic human relational functions. As this early relationship forms the template for future relationships, trust and reliance on other relationships are also impaired for the child if the caregiving relationship is harmful or not conducive for producing a safe and secure world from the perception of the child. For children raised with caregivers who are either dismissive, ambivalent, or preoccupied with their own trauma histories, the world can be perceived as threatening and a negative world view is the predominating lens for viewing all events and interactions with the environment and everyone in it (George, Kaplan, & Main, 1985).

Children in the child welfare system are particularly vulnerable to this harm due to impaired caregiving relationships, as their level of maltreatment is often chronic and severe, and at the hands of those in charge of caring for them. The developmental and physiologic consequences of their experiences underlie their emotional and behavioral experiences. This can manifest as inattention, hyperactivity, withdrawal, flattening of affective responses, violence and aggression, explosiveness, dissociative coping, excessive sexuality, and behavior patterns consistent with insecure attachment (Cook et al., 2003). As these behaviors manifest and often increase in frequency and intensity even after removal from the maltreating environment, it can appear that children are purposefully acting out in oppositional ways, and the result is diagnosis of mental health disorders (Ford, 2005; van der Kolk, 2005; Teicher, 2000; Walker, 2007). These disorders stem from a medical model, and place the
origin of the problem within the child as opposed to recognizing the behavior/emotional problems as adaptive and developmental responses to life circumstances as self protective. Therein lies an assumption that the child is somehow responsible for this behavior, or are “flawed” or “diseased” and requiring of treatment to be “fixed.”

Problems with the Treatment of Children within the Child Welfare System

By definition, all children in child welfare are maltreated. It is reasonable to suggest, therefore, that children in the child welfare system would benefit from an understanding of traumatic impact to be put into practice by professionals and caregivers so that interactions and expectations take into consideration the experiences of these children. This practice across systems is coined as a “trauma informed child welfare system” (NCTSN Systems Integration Workgroup, Taylor & Siegfried, 2005). The development of a trauma informed child welfare system is a dynamic process that has only recently begun to be attempted across the country. Essential elements of the process exist (NCTSN, 2007), but not as applied to system change. A vital need in terms of measurement comes from how this change is defined. Rather than individual change by individual practitioners, change needs to happen with the local community system (i.e., county, parish), with the system being the unit of interest. Considering this, operationalization of the essential elements for application to systems must occur for measurement to be developed. Definition of the ideal can serve as a goal to strive for, knowing that it may not be fully attained in every site that participates with the process. Yet, once is the idea of a trauma informed system is defined, a valid and reliable measure to gauge progress toward a trauma informed child welfare system becomes relevant and most important, both in terms of outcome evaluation for the intervention as well as
providing process information to improve the intervention

Children in child welfare often are labeled with disorders according to the DSM-IV, when more appropriately they could be understood in terms of trauma reactions. Approaching children in the child welfare system from a perspective based on disorders sets the course of treatment in the wrong direction based on faulty assumptions and attributions (Kaplow et al., 2006; van der Kolk, Pelcovitz, Sunday, & Spinazzola (2005). Diagnosis defines treatment. If a mental disorder is diagnosed, the symptoms will be treated as a disorder. If traumatic stress is diagnosed, it will be treated in such a way to process, mitigate, and alleviate the traumatic stress. Both paths share a similar intended outcome—to lower problem behavior and emotional symptoms—but with different definitions of etiology of the problem. The root of the problem is defined differently and subsequently treated differently. Without defining the problem accurately, interventions are treating the wrong thing and often prove ineffective.

Beyond the cost of suffering for the child that is often due to trauma and their experience being misunderstood, there is a cost to the community locally and at large for perpetual misunderstanding and mistreatment of children in child welfare. Left unacknowledged and therefore untreated, children who perpetually experience lack of connectedness and emotional safety as well as posttraumatic stress symptoms, all likely secondary to complex traumatic experiences, will continue to rely on their defenses for self-protection, which often manifest as aggression, lying, and stealing, as well as inattention, hyperactivity, and dissociation. To understood these as brain-based methods to promote self-survival leads to different expectations and assumptions than if the child is attributed with motivation to purposefully act out in these ways. Treated inappropriately, children’s
behaviors will persist and oftentimes escalate, so that involvement with substance abuse, promiscuous behavior, and criminality often follows in the teen years (Ford, Chapman, Hawke, & Albert, 2007; Fromm, 2001). Additionally, research clearly indicates that individuals who experienced maltreatment as children, with accompanying behavior and emotional disturbances, are much more likely to experience mental health disturbances and physical health conditions as adults (Felitti et al., 1998). The link between maltreatment leading to behavior and emotional disturbances secondary to traumatic stress is not well documented in the literature, and therefore there is a dearth of research linking poor adult outcomes with untreated childhood traumatic stress experiences.

These problems come at exorbitant cost to communities and society at large, as society must pay the cost of the consequences of criminality (court involvement, jail, and prison cost), consequences of substance abuse and promiscuity (especially when occurring concurrently and what this means in terms of unwanted pregnancies), and of course the cost of mental health and physical health interventions for an untreated traumatized population of adults (Carrion & Steiner, 2000; Fromm, 1991; Swan, 1998). Rather, attempts to address child traumatization during childhood are proactive measures with the long term impact of minimizing involvement with the juvenile court system, teen behavior issues, and in the long term, adult consequences of childhood traumatic experiences.

Evidence-Based Trauma Informed Treatments and Trauma Informed Interventions

In the last decade, there has been increased focus not only on treatment of childhood traumatic stress, but on the development of evidence based practices to treat traumatized children (Ford, Chapman, Hawke, & Albert, 2007; Stambaugh, Burns,
Landsverk, & Rolls Reutz, 2007). The National Child Traumatic Stress Network (NCTSN) has been instrumental in fostering 1) the development of treatments for traumatized children, and 2) system interventions to promote understanding of the impact of traumatic stress on children.

The following treatments are now evidence-based and evidence supported practices according to SAMHSA’s definitions (cite), and are employed in treating and interacting with traumatized children.

1. Trauma Focused Cognitive Behavioral Therapy (TF-CBT, and forms of TF-CBT specific to grief and to sexual abuse) are evidence based treatments, as is Parent Child Psychotherapy, C-Bits, TARGET, and Real Life Heroes. All of these NCTSN-sponsored treatments have a different focus and a different target population, and demonstrate efficacy for treatment of their population within the treatment model. These interventions are usually delivered on an outpatient basis or in a pull-out model. Tackling treatment within the context of the child’s environment (home, school, family dynamics) is more challenging for two reasons: delivering interventions within context introduces considerable variance that is not present in a pull-out model, and forming a control group in a community intervention begs ethicality. Many of these treatment models include a family component, or have family interaction integral in the treatment model; however, such mental health treatment, even when inclusive of the family system, is still delivered independently without mandatory involvement of the larger system (school, court, community). Even if a treatment is efficacious for a child’s symptoms
over the short term, if the context in which the child functions does not have an understanding of the effects of traumatic stress on a child’s functioning, the positive changes may dissipate as the larger system will not support change. Systems theory informs on this point, as a system will always work to maintain equilibrium, and when one agent of the system changes, the other agents in the system will pressure the system to returning to the old and known methods of interaction.

2. System interventions have been introduced by the NCTSN specifically for the child welfare system (Taylor & Siegfried, 2005). Toolkits for training child welfare workers and resource parents (foster parents and relatives who serve as placement for children removed from their parents’ care) have been developed and used nationally. No multisite evaluation data exists for the effectiveness of these trainings or of the training material, although anecdotal information and individual site training evaluations suggests positive reception for the information. Although these efforts go a long way to address the need for system professionals to understand the impact of traumatic stress on children, in no way are these toolkits a comprehensive multiagency whole system intervention.

A Trauma Informed Child Welfare System

Why It Is Critical

Awareness and acknowledgement that maltreated children have experienced trauma is increasing throughout the children’s services world, and if asked, there would be few
children's services professionals who would deny that most children entering foster care have experienced trauma. It is the understanding of the impact of traumatic experiences that has been lacking. This is harder for professionals and caregivers to accept, as it runs contrary to the medical model as explained above as well as traditional child rearing practices. Even when these models are ineffective in dealing with these children, the idea of achieving and maintaining equilibrium, as systems theory reminds us, is a powerful force. In practice, this means that change is hard and takes conscious considerable effort to institutionalize. It explains why, even when a practice and a paradigm of understanding these children is ineffective, and even harmful, people, and systems, continue the same actions as always. It is a long process to allow a paradigm shift to take hold.

The zeitgeist of practice for traumatized children is moving toward trauma informed interventions, so that there are pockets of professionals and individual practitioners who understand the impact of traumatic stress, what it looks like in children, and how to redefine what we see in children from this different paradigm, allowing for different treatment. At the larger system levels, where agencies meet to form a broader system (county or the state level), change is much slower. Without support, these “lone ranger” efforts are at risk of fading away or being ineffective in promoting broader change (Lieberman, 2007).

The need for a trauma informed child welfare system becomes apparent when viewing the child from the systems perspective, and as an agent interacting with many other, overlapping, agents (see Figure 1). Then imagine the multiple systems surrounding multiple children, as well as each entity within the system (i.e., the court, a counselor, or a child welfare worker) surrounded by systems of interaction with multiple children, and the complexity of the system grows exponentially. So does the impact of positive change in just
one of the entities, as well as the force of seeking equilibrium that happens when change enters a system. In other words, when a catalyst of change enters a system, a ripple effect can occur, so that this catalyst creates further change. As system theory predicts, other system forces (i.e., within the agency, from other agencies, from individuals in the system) will be in play to keep the change from happening in order to maintain equilibrium. If the forces for change are strong enough and come from enough entities within the system, especially entities with strength (power to change systems), the point of equilibrium can shift further in the direction of change to the new paradigm shift.

Figure 1. The Child in the Child Welfare Ecosystem

To make this process specific to children in child welfare, imagine the following vignette: a therapist who has been trained in trauma informed practices is conducting TF-CBT with a 13 year old girl, and the child is making positive changes in understanding how her behaviors are the manifestation of traumatic experience. The girl, following the advice of
her therapist, tries to calm herself when she is challenged or frustrated by other kids in the foster home by withdrawing to her room for a time. However, the foster parents believe that children should do as they are told, and insists that she join on family outings and every dinnertime, pointing out that she is given free time after dinner and chores are completed. Although these are reasonable demands for a non-traumatized child, the rigidity of the environment is not allowing the space for this child that she needs to learn to manage her own behavior and emotion. What she is learning in therapy does not seem to apply to the real world. The foster parents reject the suggestions by the counselor, pointing out that they cannot give special treatment to one child or they would all ask for special treatment. The caseworker supports the foster parents as she does not want the placement to break, and she joins with them in trying to impress to the child that she is safe in this home and needs to abide by the quite reasonable family rules.

In this vignette, there is an agent of change (therapist) who understands the etiology of the child's behavior, but her efforts are squelched under the forces of the existing system. Taking the same example, imagine that the caseworker was also equally aware that the child needed specific interventions and day-to-day treatment that accounted for traumatic stress, but the foster parents were persistently resistant to this notion. Although the therapist and caseworker would have mutual support, if the treatment in the foster home was not conducive to healing from traumatic stress, the efforts for change for these two professionals may not be enough to meet the ultimate goal—reduction of traumatic stress symptoms (emotions, behaviors) as an indicator of the child's healing from traumatic experiences. This is especially true if the court personnel are not attuned to the needs of a maltreated child, which is more often than not the case.
This vignette illustrates the need for multiple players in the child’s life to be on the same page in understanding the child’s needs. The case example given would be further complicated if court decisions that were not based on understanding the effects of traumatic stress were given, or if examples of non-trauma informed school interactions were given. The example given is the plight of the majority of children in the child welfare system. It illustrates that, in spite of the best work being done to understand traumatic stress in children and to educate child welfare workers, that without an infusion that considers the county (jurisdictional site) as the unit of intervention, as opposed to individual “lone ranger” practitioners, system change will be less likely.

Defining a Trauma Informed Child Welfare System

The purpose of this paper is to develop and evaluate an instrument to measure change in complex systems, and specifically within a trauma informed child welfare system. In order to do that, what constitutes such a system (in this case, being trauma informed within a child welfare system) must be defined. The idea of a trauma informed child welfare system is still being considered, so that measuring the change is dependent on what an “ideal” trauma informed child welfare system looks like.

The NCTSN has developed a conceptual framework entitled the Essential Elements (NCTSN, 2007), which detail essential components for any trauma informed child welfare system. These essential elements cover relationship-building, creation of emotional safety for the child, skill-building and processing of trauma, addressing how trauma has a “ripple” effect in a child’s life, coordination between agencies, and the impact of working with trauma on the professional who manages these cases. The essential elements transcend roles in
child welfare and are applicable to the system at large. They offer a valuable theoretical framework, but two issues relevant to the current project remain unaddressed by the essential elements, or elsewhere in the literature: (1) the elements have not been applied at a system level, with the system as the unit of change, and (2) they have not been operationalized satisfactorily at any level for purposes of valid and reliable measurement, let alone at the system level.

Challenges in Defining a Trauma Informed Child Welfare System

Establishing validity of a measurement for tracking change in a complex system relies on the ability (a) to define just what that system is, and (b) just how that system functions.

Specifically, questions under the first point could be: what is the content area of the specific system, and to what extent does this content exist within the system? Under the second point, understanding how systems change can inform the understanding of a child welfare system can change to become more trauma informed. One theory of change within complex systems suggests that change occurs in varying degrees in five major domains—context, components, infrastructure, connections, and scale (Coffman, 2007). Three of these components are most relevant to change in child welfare systems:

1. Context—local, state, and federal policy that shapes the focus and action of professionals throughout the local child welfare system. This includes the policy of each entity: schools, foster care, courts, mental health, and policy shaping local collaborative bodies

2. Components—this could refer to specific treatments or resources available locally that support a trauma informed system, and these could look different
depending on local context (e.g., evidence based practices, local child abuse prevention programs that address trauma, private agency work, school or law enforcement programs, fundraising efforts, etc.). Could also refer to day to day practice changes by individuals

3. Connections—interagency commitment of time and resources to shared case planning for children, including shared financial responsibility, joint treatment planning, and policy planning at an administrative level

If this framework is accepted, the challenge comes in determining to what extent change needs to occur in each of these domains, especially when considered within local contexts, which have unique problems and characteristics that call for unique program design. These are program theory of change issues, and it may be that the path to change may be different for different sites, but the ultimate destination looks very similar for every site. For purposes of this paper, this means that process may vary according to context, but outcome measurement, the purpose of the instrument being developed, will remain constant regardless of context. In other words, the essential elements of change in a complex system may be operationalized in such a way that they hold meaning across contexts and are true constructs of paradigm shift in a complex system, in this case, a trauma informed child welfare system.

How Change Happens

Two theoretical frameworks support the program theory for the current trauma informed system change intervention for which this instrument is being developed. It takes the work of developing program theory in order to determine junctures where change can be
expected in definitive constructs of the system before the question of measurement can be more fully addressed. Although, as stated above, it may be that the outcome can be measured across contexts regardless of the individualized path to reaching the final outcome. Yet history has proven that this “black box” way of thinking does not allow for analysis and interpretation of reasons why change did not happen. To measure the developmental process of a trauma informed paradigm shift, there are too many potential confounding variables that could impede measurable change in the child welfare system, and to develop the measurement tool with awareness of these potential barriers seems prudent. For that reason, understanding how change happens and when to expect measurable change could tie theoretical assumptions to operationalized constructs. Briefly, the two theories supporting the current intervention are (1) systems theory and (2) the theory of change.

1. Systems theory has already been discussed, and much has been written and is understood on the concept of change within a system framework, from the individual to the agency to the community level. All change occurs within the context of systems, and to understand the forces of systems on the act of change can help to predict and provide for barriers to change. This can be applied to individual agents who promote or are resistant to new practice, and this understanding can be transposed onto political processes, agency systems, and the larger interagency system. One example of an evaluation framework to support and explain the process of complex system change has been provided above, and there are others (Crocker & Algina, 2008; Glisson, 2002; Sommers et al., 1996; Urban Institute, 1996). Systems theory is helpful in that all systems are made of individuals within the system, and system
forces are at play at each level (Skytnner, 2006). The understanding that all change occurs within systems is a central theoretical underpinning for the current intervention to promote trauma informed child welfare system change.

2. The second theoretical framework is the Transtheoretical Model of Change (Prochaska & DiClemente, 1986). This model outlines five stages of change. This model suggests that matching interventions to the stage of change optimizes the possibility for sustained change. More importantly, the theory predicts that if an intervention is mismatched with the stage of change, not only will no substantial change be expected, but it may also serve to prevent change from happening.

Understanding the theory behind change is one thing, but determining what stage an individual or agency is in is quite another. There are measures that have been developed to determine stage of change, but validity for purposes of this intervention has not been established. For purposes of this intervention, it is primarily the awareness of stage of change theory that guides the project and the development of the measurement tool.

Challenges in Measuring a Complex Community System

Although it is the supposition in this paper that there are common domains to measure change in a complex social system, there is also the dual need to apply the general to the specific and in doing so, to define the content area of the specific complex system to be studied. Defining the content area of a complex system as described above is a necessary step for the development of an instrument that demonstrates reliability and validity when
applied to that content area. As the cited work from Carmines and Zeller (1979) conducted decades ago, compared to the physical or medical sciences, the social sciences provide particularly vexing challenges in establishing validity of a measuring tool. Current researchers from other social sciences concur. Crocker and Algina (2008) from the area of psychological test theory, point out five problems with measuring psychological constructs, which are equally as relevant to the measurement of social systems. Of these five problems, the fifth point is most directly related to the current work: “constructs cannot be defined only in terms of operational definitions, but must be interpreted in light of the underlying theoretical construct.” Although the other measurement dilemmas are also a challenge for the work undertaken in this project, it is the cited dilemma that this paper is directly addressing.

Research Questions

As this complex system change instrument is applied to trauma informed change within the child welfare system, this paper seeks to answer the following research questions:

1. What is the face validity of this instrument in measuring changes in a complex community system?

2. What is the face validity of this instrument in measuring trauma informed change in a child welfare system?

3. To what extent is there content validity of this instrument in measuring changes in a complex community system?

4. To what extent is there content validity of this instrument in measuring trauma informed change in a child welfare system?

5. How consistent is the Trauma Informed System Change Instrument over time?
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a. To what extent does this instrument show test-retest reliability?

b. To what extent does this instrument demonstrate internal consistency?

6. To what extent is there evidence to support factorial validity (precursor of construct validity) of this instrument in regard to the areas in which complex community systems change?

7. Is the hypothesis of six latent variables (three regarding system characteristics and three regarding individual characteristics) in this instrument supported by the analysis?

8. To what extent has trauma informed change in community child welfare systems taken place as measured by this instrument?

9. To what extent does agency affiliation and role in the agency impact trauma informed change as measured by this instrument?

10. To what extent is this instrument sensitive in capturing change in a child welfare system’s becoming trauma informed?

11. To what extent does this instrument contribute to understanding the impact of the trauma informed system change initiative?
Chapter II

Review of the Literature

Section I of this chapter consists of an overview of current research regarding trauma informed child welfare systems and trauma informed system change. A general review of measurement of complex systems follows, with research and theory on the nature of systems and change in systems provided, as well as an overview of methods used to measure change in systems. Section II provides background for understanding the impact of traumatic stress and the needs of children in child welfare - the research basis for the importance of addressing child traumatic stress, the case for children in child welfare, and treatment for children with traumatic stress. Section II concludes with a review of literature supporting the need for a trauma informed child welfare system.

Section I

Measurement of Trauma Informed System Change for Child Welfare Systems

There are existing measures for specific components of what comprises a trauma informed child welfare system. Briere (2006) provides an overview of instruments to use to assess the impact of traumatic stress in children. Researchers from UCLA have developed a series of self-report measures for screening for exposure to traumatic events as well as the development of PTSD symptoms in children and adolescents as defined by the DSM-IV (Pynoos et al., 1998). Aarons (2005) has developed a measure of attitudes towards the adoption of evidence-based practices, which is relevant when trying to implement new
practice among established practitioners. The NCTSN has a measure to determine level of organizational readiness to adopt a trauma informed practice (Allred, 2005).

As noted above, the Administration for Children and Families has developed outcome measures for children in child welfare, although these are simply stated as outcomes with no operationalization of the measures. This is left per state organizations to determine and compliance is measured through the Child and Family Services Review. Each state has developed its own measure for these outcomes, which the ACF determines as an appropriate measure. Measures of organizational change have been noted previously in this chapter (i.e., Coffman, 2007; Glisson, 2002) but none to specifically focus on measurement of trauma informed systems in working with children in the child welfare system. It is the purpose of the current work to fill this gap in the realm of evaluation measurement.

Definition of Trauma Informed Child Welfare System

Although substantial work has been done regarding the need for viewing child welfare from a systems approach and in a collaborative manner (Lewandowski & GlenMaye, 2002; Piles, 2008; Taylor & Siegfried, 2005), no other work focusing on the understanding of traumatic impact on children in the child welfare system has been done to the extent of the NCTSN and affiliated researchers\(^3\). The idea of a trauma informed child welfare system is still in a developmental stage (NCTSN, 2007), so that measurement of the system is dependent on definition of the construct of a trauma informed child welfare system. The NCTSN has developed the Essential Elements, which detail essential components to a

\(^3\) Leaders within the field of child trauma work under the umbrella of the National Child Traumatic Stress Network. A few of these researchers include B.A. van der Kolk, A. Lieberman, F. Putnam, R. Kagan, E. Deblinger, J. Osofsky, J. Cohen, and R. Pynoos, among many others who have made major contributions to the field.
1. Support and promote positive and stable relationships in the life of the child
2. Maximize the child’s sense of safety
3. Services to the child should be guided by a thorough assessment of the child’s trauma experiences and their impact on the child’s development and behavior
4. Assist children in reducing overwhelming emotion
5. Help children make new meaning of their trauma history and current experiences
6. Address the impact of trauma and subsequent changes in the child’s behavior, development, and relationships
7. Provide support and guidance to the child’s family and caregivers
8. Coordinate services with other agencies

The Essential Elements are valuable in outlining system and organizational factors necessary in order to become more trauma informed; however, work has not yet been done to make them measurable, and they have not yet been applied where the system is the unit of change.

Measurement of Change in Complex Systems

Bronfenbrenner (1979) helped to transform the work of previous researchers interested in system change when he introduced his ecological systems theory. This systems
theory views individuals as organisms in an environment and describes bidirectional relationships between the individual and elements in the individual’s environment. Per Bronfenbrenner, an individual’s likelihood to change is intrinsically linked to the environment. All change occurs within the context of systems, and to understand the forces of systems on the act of change can help to predict and provide for barriers to change. Systems theory is helpful in that it explains how all systems are made of individuals within the system, and system forces are at play at each level. The understanding that all change occurs within systems is a central theoretical underpinning for the current intervention to promote trauma informed child welfare system change.

The Transtheoretical Model of Change (Prochaska and DiClemente, 1986) builds on systems theory to describe the change process in five distinctive areas:

1. **Precontemplation**—no awareness that change is needed
2. **Contemplation**—awareness that there is a problem, but no plan or intention on creating or participating in change
3. **Preparation**—understanding that change is necessary and putting a plan into place
4. **Action**—putting the plan into action
5. **Maintenance**—taking steps to assure that the change is sustained

Developed initially in the treatment of substance abuse, this theoretical model is valuable for the development of any intervention, as it predicts optimal change if treatment is matched with stage of change.

From a more philosophical perspective, but inescapably intertwined in the idea of change, comes another theory of how change manifests. Per Chopra (2004), systems are
comprised of individuals, and individuals are active agents in creation of system change. Per this theory, and in line with systems theory, the origin of change occurs prior to the outward manifestation of the change. By the time we see and experience it, it is too late to intervene to create change. The inception of change happens much earlier, in individuals' thoughts, intentions, and motivations. In this way, change occurs from the cognitive and emotional inner world to the outer world that is experienced. Chopra also discusses the concept of "simultaneous, interdependent co-arising," which speaks to the complexity of intertwining systems. This concept speaks to the reciprocity of actions, as well as the impact of individuals' intentions and motivations on the experience of others. Per this part of Chopra's philosophy, most efforts are made at the level of where the effects manifest, but could be energy better spent if focused closer to the inception of change.

Models for Evaluating and Measuring System Change

Systems evaluation and evaluation of systems initiatives is not uncharted territory. Systems initiatives have been around for decades and various evaluation approaches have been tried. Of particular note are "theory of change" evaluation approaches that have gained substantial momentum since the mid 1990s when the Aspen Institute's Roundtable on Comprehensive Community Initiatives for Children and Families introduced them as a promising approach for evaluating complex initiatives (Connel et al, 1995). Since that time, the Aspen Institute has produced more evaluation research, including Auspo & Kabisch's work (2004) on theory of change to understand how community initiatives produce change. Theories of change are now the cornerstone of many, if not most, systems initiative evaluations. But while theories of change have added much to evaluation practice in this
area, they are not (and did not promise to be) a panacea for all evaluation dilemmas that systems initiatives present. In practice they have been more a way of describing system elements and systems initiative complexities than an evaluation methodology that spells out initiative assumptions and ways of testing whether or not they are valid.

One such initiative is the BuildInitiative. Coffman (2007) researched the evaluation of system change, and developed a framework for the BuildInitiative. Coffman pointed out that systems initiatives are complex and notoriously “hard to measure.” They involve multiple programs and players and feature outcomes at multiple levels (individual, family, community, and state). They involve numerous public or private funding streams administered through different agencies and decision-making structures. They require aligning goals and coordinating actions across programs with different political cultures. And, they tackle difficult deep-rooted problems such as gaps in services and outcomes based on race, income, culture, and language. Finally, all efforts to improve systems are long-term efforts that evolve over time in response to the political, economic, and social contexts around them. These many complexities place systems initiatives directly outside of the more familiar and more traditional program evaluation comfort zone. Consequently, less consensus exists about how to assess them.

This framework describes change occurring in varying degrees in five major domains—context, components, connections, infrastructure, and scale, detailed for general systems change as follows, based on Coffman’s work:

- **Context**—improving the political environment that surrounds the system so it produces the policy and funding changes needed to create and sustain it
- **Components**—establishing high-performing programs and services within
the system that produce results for system beneficiaries

- Connections—creating strong and effective linkages across system components that further improve results for system beneficiaries

- Infrastructure—developing the ongoing supports systems need to function effectively and with quality

- Scale—ensuring a comprehensive system is available to all intended beneficiaries to produce broad and inclusive results for system beneficiaries

These five areas comprise the aspects of a system that, if developed or advanced, can produce broad impacts for the system's intended beneficiaries. Systems initiatives do not have to focus on all five areas, although most focus on several areas simultaneously. They do not, however, typically place an equal emphasis on all focus areas at once. Some areas receive more attention than others at any given point in time, depending on where the system's needs are greatest and where the greatest benefits can be expected.

Compared to the physical or medical sciences, the social sciences provide particularly vexing challenges in establishing validity of a measuring tool. Crocker and Algina (2008) speaking from the perspective of validating psychological test theory, point out five problems with measuring psychological constructs, which are equally as relevant to the measurement of social systems. They recognize that (1) no single approach to the measurement of any construct is universally accepted, (2) psychological measurements are usually based on limited samples of behavior, (3) measurement is always subject to error, (4) there is a lack of well-defined units on measurement scales, and (5) constructs cannot be defined only in terms of operational definitions, but must be interpreted in light of the underlying theoretical construct.
Glisson (2002) explains the process of change within an organizational context, thus providing a framework for evaluation of change within an organizational system. He defines two overarching domains relevant to the change process—organizational culture and organizational climate. He uses a definition of culture put forth by Cooke & Szumal (1993), defined as the normative beliefs and shared behavioral expectations in an organization or work unit. These beliefs and expectations guide the way work is approached and socialize new employees in the priorities of the organization (e.g., conformity, consensus, motivation). Culture appears to be transmitted among employees more through behavioral expectations and normative beliefs than through “deeper” values or assumptions as individuals in an organization can comply with behavioral expectations without necessarily internalizing the values and assumptions that lie at the core of those expectations. Expectations and norms may reflect the values and assumptions of organizational leaders, but not other members of the organization. Or expectations and norms may be determined by the job demands and realities that workers face on a daily basis, regardless of the values and assumptions of top management (Hemmelgarn et al., 2001). But it is the expectations and norms that are most visible and shared, and not necessarily the deeper assumptions and values espoused by management or reflected in the behavior of the workplace (Glisson & James, 2002).

In other work, Glisson & James (2002; James & James, 1989) define organizational climate, and distinguishes between psychological climate and organizational climate. Psychological climate is defined as the individual’s perception of the psychological impact of the work environment on his or her own wellbeing. When workers in the same organizational unit agree on their perceptions, their shared perceptions can then be aggregated to describe their organizational climate.
Glisson defines subdomains of organizational culture as well. These are:

1. **Proficiency**—refers to the expectation that service providers will be competent, have up-to-date knowledge, and place the well-being of clients first. Proficiency is measured on scales of competence (such as having up-to-date training and information) and responsiveness (the client comes first).

2. **Rigidity**—refers to the expectation that service providers have limited discretion and flexibility, and closely follow extensive bureaucratic rules and regulations. There are two areas where rigidity is measured—centralization (where the power lies) and formalization (specific procedures to complete work).

3. **Resistance**—refers to the expectation that service providers will show little interest in change or new ways of providing services. This is measured through definition of apathetic behavior (inactivity and resignation to the way things are) and suppression (criticism and opposition that undermine openness and innovation).

Glisson (2002) measures psychological climate through an individual's perception of the psychological impact of the work environment on their own well-being, which is measured through emotional exhaustion, role conflict, and depersonalization. There are three subdomains of organizational climate. These are:

1. **Engagement**—referring to service provider perceptions of personal accomplishment, involvement, and concerns for clients, measured through personalization and personal accomplishments on the job.

2. **Functionality**—referring to service provider perceptions that they receive the
needed cooperation and support to do their jobs, measured through cooperation and help from co-workers, opportunity for growth and advancement, and a clear understanding of how they fit in

3. Stress—referring to the service provider perceptions that they are emotionally exhausted and overloaded in their work, measured through exhaustion and overwhelm, multiple conflicting duties and demands, and impossible amounts of work to accomplish

Glisson, Dukes, & Green (2006) offer the use of this organizational structure in evaluation of system change in the children’s services systems. They have developed a model of intervention within children’s services settings based on availability, responsiveness, and continuity of services, and have developed an instrument for measurement of change in child services organizations using this model. The measure however focuses on individual level changes and not on aggregate organizational changes.

Community change initiatives (CCIs) provide another arena for evaluation of complex systems (Sommer et al., 1996). Gambone (1998) discusses the challenges of measurement in such initiatives. CCIs all have in common the goal of catalyzing and sustaining significant change in fundamental aspects of social, economic, and political structures and their functioning in communities. They believe that activities can be undertaken that will change basic patterns of interaction to improve quality of life for the residents of a community. This is in comparison to traditional ways of effecting change that involve discreet targeted areas and specific programs. One important challenge noted is that most measures of change are at the individual level, and aggregating the individual data is difficult for some types of measures, such as perceptions of interactions in community
settings. Another challenge comes with process evaluation. Beyond just descriptives regarding context and how the initiative is implemented, measures of concrete linkages between the initiation and outcomes are necessary. However, there are not measures of process in community initiatives readily available, so that evaluation efforts often must focus on development of these measures.

Initiatives for the Current Child Welfare System

Systems of Care Initiatives

A Systems of Care framework for intervention with children and families has been in development for over twenty years, originally for children with serious emotional disturbances, but recently adapted to children in the child welfare system, as explained in Building Systems of Care: a Primer for Child Welfare (Pires, 2008a). This document has been funded by and it explains that the system of care approach “has evolved over time as a concept that can be applied to any designated population of children, youth and families that requires an array of services and supports from multiple entities, including any or all populations of children, youth and families involved, or at risk for involvement, in the child welfare system.” Per this comprehensive document, a System of Care is defined as “a broad, flexible array of effective services and supports for a defined population(s) that is organized into a coordinated network; integrates services/supports planning, service coordination and management across multiple levels; is culturally and linguistically competent; builds meaningful partnerships with families and youth at service delivery, management and policy levels; and has supportive management and policy infrastructure.” The Systems of Care initiative provides an overarching framework for intervention with at-risk children and
families, and many of the tenets are compatible with mandated outcomes for children in child welfare as they have been put forth by the Administration for Children and Families (ACF). This was done as many of the families that are served through a System of Care initiative are involved with child welfare.

The Administration for Children and Families (ACF) lists outcomes for child welfare agencies and these are monitored through the process of Child and Family Services Review (CFSR) (see http://www.acf.hhs.gov/programs/cb/cwmonitoring.htm). Each state complies with the federal CFSR reviews of their child welfare programs and data is collected on each of the outcomes specified by ACF. The three categories of outcomes are safety, permanency, and well-being, and are specified as follows:

- Safety Outcome 1—children are, first and foremost, protected from abuse and neglect
- Safety Outcome 2—children are safely maintained in their homes whenever possible and appropriate
- Permanency Outcome 1—children have permanency and stability in their living situations
- Permanency Outcome 2—the continuity of family relationships and connections is preserved for children
- Well-Being Outcome 1—families have enhanced capacity to care for their children’s needs
- Well-Being Outcome 2—children receive appropriate services to meet their educational needs
- Well-Being Outcome 3—children receive adequate services to meet their
The Systems of Care approach dovetails well with goals for children in child welfare, and the philosophy is strengths based and family focused. However, there is no focus, or even mention, of the traumatic impact on children of the maltreatment that happens within families involved with the child welfare system, so that the body of knowledge regarding impact of trauma put forth to this point in this document is not addressed (Pires, 2008a).

Trauma Informed Approach

Alternatively, the Systems Integration Working Group White Paper from the National Child Traumatic Stress Network (Taylor & Siegfried, 2005) explains the problem with the current child welfare system and where that system is failing when considering the traumatic impact of maltreatment on children. Children in child welfare have experienced complex trauma, which manifests as inattention, hyperactivity, withdrawal, flattening of affective responses, violence and aggression, explosiveness, dissociative coping, excessive sexuality, and behavior patterns consistent with insecure attachment. As these behaviors manifest and often increase in frequency and intensity even after removal from the maltreating environment, it can appear that children are purposefully acting out in oppositional ways, and the result is diagnosis of mental health disorders. These disorders stem from a medical model, and place the origin of the problem within the child as opposed to recognizing the behavior/emotional problems adaptive and developmental responses to life circumstances. Therein lies an assumption that the child is somehow responsible for this behavior, or are “flawed” or “diseased” and requiring of treatment to be “fixed.” Dr. Ansar Haroun does an unfortunate service to this perspective by informing through a psychiatric
perspective in the Pediatric Annals this “wickedness” in children (Haroun & Haroun, 2004).

The NCTSN Systems Integration Working Group (Taylor & Siegfried, 2005) documented the current inclusion of trauma awareness within systems interacting with children in child welfare, including courts, schools, mental health workers, and child welfare workers. Of the child welfare agencies and mental health agencies, information on traumatic events, and academic and behavioral problems were gathered most of the time (88%). Information on what triggers a child (a trauma reminder) was only gathered 47% of the time, and symptoms of posttraumatic stress and a child’s coping strategy just two-thirds of the time. Additionally, even though it is encouraging that the information is collected a majority of the time, considering all of the children involved have been maltreated and traumatized, there is more work to be done. As well, it was clear that gathering this information did not translate to an understanding of what the information means in terms of interacting with and treating the child.

Section II

Child Development and Traumatic Stress

Understanding Normal Child Development

It’s only been in the last 25 years that interest in early childhood development has increased and research on the neurological mechanisms of child development has exploded. Prior to the 1980s, it was largely believed that the structure of the brain was formed when a baby was born. The interaction of the environment, genetics, and an infant’s own active involvement with their environment began to be understood with neurodevelopmental

There is some research that suggests that brain neurons develop after birth and into adulthood (Shonkoff & Phillips, 2000), but largely, infants are born with most of the neurons they will have as an adult. The brain's basic structure is intact at birth, but much of the growth of the brain happens in the first few years after birth, and it develops in a sequential manner (Perry, Pollard, Blakely, Baker, & Vigilante, 1995; Perry, 2000a). Learning is actually the process of the brain creating, reinforcing, and pruning away neural connections (synapses), which organize the brain and connect different areas of the brain as the child grows. At birth, an infant has very few synapses connecting neurons in the brain, and the existing synapses govern involuntary body functions such as breathing, heart rate, sleep, and hunger; nearly all other functions of the brain develop through synaptic connections formed after birth (Schore, 1997; Teicher, 2003).

Perry (2000c) documents that by the age of 3, a child's brain has developed to 90% of its adult size, and this growth comes about due because of brain plasticity that responds to environmental experiences. The environment and the child's active interaction with the environment serve to "sculpt" the malleable brain; thus learning occurs, as does increasingly complex function. Perry has conceptualized brain development in a sequential manner, showing that the brainstem develops first, governing the most primitive functions such as heart rate, body temperature, and blood pressure. Next, the midbrain forms, and the
functions of sleep, appetite, and arousal develop. In a sequential manner, the development of
the limbic area of the brain builds on the existing areas of brain development. This area
regulates motor functions, emotional reactivity, sexual behavior, and attachment. Finally, the
cortex develops. This is the area of social and cognitive functioning, including affiliation,
concrete thought, language development, and abstract reasoning. As will be shown later, this
sequential process of brain development becomes vital in understanding the effects of
traumatic stress during a young child’s first three years, and beyond.

The idea of brain plasticity becomes important in understanding the process of how
a child learns. An early over-production of neurons helps the brain to prepare for certain
experiences, such as language development for example. But as these early synapses are
weak, experience must occur over and over to develop these brain pathways, otherwise the
pathways will not be strong or may wither and die (Greenough, Black, & Wallace, 1987).
There appear to be sensitive periods for particular development to occur, as the process of
pruning the brain decreases dramatically after the age of 3 (Perry, 2001a). Helgeson (1997)
offers a nice analogy for brain development. He likens the brain to a network of streets, and
if the streets are dense and far reaching, even someone unfamiliar to the streets could make
their way around. If there are fewer streets, the traveler has to break new ground in order to
get around. Traveling is possible, but much harder. In the brain, early pathways that are
formed serve as a foundation for later pathways to be developed. They become entrenched
and actually change the structure of the brain (Putnam, 2006). Learning can still occur, but it
is much harder after the sensitive period of intense pruning is over (Perry, 2001a).
Impact of Traumatic Stress on Child Development

Trauma is defined as “a disordered psychic or behavioral state resulting from severe mental or emotional stress or physical injury” (Miriam-Webster, 2009). The Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition (American Psychiatric Association, 2000) delineates information regarding the experience of posttraumatic stress in children. For children, threat may be a real or perceived threat of serious harm or death. Trauma may be experienced as the result of a child's perception of their world and the powerlessness they have compared to the adults in their world. They are dependent on adults to meet all of their survival needs, and if the adults are harmful, frightening, or threatening, the child may experience an adverse experience as life-threatening, or they may in fact be life threatening.

In addition to traumatic experience, traumatic stress involves re-experiencing, avoidance, and hyperarousal (DSM-IVR, 2000). Re-experiencing can be in the form of nightmares, flashbacks, and especially “triggers,” where the child is reminded of traumatic experience even by innocuous stimuli. Avoidance may be through avoidance of places or people that remind of the trauma, or may take the form of avoiding the internal affective experience associated with the trauma. Hyperarousal may manifest as increased physical symptoms (heart rate, respiration, sleep disturbances) or by an overactive startle response.

Traumatic stress has the potential to impact all areas of child development. Schore (2001b) has explored the relationship between early traumatic stress and a variety of right-brain functions, including attachment, use of the dissociative defense in response to overwhelming stress, and inefficient right brain regulatory functions. Perry, PlUard, Blakely, Baker, & Vigilante (1995) associated hyperarousal with chronic traumatic stress in children, which results in hyperactivity, impulsivity, attention problems, anxiety, and sleep
disturbances. DePrince, Weinzierl, & Combs (2009) documented impaired executive function and trauma exposure in a community sample of children. They saw disruptions with working memory, directing attention, focusing attention, self-monitoring, and shifting emotional and behavioral states—all included under the umbrella of executive functioning—with these trauma-exposed children.

The experience of stress is normal and the brain is prepared for it. Survival depends on the ability to react to stress for self-protection (Shonkoff & Phillips, 2000). Ford (2002) distinguishes between a normal state, a stressed state, and a state of extreme stress. It is the extreme stress state, especially when experienced repeatedly, that leads to the changes in the brain as the child’s brain adapts to the extreme stress environment. This chronic stress overactivates certain parts of the brain in an attempt to help the individual survive. Developmental energy flows into survival mechanisms, reinforcing these neural pathways, thus leaving other neural pathways underdeveloped (Schore, 1997). The survival portions of the brain are the parts formed first (in the sequential manner discussed above), so that less energy goes to higher brain functions and instead is diverted to survival (Ford, 2005; van der Kolk, 2005).

Traumatic Stress due to Child Maltreatment: Abuse and Neglect

The Michigan Child Protection Law (MCL, 1975) defines child abuse and child neglect as follows:

Child Abuse: Harm or threatened harm to a child's health or welfare that occurs through nonaccidental physical or mental injury, sexual abuse, sexual exploitation, or maltreatment, by a parent, a legal guardian, or any other person responsible for the
child's health or welfare.

Child Neglect: Harm or threatened harm to a child's health or welfare by a parent, legal guardian, or any other person responsible for the child's health or welfare that occurs through either of the following:

i. Negligent treatment, including the failure to provide adequate food, clothing, shelter, or medical care;

ii. Placing a child at an unreasonable risk to the child's health or welfare by failure of the parent, legal guardian, or other person responsible for the child's health or welfare to intervene to eliminate that risk when that person is able to do so and has, or should have, knowledge of the risk.

By definition, abuse and neglect happen at the hands of the caregiver of the child, and as will be explored in the discussion about “complex trauma” below, maltreatment by caregivers strongly increases the likelihood that the maltreatment experience will be traumatic for the child. Finkelhor, Ormrod, & Turner (2006) document that as the number of types of maltreatment a child experiences increase, there is a proportional increase in traumatic stress symptoms. It is in this light that other research looking at various types of child maltreatment and impact on child development subsumes the assumption of traumatization through this maltreatment.

Perry (2001b) examined the impact of maltreatment on child development. He recounts the “inside out and bottom up” development of the brain, in which higher functions of the brain begin to control and modulate lower parts of the brain as a child develops in a normal trajectory. Anything that increases the reactivity of the primitive parts
of the brain (traumatic stress) or decreases the moderating capacity of the limbic or cortical areas (neglect or other factors) will increase capacity for violence and impulsivity. In previous research (Perry et al., 1995, Perry & Pollard, 1998, Perry, 1999), Perry explained the neural pathways that are activated in a repetitive fashion become permanent, altering multiple aspects of brain structure and functioning (synapses, neurotransmitters and receptors, density), and the more that this pathway is activated, the more this pathway will modify to accommodate the functional patterns in which the brain is being used. Perry provides examples of this:

The more someone practices the piano, the more the motor-vestibular neural systems involved in that behavior become 'engrained.' The more someone is exposed to a second language, the more the neurobiological networks allowing that language to be perceived and spoken will modify. And the more threat-related neural systems are activated during development, the more they will become 'build-in'.

Perry notes that specifically, chronic exposure to violence, including witnessing domestic violence and experiencing physical abuse, activates threat responses in the child's developing brain. Normal response to threat has been described by Perry et al. (1995) and Perry (1999). Two distinct methods are described—dissociative and hyperarousal. All individuals use a combination of these responses, and for young children, the primary response is dissociative with hyperarousal becoming more common in older children.

Excessive activation of these responses alter the structure of the brain, which then manifests as functional changes in emotional, behavioral, and cognitive functioning. The impact of chronic maltreatment and the impact on the brain become important when realizing that these neural systems are responsible for regulating the response to threat. With chronic
activation, these pathways become the default response to threat and stress, so that even small amounts of stress lead to this “fight or flight” survival response. This is termed “hyperarousal” (Perry et al., 1995; Perry, 1999), and refers to the activation of the “default” survival neural pathways even in the presence of mild or only perceived threat.

Aside from hyperarousal, there are many other neurological impacts on the brain from early maltreatment. Teicher (2003) offers a comprehensive summarization of the functional effects of the structural differences in the brain caused by early maltreatment and traumatic stress. All of the following areas have been shown to develop abnormally when childhood maltreatment is present:

- Hippocampus—records episodic memories (Desgranges, Baron, & Eustache, 1998) and is involved in development of dissociative states (Mesulam, 1981); crucial with behavioral inhibition (DePue & Spoont, 1989); physiological changes, i.e., reduction in hippocampal volume when marker of excessive stress (cortisol) is present (Carrion, Weems, & Reiss, 2007)

- Amygdala—involved in fear conditioning and triggering fight or flight reactions and control of aggressive, oral, and sexual behaviors; excessive activation linked to development of major depression (Drevetts et al., 2004b) and Posttraumatic Stress Disorder (Morgan et al., 1996)

- Temporal lobe—associated with children who have experienced deprivation and violence in their environment, and is associated with increased aggression and violence (Bach-y-Rita, Lion, Climent, & Ervin, 1971); suicidality and seizure activity (Barracough & Hughes, 1987)

- Corpus callosum—perception and expression of emotion in right
hemisphere of brain with language based and other intricate tasks in left
hemisphere – lowered communication between hemispheres with impacted
corpus callosum (Teicher et al., 2002)

- Cerebellar vermis—cognitive, linguistic, social behavioral, and emotional
disruptions (Schmahmann & Sherman, 1998; Schmahmann et al., 1999)

Overall, the hypothalamic-pituitary-adrenal axis is a major stress response system and
when activated by stressors, hormones specific to each gland are released (corticotrophin-
releasing factors, CRF; adrenocorticotropic hormone, ACTH; cortisol)

Experiences provide the organizing framework for an infant and child (Perry,
Pollard, Blakely, Baker, & Vigilante, 1995). Memories are formed as children have
experiences, and those things experienced again and again make a well-worn pathway in the
brain which leads to an indelible memory. Memories that have strong affect or strong
sensory components can also reinforce a brain pathway so that the experience is
remembered (Perry, 1999). Memories are stored within this organizing framework so that a
child develops a cohesive “story” or understanding about life experiences.

The process of storing memory has been described in a dichotomous fashion, with
Rovees-Collier (1997) characterizing it as declarative, or explicit, memory versus an
emotional, implicit, memory. LeDoux (1998) builds on this explanation with brain-based
connections. This work states that explicit memory is built to remember details and context
of events, and is highly linked to language systems. This memory process is linked to the
hippocampus and higher brain systems. Emotional implicit memory seems to give the
emotional feel of events without the contextual details. This process is governed by the
amygdale, and is connected to body response systems. Usually these two processes work in
conjunction and serve an evolutionary purpose—sensing threat and using the higher brain functions to mediate a response. However, under chronic traumatic stress, or what van der Kolk and Fissler (1995) term as extreme stress, these systems do not work in synch, so that the sensory/affective memories become dissociated from contextual understanding provided by the explicit memory. The memories, although disjointed, continue to exist in fragments, impacting behavior and emotional experience; this disorganization plays a part in the impact of complex traumatization to a developing child.

The Development of Attachment

The development of a child’s capacity to independently regulate their own emotion and behavior is one of the functions of a healthy attachment relationship. John Bowlby has theorized and researched the attachment process for decades. He describes three functions of secure attachment for the survival of the infant—proximity, secure base, and safe haven (Bowlby, 1958, 1969, 1982). Maintaining proximity to a protective caregiver is the infant’s sole means of protection and its single adaptive behavioral strategy for responding to the experience of fear. Other animals may run and hide when fearful, but an infant only has the option to reach out to a caregiver and maintain proximity as a means of protection.

Therefore infants and young children tend to continually monitor the accessibility of their caregiver in case of harm. The attachment system becomes activated when children are stressed (tired, hungry, hurt) or frightened. The activation of the attachment system makes it likely that the child will receive comfort and protection at the exact time the child needs it. In this way, the caregiver becomes a safe haven for the child to turn to in order for distress to be decreased. The establishment of a safe haven for the child reinforces that the world is a
safe and positive place, as this is the majority of what the child experiences with the caregiver.

It is in this way that the caregiver becomes a secure base for the child, a safe and predictable relationship within which needs will be met. Two things come from the establishment of this secure base—first, the child feels security so that when normal developmental impulses to explore the environment are experienced (and thus opportunities to learn and grow), the child experiences confidence to leave the caregiver for short periods of time with confidence knowing that the caregiver will be there for them to return to. Secondly, in the establishment of this attachment relationship and the ongoing cycle of experiencing needs and having needs promptly met, the child learns that they are loveable and worthy of adult reciprocation.

Bowlby (1973) suggests that the attachment process is biologically based and is as vital to survival as feeding and exploration behaviors. He describes the attachment relationship as a reciprocal process, as a sensitive parent responds to an infant’s cries of distress and learns to differentiate between the meaning of different cries, thus attuning with the infant’s emotional and physical needs. The infant experiences satiation of needs, thus stops crying and begins making pleasant interactions, such as smiles and cooing. In turn, this is pleasing to the parent and reinforces positive attachment behaviors from the parent. Perry (2000) notes that an attachment bond is an enduring emotional relationship with a specific person, that the relationship brings safety, comfort, soothing, and pleasure, and that the loss or threat of loss of the person evokes distress.

When proximity, secure base, and safe haven functions are not experienced for a child, internalized messages become negative. Without the secure base function, children
internalize their own unlovability and unworthiness. The internal model of self is built upon this key concept. This state is a result of the insecure attachment process and colors interactions within all other relationships. Without the safe haven function, the child learns that the world is not a safe place, and to expect danger and threat all around (Bowlby, 1980). Children who learn that a caregiver is unavailable, that the world is a threatening place, and that they are unworthy of caregiver protection are said to be insecurely attached.

Scannapieco & Connell-Carrick (2002) list the consequences of an impaired attachment relationship in early childhood, ranging from severe restriction to form meaningful relationships to mild interpersonal, social, or emotional problems. Betrayal trauma involves a whole other layer of harm to the child. It involves disruption of the attachment relationship. It is through the attachment process that children learn to modulate their emotion through the modeling and comfort given by a caregiver, learn self-worth, as a caregiver responds when they protest as infants that needs are not being met, and learn to explore their world from a safe base provided by the caregiver. If the child/caregiver relationship is impaired, the child does not learn these basic human relational functions. As this early relationship forms the template for future relationships, trust and reliance on other relationships are also impaired for the child if the caregiving relationship is harmful or not conducive for producing a safe and secure world from the perception of the child. For children raised with caregivers who are either dismissive, ambivalent, or preoccupied with their own trauma histories (George, Kaplan, & Main, 1985), the world can be perceived as threatening and a negative world view is the predominating lens for viewing all events and interactions with the environment and everyone in it.

Schore (2003a) puts forth regulation theory, the understanding of affect regulation,
which builds on attachment theory from a neuroscience and psychotherapeutic perspective. This theory purports understanding of affective states and how to impact them through the therapeutic process (Schore, 2003b) through the integration of biological and psychological understanding of human behavior, and the use of the biopsychosocial model for understanding and intervening with affective and behavioral problems. Schore notes that affective dysregulation is at the root of most mental disorders, and understanding interventions based on explicit and implicit affective regulation is key. There are clearly times in the early development of infants during which the development of affect regulation takes place within the context of a social relationship (with a care provider). Yet, during the time of the development of this theory, there was great favor in understanding affective regulation in terms of explicit regulation, e.g., through the use of cognitive behavioral techniques, affective states can be consciously controlled. Schore discusses the role of implicit affective states and neuropsychiatry, and the need and effectiveness of relationally-based interventions for affect regulation. His work provides vital support for understanding the neurological impact of child maltreatment, and subsequent interventions for the emotional and behavioral consequences of child maltreatment.

In understanding the neuropsychological impact of child maltreatment, child neglect can be more harmful than abuse alone (Cicchetti & Toth, 1995; De Bellis, 2005; Hildyard & Wolfe, 2002). Neglect often begins at a very early age, and as physical, emotional, and medical needs are not being met, children do not develop a secure attachment. They begin to internalize, in the way that Bowlby described, a negative view and a distrust of relationships, so that they often become disconnected from others and may begin to hold intense rage, which is a result of not having needs met at the very early ages (Schore, 2003c).
The greatest source of danger for a developing child is a caregiver who either is a source of danger or does not provide protection from danger and nurturing when dangerous circumstances arise (Cicchetti & Lynch, 1995). For an exploring child, the world is full of confusing and potentially threatening experiences. There will be inevitable times of harm and brushes with danger. Schore (2002) explains that during these times, a predictable and dependable caregiver helps to regulate a child’s physical, emotional, and behavioral responses to harm or threat of harm by providing “co-regulation,” which involves the provision of a steady and calming experience during stressful times that helps to scaffold the experience for the developing reactionary neurological system of the child. This experience provided repeatedly helps the development of brain pathways that eventually will allow the child to self-calm during times of stress. Schore goes on to explain that the lack of this calming caregiver presence puts the child at risk for inadequate development of capacity to regulate their own internal states.

Complex Trauma

Complex traumatic exposure refers to children’s experiences of multiple traumatic events that occur within the caregiving system—the social environment that is supposed to be the source of safety and stability in a child’s life (Cook, Blaustein, Spinazzola, & van der Kolk, 2003). It refers to simultaneous and/or sequential forms of maltreatment that are chronic and begin in early childhood. It is important to note the differences between complex trauma and the symptoms of Posttraumatic Stress Disorder, which does not address the full range of impact that chronic traumatic experience has on a developing child, and comes more from a medical model of understanding human behavior. PTSD may be
appropriate to explain the emotional and behavioral consequences of traumatic experience on an adult, but the difference between adult and child experience lies in the developing neurological systems of the child, as noted earlier. The sequelae of complex trauma include PTSD symptoms, but also spill into other, multiple domains of functioning. Per Cook et al., these domains and their emotional/behavioral/developmental impact are:

1. **Attachment**—problems with boundaries, distrust of others, interpersonal difficulties, difficulty with attuning to others’ emotional states, difficulty understanding others’ points of view, and difficulty with forming interpersonal alliances with others

2. **Biology**—sensorimotor developmental impairments, hyper or hypo sensitivity to physical contact, coordination and body tone problems, somatization, widely ranging medical problems

3. **Affect regulation**—problems with emotional regulation, difficulty identifying and describing internal affective states, difficulty communicating needs and desires

4. **Dissociation**—distinct alterations in states of consciousness, depersonalization, impaired memory for state-based events

5. **Behavioral control**—impulsivity, self-destructive behavior, aggression, pathological self-soothing behaviors, sleep and eating problems, substance abuse, excessive compliance, oppositional behavior, difficulty following rules, communicating past traumas through re-enactment

6. **Cognition**—difficulty with attention, focusing, planning, processing new information, self-monitoring of own contribution to problems, language
delays, auditory and visual-perceptual problems, orientation in time and space, completing tasks

7. Self-concept—lack of continuous sense of self, poor body image, low self-esteem, guilt and shame

This is compared to the Diagnostic and Statistical Manual of Mental Disorders-IV-TR (American Psychiatric Association, 2000) diagnostic criteria for Posttraumatic Stress Disorder, which is as follows:

A. Exposure—the person has been exposed to a traumatic event in which both of the following were present:

1. Experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others

2. The person's response involved intense fear, helplessness, or horror. (In children, may be expressed by disorganized or agitated behavior.)

B. Re-experiencing—the person experiences one or more of the following regarding the event:

1. Recurrent and intrusive distressing recollections (for children, may be repetitive themes in play)

2. Recurrent distressing dreams

3. Reliving the experience, such as flashbacks, illusions, hallucinations (in children, trauma-specific re-enactment may occur)

4. Intense psychological distress at exposure to internal or external cues that symbolize or resemble the traumatic event
5. Physiological reactivity on exposure to internal or external cues that resemble the traumatic event

C. Avoidance—persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness in three or more of the following ways (not present before the event):

1. Efforts to avoid thoughts, feelings, or conversations associated with the trauma
2. Efforts to avoid activities, places, or people that arouse recollections of the trauma
3. Inability to recall an important aspect of the trauma
4. Markedly diminished interest or participation in significant activities
5. Feeling of detachment or estrangement from others
6. Restricted range of affect
7. Sense of a foreshortened future

D. Hyperarousal—persistent symptoms of increased arousal not present before the trauma, as indicated by two or more of the following:

1. Difficulty falling or staying asleep
2. Irritability or outbursts of anger
3. Difficulty concentrating
4. Hypervigilance
5. Exaggerated startle response

Diagnostic criteria also include specifics on duration (more than one month) and clinically significant distress or impairment in social, occupational, or other important areas
of functioning.

The differences are clear when contrasting the two explanatory models of traumatization, and the impact of complex trauma on the developing child is sometimes referred to as Developmental Trauma Disorder (Cook et al., 2005; Pynoos et al., 1999), and has also been referred to as Type III Trauma, defined as extreme trauma characterized by multiple traumatic experiences that typically begin at an early age and may be perceived as life-threatening (Solomon & Heide, 1999). A child having experienced a traumatic event that was time-limited and involved caregiver protection, at least eventually is less likely to be impacted in the developmental areas listed above, even though that child may still show the PTSD symptoms. This appreciation for the impact of traumatic experience on children becomes vital when understanding and caring for children in the child welfare system.

Cost of Untreated Traumatized Children to Society

The outcomes of children having experienced complex traumatization are enormous, both personally and as a cost to society. Cook et al. (2003), explain that the consequences of complex traumatization, meaning the early traumatic exposure—emotional dysregulation, inability to detect danger cues, loss of personal direction, loss of a safe base of protection—often leads to further traumatization. Children having experienced complex trauma and therefore having difficulty regulating behavior and internal arousal, compounded with the difficulty in scoping their environment and reading danger cues, then often put themselves in situations within which they are at risk for further sexual or physical abuse and/or being part of community violence. This leads to the need for community intervention, so that there is a monetary and emotional cost to the legal involvement to monitor and adjudicate
juveniles who break the law, the mental health cost to intervene and provide mental health services for at-risk youth, the medical cost to support young women with early pregnancies that come as a result of the re-enactment behavior seen as promiscuous, and the child welfare cost that comes when children who have not been treated become parents of children themselves. Direct costs associated with child abuse and neglect to be 24.4 billion dollars annually, including hospitalization, chronic health problems, mental health treatment, child welfare services, and law enforcement involvement. Indirect costs reach 69.7 billion dollars, and include special education, adult mental health and health care costs, lost productivity, and adult criminality (Fromm, 2001).

Studies have examined the connection between child maltreatment and subsequent emotional and behavioral problems. The long term effects of arc clear, as 65% of people in drug treatment programs report being abused as children (Swan, 1998), that 62% of teen mothers report having been sexually abused, and traumatic childhood experiences have been reported in a range that tops at 98.6% (Carrion & Steiner, 2000).

Regarding delinquency, Ford, Chapman, Hawke, & Albert (2007) report the starkly disproportionate rate of child maltreatment within this population. There are wide variations in reporting, as there is not uniform use of standardized measures, but despite this, they report that, for example, more than a third of children in the California Youth Authority met criteria for PTSD, and another 20% met partial criteria. This incidence of PTSD is similar to children in the mental health arena, but is eight times higher than children in the community. Livingston, & Dennison (2008) concur with the connection between child maltreatment and delinquent behaviors, and took their research a step further to provide a trajectory analysis, which helps to understand what combination of type of maltreatment, timing of
maltreatment, and chronicity of maltreatment led to greater likelihood of delinquent behaviors. They found six different trajectories for children, and that four of the six revolved around children’s school transition periods. Additionally, children whose maltreatment either started in or continued into adolescence were more likely to commit juvenile offenses. It is noted that offending is just one of the negative life outcomes resulting from maltreatment, and that limitations of the study are significant underreporting of the instances of maltreatment as well as instances of offending. Children for whom maternal rejection was documented at age one were more likely to commit violent crimes by the age of 18 (Raine, Brennan, & Sarnoff, 1994).

The physical effects of childhood trauma are evident as well. The Adverse Childhood Experiences study (Felitti et al., 1998) reported that childhood adverse events were the greatest predictor of adult heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease. The same report indicates that there is a direct correlation between number of childhood adverse events and number of health risk behaviors and physical health problems. Risk behaviors include cigarette smoking by age 14, up to 4 times greater likelihood of adult smoking, alcoholism, drug abuse, suicide attempts, depression, and sexually transmitted diseases. Overall, this study reported that the aggregate costs of child maltreatment and family violence result in enormous mental health, medical, and social costs over the course of a person’s life, representing the greatest public health problem in the United States.

One provocative article makes the connection between childhood trauma, the biological changes from trauma, and murder (Heide & Soloman, 2006). The authors detail a compelling argument for differences in brain functioning (consistent with what has been outlined above) in individuals who have committed murder. Severe childhood maltreatment
is common for preteen, adolescent, and adult homicide offenders, and many of these offenders experience symptoms of complex trauma. They are in a state of almost continual arousal, in the biologically based process described above, and their reactions to sometimes innocuous stressors make them respond irrationally out of fear and anxiety. The authors advocate for a trauma assessment to be part of the psychological assessment that offenders receive, as it could shed light into the offender’s state of mind during the offense. Awareness that the offender may be re-experiencing their own trauma history may help to explain over-reactive and irrational homicidal behaviors. They continue to point out that in many states there are mitigating factors regarding criminal behavior, with one being that the defendant was under extreme mental or emotional disturbance. For those offenders who experience complex traumatization, this is an ongoing state, and trauma survivors may feel overwhelmed with intense feelings of terror and helplessness. This is a powerful argument in the dialogue regarding the cost of child traumatization to society.

The secondary effects of childhood traumatization are considered when looking at the second generation effects: when traumatized children become parents themselves. Swain, Lorberbaum, Kose, & Strathearn (2007) researched brain-based differences connected to the skills and characteristics necessary for “good enough” parenting, that, when coupled with a “good enough” environment produces positive outcomes for developing children. The mother-child relationship was seen to be potentially a critical target in optimizing developmental outcomes and preventing child maltreatment (Olds, 2000; Sanchez, Ladd, & Plotsky, 2001). Parents with childhood attachment disturbances are at risk of transferring that disturbance to their own children. Swain et al. link specific parenting skills to robustness of function in different areas of the brain, which were covered above. This provides support
for the brain-based link underlying intergenerational transmission of child maltreatment. Maltreated children bring with them impairments in brain functioning, so that it impacts the parenting capacity for their own children. Without intervention, there is an intergenerational transmission of child abuse and neglect based on parenting deficits that were born in the neurological differences of the parents due to their own childhood maltreatment (Swain et al., 2007).

Walker (2007) corroborates this view in a review of the impact and implications of unresolved trauma experiences on future parenting and the ability to protect. He cites the work of Neborsky (2003) in asserting that unresolved trauma leads to the increased likelihood that, as a parent, the person will treat their own child the same way they themselves were treated. Walker links the consequences of unresolved trauma experiences to increased likelihood of addictions, dissociation, and re-enactment behaviors. Substances are used as a way to block out unresolved pain and distress, and there is a strong correlation between substance abuse and PTSD (van der Kolk, 2003), which has clear implications for the care of children. Schore (2001) delineates the dangers of dissociation and a mother's capacity to respond to a distressed infant. Persistent crying can trigger dissociative responses, and can interfere with infant attachment. Schore notes the correlation between maternal dissociation and infant neglect, and explains that the earlier and more chronic the maltreatment was, the more likely dissociation will become a method of coping, and especially so if the maltreatment came from a primary caregiver. The implicit memory, if not processed, can contribute to caregivers being triggered by infant stimuli, with reenactment behaviors ensuing. Solomon (2003) concurs, stating that the greater the intimacy with another person, the more likely it is that emotions, even archaic ones, will emerge, along with
primitive defenses. There are also concerns that unresolved trauma can be unearthed by normal child events – crying, toileting, addition of another child, etc. West & George (1999) characterize it in the following way: Overwhelmed by his own attachment needs, the parent then fails to provide care and abdicates his position as protector precisely at the moment of the child's greatest need, as the child's expression of attachment needs triggers the parents unresolved experiences of fear, anger, distress, or abandonment.

Sharfstein (2006) sums up the cost of child maltreatment to society as follows:

“(Early childhood violence) is the largest single preventable cause of mental illness. What cigarette smoking is to the rest of medicine, early childhood violence is to psychiatry.”

Children in the Child Welfare System

In 2001, 903,000 child abuse and neglect cases were substantiated in the United States, and this does not include those that were reported but for which there was insufficient information for substantiation (NCANS, 2001). The Third National Incidence Study of Child Abuse and Neglect (NIS-3, 1996) reports a much higher incidence of child maltreatment (with updated figures from the Fourth Study due in 2009). This report indicates that over one and a half million children were maltreated in the most recent year of the report (1993), and includes children who had been sexually abused, physically abused, neglected, and emotionally abused/neglected. The USDHHA (2005) reports that one million child abuse and neglect cases are substantiated in the U.S. every year, with a total of 3 million

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4 The fourth National Incidence Study of Child Abuse and Neglect (the NIS-4) is now underway and is expected to be released in the fall of 2009. The NIS is a congressionally mandated, periodic research effort to assess the incidence of child abuse and neglect in the United States. The NIS gathers information from multiple sources to estimate the number of children who are abused or neglected children, providing information about the nature and severity of the maltreatment, the characteristics of the children, perpetrators, and families, and the extent of changes in the incidence or distribution of child maltreatment since the time of the last national incidence study.
reported cases. Of these substantiated cases, more than 500,000 children are placed in foster care annually (Administration for Children and Families, 2005), with 45% being placed for sexual abuse and 48% placed for physical abuse (Dwyer & Noonan, 2001).

Minority children are disproportionately at greater risk for child maltreatment and for traumatization (supplement to the US Surgeon General, 2001). This is not only due to the greater likelihood of being impoverished, but also to the cumulative negative effects of their environment. The Annie E. Casey Foundation (2005) reports that minority children are more likely to then be placed in foster care and less likely to be reunited with family. Additionally, 75% of these children did not receive mental health services within one year after the substantiation of abuse (Burns et al., 2004).

Children in Child Welfare and Traumatic Stress

Children who become involved in the child welfare system are particularly vulnerable to experiencing traumatic stress reactions due to the almost universal experience of these children of complex trauma (Cook et al., 2005). In their home environment, children experience multiple, overlapping, and chronic events, and by definition, these children all have experienced some form of maltreatment from parents or caregivers. This brings impact to wide ranging areas of development, among which include a child’s ability to modulate emotion and control behavior, both of which are biologically based. Richardson, Henry, & Black-Pond (2007) documented the overlapping traumatic experiences of children in child welfare, finding that nearly all had experienced neglect, 75% had experienced substance abusing caregivers, and half had experienced domestic violence; this is in addition to physical and sexual abuse. Of these children the large majority demonstrated functional impairments
with memory, language, and attention processes, and the norm for the sample of some externalized behaviors was near or at the level of clinical significance.

Because children's trauma experiences are so complex, Manly (2005) called for well-conceptualized and empirically sound methods for handling co-morbidity of types of maltreatment to prevent methodology from obfuscating distinctions among subtypes of maltreatment and the associated outcomes. Pears, Kim, & Fisher (2008) conducted a latent construct analysis of children in child welfare. Emotional and cognitive impairments were differentially associated with profiles of maltreatment based on type and severity of the maltreatment. The children in this child welfare sample had experienced an average of three types of maltreatment. All of the children had experienced some type of neglect. Those who had also experienced sexual, physical, and emotional abuse were at the highest risk for externalized problems, internalized problems, and poor cognitive functioning, with children having experienced "only" neglect faring relatively better in these domains. Children who had been sexually abused and emotionally maltreated showed higher cognitive functioning, but higher internalizing behaviors. Those who had been physically abused in addition to neglect showed high internalization as well as lower cognitive functioning. Taken together, these results demonstrate the complexity of maltreatment experienced by children in child welfare along with the complexity of impact on developmental and emotional functioning.

Children who exhibit the dysregulation of behavior and emotions receive various diagnoses within a medical model of treatment and without an understanding of explicit/implicit memory (Kaplow, Saxe, Putnam, Pynoos, & Lieberman, 2006). Kaplow et al. continue to explain that a child's extreme emotion or impulsive behavior in response to the triggering of an implicit memory may appear to be reacting out of context. They cannot
explain their reaction, as explicit memory would be required for this, so that they may patch together a response according to what the adults expect, or they react in a brain-based survival response (fight/flight/freeze), either of which appear disjointed and unexplainable to the observer. Without understanding the child’s exposure and history, they may be diagnosed with a disorder that does not account for the etiology of the behavioral/emotional reaction. Additionally, van der Kolk (2002a, b) has pointed out that the inability to accurately evaluate the emotional significance of sensory experiences makes it more difficult for trauma survivors to learn from experience. Thus, they may be likely to repeat behaviors over and over without making the connection to the consequences of the behavior.

Betrayal Trauma

The term “betrayal trauma” and betrayal trauma theory was first introduced by Jennifer Freyd. Betrayal trauma is defined as occurring when the people or institutions we depend on for survival violate us in some way (Freyd, 1994). Betrayal trauma theory “predicts that the degree to which a negative event represents a betrayal by a trusted, needed other will influence the way in which that even is processed and remembered” (Sivers, Schooler, & Freyd, 2002). Freyd (1994, 1996) explains that betrayal trauma theory allows for the social utility in remaining unaware of abuse when the perpetrator is a caregiver. She reports that social contract theory points out how excellent humans are at detecting betrayal, yet there are some circumstances when detecting the betrayal is counter-productive to survival. If the perpetrator is a caregiver, remaining unaware of the betrayal allows the child to remain connected to the caregiver to meet other survival needs. Dissociating the information from awareness is mediated by the threat that the information poses to the
system of attachment. Chu & Dill (1990) reported consistent information in that childhood abuse by family members was significantly associated with dissociation whereas abuse by non-family members was not.

The earlier the trauma and the closer the relationship with the perpetrator of the trauma, the more impactful the experience is on the child’s development (Walker, 2007), and the more likely that the child will experience betrayal trauma (Freyd, 1994; Goldberg & Freyd, 2004). For children in the child welfare system, often by the time the situation has reached a crisis point warranted court intervention, the child has sustained a high percentage of their life exposed to a maltreating environment and maltreatment by caregivers (Walker & Weaver, 2007). Forms of maltreatment are often overlapping and the likelihood of experiencing increasing types of maltreatment events increases with age (Richardson, Henry, & Black-Pond, 2007).

As all children in child welfare by definition have been abused and/or neglected by those in charge of their care, maltreatment is not just a matter of experiencing terrifying events, but per betrayal trauma theory, it involves betrayal by the caregiver. Thus, there is a greater likelihood of experiencing amnesia, selective memory, or dissociation of memories of maltreatment by a caregiver, which serves for survival in the moment but has other implications over the long term (Freyd, 1994). She describes the function of this amnesic process, noting that first, psychic or physical pain leads to the detection of betrayal, which normally is in the individual’s best interest to distance from the source of pain, and betrayal. But, second, when the individual is dependent on the source of betrayal for survival, the opposite becomes true for the sake of survival: to ignore or forget the betrayal is in the best interest of the individual so that greater survival needs (food, water, shelter) continue to be
met. Third, this leads to the need for memory repression, for the memory to be blocked from the process that governs attachment behaviors, but not necessarily blocked from nervous system experience as a whole. Fourth, this information is processed in an adaptive manner in the moment, but then applied later in life to similar situations, which have a maladaptive function.

It is this maladaptive function later in life where the relevance of experiencing betrayal trauma becomes significant. The long term consequences of having developed this amnesic and/or dissociative process when faced with betrayal cues in other relationships opens the individual for revictimization, as cues that signal danger and threat are blocked from consciousness (DePrince, 2005). DePrince shows that experience of betrayal trauma before the age of 18 is associated with pathological dissociation, both of which are associated with statistically significant increase in revictimization. Additionally, research by Foynes, Freyd, & DePrince (2009) revealed delayed disclosure of maltreatment for more than a year when it was perpetrated within a very close relationship as opposed to a less intimate relationship. This is another factor in increasing revictimization risk for those who experience maltreatment within a caregiving relationship. As children in the child welfare system have increased betrayals by caregivers (the definition of the maltreatment leading them into protective care), it follows that they experience greater likelihood for following a trajectory of revictimization.

Treatment for Childhood Traumatic Stress

Heide & Solomon (2006) point out that traditional treatments for those with mental health needs do not identify and address posttraumatic stress when it underlies mental health
conditions. Posttraumatic stress involves hyperarousal (sleep disturbances, irritability/anger, difficulty concentrating, hypervigilance, and exaggerated startle response), avoidance (avoiding thoughts, feelings, activities associate with the trauma, inability to recall the trauma, detachment, diminished interest, foreshortened future), and re-experiencing (intrusive recollections, dreams, or flashbacks of the event, psychological and physiological reactivity/distress when reminded of the event) (APA, 2000). In children, this can manifest as inattention, hyperactivity, impaired memory, and lack of emotional impact (flat affect, or dismissive about the trauma), as well as angry outburst and reactions that are incongruent with external stimuli (Ford, 2005; van der Kolk, 2005). Treatments specific to addressing the etiology of traumatic stress symptoms is crucial to ameliorate the expression of those symptoms. Teicher (2000) points out that in the past, researchers had considered the damage from child maltreatment as a “software” problem, amenable to cognitive therapies. It is now understood that the core of the maltreatment experience lies in biological, neurological differences that need to be addressed in treatment for treatment to be effective (van der Kolk, 1996).

For example, one of the first trauma informed treatments was Biologically Informed Psychotherapy, which addresses the physiological effects of trauma (Solomon & Heide, 2005; van der Kolk, 1996), as clients are helped to process their traumatic experiences. Memories that are stored in the limbic system without an accompanying cohesive narrative memory result in the individual being susceptible to triggering from events that do not appear to be connected, but cause an often extreme visceral response. Trauma focused therapy helps the person tolerate the affective sensations in order to hold the memory while creating a narrative around it. In this way, the memory is transferred out of the limbic system
and into cortex where it can be stored in a cohesive manner. This helps clients reconnect body feelings to their thought processes.

In the last decade, there has been increased focus not only on treatment of childhood traumatic stress, but on the development of evidence based practices to treat traumatized children. The National Child Traumatic Stress Network (NCTSN) has been instrumental in fostering 1) the development of treatments for traumatized children, and 2) system interventions to promote understanding of the impact of traumatic stress on children (NCTSN, 2008).

Ford, Chapman, Hawke, & Albert (2007) list typical trauma-informed therapies for children who have entered the delinquency and child welfare systems, and this provides a comprehensive synopsis. These are evidence-based therapies that have their evidence base from a population of traumatized children. Therapies include Trauma Focused Cognitive Behavioral Therapy (TF-CBT, and forms of TF-CBT specific to grief and to sexual abuse), Eye Movement Desensitization and Reprocessing Therapy (EMDR), Skills training in Affective and Interpersonal Regulation (STAIR), and Phase Oriented Treatments, such as TARGET (Trauma Affect Regulation: A Guide for Education and Therapy, and TREM (Trauma Recovery and Empowerment Model). Other trauma informed treatments include Brief Eclectic therapy and Seeking Safety. All of these therapies have been shown to reduce PTSD symptoms and enhance psychosocial and educational attainment, and have been listed as evidence based or evidence supported treatments.

Stambaugh, Burns, Landsverk, & Rolls Reutz (2007) list additional trauma informed treatments that also prove efficacious and have been designated as evidence based or supported. In addition to the treatments listed above, they include Parent Child Interaction
Therapy (PCIT), which is a treatment focusing on the parent-child relationship, Child Parent Psychotherapy for young children, TF-CBT for Schools, and Project 12-Ways/Safe Care for Child Neglect, which focuses on improvement of parent skills.

Challenges to Treatment of Child Traumatic Stress in Child Welfare

There are challenges inherent in providing evidence supported treatment to children in the child welfare system. Maher et al. (2009) document the challenges, including 1) contextual factors and 2) system collaboration factors when implementing a trauma informed evidence based treatment in school systems for treatment of children in child welfare.

1. Some contextual factors are inherent in a social work perspective regarding evidence based practice (undermining the self-determination perspective of social workers with a prescriptive model, and skepticism regarding the more homogeneous samples upon which the evidence base was founded, as opposed to more diverse samples in some contexts). The other set of challenges regarded the institutional context in which child welfare functions. Lack of availability of evidence based practices within child welfare samples are scarce, knowledge of treatments may be limited, and protective policies for this vulnerable population are in place, hindering accessibility.

2. Lack of system collaboration between schools and child welfare, differing goals and outcomes between the systems, and overlapping service provision and funding streams were system challenges faced.

Harris, Lieberman, & Marans (2007) recognize other system challenges in delivering
treatment to children in child welfare systems. They note that effective treatment needs to span the various systems within which children exist, but many interventions are delivered on an outpatient basis or in a pull-out model, whereas tackling treatment within the context of the child's environment (home, school, family dynamics) is more challenging. Many of these treatment models include a family component, or have family interaction integral in the treatment model; however, such mental health treatment, even when inclusive of the family system, is still delivered independently without mandatory involvement of the larger system (school, court, community). Even if a treatment is efficacious for a child's symptoms over the short term, if the context in which the child functions does not have an understanding of the effects of traumatic stress on a child's functioning, the positive changes may dissipate as the larger system will not support change. Systems theory informs on this point, as a system will always work to maintain equilibrium, and when one agent of the system changes, the other agents in the system will pressure the system to returning to the old and known methods of interaction. (See Skyttner, 2006 for a comprehensive summary of the systems approach and tenets of systems thinking).

Glisson (2002) makes the case that implementation of new practices, regardless of the case made for efficacy or the effectiveness of training knowledge and skills, is dependent on organizational factors in order for practice to change. Although broader, macro-level factors impact implementation as well—factors such as funding, policy, and collaborative agreements—it is the culture and climate of an organization to a large extent that impacts whether and to what extent practice changes. Culture is defined as the way things are done in an organization, and culture is defined as the way individuals perceive their work environment. This view of implementation is consistent with Leiberman's (2007) view that
children do not live in isolation and services are not delivered in isolation, as the “silo”
perception of agencies, organizations, services, and children would say. The silo effect refers
to the function of social entities as if they existed independently and without interaction with
larger systems or other social entities (McCabe, 2009).

System interventions have been introduced by the NCTSN specifically for the child
welfare system (Taylor & Siegfried, 2005). Toolkits for training child welfare workers and
resource parents (foster parents and relatives who serve as placement for children removed
from their parents’ care) have been developed and used nationally. No multisite evaluation
data exists for the effectiveness of these trainings or of the training material, although
anecdotal information and individual site training evaluations suggests positive reception for
the information. Although these efforts go a long way to address the need for system
professionals to understand the impact of traumatic stress on children, in no way are these
toolkits a comprehensive multiagency whole system intervention.

The Need for a Trauma Informed Child Welfare System

Kaplow et al. (2006), as noted above, explain the consequences of misdiagnoses of
traumatized children, in that if the etiology is not understood, misdiagnoses will lead to
mistreatment. They implore that, for this reason, it is vital that institutions and organizations
that work with children become sensitive to trauma symptoms and the disruptive effects that
trauma has on children. They point out through a case example that it may be just when a
child's traumatic experience has ended that the consequences of traumatic impact begin. For
some children, it is the end of this trauma that marks the beginning of a cycle of trauma
symptoms, functional impairment, and consequently, further traumatization (DePrince,
It is for this reason that a comprehensive system of intervention and prevention efforts must be in place.

Harris, Lieberman, & Marans (2007) provide a cogent summary of the costs of not addressing child traumatization that will occur even in the context of well-intentioned interventions such as Systems of Care approaches. As children raised in maltreating environments have brain pathways well-worn to react to danger, when triggered, these children manifest a traumatic dysregulation of neurobiological, cognitive, social, and affective processes, as explained above. If left unaddressed and misunderstood, the consequences of traumatic impact on children affect not only the individuals, but reverberate within the family and within the other systems of the child's life, and ultimately can mar the healthy development of their own children.

The NCTSN Systems Integration Working Group (NCTSN, 2005) put forth recommendations on the need for trauma informed child welfare system, and why the development of a trauma informed system is so vital to the outcomes of children in child welfare. They listed the importance of the trauma informed system in two general areas regarding traumatic impact: what it means to fully understand a child's trauma reactions, and to fully understand their trauma triggers. As explained previously, there is a wide selequae of behavior and emotional responses associated with traumatic stress, like anger, withdrawal, avoidance, and dissociation. Without understanding a child's history and how they respond to their trauma, a caregiver or service provider may interpret a child's behavior as a larger mental health issue rather than a traumatic response. In the same way, traumatic reminders may trigger behavior and emotional responses in children. Without understanding triggers, a child's response to a traumatic memory may appear disjointed and out of context with their
surroundings, again, appearing symptomatic of a mental health problem (Pynoos, 1993). If a
caregiver, teacher, and service provider understand a child’s triggers, and ideally can
anticipate them, traumatic responses are minimized. In this way, seeking out information and
understanding of a child’s traumatic responses and triggers, along with history and duration
of the trauma, can be shared among those who care for and interact with the child to directly
impact the quality of care and treatment the child receives and ultimately the child’s well-
being (Taylor & Siegfried, 2005).

Van der Kolk, Pelcovitz, Sunday, & Spinazzola (2005) explain the manifestation of
extreme stress in children, and consequences of not treating it as such. Approaching children
in the child welfare system from this medical model sets the course of treatment in the
wrong direction based on faulty assumptions and attributions. Diagnosis defines treatment.
If a mental disorder is diagnosed, the symptoms will be treated as a disorder. If traumatic
stress is diagnosed, it will be treated in such a way to process, mitigate, and alleviate the
traumatic stress. Both paths share a similar intended outcome—to lower problem behavior
and emotional symptoms—but with different definitions of etiology of the problem, the
root of the problem is defined differently and treated differently. Without defining the
problem accurately, interventions are treating the wrong thing and often prove ineffective.

The ecological/transactional approach has been recommended to treat child trauma,
as the child is part of the family system and the environment in which the traumatic events
were occurring (Bronfenbrenner, 1979, 1986; Cicchetti & Lynch, 1993). Yet this approach is
not usually implemented, likely because the symptoms of child trauma are so complex and so
compelling that mental health services alone are sought for treatment. As noted in Glisson’s
(2008) and Lieberman’s (2007) research, organizations/agencies/children do not exist in
isolation, and to implement best practice and treat problems involves the whole system, not just the individual. Therefore, although communities may have individual professionals and practitioners who understand the impact of traumatic stress and how to redefine what we see in children from this perspective, allowing for different treatment, without support from the larger system, these efforts at change are at risk of fading away or being ineffective in promoting broader change, just as system theory predicts (Skytnner, 2006).
CHAPTER III

METHODS

Overview

The purpose of this study is to develop and evaluate an instrument to measure change in a complex community system as it adopts a new paradigm, and specific for the current research, system change in establishing a trauma informed child welfare system.

Origin of Study Concept

This study is being conducted within the constraints of a SAMHSA funded grant project, which aims to facilitate community child welfare systems in becoming trauma informed. The realization of a need for an instrument to measure the impact of system change initiatives, in this case, moving toward a trauma informed paradigm, came from grassroots need at the community level, and as well from the growing need in the NCTSN community of grantee sites. More sites are engaging in the work of changing systems, and evaluation of their efforts has not necessarily kept pace. To illustrate, the hierarchy of imbedded systems involved in changing communities is as follows:

Level 1: Children and families (clients)
Level 2: Service providers
Level 3: Organizations/agencies
Level 4: Local child welfare systems that revolve around county court
Level 5: All local child welfare systems within the state child welfare system
Initiatives within the NCTSN have focused on Level 1 and Level 2. The realization for need of intervention at a larger systemic level still has resulted in interventions at the second level (i.e., the Child Welfare Training Toolkit for training child welfare workers, and the Resource Parent Training for training foster parents). Although there has been understanding of the need at a system level, training and intervention in work with traumatized children is still focused on the service provider level (and individual level). The CTAC initiative is conceptualized at Level 4, with Level 3 interventions. Measurements are taken from service providers and individuals within agencies regarding their perception of the Level 3 agencies, which comprise the whole of their county system. Intervention at this level has just begun, as in the CTAC work, so that any evaluation efforts of such a system change initiative are in the early stages at best, and the need for an instrument to help produce evidence to support the process has become clear. It is from this need that the Trauma Informed System Change Instrument was created.

Evaluating the instrument could not be done in the sequence that would have been desired, as even prior to the design of the current study, demands of the project evaluation led to the need to collect data for purposes of the initiative. Therefore, the first draft of the instrument was put to use. At the point of designing this study, and given the wealth of data already collected along with projected data collection opportunities, the study was designed around the current state of the initiative. Because the first and second cohorts of participants differ in the version of the instrument administered to them and in the timeframes for collecting retest data, the study was separated into two phases, and design

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5 Chris Coryn PhD was instrumental in framing the design of this study to fit the existing parameters of the initiative and the data collection opportunities.
and analysis were fit around these constraints in an effort to maximize the utility of the data for both evaluation of the instrument and evaluation of the impact of the initiative.

As the study of evaluating this instrument stems from an applied social work initiative, methods of instrument development occurred not only within the process of designing the initiative evaluation, but actually within the actual designing of the initiative itself. Thus, the current instrument is a product of this developmental process. To serve the project, the first phase of this study - the developmental period for instrument design - was abbreviated due to the need to put the instrument in the field for use. Getting to the stage of evaluating the reliability and validity of the instrument has been an iterative process, and clarifying the first phase of instrument design becomes important. It is in this context that instrument development is described below, and is labeled Phase I. Because the purpose driving the development of this instrument was to gauge change in child welfare systems, the first draft of the instrument was re-administered to the original respondents to try and measure change in the system after the intervention took place. Measuring impact happened simultaneously with the need to revise the instrument for purposes of improving reliability and validity. Therefore, for purposes of this study, Phase II is broken into two parts following the different foci on obtaining results – the instrument evaluation study, which evaluates factorial validity and reliability of the second iteration of the instrument, and the impact study (from the first iteration of the instrument). These separate activities are labeled as Phase II: Part 1 and Phase II: Part 2 respectively.

Following the manner in which the larger project, and therefore this current study unfolded, research questions for Phase I were developed post hoc, and serve as the foundation for the primary purpose of the instrument within the evaluation of the project –
to measure the impact of the initiative (Phase II: Part 2), and for the primary purpose of this study – the evaluation of the instrument (Phase II: Part 1). For consistency and ease of reading, research questions that arose from Phase I are listed with Phase II research questions. Each phase of the study is broken out below. For Phase I - Development of the Instrument – the procedure and the instrument details are listed. For each part of Phase II, the relevant research questions are listed, with procedures, the sample, data collection, data storage, and data analysis delineated separately as well. 

Phase I – Development of the Instrument

Procedure

The draft version of the Trauma Informed System Change Instrument was conceptualized within a framework designed for evaluating system change (Coffman, 2007). This framework came from measuring early childhood intervention in communities and was similar to the current project in that change was viewed from a community-wide perspective rather than just within-agency in respect to the content area (e.g., early childhood intervention for that model and trauma informed child welfare for the current study).

Instrument development went through several iterations within CTAC - the agency developing the system-change initiative for child welfare. The author was given the task of developing an evaluation tool to measure the shift to becoming more trauma informed in communities. In the process of reviewing current evaluation methods for systems (see Chapter II), there were few methods revealed to detect community change beyond the

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6 HSIRB application for this study was submitted on 11/24/09, with approval received on 11/30/09. The overall initiative received HSIRB approval first on 12/15/08, and this study was incorporated into the re-approval application submitted on 11/24/09.
monitoring of process data (increase in collaborative meetings between agencies, for example). Additionally, there are no evaluation tools or systems to detect to what extent such a complex social system as the child welfare system is becoming trauma informed.

As the CTAC trainers are in the vanguard for helping communities institute trauma informed change within their child welfare systems, and have been improving their methods of helping communities shift to a trauma informed paradigm since 2003, the author utilized their expertise in developing and then amending this instrument.

Two main conceptual frameworks were used in the development of the instrument — understanding which aspects of a community would be most relevant to monitor for signs of change to a new paradigm (a system change perspective) and in what ways trauma informed change could be detected in communities (a content area perspective). The system evaluation framework noted above (Coffman, 2007) was used as the most fitting system model, and the Essential Elements of Trauma Informed Practice (NCTSN, 2007) was the most obvious choice for understanding what it means to be trauma informed in child welfare. It became clear through the iterative process that monitoring change in the system was really the primary focus for the instrument, and that this instrument was in no way a comprehensive operationalization of the Essential Elements. The Essential Elements were used to inform and structure the questions, and to make them more “real” and relevant for respondents, but the primary area of content development was concerned with the areas that change can be measured within complex systems.

Through the input of the training team and following the work done in the early education initiative, the author proposed seven domains as areas in which change towards a

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7 Professionals from CTAC's transdisciplinary trauma assessment team were helpful with providing feedback regarding face validity. Jim Henry PhD, director of CTAC, and Connie Black-Pond LMSW, clinical director, were key in developing the instrument.
new paradigm could be detected - Policy, Family Involvement, Collaboration, Evidence Based Practice, Individual Practice, Agency Practice, and Supervision. From these areas, items were developed to try to capture the areas of change within those domains that would best reflect shifting to a new paradigm, in this case, the process of becoming more trauma informed in child welfare. Eighteen items were agreed upon throughout this iterative process between trainers and the author as relevant in capturing the essence of change within community systems. The 18 items of the instrument fit into the seven domains as follows: Policy - Items 1, 2, 3; Family - Items 6, 15; Collaborate - Items 4, 5, 7; Evidence Based Practices - Items 12, 13; Individual Practice - Items 16, 17, 18; Agency Practice - Items 8, 10, 14; and Supervision - Items 9, 11.

The draft instrument was designed on a 5 point Likert scale with responses anchored at 1 (not at all true for my agency), 3 (somewhat true for my agency), and 5 (completely true for my agency). An option of Not Applicable was given.

After the piloting of the instrument, revisions were required to improve its utility. First, the scaling was modified. Anchors were given for each point of the scale (1 = not at all true, 2 = a little true, 3 = somewhat true, 4 = mostly true, and 5 = completely true). This accommodated perceived ambiguity of the 2 and 4 position. Second, the option of Not Applicable was removed. This was done to lower the incidence of, in effect, missing data, as it appeared some respondents were considering the item not applicable to them, when in fact it was more likely that it simply did not reflect practice in their agency, and a "1" should have been endorsed. Finally, there were difficulties with the hypothesized groupings of the items. With so many potential factors identified, some of the domain areas had only two items, which then precluded doing more rigorous analysis. Therefore, the first fifteen items,
focusing on agency-level functioning, were regrouped to more closely align with the theoretical framework. Three grouping were then proposed: Policy, Agency Practice, and Connections, and they are defined in the context of a trauma informed child welfare system as follows:

a. Policy—This can refer to local, state, and federal policy that shapes the focus and action of professionals throughout the local child welfare system. In the case of the current project, federal and state policy is not a focus of the system change initiative; rather, the effort is grassroots and is aimed at changing the system from the vantage of local policy. Policy includes the cooperation between agencies. This includes the policy of each entity: schools, foster care, courts, mental health, and policy shaping local collaborative bodies

b. Agency Practice—These refer to specific treatments or resources available locally that support a trauma informed system, as well as day to day agency practices that are trauma informed, and these could look different depending on local context.

c. Connections—Refers to communication at and between multiple levels of the agency. This includes commitment of time and resources to shared case planning for children, and connections for communication between entities and individuals whose communication is relevant in the lives of children. This includes agency/professional communication, peer communication, supervisory connections, and family communication.
The last three items of the instrument that had focused on individual characteristics were grouped with additional individually-focused items. On the advice of one of the trainers, exploring individual factors that relate to overall system change was added in order to separate to what extent individual characteristics impacted the larger system change. System change incorporates change at the individual level, and this is hypothesized to be necessary in the overall measurement of trauma informed child welfare change. Individually focused items were retained from the first draft, and the Evidence Based Practice Attitude Scale (Aarons, 2002) informed the development of items that 1) are specific to trauma informed systems, and 2) better accommodate the longitudinal use of the instrument to measure change. The individually based domains are labeled as Integration, Openness, and Tradition, and are defined as follows:

a. Integration - This is the extent to which individuals see themselves as practicing consistently with the new paradigm practice (i.e., trauma informed practice).

b. Openness – This is the extent to which individuals are open to exploring and considering new ways of professional practice.

c. Tradition – This refers to the level of allegiance an individual has to how things are currently practiced, and may be relevant in inhibiting the adoption of new practices, even if the individual is open to exploring other ways of doing things.

The Instrument

The revised instrument now has 26 items that were rated on a Likert scale from 1 to 5 and anchored as stated above. The items grouped into the hypothesized factor loadings as follows: Policy – P1-sc1, P2-sc2, P3-sc3, P4-sc5, P5-sc15; Agency Practice – AP1-sc8, AP2-
Phase II: Part 1 - Reliability and Validity Study

Phase II: Part 1 Research Questions

This portion of the study seeks to answer the following research questions:

12. What is the face validity of this instrument for measuring changes in a complex community system?

13. What is the face validity of this instrument for measuring trauma informed change in a child welfare system?

14. To what extent is there content validity of this instrument in measuring changes in a complex community system?

15. To what extent is there content validity of this instrument in measuring trauma informed change in a child welfare system?

16. How consistent is the Trauma Informed System Change Instrument over time?
   a. To what extent does this instrument show test-retest reliability?
   b. To what extent does this instrument demonstrate internal consistency?

17. To what extent is there evidence to support factorial validity (precursor of construct validity) of this instrument in regard to the areas in which complex community systems change?

18. Is the hypothesis of six latent variables (three regarding system characteristics and three regarding individual characteristics) in this instrument supported by the analysis?
Procedures

Sample

Participants from both the first and the second cohorts of the initiative comprised the pool of respondents for evaluation of the instrument. The instrument was administered at four orientations held for each community. Orientations were held in February and April 2008 for Hillsdale and Livingston Counties. Manistee and Benzie Counties as well as the Little River Band of Ottawa Indians, had an orientation held in December 2008. The fourth orientation kickoff was held for Lake, Mason, Ottawa, and Newaygo Counties in March 2009. All participants were provided the opportunity to complete the instrument after the initial orientation session defined what it meant to be a trauma informed child welfare system. These participants were informed about the initiative through community channels (i.e., agency meetings, emails from the community “champion,” and newspaper articles or newsletters). Attendance was not limited to particular agencies or types of professions, although, as the training is relevant to child welfare, the audience was comprised of various professionals and resource parents who interacted in some way with the child welfare system. The sampling frame from which this sample was taken was all of those individuals who were present at the trainings.

Data Collection

The instrument was always administered after it was defined for the audience what it meant to be a trauma informed child welfare system. The trainer explained the purpose of the instrument and directed the participants to the HSIRB Informed Consent form in their
training materials, which details the initiative and the purpose of the instrument. The trainer then gave 10 minutes within training time for participants to complete the instrument if they chose to. On the instrument, respondents were given the opportunity to participate in the reliability study; if they chose to do so, they were instructed to give their contact information in order to be contacted in three months. Respondents were instructed to turn their instrument face down in the middle of the table when it was completed. After all respondents were finished, the researcher and other CTAC personnel collected the instruments from the tables.

For the test-retest portion of the reliability study, Survey Monkey was used to collect instruments at the three month period. Respondents who gave their email address were emailed the link to Survey Monkey to complete the instrument again. Two subsequent reminder emails were sent to those participants who did not submit a three-month instrument. They were not emailed again if, after three emails, they did not complete an instrument.

The needs and timeframes of the Initiative drove the pre-post data collection and the make-up of the pool of subjects, rather than being under the control of the researcher. This meant, for example, that test-retest data from the first cohort (Livingston and Hillsdale) were not collected in a timeframe that the researcher would have preferred in trying to establish reliability of the instrument (a three month time period). Instead, post data was collected 10-11 months after pretest data, so that the study was designed to examine reliability, with some validity implications, but also to capture program impact. For cohort one participants, the instrument was emailed to respondents who provided their email address rather than using
Survey Monkey. Survey Monkey was used for the second cohort retest in an effort to obtain a better response rate.

Data Storage

All instruments that were completed, along with interview notes and other survey data utilized for the study are held in the researcher's locked office at the Western Michigan University's Unified Clinics. Responses were inputted into a PASW database by a research assistant employed by CTAC.

Data Analysis

Data were first cleaned and data entry errors were corrected. The issue of missingness was addressed, with alternative methods for accounting for missing data explored. Descriptives were run, and nonnormality was assessed. Alternative methods for addressing the nonnormality were explored – transforming the data, using alternative methods for conducting the CFA analysis that are more robust to nonnormality, and simply allowing for the nonnormality, thus citing the limitation of nonnormal data.

Factorial Validity

Factorial validity was analyzed using AMOS to conduct a confirmatory factor analysis (Blunch, 2008; Brown, 2006; Byrne, 2010; Kline, 2005). Maximum Likelihood (ML) was the estimation method used to conduct the analysis. The hypothesis of six latent variables (three agency and three individual) was tested and alternative models were
postulated. The CFA analysis was conducted using a complete data set versus the dataset that had data MAR (missing at random), as ML will not produce modification indices with any missing data. Because the data are “ordered categorical” data, the Means and Variance Adjusted Weighted Least Squares (WLSMV) is the preferred estimation method, but this was not used to find the best model fit because it does not allow testing of nested models. Therefore, the final CFA models were run in Mplus using WLSMV, and results were compared to the results from ML.

Other Measures of Validity

Establishment of face validity was done in the construction of the instrument, and was discussed earlier in this chapter. Content validity was assessed using qualitative methods. There are two parts to this level of validity – the primary function of the instrument is to measure change in complex community systems, and content was compared and contrasted to other models of measuring system change. Because of aspirations to create another iteration of the instrument that has improved validity specific to trauma informed child welfare systems (which is beyond the scope of this work), the initial attempt at using the Essential Elements of Trauma Informed Practice in the development of the instrument has been reviewed and critiqued, and suggestions for improved content validity (specific to trauma informed systems) have been offered.

Reliability

Stability of the instrument over time was assessed using the test-retest procedure. An arbitrary timeframe of three months was selected as appropriate for the procedure, as to
allow enough time to allow the effects of memory and practice to fade, but to not be conformed by impact of the initiative being detected by the instrument. However, the desired timeframe was not possible for the first cohort, and the retest occurred 10-11 months after the first test. For the second cohort, the retest did occur three months later. Given these differences in the two cohorts of test-retest participants, it was hypothesized that the stability coefficient for the first cohort would be lower than that of the second cohort, as the longer span for the retesting would be expected to reflect respondent perception of change in the system. Stability of the instrument and consistency of the patterns of responses was assessed using Pearson product moment coefficient ($p_{12}$). PASW bivariate correlation was used for the analyses.

Analyses to determine internal consistency of the instrument were conducted in PASW, with Cronbach’s alpha determined for each of the subscales comprised of items thought to be measuring the same construct. The initial model of the instrument had three domains collecting data regarding the agency/organization, and each originally had 6 items hypothesized to be measuring the construct. The last three domains measured individual characteristics, and each domain had 3-4 items.

Phase II: Part 2 – Impact Study

Phase II: Part 2 Research Questions

19. To what extent has trauma informed change in community child welfare systems taken place as measured by this instrument?

20. To what extent does agency affiliation and role in the agency impact trauma informed change as measured by this instrument?
21. To what extent is this instrument sensitive in capturing change in a child welfare system's becoming trauma informed?

22. To what extent does this instrument contribute to understanding the impact of the trauma informed system change initiative?

Procedures

Sample

For determining impact, respondents were trainees in the Initiative’s kickoff trauma informed orientations. The post test respondents came from the pool of individuals who supplied their contact information, so this pool did not include those who submitted pretest instruments anonymously or without identifying information. The bias introduced into this smaller sample for purposes of data analysis is not known, but possibilities are discussed in the next chapter.

Other participants in the study include those who agreed to be interviewed regarding their opinion on the status of trauma informed change in their community. This group of respondents included members of the leadership teams, but also selected participants who were included because of their involvement in the initiative. Others include those who completed surveys asking for status updates on the way in which the trauma informed training and practices are unfolding in their community. All of these participants are those who were present at the initial trauma informed kickoff in their community.

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8 Much of the procedure information in this section is consistent with that in the previous section. For ease of reading and to avoid redundancy, the reader is referred to the previous section when applicable.
Data Collection

Data collection of the Trauma Informed System Change Instrument for the impact study is identical to that reported in the previous section. Data from interviews was collected at each local site from individuals who had been participating in the initiative and had agreed to be interviewed. Three CTAC staff conducted interviews – Dr. Henry, Ms. Black-Pond, and the author – and the CTAC staff traveled to the local communities to conduct the interviews. Participants signed a release for their de-identified information to be used for evaluation and presentation purposes.

Data Storage

The reader is referred to the previous section.

Data Analysis

The extent to which systems have changed as measured by this instrument was addressed by running paired t-tests after factorial validity of the latent factor structure had been established. A Bonferroni correction was used to avoid Type I errors.

The question regarding sensitivity of the instrument to capture change was addressed through the test-retest portion of the study. Interviews had been conducted through the initiative evaluation to explore qualitatively the change or lack thereof that these interview participants perceived. Direction of change of responses was analyzed at large with the intent to also analyze according to differences according to roles and agency affiliation. The data from both methods were compared for consistencies. This information then was used
to consider the question regarding the role of the instrument in determining the impact of
the initiative.
CHAPTER IV

RESULTS

Results are organized in four sections. Factorial validity is discussed first as it is the foundation for the remaining analyses. Reliability analyses are then provided, followed by a discussion of face and content validity. The last section describes the results of the impact study.

Factorial Validity

Descriptives

Frequencies were run on the data prior to the addressing of missing data, then were run with cases with significant missing data removed (see below), and thirdly were run with all missing values addressed. Full descriptives for each of these levels of missingness are contained in Appendix A. Normality of data was explored in each case.

Missing Data

In the original database, without removal of any missing data, missingness ranged from 3.2% (Item 26) to 11.4% (Item 15); total number of cases was 342. Average missingness was 6.5%. Data were explored case by case, and cases that had more than 25% missing responses were eliminated, in practical terms meaning that cases with 7 or more missing responses were removed (see Byrne (2010) for this standard for CFA). This made sense theoretically, in that if a respondent did not answer several of the items (in this case
more than six), it follows that they may not have a grasp on the concept being surveyed with the instrument, or they may perceive themselves as so far removed from the content areas to feel that they do not apply to them.

After the removal of cases responsible for more than 25% of missingness, frequencies were run again. Of the 342 original cases, 28 were removed to leave a working database of 314 cases. Missingness in the revised database ranged from .96 on several items to 7.3% on Item 15 (next highest missingness was 4.1% on items 1 and 21), for an average of 2.5% overall missing data. Although replacing missing data with the mean of the item reduces the variance of the item, and CFA is built on variance, the amount of remaining missing data in this study was very small. Therefore, the author postulated that the potential impact on variance by filling in missing data with the item mean was small compared to the potential benefits of having a complete dataset. In AMOS, having a complete dataset allows modification indices to be run for modifying the specification of the model when the goodness of fit is not at a desirable level. AMOS will not allow this when the dataset is incomplete.

A preliminary analysis was run using two versions of the dataset. For both, cases with greatest missingness (more than 6 items) were removed. For the first dataset, the remaining 2.5% of the missing values were left in, so that AMOS could estimate the values. For the second dataset, missing values were imputed with the mean of each item. Analysis with both forms of the dataset was done because of the limitations present if only one or the other were selected for all the analyses. Reasons for the two datasets are as follow:

1) Dataset 1 - Retaining missing values: Having AMOS fill in the missing values is a more parsimonious and accurate method for imputing the values (see Byrne);
however, with this method, AMOS then will not provide modification indices, which are extremely helpful in pinpointing misspecifications in the model. Missing data in the dataset necessitated the author to use exploratory methods to identify potential misspecifications rather than statistical identifiers from the program.

2) Dataset 2 - Imputing missing values prior to analyses: As noted above, having a complete dataset allowed AMOS to calculate modification indices as a way to identify misspecifications of the model, and this is a boon to finding the best fit. The question arose as to how to fill the missing data. Using traditional methods for removing missing data has significant problems. Listwise deletion does a poor job of conserving data.\(^9\) Pairwise deletion produces biased standard errors, especially if the data is MAR (missing at random). Single imputations produce underestimates of variance and standard errors, and overestimates of correlation. A better approach is maximum likelihood (used in this software) or multiple imputations (not available in SPSS). Because the percentage of remaining missing data was so small, a single imputation of the mean for missing data was used.

Problems with skewness and kurtosis were heightened when missing data was filled with the item mean, as would be predicted. However, there were no items that shifted — either they had a nonnormal distribution for both datasets or they didn’t. The difference was in the extent to which data were nonnormal.

Per Byrne (p. 105), CFA is robust to violations of the assumption of skewness, as CFA is an analysis of covariance rather than differences in mean, which skewness would

\(^9\) Listwise deletion of 28 cases was done in spite of the “wasting” of data, as it was determined that so many missing responses from individual respondents suggests issues with validity of the remaining responses, as was discussed in the Missing Data section earlier in the chapter.
impact. Rather, CFA is sensitive to violations in the assumption of normal kurtosis (DeCarlo, 1997). Through the frequencies run initially, this study’s dataset shows significant nonnormal kurtosis for two items in the Community Characteristics section of the instrument, for five items of the Individual Characteristics section, and for multivariate normality, a decision needed to be made regarding the issue of kurtosis. The options were as follows:

1) Transform the items to create a more normal distribution. This option, although potentially remediating the issue of kurtosis (but not with certainty, as nonnormal kurtosis will persist when there are floor/ceiling effects), has serious drawbacks when trying to interpret the data. The other items will be understood in the original metric, but the transformed data will be in a different metric (e.g., logarithm). This may confound the analyses, and will confound interpretation (i.e., what does it mean to have $x$ proportion of an item’s variance load onto a factor compared to $x$ proportion of another item’s logarithm’s variance load onto the factor). The issue of informed and meaningful interpretation of the results is the purpose for conducting the analysis, and interpretation with transformations could become unnecessarily oblique.

2) Use an alternate method of estimation in CFA. Maximum Likelihood is the preferred method of estimating parameters with CFA, but it is less robust against violations of normality with kurtosis. Asymptomatic distribution-free estimation (Browne, 1984a) works well for violations of kurtosis, but it requires large sample sizes (over 1000) to perform accurately (West et al., 1995). More recent scrutiny of the method suggests that at the very least, there needs to be 10 times the number of
estimated parameters, or it will give distorted estimated parameters and standard
erors (Raykov & Marcoulides, 2000). WLSMV (Mean and Variance Adjusted
Weighted Least Squares) works well with ordered categorical data, is not impacted by
nonnormality, and this fits the type of data in this study the best, but it does not
allow for comparison of nested models\textsuperscript{10}, which will be essential in determining the
best fitting model for this data.

3) Use ML for the analysis and discuss the limitations of the result with kurtotic items.
Kurtotic data increases the likelihood of Type 1 errors -- refuting the null hypothesis
when in fact it is true. For CFA however, the logic is opposite of what is normally
understood -- the null hypothesis is that the data represents the population so that
hypothesis testing will show nonsignificant results, which is desirable. Refuting the
null indicates that the results of CFA are statistically significantly different than the
population, i.e. that the results do not indicate a model that generalizes to the
population, but is more likely specific to the sample. So having a kurtotic distribution
increases the chances of concluding that a model is less of a good fit than it actually
is.

Based on the limitations of each of the methods, Maximum Likelihood was used for all
the analyses with the final model run with WLSMV to compare results with a method most
suited for the data.

\textsuperscript{10} A nested model is one that is pared down from the original model, such as having items with low factor
loadings removed. However, WLSMV will be used to test the final model to compare results with results from
ML.
Preliminary Analysis

Preliminary analysis was done first with the entire survey and an unadultered data set, meaning all missing data was present in the data set. It became clear that the first part of the instrument had to be separated from the second part, as they were actually two separate analyses, with potential interfactor correlations or second order factors specific to each, and their focus was distinct: perception of system change versus individual practice. The two were broken apart and all analyses were conducted separately.\(^{11}\) For all hypotheses, both unstandardized and standardized estimates are provided.

Factorial Validity of the Community Factors – Four Hypothesized Models

Table 1 displays a summary of the iterations of model fits, and shows the final model from the ML estimation compared to the final model from the WLSMV estimation. Details of each model follow the table.

<table>
<thead>
<tr>
<th>Model 1*</th>
<th>X²</th>
<th>df</th>
<th>X²/df</th>
<th>X² Diff</th>
<th>RMSEA</th>
<th>CFI</th>
<th>TLI</th>
<th>GFI</th>
<th>PCFI/PG</th>
<th>Hoelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>445.2</td>
<td>87</td>
<td>5.117</td>
<td>NA</td>
<td>.115</td>
<td>.860</td>
<td>.832</td>
<td>.835</td>
<td>.713/.606</td>
<td>78, 85</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 2*</th>
<th>X²</th>
<th>df</th>
<th>X²/df</th>
<th>X² Diff</th>
<th>RMSEA</th>
<th>CFI</th>
<th>TLI</th>
<th>GFI</th>
<th>PCFI/PG</th>
<th>Hoelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>295.7</td>
<td>86</td>
<td>3.438</td>
<td>149.51*</td>
<td>.088</td>
<td>.918</td>
<td>.900</td>
<td>.885</td>
<td>.752/.634</td>
<td>116, 127</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 4*</th>
<th>X²</th>
<th>df</th>
<th>X²/df</th>
<th>X² Diff</th>
<th>RMSEA</th>
<th>CFI</th>
<th>TLI</th>
<th>GFI</th>
<th>PCFI/PG</th>
<th>Hoelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>125.1</td>
<td>62</td>
<td>2.018</td>
<td>170.6**</td>
<td>.057</td>
<td>.971</td>
<td>.964</td>
<td>.943</td>
<td>.772/.642</td>
<td>204,228</td>
<td></td>
</tr>
</tbody>
</table>

\(^{2\text{nd}}\) order factor

\(^{11}\) The utility of both parts being contained in one survey will come in the impact study that will eventually be conducted, and both parts of the instrument can be modeled together for determination of impact.
Hypothesis One – 3 Correlated First Order Factors

The factorial validity of the Community Characteristics factors - Policy, Connections, and Agency Practice - was evaluated. It was run first with Dataset One, with 2.5% missing data. As there was missing data, AMOS did not calculate modification indices, which is a significant detriment to understanding how to better conceptualize the model. The solution with missing data was not admissible (Chi square=433.1, df=87; 48 parameters to be estimated; chi square/df = 4.978. CFI=.868, PCFI=.629, NFI=.842, RMSEA=.113; GFI is not produced with missing data.). Hoelter was 80, 88 for .05 and .01 respectively.\(^\text{12}\) The ECVI was considerably higher for the tested model than for the saturated model, whereas the opposite is desirable. Although all but two items showed an adequate factor loading, the interfactor correlations were unacceptably high (.89, .96, .98) (See Figure 2 and Figure 3). These high correlations suggest that there could be a higher order factor explaining the three

\(^{12}\) As a guide for the various goodness of fit indices, the following is provided: A good fit and admissible model would have CFI>.90 with .95 preferred, and GFI>.90. PCFI and PGFI are parsimony fits, adding to the goodness of fit of the model the idea of being the most parsimonious model. These values in the .50s are ideal. For the CAIC, smaller values are better, and the tested model should be smaller than the default model; the same is said for the ECVI. The Hoelter indicates the adequacy of the sample size. Values over 200 for both .05 and .01 indicate adequate sample size. The RMSEA is one of the most important measures for goodness of fit and is ideal when at .05 or lower. Sizes up to .08 indicate at least an adequate model.
first order factors, and that they are actually endogenous factors loading onto one exogenous factor.

The same model was run after the dataset had no missing values, with all remaining missingness imputed with the mean, and results between the two were compared in order to determine the impact on model estimates. The solution with Dataset 2 - no missing data - was not admissible (Chi square=445.2, df= 87; 33 parameters to be estimated; chi square/df= 5.117. CFI=.860, NFI=.833; GFI=.835, TLI=.832, PGFI=.606, PCFI=.713, RMSEA=.115). Hoelter was 78, 85 for .05 and .01 respectively. Again, the ECVI was considerably higher than the saturated model.

Figure 2. Hypothesis One - 3 First Order Factors – ML Estimates for Missing Data - Unstandardized Estimates
Figure 3. Hypothesis One - 3 First Order Factors - ML Estimates for Missing Data - Standardized Estimates

Figure 4. Hypothesis One - 3 Correlated First Order Factors - No Missing Data - Unstandardized Estimates
The chi-square values for both models were extremely high, with only a difference of 12.1 between them; the two most critical goodness of fit indices were negligibly altered (.008 difference for CFI and .002 difference in the RMSEA). As the difference was not significant, and did not have a noticeable impact on the goodness of fit factors, all analyses from here on use the final database with no missing values, as the production of modification indices are invaluable to the process of determining the best fitting model.

Development of Hypothesis Two

First, the critical ratios of all the estimated parameters were examined. The critical ratio is the parameter estimate divided by the standard error. This provides a z statistic, so that values over 1.96 indicate that the parameter is significant (probability of .05 that the
parameter is not different than zero). In the interest of parsimony, nonsignificant
parameters should be considered for dropping from the model. For the Hypothesis One
model, all parameters are significant.

The modification indices give evidence as to the impact on the model if a parameter
is dropped. The offered modifications are based on statistics alone and must be weighed in
the context of theoretical relevance. For example, if a correlation was constructed between
the latent variable Agency Practice and the error term for item 15, with a 23.406
improvement in the chi square, but this has no theoretical meaning. There was one
suggested modification, constructing a correlation between the errors of items 1 and 2 that
yielded a 124.784 difference, at least four times the magnitude of any other modification.
This change was incorporated.

Additionally, as stated above, the interfactor correlations for the latent factors were
unacceptably high, and at this level, suggest the possibility of a second order factor. This
does make theoretical sense, as it could be reasoned that responses for questions on policy,
collaboration/communication, and agency practice all share a common influence from the
community in which the system operates. Thus, a second order factor, named Community
Characteristics, was added to the diagram. These were the most salient sources for misfit of
the model, so that Hypothesis Two was developed through incorporation of these two
changes. Other “fine tuning” changes can be made after hypothesis testing. Of note is
another concern with items 1 and 2, in that the MI suggests that Item 2 determines
responses for Item 1, and incorporating this change would yield a 47.774 difference in the
chi square. This combined with the correlated error terms suggests redundancy in the items,
and will be addressed later.
Hypothesis Two - Second Order Factor with 3 First Order Factors

Hypothesis Two represented a significant improvement in model fit (chi square difference at 149.51, p<.001). For Hypothesis Two, the chi square = 295.7, df=86, with 34 parameters are estimated, and chi square/df=3.438. The goodness of fit indices improved, with CFI=.918, which is above the level indicating an adequately fitting model. However, NFI=.889 and GFI=.885, although both improved, are both still below the .90 threshold. TLI now is just at .900. Parsimony indices elevated (PGFI=.634 and PCFI=.752), and although PGFI continues to be in an acceptable range, these reflect the increased complexity of the model. As the RMSEA=.088 and is a great improvement over the previous .115, improved fit continues to be supported. The Hoelter = 116, 127 for .05, .01 respectively, also showing improvement. The ECVI is still much larger than the saturated model (1.162 vs. .767). In spite of some improvements, the solution was not admissible. A quick look at the graphics explains why (See Figures 6 and 7).

Figure 6. Hypothesis Two - Second Order Factor and 3 First Order Factors - Unstandardized Estimates
The coefficient for the residual for Connections is negative, which does not make conceptual sense. Additionally, all of the loadings from Community Characteristics to the first order factors are in the high .90s, or over 1.0, which again does not make conceptual sense. This suggests that although the goodness of fit indices show improvement, this conceptualization of the model is not tenable.

Development of Hypothesis Three

Given that the second order factor adds potentially unnecessary complexity to the model and offers untenable results, reverting to Hypothesis One for reconceptualization seemed appropriate. The correlation between the error terms for items 1 and 2 was retained,
but with a wary eye to the modification indices suggesting that item 1 loads onto item 2, and that item 2 loads onto item 1. This strongly suggests a flaw in the instrument design and that in future iterations, these two items be combined into one. Four changes were made to Hypothesis One to develop Hypothesis Three:

1) Item SC3-P3 showed a factor loading of .40, below the desired minimum of .5. In the interest of parsimony, this item was removed.

2) Modification indices showed item 15 involved in many relationships with other variables, multiple error terms, and more importantly, suggested that agency practice also accounts for some of the variability of the item (this makes sense, as the item reads: “Our agency’s policy and practice provides for ...”). It appears to be a poorly worded item in light of the proposed latent factor structure. For these reasons, Item 15 was removed from the analysis.

3) In perusing the nature of the items and pondering the very high interfactor correlations (which did not respond to the solution of a second order factor structure), it became apparent that the “Connections” factor, which includes content regarding collaboration with other agencies, communication with families, and interlevel communication within agencies, may be equally or more appropriately represented under one of the two other headings. For this reason, the Connections latent factor was removed, leaving a two first order factor structure. Items were placed according to what made logical sense in terms of practice. Three items moved easily to Agency Practice, with two seeming more appropriate for Policy.

4) A correlation was added between the error terms for items 12 and 13, based on the modification indices, and this helped to improve fit. Modification indices suggested
a third correlation of error terms (9 and 11), but this served to increase interfactor
correlation, which is not desirable, and therefore was not added to the model.

Additionally, the items used as the anchor for setting the regression weights and fixed at
1.0 were changed to the items that had the highest factor loadings from previous analyses,
thus suggesting that they may be the best single representation of the latent factor over all of
the other items. This switch is just keeping in line with good practice, and did not impact
the results of the analyses.

Hypothesis Three - 2 First Order Factors Correlated – 13 Items

Hypothesis Three, a nested model of both Hypotheses One and Two, represented a
significant improvement in model fit per the Chi square test, which was significant at the
.001 level ($\Delta X^2 (df) = 320.11$ compared to Hypothesis One, and $\Delta X^2 (df) = 170.6$ compared to
Hypothesis Two).

Analysis of Hypothesis Three results in a chi square= 125.1, df=62, number of
parameters to be estimated at 29, and chi square/degrees of freedom at 2.018. It is noted
that although the sample remains highly multivariate kurtotic, this has improved with the
removal of the two items (multivariate kurtosis at 62.978 with critical ratio of 24.637 in
original structure, compared to 49.007/21.987 for the revised instrument). Item SC2
continues to be highly kurtotic (and positively skewed), and needs to be addressed in a
reconceptualization of the instrument.

This solution is admissible. The goodness of fit estimates all are well past the .90
threshold - CFI=.971, GFI=.943, NFI=.945, and TLI=.964. Parsimony estimates hover at
similar levels to other models tested - PGFI=.642, PCFI=.772. The RMSEA=.057
(confidence interval of \(0.042 - 0.071, p=0.201\)), which is one of the most important tests for goodness of fit. The Hoelter=.204, 228 for .05, .01 respectively, which indicates an adequate sample size from which to extract valid results. The ECVI is nearly equal: .585 for the tested model and .581 for the saturated model, which is by far the closest fit on this index so far.

In looking at the output graphics (See Figures 8 and 9), all factor loadings are at an acceptable level (over .50) with the exception of C2, which comes in at .48. The model was run without C2, and the inclusion of this item produced an overall better-fitting model. The interfactor correlation is still rather high at .86, with .85 being the standard guideline for questioning the correlation. The impact and implications of an interfactor correlation at the upper limit will be discussed in the next chapter. As the model proposed in Hypothesis Three provided a robust fit per nearly all the various goodness of fit indices, and also makes solid conceptual sense, it stands to reason that this model is the final model. However, the author continued to question the existence of a second order factor. Having a second order latent factor that encompasses the idea of unique community characteristics impacting the patterns of responses on items makes solid theoretical sense. Therefore, a fourth hypothesis was put forth, taking the model from Hypothesis Three and substituting a second order factor for the correlation between the two first order factors.

Hypothesis Four – Second Order Factor with 2 First Order Factors

Although the chi square value was identical to Hypothesis Three, 125.1, this solution was not admissible because of negative residual values that the model produced. There continued to be 62 degrees of freedom, with 2.018 as the chi square/degrees of freedom, and 29 parameters to be estimated.
Figure 8. Hypothesis Three - 2 First Order Factors, 13 Items - Unstandardized Estimates

Figure 9. Hypothesis Three - 2 First Order Factors, 13 Items - Standardized Estimates
As the solution was not admissible, the goodness of fit indices are moot. However, for consistency, they are listed: CFI=.971, GFI=.973, NFI=.945, PGFI=.642, CFI=.772, RMSEA=.057. The ECVI values are nearly equal between the proposed model and the saturated model (.585 vs. .581). The Hoelter was 204, 228 for .05 and .01 respectively. (Note that all of these values are identical to Hypothesis Three – the only change between the two models was replacing the correlation between the two latent factors with a second order factor accounting for the variance.) As all other indices are unaffected by the switch from latent factor correlation to second order latent factor, including the parsimony factors remaining the same, and the only difference between the two models is that the second order is not admissible, there is little room for doubt in considering Hypothesis Three as the final model for the Community portion of the instrument.

Figure 10. Hypothesis 4: Second Order Factor with 2 First Order Factors, 13 Items — Unstandardized Estimates
Figure 11. Hypothesis 4: Second Order Factor with 2 First Order Factors, 13 Items – Standardized Estimates

Individual Factors

A summary of the modifications of the model for individual characteristics is in Table 2.

Table 2. Summary of Models for Individual Characteristics

<table>
<thead>
<tr>
<th>Model 5</th>
<th>$X^2$</th>
<th>df</th>
<th>$X^2$/df</th>
<th>$X^2$ diff</th>
<th>RMSEA</th>
<th>CFI</th>
<th>TLI</th>
<th>GFI</th>
<th>PCFI/PGFI</th>
<th>Hoelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 5 -</td>
<td>210.4</td>
<td>41</td>
<td>5.132</td>
<td>NA</td>
<td>.115</td>
<td>.822</td>
<td>.762</td>
<td>.898</td>
<td>.613/.558</td>
<td>85,97</td>
</tr>
<tr>
<td>1st</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 5 -</td>
<td>38.8</td>
<td>18</td>
<td>2.156</td>
<td>171.6**</td>
<td>.061</td>
<td>.973</td>
<td>.958</td>
<td>.971</td>
<td>.625/.471</td>
<td>233,281</td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 5 -</td>
<td>50.6</td>
<td>25</td>
<td>2.024</td>
<td>159.8**</td>
<td>.057</td>
<td>.968</td>
<td>.953</td>
<td>.967</td>
<td>.672/.537</td>
<td>233,275</td>
</tr>
<tr>
<td>3rd Final</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model WLSMV</td>
<td>60.9</td>
<td>13</td>
<td>4.685</td>
<td>NA</td>
<td>.108</td>
<td>.968</td>
<td>.943</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>solution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Statistically significant at p=.001**
Hypothesis Five – Correlated 3 First Order Factors Model

This portion of the instrument was adapted from an existing instrument (see Aarons, 2006) for purposes of assessing individual perception to changing practice. Ultimately this will factor into the impact analysis for the trauma informed intervention. The hypothesis for the factor structure follows that purported by Aarons.

Analysis indicated that the model was admissible. For this model, the chi square = 210.4, df=41. Number of parameters to be estimated =25 and the chi square/df=5.132. Goodness of fit indices were CFI=.822, NFI=.722, GFI=.898, TLI=.762. Parsimony indices were PGFI=.558, PCFI=.613. RMSEA=.115, and the ECVI = .832 vs. .432. Hoelter =85, 97 for .05, .01 respectively.

Given these results, although parsimony is well within an acceptable range, all other indices need improvement. Looking to the model (See Figures 12 and 13), two items stand out clearly. Item 04 has a negative factor loading and Item T4 has a .00 factor loading. As well, T3 has a factor loading of .30, suggesting it may improve parsimony to remove it. Finally, although two of the interfactor correlations are appropriate, one is -.04, and it follows that these two factors may not correlate. However, the correlation was kept in the model given that two variables were being dropped instead, so that the effect on the correlation could then be gauged.
Figure 12. Correlated 3 First Order Individual Factors - Unstandardized Estimates

Figure 13. Correlated 3 First Order Individual Factors - Standardized Estimates
Modifications to Hypothesis Five

The proposed modifications made considerable improvements across the board for the hypothesized model. Chi square now has a value of 38.8, df=18, parameters estimated = 18, and chi square/df=2.156. The Chi square test for improvement in model fit is significant at the .001 level ($\Delta X^2_{(df23)}=171.6$).

Goodness of fit indices are very good, with CFI=.973, NFI=.951, GFI=.971, TLI=.958. Parsimony indices are good to excellent, with PGFI=.471, PCFI=.625. The RMSEA=.061, (.034 to .087), which is higher than desired, but still acceptable. The ECVI = .230 vs. 239 for the saturated model. Hoelter = 233, 281 for .05 and .01 respectively. This model was admissible. All interfactor correlations and factor loadings are in an appropriate range (See Figures 14 and 15).

Figure 14. Correlated 3 First Order Factors, 8 Items - Unstandardized Estimates
Having only two items under the Traditions factor was of concern, especially considering the content information that is lost with the omission of T3. Therefore, another iteration was tried, inserting just T3 in the model again.

Final Modifications to Hypothesis Five

This proved to be the best fit of all for individual factors. This was a nested model from the first iteration, so the Chi square difference was determined as difference from that iteration. The Chi Square difference is significant at the .001 level ($\Delta X^2_{(6)} = 159.8$). As the second iteration was a nested model of this one, a Chi square test for fit was done to see if the second iteration was statistically significant in improved fit over this model. The
resulting statistic did not exceed the critical value for significance even at the .10 level ($\Delta X^2_{(25)} = 11.8$).

Overall, this proved to be the best fit. Chi square = 50.6, which represented a small but insignificant increase, and other factors improved. The degrees of freedom = 25, number of parameters to be estimated = 20, chi square/df = 2.024. The goodness of fit indices continue to be excellent, with CFI = .968, GFI = .967, NFI = .939, TLI = .953. Parsimony indices are still in an acceptable range, with PGFI = .537, PCFI = .672. However, the RMSEA = .057, with a CI of .034 to .080, indicating a change that brings this measure into the acceptable range. The ECVI is .289 to .288 for the saturated model, and the Hoelter is 233, 275 for .05, .01 respectively. The factor loading for T3 continues to be low, but in the larger picture, keeping it in improves overall fit. Given these indicators as a whole, this model is the final model for the Individual portion of the instrument.

Figure 16. Correlated 3 First Order Individual Factors, 9 Items - Unstandardized Estimates
Both final models that had been fit in AMOS were run in Mplus as well using an alternative method of estimation. As the data is ordered categorical data, WSLMV (Means and Variance Adjusted Weighted Least Squares), which is available in Mplus, was used as the model estimator as a way of testing the model fit using Maximum Likelihood. The model was not fit through Mplus initially as Mplus does not allow the function of testing nested models for ordered categorical data, which was essential in the process of finding the best fit for these data.
Community Characteristics Model

Using WSLMV to estimate the final model from ML estimation, goodness of fit indices were comparable. Chi square = 100.423 with 36 df. CFI=.971 and TFI=.991 with 68 estimated parameters. RMSEA=.075. This was a poorer result than that obtained with ML (.057). The modification indices suggested that modeling a correlation between Items 9 and 11 would result in a better fit of the data, so this modification was made. Chi square now = 81.271 with 35 df. CFI improved slightly, now at .979 with TFI now = .993, and 69 estimated parameters. Improvement in model fit is shown especially with RMSEA, as it now equals .065. This model with the added correlation of Items 9 and 11 is the final model.

Individual Characteristics Model

Results from WSLMV indicate that the final model obtained in AMOS was made more parsimonious with better fit by dropping two items. The three factor, nine item model obtained through ML, when tested with WSLMV, resulted in a chi square value of 60.945 with 13 df. CFI is still excellent, at .968, with TLI=.943 and 48 estimated parameters. RMSEA was quite poor, however at .108 (compared to the ML version, resulting in RMSEA=.057). Modification indices showed that Item 25 (T3) loaded both other latent factors, as well as the one that it was modeled to load onto. Given this cross factor loading, and based on the level of improvement that the MI suggested, this factor was dropped and the model was run again. This time, the model with factor 1 accounting for three items, factor two accounting for three items, and factor three accounting for only two items, the best fit was found. Chi square = 30.303 with 10 df. CFI=.986 with TLI=.984 – both reflecting a slight drop in goodness of fit. However, RMSEA improved to .080, which gave the best fit so far.
Items loading onto the third factor of the model show problematic fit as a whole. In the ML estimation, Item 26 was dropped (T4), and through WSLMV, Item 25 (T3) was just dropped. In addition to these items, in the modification indices, Item 21 (T1) loads onto the other factors as well but to a lesser degree. The model was run and all indices indicated a much poorer fit. A two factor model was also run due to the issue of cross loading, but with dramatically poor results in goodness of fit.

Given this, the case could be made for either the WSLMV final model or the ML final model. Because from a theoretical perspective it made more sense to include the third item (sc25-T3) in the third factor (Tradition), this item was retained in the final model, with limitations of the cross-loading noted.

This Model with Other Samples

The final model of part one of the instrument was used with a second, similar sample (the final model from the WSLMV was used). The sample consisted of Cohort One (Livingston and Hillsdale Counties) who completed the instrument in February and April of 2009 (n=131). The pool of participants came from the same systems (i.e., schools, DHS, courts, mental health) as the sample used to develop the model, but come from different counties in Michigan. It is noted that this is a smaller sample of participants, which can, and did, impact the analysis.

In looking at the descriptive of the items with this sample, patterns of kurtosis are consistent. P2 is still positively kurtotic, but less so than in the original sample (2.425). P3 was at the upper level for becoming a kurtotic problem in the original sample, but is at acceptable levels in this sample. C4 is more negatively kurtotic in this sample (-.915 vs. -
Standard deviations are similar, as is the pattern of skewness, although this sample tends to be more extremely skewed than the previous. The range of responses is the same.

The model fit was weaker for this sample. Chi square = 130.017 with df = 61, and Chi square/df = 2.131. Number of parameters estimated was 43. The solution continues to be admissible. CFI = .929, NFI = .876, TLI = .909, and RMSEA = .093. Clearly the goodness of fit has deteriorated with this sample, although parsimony indices are adequate, with PCFI = .727. The ECVI is 1.662 compared to 1.600 for the saturated model. The Hoelter gives a clue as to the reason for poor fit, as indicators of sample size show that the sample size is not adequate to provide valid results (81 and 90 for .05, .01 respectively).

As the graphics show, the interfactor correlation has increased to an unacceptable level with this sample (.93 standardized). The factor loadings remain consistent, although C2 dropped to .35.

Figure 18. Hypothesis Three with Cohort One Sample - Unstandardized Estimates
Figure 19. Hypothesis Three with Cohort One Sample - Standardized Estimates

Figure 20. Full Sample with Final Model - Unstandardized Estimates
As another test of generalizability of the model, the whole sample was combined (i.e., the original database of Cohort Two participants and the Cohort One participants (total n=424). Conceptually, this makes sense as all of the participants are from the child welfare system in some manner, and all completed the instrument at their first orientation to the trauma informed system change initiative.

The solution was admissible, but Chi square increased, now at 156.089 with 61 df, and 41 parameters to be estimated (Maximum Likelihood method of estimation was used, as there was missing data in the larger database and ML will estimate the missing data values). The interfactor correlation is still high at .89 standardized. CFI=.971, NFI=.953, TLI=.956, RMSEA=.057. PCFI=.651. ECVI is at .512 compared to the saturated model at .440, and the Hoelter suggests that sample size is adequate (224 and 250 for .05 and .01 respectively.)
Missing data may have played a role in the differences. Modification indices were not run because of the missing data.

In all, the model held for data from other sources, or data added to the original database, although the interfactor correlation did increase in the two other samples.

Reliability

Internal Consistency

Internal consistency of the items was gauged with Cronbach’s alpha, running the analysis in PASW17, using the sample data from Cohort Two (n=314). Results indicate good reliability for the Policy and Agency Practice items on the first part of the instrument.

On the second part of the survey, the Integration factor also shows good internal consistency. The alpha value is adequate for Openness, and is very poor for Tradition. The Tradition factor needs closer scrutiny when the instrument is revised. Results are displayed in Table 3.

Table 3. Internal Consistency for Latent Factors

<table>
<thead>
<tr>
<th>Factor (n=314)</th>
<th>Number of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy</td>
<td>5</td>
<td>.869</td>
</tr>
<tr>
<td>Agency Practice</td>
<td>8</td>
<td>.875</td>
</tr>
<tr>
<td>Integration</td>
<td>3</td>
<td>.847</td>
</tr>
<tr>
<td>Openness</td>
<td>3</td>
<td>.735</td>
</tr>
<tr>
<td>Tradition</td>
<td>3</td>
<td>.527</td>
</tr>
</tbody>
</table>
Table 4. Agency Affiliation for Test-Retest/Pre-Post Test

<table>
<thead>
<tr>
<th>Agency Affiliation</th>
<th>Livingston County</th>
<th>Hillsdale County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Mental Health</td>
<td>8 (50%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Department of Human Services</td>
<td>2 (13%)</td>
<td>2 (9%)</td>
</tr>
<tr>
<td>Court Personnel</td>
<td>2 (13%)</td>
<td>5 (23%)</td>
</tr>
<tr>
<td>School Personnel</td>
<td>1 (6%)</td>
<td>5 (23%)</td>
</tr>
<tr>
<td>Private Agency/Private Practice</td>
<td>2 (13%)</td>
<td>9 (41%)</td>
</tr>
<tr>
<td>Missing</td>
<td>1 (6%)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>22</td>
</tr>
</tbody>
</table>

Stability of Instrument

A test-retest procedure was used to show how consistently the respondents answered the instrument at different times, or to gauge the stability of the instrument. For Cohort One, 38 participants responded to the retest. Respondent agency affiliation and role are listed per county in Table 4.

For Cohort Two, only 18 participants responded to the retest, and of those, only 14 respondents who offered agency affiliation and role, so that these frequencies were not sizeable enough to list. Test-retest reliability was analyzed for each cohort separately, as Cohort One had nearly a year in between the pre and post tests, and Cohort Two had three months. Coefficients of stability were run for both the year duration test-retest for Cohort One and the three month test-retest for Cohort Two for Community Factors. Only Cohort Two data is available for the Individual Factors, as the iteration of the instrument that
Cohort One did not have the second portion of the instrument yet. Coefficients of stability are listed in Table 6.

Table 5. Role within Agency for Test-Retest/Pre-Post Test

<table>
<thead>
<tr>
<th>Role within Agency</th>
<th>Livingston County</th>
<th>Hillsdale County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Therapist/Social Worker</td>
<td>8 (50%)</td>
<td>10 (48%)</td>
</tr>
<tr>
<td>Administrator</td>
<td>6 (38%)</td>
<td>3 (14%)</td>
</tr>
<tr>
<td>Teacher</td>
<td>0</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Probation Officer</td>
<td>0</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Attorney</td>
<td>1 (6%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Caseworker</td>
<td>1 (6%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Paraprofessional</td>
<td>0</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 6. Coefficients of Stability from Cohort One and Cohort Two for Community Characteristics

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Cohort 1</th>
<th>Cohort 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1-sc1</td>
<td>Written policy is established committing to trauma informed</td>
<td>.615</td>
<td>-.107</td>
</tr>
<tr>
<td>P2-sc2</td>
<td>Formal system for reviewing staff using trauma informed practice</td>
<td>.546</td>
<td>.087</td>
</tr>
<tr>
<td>P4-sc5</td>
<td>Structures in place for consistent trauma informed responses</td>
<td>.337</td>
<td>.209</td>
</tr>
</tbody>
</table>
Table 6 – Continued

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Score 1</th>
<th>Score 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1-sc4</td>
<td>Policy System of communication in place with other agencies making trauma informed decisions</td>
<td>.130</td>
<td>.541</td>
</tr>
<tr>
<td>C3-sc7</td>
<td>Policy Agency has a system in place to develop common trauma informed goals with other agencies</td>
<td>.301</td>
<td>.664</td>
</tr>
<tr>
<td>C2-sc6</td>
<td>Agency Families/children have systematic opportunities to voice needs, concerns</td>
<td>.461</td>
<td>.664</td>
</tr>
<tr>
<td>C4-sc9</td>
<td>Agency Supervision to manage personal and professional stress</td>
<td>.726</td>
<td>.448</td>
</tr>
<tr>
<td>C5-sc11</td>
<td>Agency Supervision from trauma informed supervisor</td>
<td>.641</td>
<td>.578</td>
</tr>
<tr>
<td>AP1-sc8</td>
<td>Agency Understanding impact of trauma incorporated into decision making</td>
<td>.578</td>
<td>.580</td>
</tr>
<tr>
<td>AP2-sc10</td>
<td>Agency Trauma informed safety plans for children</td>
<td>.496</td>
<td>.578</td>
</tr>
<tr>
<td>AP3-sc12</td>
<td>Agency Timely trauma informed assessment is available</td>
<td>.460</td>
<td>.185</td>
</tr>
<tr>
<td>AP4-sc13</td>
<td>Agency Continuum of trauma informed intervention is available</td>
<td>.437</td>
<td>.386</td>
</tr>
<tr>
<td>AP5-sc14</td>
<td>Agency Child’s definition of emotional safety is included in treatment plans</td>
<td>.707</td>
<td>.329</td>
</tr>
</tbody>
</table>
Table 7. Coefficients of Stability for Cohort Two for Individual Characteristics

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Coefficient of Stability - Cohort 2 N=18</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1-sc16 Integration</td>
<td>I have a clear understanding of what trauma informed practice means</td>
<td>-.327</td>
</tr>
<tr>
<td>I2-sc18 Integration</td>
<td>I feel equipped to help children make meaning of their trauma history</td>
<td>.590</td>
</tr>
<tr>
<td>I3-sc19 Integration</td>
<td>In practice, I am utilizing what I believe to be trauma informed interactions</td>
<td>.582</td>
</tr>
<tr>
<td>O1-sc17 Openness</td>
<td>I feel favorable in trying a new trauma informed intervention</td>
<td>.499</td>
</tr>
<tr>
<td>O2-sc20 Openness</td>
<td>I am willing to try a new form of intervention even if I have to follow a manual</td>
<td>-.231</td>
</tr>
<tr>
<td>O3-sc22 Openness</td>
<td>I am willing to use trauma informed interventions that researchers say are effective.</td>
<td>-.139</td>
</tr>
<tr>
<td>T1-sc21 Tradition</td>
<td>I know better than academic research on trauma what children and families need</td>
<td>.477</td>
</tr>
<tr>
<td>T2-sc24 Tradition</td>
<td>Clinical experience with children and families is more important than what the research says</td>
<td>.732</td>
</tr>
<tr>
<td>T3-sc25 Tradition</td>
<td>I would not use a trauma intervention if it means making a lot of changes</td>
<td>-.103</td>
</tr>
</tbody>
</table>

It would follow that the coefficients of stability would be greater for the three month sample as it would be expected to find effects of history and/or impact of the initiative with the year sample. However, this proved to not be the case. The reason for this is not apparent, except that the numbers for both samples are very small (39, 18). Additionally,
those who responded to the three month retest may represent those respondents who are more committed to the initiative (as those who have less investment would be less likely to complete a survey with no incentive to do so). Although attempting a test-retest was important to explore stability of the instrument, these results are inconclusive due to small sample size, likely respondent bias, and the effects of history and impact of the initiative on the responses.

Validity of the Instrument

The first four research questions concern the face and content validity of the instrument in terms of measuring complex systems and in terms of measuring trauma informed systems. As discussed in Chapter Three, the original intent of the instrument was to measure the extent to which the content area (becoming trauma informed) was occurring in the complex system (system measurement). However, it soon became clear that measuring the system change became the predominant purpose of the instrument. Nevertheless, both perspectives on validity are put forth below. It is not the intent of this work to fully establish content validity for either trauma informed systems or for system change initiatives, although, of course, literature and research from both content areas were tapped in the development of the instrument. Information towards the development of the instrument came from trauma informed content experts in the way of the attempt to weave through the instrument the idea of the Essential Elements. This was in no way a completed endeavor, as the elements were not operationalized, nor was this the intent.

Regarding the content area of being trauma informed, the instrument has face validity based on the development by content experts, but it falls well short of content
validity for purposes of being trauma informed. It was developed to loosely follow the Essential Elements and the association of the elements to the instrument is as follows:

As can be seen in Table 8, all of the elements are loosely represented to some extent, but in no way is this instrument capturing the array of content in the Essential Elements. Some of the elements are better represented than others (i.e., 8 and 9). Two of the items (sc1 and sc2) don't seem to relate to the Essential Elements, but are important points for consideration in a system. In a future iteration of the instrument, more comprehensive content can be included to incorporate a better representation of the Essential Elements as well as to address critical areas for change in systems.

Validity for use in measuring complex system change is more relevant to this work, and the confirmatory factor analysis supports this in the way of identifying latent factors that relate to areas of change in systems. Face validity comes from the extensive literature review in this area as well as the input from the trainers who are attuned to areas of systems that contribute to sustaining change in systems. As the CFA reduced the instrument to just two factors, arbitrarily named Policy and Agency Practice, it seems doubtful that all nuances of systems and change in systems are captured by these two factors. Future iterations of the instrument should incorporate lessons from the qualitative data collected through the initiative in an inductive approach to understanding other areas of system change.

The Essential Elements are as follows: 1) Support and promote positive and stable relationships in the life of the child; 2) Maximize the child’s sense of safety; 3) Services to the child should be guided by a thorough assessment of the child’s trauma experiences and their impact on the child’s development and behavior; 4) Assist children in reducing overwhelming emotion; 5) Help children make new meaning of their trauma history and current experiences; 6) Address the impact of trauma and subsequent changes in the child’s behavior, development, and relationships; 7) Provide support and guidance to the child’s family and caregivers; 8) Coordinate services with other agencies; 9) Manage professional and personal stress.
<table>
<thead>
<tr>
<th>Factor</th>
<th>Item</th>
<th>Essential Element(s) Represented</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P1-sc1</strong></td>
<td>Policy</td>
<td>Written policy is established committing to trauma informed practices</td>
</tr>
<tr>
<td><strong>P2-sc2</strong></td>
<td>Policy</td>
<td>Formal system for reviewing staff using trauma informed practice</td>
</tr>
<tr>
<td><strong>P4-sc5</strong></td>
<td>Policy</td>
<td>Structures in place for consistent trauma informed responses between agencies</td>
</tr>
<tr>
<td><strong>C1-sc4</strong></td>
<td>Policy</td>
<td>System of communication in place with other agencies making trauma informed decisions</td>
</tr>
<tr>
<td><strong>C3-sc7</strong></td>
<td>Policy</td>
<td>Agency has a system in place to develop common trauma informed goals with other agencies</td>
</tr>
<tr>
<td><strong>C2-sc6</strong></td>
<td>Agency Practice</td>
<td>Families/children have systematic opportunities to voice needs, concerns</td>
</tr>
<tr>
<td><strong>C4-sc9</strong></td>
<td>Agency Practice</td>
<td>Supervision to manage personal and professional stress</td>
</tr>
<tr>
<td><strong>C5-sc11</strong></td>
<td>Agency Practice</td>
<td>Supervision from trauma informed supervisor</td>
</tr>
<tr>
<td><strong>AP1-sc8</strong></td>
<td>Agency Practice</td>
<td>Understanding impact of trauma incorporated into decision making</td>
</tr>
<tr>
<td><strong>AP2-sc10</strong></td>
<td>Agency Practice</td>
<td>Trauma informed safety plans for children</td>
</tr>
<tr>
<td><strong>AP3-sc12</strong></td>
<td>Agency Practice</td>
<td>Timely trauma informed assessment is available</td>
</tr>
<tr>
<td><strong>AP4-sc13</strong></td>
<td>Agency Practice</td>
<td>Continuum of trauma informed intervention is available</td>
</tr>
<tr>
<td><strong>AP5-sc14</strong></td>
<td>Agency Practice</td>
<td>Child's definition of emotional safety is included in treatment plans</td>
</tr>
</tbody>
</table>
Impact Study

Descriptives

Participants invited to complete the first iteration of the instrument were trainees in the kickoff trauma informed orientation in Hillsdale and Livingston counties of Michigan in the months of February and March, 2009. There were 130 surveys completed and submitted. Hillsdale professionals accounted for 77 of the participants, with the remaining 53 participants representing Livingston. The professional breakdown is as follows: 19 court personnel, 21 DHS personnel, 39 school personnel, 43 mental health professionals, and 3 medical personnel. Differences between those who completed the instrument at one year and those who did not are not known, although just by examining the raw data, there appears to be a pattern of response from those who are more invested and involved in the initiative. The extent to which this holds is not clear, however, as there were also many participants who are highly involved in the initiative who did not complete the instrument at one year.

Pre-Post Results

Pre-post pairs of data were collected from Cohort One and were analyzed according to the valid factor structure from the CFA analysis. The PASW17 Compute Variable option was used for creating each factor, summing the items comprising the factor. Means reflect the mean sum of each factor and this is the mean used in the analysis. Paired t-tests were then run on the pre-post data. Statistically significant change was revealed through the analysis, with p=.048 for Policy and p=.049 Agency Practice, as seen in the table below:
Table 9. Pre-Post Results for Policy and Agency Practice

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>St. Error of Mean</th>
<th>95% Confidence Interval</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Deviation of Mean</td>
<td>Lower</td>
<td>Upper</td>
<td>t df (2-tailed)*</td>
</tr>
<tr>
<td>Policy</td>
<td>-.550</td>
<td>1.00</td>
<td>.178</td>
<td>-.913</td>
<td>-3.093 31 .048</td>
</tr>
<tr>
<td>Agency Practice</td>
<td>-.314</td>
<td>.883</td>
<td>.153</td>
<td>-.627</td>
<td>-2.046 32 .049</td>
</tr>
</tbody>
</table>

* Results are significant at the .05 level. When using the Bonferroni correction, the equivalent is .025, so that results do not meet the .05 level of significance when corrected to avoid Type I errors.

It is noted that only the respondents who offered their contact information on the pretest were offered to take the posttest. Differences between the group that offered their information (n=96, 73%) versus those that didn’t (n=35, 27%) are not known, thus the level of bias in response is not known.

Effect size was determined using Cohen’s d, utilizing the means and standard deviations of the groups, as well as the correlation between the measures to account for within group shared variance. Results indicate a moderate effect size of .365 for Policy and .363 for Agency Practice. Cohen’s d results were converted to Hedges’ g to account for small samples. Results are listed in Table 10.

It was hoped to determine differences in subgroups pre and post, i.e. according to agency or to agency role. Because the total number of matched pairs of responses is so small, the numbers within each category are too small to analyze meaningfully. Although for agency and role in agency, Community Mental Health and therapists/mental health clinicians represent a large minority of total responses, these numbers are still very small. For those in a CMH agency, Policy differences are .088 (n=8) and Agency Practice differences are at .378
The pre-post difference for Policy for just therapists was not statistically significant for Policy (p=.195, n=14), but came close for Agency Practice (p=.054, n=14).

Table 10. Results of Pre/Post for Cohort One

<table>
<thead>
<tr>
<th>Domain</th>
<th>Mean</th>
<th>T</th>
<th>P value</th>
<th>Cohen's d</th>
<th>Hedge's g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy (n=32)</td>
<td>1.84</td>
<td>2.063</td>
<td>.048</td>
<td>.365</td>
<td>.359</td>
</tr>
<tr>
<td>Agency Practice (n=33)</td>
<td>2.52</td>
<td>2.046</td>
<td>.049</td>
<td>.363</td>
<td>.357</td>
</tr>
</tbody>
</table>

A secondary consideration of the impact study is not just whether there has been change from pre to post tests, but consideration of the extent to which the instrument has accurately captured the true change as opposed to mean differences that are being affected by some type of bias. One method of discerning this is in the comparison of the coefficient of stability for the one year measure versus the three month measure, as reported above. For this example, the numbers are too small to draw meaningful conclusions at this juncture, but this is an area for future consideration if sufficient respondents are available. It would be expected that the coefficients of stability would be lower for the year sample if in fact the instrument is accurately recording positive impact of the initiative (based on other data suggesting positive effects). Such change would not be expected at the three month juncture so that the coefficients would be expected to be greater. This hypothesized pattern in the responses could provide some evidence that the instrument is indeed sensitive enough to record change. However, considering the current small sample of three month data, and that most of the items (8 of 13) had a three month coefficient that was smaller than the year
measure, it could be hypothesized that the very act of embarking on the community initiative is enough for people to record a perception of change in their communities.

In reviewing the raw data, the proportion of responses that were at “1” or “5” suggest a floor and ceiling effect\(^\text{14}\), suggesting that the measurement needs a more graduated scale. A future revision of the scale could incorporate more than a 5 point Likert scale to improve sensitivity.

The final consideration for the impact study was the role of this instrument in determining the impact of the initiative overall. In other words, are the results of the instrument to date consistent with other data collected through the evaluation of the initiative. Both the Policy factor and the Agency Practice factor showed increase in ratings from the kick-off orientation to the first year mark. What is known in regard to changes in the two counties represented is as follows:

- Development of trauma informed assessment process for each county
- Trained trauma informed therapists in each county
- Development of policies and legal documents to formalize various trauma informed protocols
- Data from interviews indicating individual practice has shifted due to the initiative
- Community cooperation in completing screens identifying children potentially impacted by trauma in their communities
- A court report form is being implemented in Hillsdale County to provide the Judge with trauma informed updates on children in child welfare

\(^{14}\) For the first section, 6 of the 13 items had more than 40% of the respondents rate the item as “1” and for the second section, 6 of the 9 items had a skewed end response (4 with more than 40% as “1” and 2 with more than 40% as “5”).
Given the changes following the start of the initiative in these counties that are known and documented, it appears that the instrument is consistent in reflecting change in the community according to the two factors in the instrument:

- There are known changes in “Policy” in both counties: Hillsdale instituted changes in how information is reported to the Court, Livingston has developed several documents and processes to integrate a trauma informed perspective for agencies, and creation in both counties of a nonprofit entity to institutionalize trauma informed assessment.

- There are numerous examples that document changes in day-to-day “Agency Practice,” as highlighted through interviews and field notes taken during meetings and observations of practice.

Based on this analysis and synthesis of evaluation information, it appears that the instrument is capturing change in the system, and that it is adding the power of measuring the system changes in a quantitative and factorially valid manner, adding to the depth of the other, more qualitative evaluation data.
CHAPTER V

DISCUSSION

Overview of the Study

General Summary

This study originated from the need to measure the extent to which child welfare systems were becoming trauma informed during and after participation in a community-wide training initiative. Necessity fueled the construction of an instrument to fill this purpose, as there are no existing methodologies or instruments to document either 1) to what extent child welfare systems are functioning in a trauma informed manner, or 2) to what extent are these systems changing after efforts are made to transform functioning of the systems. Professionals from the Southwest Michigan Children’s Trauma Assessment Center (CTAC) had developed an initiative to help communities 1) understand what it means to be a trauma informed child welfare system, 2) identify the need for trauma informed change in their community, 3) address the identified need, and 4) take necessary steps to integrate and sustain these changes over the long term. As this type of initiative is in its infancy nationally, the CTAC professionals are among the vanguard for creation of trauma informed change, and are poised in a favorable position to provide consultation and feedback on content when developing evaluation methods to chart the change and, specific to this work, insight into the development of items for an instrument to document current community status and change over time.

It was not just the idea of measuring trauma informed change in practice that drove instrument development, as this is a more or less straightforward endeavor: define trauma
informed practice for particular professionals, from this operationalize practice, and then
develop instrumentation to measure the change. This could be done for teachers, therapists,
court personnel, foster care workers, and so on (and this has been done in some instances).
The more vexing problem is in moving away from the silo effect and impacting (then
measuring) change as each of these entities are just a piece of the overall system. This
required a systems perspective in developing instrumentation, and various approaches to
measuring systems were thus explored. The model that emerged from this review of existing
literature hypothesized three areas where system change could be monitored and measured:
Policy, Agency Practice, and Connections (between individuals and between agencies).

Given this general systems framework, items were developed with the content
experts to look at system change specific to this trauma informed initiative. This initial
version of the instrument was administered to the first cohort of participants in the initiative
– child welfare professionals and caregivers from Hillsdale and Livingston Counties. After
this pilot, the instrument was revised. Additional measures of individual change were
developed based on an existing instrument. These items measured the attitude of adopting
new practice, as it was hypothesized that controlling for individual attitudes regarding change
in practice would be vital in determining the extent to which communities were changing.

The revised instrument was used for administration to cohort two participants. It
was through the abundance of responses from this series of administrations of the
instrument that the determination of factorial validity of the instrument became a distinct
possibility, as too few respondents would have precluded this level of analysis. A spirit of
frugality in preserving usable data drove the design of the current study, so that cohort one
data could be used to answer research questions concerning 1) impact of the initiative, and 2)
specific characteristics of the instrument in determining impact (sensitivity of the instrument, the fit of the instrument in the overall evaluation), and cohort two data could be used for determination of psychometric properties of the instrument (as well as impact of the initiative at a later date).

Analyses

Confirmatory factor analysis was used to fit a factor structure to the existing data. The Maximum Likelihood (ML) estimator in AMOS was selected to fit and modify the model. AMOS provides an ease of usability, the option of graphics, and most importantly, the ability to test goodness of fit of nested models using ML. Missing data was imputed rather than allowing AMOS to estimate the missing data, as modification indices are not offered when the model has missing data.

For Community Characteristics, a two factor model was fit for 13 items. Goodness of fit indices were excellent, as were parsimony indices and the index of adequacy of sample size to fit a valid model. As the data are ordered categorical data and Means and Variance Adjusted Weighted Least Squares (WLSMV) is the estimator of choice for this type of data, the final model from ML was fit using WLSMV in Mplus. Modification indices from the WLSMV estimate suggested an additional correlation between two of the items, so this was added to the ML version and this became the final model. There is a high covariance between two of the items, suggesting that these two items need close scrutiny in the next iteration of the instrument. The goodness of fit and parsimony indices remained acceptable, adding credence to the factorial validity of the first section of the instrument. Evidence of convergent validity was good in that the standardized estimates were relatively large for each
set of indicators. However, the interfactor correlation is quite large so that support for
divergent validity is not strong. Such a high interfactor correlation suggests a second order
factor structure (Bollen & Long, 1993), but this was tested and invalid results were obtained.
Internal consistency was found to be adequate using Cronbach's alpha.

For Individual Characteristics, a three factor model was fit for 9 items. Goodness of
fit indices and parsimony indices were adequate, and although nested models were tested,
alternative hypotheses for factor structures were not necessary. However, the third factor,
Tradition, comes with substantial problems with the items. The last item has a very low
factor loading but including it in the model improves the overall fit. All three items
comprising this factor cross loaded onto the other two factors. Internal consistency for the
third factor was in the .50s. In the next iteration of the instrument, the items in this factor
need to be revisited so as to clarify the latent construct and refocus the questions for this
construct.

Once the evaluation of the instrument was complete, the impact study was
conducted. Using the valid factor structures, paired t-tests were run on the post data
received from cohort one. Although the number of paired responses was small, there were
enough to show statistically significant change and detection of a moderate effect size.
Results from use of the instrument were consistent with evaluation results obtained through
observations and interviews.

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received from cohort one. Although the number of paired responses was small, there were
enough to show statistically significant change and detection of a moderate effect size.
Results from use of the instrument were consistent with evaluation results obtained through observations and interviews. The results indicated that change had occurred in both the area of Policy and Agency Practice, both at the level of .05 probability.

Contribution

Arguably the biggest contribution of the instrument is the capacity for measuring a construct that before now has not been specifically measured in child welfare systems. In effect, it has put trauma on the radar. By measuring something, it exists. In this case, the attempt was made to measure trauma informed system change, and by doing so, this has the potential to put the idea of “trauma informed” on the radar. The flaws of this first iteration don’t preclude the seminal utility of the instrument to make the impact of trauma a talking point for the focus of future evaluation activities. To emphasize this point, many other sites from across the nation who are engaged in similar work have requested the instrument to use and/or adapt for their own trauma informed initiatives. Connections have been made to join efforts in refining and adapting the instrument to better meet the needs of initiatives that hope to change systems. This instrument is the starting point for other sites to measure the change they are making happen.

Along the same lines, this instrument is an important step in measuring the theory of change for system initiatives. Program theory predicts that a trauma informed view of children in child welfare (system level) will reduce child symptoms (individual level), and this instrument is seminal in measuring the impact of the system initiative. Change at the individual level has been theorized, and system change models have been put forth, but this instrument combines both. It goes beyond the use of simple training evaluations and
measurements of individual change to instead gather the perspective of professionals about the functioning of their system. The change in the system is hypothesized to be a vital link in the ultimate change in child outcomes, and now there is a tool to use for this measurement.

This instrument contributes to evaluation methodology in that it provides a framework for measuring similar initiatives that aim to shift paradigms. Although the next iteration of the instrument will improve the specificity to trauma informed systems, this version has validated a two factor model that is highly amenable to alteration to accommodate other content areas for system change. It contributes to evaluation theory in that it is providing a framework for understanding the way that systems change. There are multiple theories put forth to understand system interactions, but few that offer a simple guideline for measuring this change. This instrument provides a framework from which to explore the factors that make up the idea of system change.

Use of this instrument contributes to the field in two other ways. First, because it is used in a community setting, including primary, secondary, and tertiary contacts for children in child welfare, the instrument comes with the ability to bring to light those individuals whose role is more peripheral to the lives of children, i.e., policemen, lawyers, paraprofessionals. These professionals and personal contacts may be significant to traumatized children, but these individuals may not see their role as vital or even important in the lives of vulnerable children. By collecting data on their opinions on the function of the system as a whole, first it brings attention to the fact that they are present and listening at these kick-off trainings, and secondly helps them understand that they could be the one important link in a child's life.
Finally, not only is the instrument important in the capacity to measure the state of the current system and the extent to which it has changed, but it can be used a vital part of creating the change. It can be used in a diagnostic capacity to help determine strengths and areas to focus intervention for specific communities. In this way, responses from the community can be fed back into the initiative so that the initiative potentially can change according to data collected from the instrument. Given these contributions of the instrument, there are limitations to utility, and these are discussed below.

This instrument was developed with the guidance and direction of an expert in confirmatory factor analysis who has extensive experience in the validation of instruments. This level of expertise helps to ensure rigor in the process of validating the current instrument.

The instrument was developed in the community context. The heterogeneity of respondents who hail from the community setting helps to support the external validity of the instrument. It was developed and piloted within community settings, and now after validation, will be used in similar community settings.

Limitations

In spite of obtaining valid factor structures for both sections of the instrument, and for documenting statistically significant change in the impact study, multiple limitations exist for the current study.

First, contextual factors greatly impact the analysis for evaluation of this instrument. Defining the "child welfare system" is different for different communities, and the impact of this difference muddies the salience of positive results. Case in point: the Trauma Informed
Child Welfare Initiative is being implemented at the system level in participating counties in Michigan. The first cohort of participants came from Hillsdale and Livingston counties, and the second cohort of counties includes the northern counties of Lake, Mason, Manistee, Oceana, Newago, and Benzie, and the Little River Band of Ottawa Indians. But note that the catchment area for agencies differs from community to community, and this is not easily defined so to be able to account for introduction of bias and mediating effects in each area.

For example, a community mental health agency in northern Michigan has responsibility for Lake, Mason, and Oceana counties, whereas one DHS agency includes Lake and Newaygo, and the other includes Mason and Oceana. The Intermediate School District encompasses Lake, Mason, and Newaygo, but not Oceana County. Each county has its own court system. The Little River Band covers all of these counties and has jurisdiction over Native children in the child welfare system. Therefore, defining the child welfare system for each participant is very much context-dependent, and each community’s organizational responsibilities and barriers are unique and complex. To compare one individual’s responses in how they communicate with other agencies to another individual in an adjacent community could be comparing apples and oranges, as each individual may be referring to different agency players. To further complicate matters, HSIRB consents for participation make it clear that identifiers do not need to be present on evaluation forms submitted, so that from where a participant hails may be unknown anyway.

As it is the professionals from the second cohort in these northern counties who are the pool of participants for some of the evaluation activities regarding this instrument, it can become relevant to data analysis and interpretation to consider the heterogeneity of this group in analysis, even though they are united by one common broad purpose – child
welfare. Yet the sample numbers are not large enough to power more sophisticated statistical analyses that could take into account differences between communities.

Regarding the impact study, different forms of the instrument were used, so as to introduce unknown bias. For example, the first cohort used a version of the instrument that contained an option for "not applicable." This was removed in the next iteration as it appeared that using the NA option was either an indication that the item was addressing an area where there was little to no trauma informed practice in that participant's perspective, as they were not even seeing it as applicable to them, so to give the effect of overestimating the extent to which systems are trauma informed. In this way, it was akin to missing data. Additionally, the manner in which those respondents who submitted an instrument without identifying information is not known. Differences can be guessed, but these are not even informed guesses — it could be anything. Given this potential bias, it is especially true for the impact study that results are affected in an unknown way.

Designing the Study to Fit Preexisting Patterns of Data

On the one hand, fitting the development of the study to an existing initiative was a great strength for the study, as 1) it provided an easily accessible pool of participants to complete the instrument, and 2) conducting the evaluation for the initiative mandated completion of steps in the study in a timely manner, thus avoiding the paralysis that could result from facing barriers when conducting research for research's sake with no other secondary pressure to complete it. However, aspects of conducting the research in this manner bring restrictions. The aspects of research in context and discussion of the resulting restrictions are as follows:
1) Accessible sample – As noted above, the heterogeneity of the sample introduces significant areas of potential variability into responses. Because this is a community sample and the respondents did not need to identify themselves, there may be very different professional perspectives being represented in the responses (e.g., a police officer completing the instrument is more ancillary to the child welfare system and will likely see things very differently than a therapist, even if they work with the same systems and with the same children). The problem comes in not being able to identify and pinpoint these potential sources of bias and variability consistently.

2) Lack of comparison/control group – There were not resources to develop and subsequently measure other counties to comprise a comparison group. This comes largely from the process through which the initiative rolls out. It is a team process to identify the next cohort of counties, and this has not been done well in advance, as the willingness and ability of communities to participate can and does change from the time of proposing the initiative to the time of actually beginning it in a community. Opportunities to work with new communities that eventually will form the next cohort tend to take form in a way that is not predictable and is impacted by many factors well out of the control of the researcher. Thus they cannot be tapped into as a way to account for threats to validity in a timely manner.

A second factor that impacts the constructing of a comparison group is the far and wide reach of the training team throughout the state. Trainings have been conducted for years in communities throughout the state - for the Child
Welfare Institute (which trains children’s services workers for the Department of Human Services), for Community Mental Health workers in a separate training initiative, and for many different and diverse schools, agencies, and nonprofits who request training. Even if other means were taken to solicit a comparison group (such as giving incentives, going to non-trauma trainings), the impact to particular respondents of the years of training that have been conducted by CTAC trainers for the last several years is not known.

3) Spurious causal factors — with no comparison, a group of therapists from one community may record changes on the instrument that have nothing to do with the initiative. They may have had a change in administration or funding, or particular therapists who hold informal organizational power may have impacted practice. These possibilities are not known, at least not in a systematic manner that is solicited.

4) Measuring impact on children — The very children at the center of the initiative comprise one of the most vulnerable populations, and they are protected by the Department of Human Services for reasons of confidentiality and liability, and by HSIRB. Trying to determine the ultimate impact on these children of a trauma informed initiative is arduous, as their individual data is very difficult to access.

Lack of Input from Other Content Experts

Although it is true that trainers from CTAC are doing seminal system work in transforming trauma informed systems, there certainly are other professionals nationally who
are doing work in the same area, perhaps with different foci, but still with experience to offer in devising an instrument to measure trauma informed change. Although this collective wisdom has been accessed and has influenced the CTAC trainers in immeasurable ways, there is little doubt that input from other communities would improve generalizability of the instrument. It is the plan to take the current instrument in its first phase of evaluation to a national body in order to solicit critique and feedback for improvement. It was deemed more expedient to provide a viable instrument to the national body, rather than to try to start from scratch with so many diverse areas represented. An argument for either approach could be made, but this was the route chosen by the CTAC team.

Limitations Specific to the Analysis

There are multiple limitations for purpose of robust analysis, and most of these limitations stem from the inception of the instrument in an applied setting. The sample size is not as large as would be desirable for the confirmatory factor analysis, for the test-retest analysis, and for the impact study. More is often better in regard to sample, and some of the threats to internal validity could have been minimized in the impact study with a larger sample. Also, in the CFA, there could have been more of a selection of estimating methods with a sample over 1000. The test-retest analysis did not provide valid data due to extremely small sample size, so that at even doubling the current response base could have improved interpretability.

Non-normality of the data was discussed earlier. Although skewness has less impact on CFA because it is not a mean-based analysis, kurtosis does have an impact. Several items on the instrument were kurtotic, and the extent to which the kurtosis impacted the analysis is
not fully known. Implicit in kurtosis is the idea of ceiling and floor effects perhaps a more sensitive scale, such as a Likert scale up to 7 or 9 would have helped to alleviate the ceiling/floor effects.

A greater focus on researching content for the items would have improved content validity for the purpose of measuring trauma informed change, which was the initial intent in the development of an instrument. This limitation is the shadow-side of the benefit that comes from the study stemming from an applied setting, and will be remediated in future iterations of the instrument.

Lack of Comparison for Criterion and Predictive Validity

As this is essentially ground-breaking work in trauma informed system change for child welfare, which brings with it a sense of excitement and possibility, but by being groundbreaking comes again the other side of the coin in that there is no other work to compare to in order to build a case for criterion validity. Work has not been done in this area to the extent to begin considering predictive validity.

Implications

Arguably the greatest implication of this work is the potential impact it can help to put into motion, via a ripple effect, for traumatized children in child welfare. Once a concept or a construct is measured, it becomes real. To date, the Federal Standards that are in place to monitor child welfare activity do not mention the word “trauma” in any form. The closest the Standards come is to look at child well-being and the idea of receiving treatment. The Standards do not discuss *appropriate* treatment, only the frequency with
which treatment is given for children in foster care, as reported by case workers. As has been found through the trauma informed initiative, case workers or administrators in child welfare may not know what treatment is appropriate for kids in their care, especially if the impact of trauma is not being talked about, let alone addressed.

The initiative is impacting professionals in the participating communities in Michigan, with the hope that the effects will move to the children. In other words, if trauma informed practices are the way to mitigate symptomology for traumatized children, and if professionals are willing and able to conduct their work with children in trauma informed ways (including as an agent within a system), then symptomology for traumatized children should reduce. As measurement of symptomology is one proxy for child well-being, it follows that child well-being should improve with reduction of symptoms.

This is the contribution of the initiative, but the instrument, and this study, play a key role in this. Program theory in a very brief and colloquial form was described in the preceding paragraph. There are multiple junctures in that brief description that require vigorous measurement to lend support to the model of the program theory. One of those junctures is the extent to which the system is supporting trauma informed practice in individuals, and another is the extent to which individuals are willing to change their practice to become more trauma informed. Having an instrument that has been evaluated for validity in measuring change in child welfare is key to supporting the program theory. In the attempt to measure the construct of "trauma informed," the current instrument falls short as was described in the previous chapter; however, it is a step in the right direction, and builds a foundation for future work to operationalize "trauma informed" within a system framework.
A second implication for the results of this study stems from one of the limitations—that the instrument is not really an operationalization of being “trauma informed.” Many of the items of the instrument refer to “trauma informed,” rather than operationalize and supplant a specific meaning for that phrase. Given that limitation, it would not take considerable effort for researchers from other fields in the social sciences to modify this instrument to fit their content area. The factor structure is valid for measuring systems, in this case, trauma informed systems. To take this instrument structure and modify it for other system change paradigms could be relatively easily done. Then, factorial validity of the modified instrument could be completed again. As this instrument goes through its next iteration, with likely more focus on the content area of being trauma informed, the plasticity of the instrument to meet measurement needs for other endeavors will be inversely related to the level of trauma informed specificity.

Although there are likely many other implications for this research, the final one that seems most salient to the context of this work is the idea of impact on venues more peripheral to the “core” child welfare system. While the initiative has tried to impact the “child welfare” system in becoming trauma informed, other individuals who may have a more tertiary role in contributing to the lives of children in child welfare have also attended. Thinking in a sense of concentric circles, those at the outer perimeter who have participated in the trainings may have felt their role in children’s lives was less important in a trauma informed sense, and they may have interpreted the purpose of the instrument as being not applicable to them. Those in the initiative know that those “ancillary” individuals (ranging from police officers, to teacher’s aides in Head Start, to the lunch lady at school) do play important roles in assuring our most traumatized children are treated in a way that accounts
for the impact of the trauma they have experienced. Although trite, it is a resounding truth that any system is only as strong as the weakest link; if it is the lunch lady who triggers a traumatized child repeatedly, that interaction will ripple throughout the rest of that child’s life and potentially dampen the impact of positive efforts from caregivers, teachers, and therapists. Therefore, through this instrument and the attempt to capture trauma informed change, it is helping to uncover those pockets of professional interaction that don’t recognize the impact they have on children. They may decline responding to items in the belief that this trauma informed work is not applicable to them. By examining the data, even raw data, it is possible that these patterns can be detected, resulting in either the development of an instrument more globally sensitive, or perhaps in an instrument specific to these tertiary contacts.

Future Research

Because this is seminal work in trauma informed system change, there is really a universe of potential directions, levels of specificity, and ranges of focus that future research can take on. Provided here are just the musings of the author – other ideas are welcomed.

The most obvious area of future research is in the honing of the instrument for national use in trauma informed systems. Gaining the opinions and feedback from national experts in creating an instrument that is relevant to all types of communities, different venues (school focus vs. court focus vs. mental health focus, for example), and for different purposes is vital. The form that this takes is up to the feedback given by others in the field of trauma focused work. The use of the instrument by different experts in trauma informed practice and in different venues of trauma informed work will aid the generalizability of the
instrument, or will inform the discussion as to whether another version of the instrument is needed. All of this input will inform content validity of the instrument in trauma informed venues, which is a necessary step in establishing validity.

Reworking the instrument to attain greater concurrent validity and really build discriminant validity is vital to understanding the construct of being trauma informed. Determining whether there is a second order construct or more first order constructs will help to shape systems interventions, so that they more accurately target areas of change in systems. In other words, the development of better measurement is a reciprocal process with the development of better interventions to improve trauma informed system practice.

Because this research has been conducted in an applied setting, external validity is enhanced over any evaluation of an instrument in a controlled setting. This is arguably a strength of the study in the sense of establishing external validity. So rather than thinking in terms of enhancing internal validity of the instrument, which is simply less relevant to this type of work, the idea of exploring the idea of “viability validity” as a part of “integrative evaluation” is in order (Chen, 2010). Viability validity refers to the fact that “unless the intervention is practical, suitable to community organizations’ capacity for implementation, and acceptable to clients and implementers, it has little chance of survival in a community.” It is intriguing to imagine an instrument that captures these areas of usefulness of both an instrument and an initiative.
REFERENCES


NCTSN Systems Integration Working Group (Taylor & Siegfried, 2005)


van der Kolk, Pelcovitz, Sunday, & Spinazzola (2005)


Appendix A

Survey and Instrument
TRAUMA INFORMED SYSTEM CHANGE SURVEY

As part of the evaluation of this project, we are tracking system change at a service provider level, at an agency level, and at the county system level. Please complete the following to help us understand your perception of change needed in these areas.

<table>
<thead>
<tr>
<th>Your Agency Affiliation</th>
<th>Your Role</th>
</tr>
</thead>
</table>

**Organizational Change Self-Evaluation – The Current System**
Rate the following statements regarding your agency as it currently operates.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not Applicable</th>
<th>Not at All True for My Agency</th>
<th>Somewhat True for My Agency</th>
<th>Completely True for My Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written policy is established committing to trauma informed practices</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>The agency has a formal system for reviewing whether staff are using trauma informed practice</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Policy allows flexibility with rules to meet individual children’s needs</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>There is system of communication in place with other agencies working with the child for making trauma informed decisions about the child or family</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>There are structures in place to support consistent trauma informed responses to children and families across roles within the agency</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Families and children are given systematic opportunities to voice needs, concerns, and experiences</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>The agency has a system in place to develop/sustain common trauma informed goals with other agencies</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Understanding of impact of trauma is incorporated into daily decision-making practice at my agency</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Supervision at my agency includes ways to manage personal and professional stress</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Trauma informed safety plans are written/available for each child (i.e., triggers, behaviors)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
when over-stressed, strategies to lower stress, support people for child)

| Staff receive supervision from trauma informed supervisor | 0 | 1 | 2 | 3 | 4 | 5 |
| Timely trauma informed assessment is available and accessible to children served by my agency | 0 | 1 | 2 | 3 | 4 | 5 |
| A continuum of trauma informed intervention is available for children served by my agency | 0 | 1 | 2 | 3 | 4 | 5 |
| A child's definition of emotional safety is included in treatment plans | 0 | 1 | 2 | 3 | 4 | 5 |
| Our agency's policy and practice provide for support and trauma informed guidance for families | 0 | 1 | 2 | 3 | 4 | 5 |
| I have a clear understanding of what trauma informed practice means in my professional role | 0 | 1 | 2 | 3 | 4 | 5 |
| I feel equipped to help children make meaning of their trauma history and current experiences | 0 | 1 | 2 | 3 | 4 | 5 |
| In practice, I am utilizing what I believe to be trauma informed practice | 0 | 1 | 2 | 3 | 4 | 5 |

What is one way in which you intend to adjust your practice to become more trauma informed?

We would like to continue to receive your opinion on how the trauma informed system change is being implemented and practiced in your county. With your permission, we would like to contact you one time per year for the next three years to continue tracking your opinion on changes in your county. Contact would be by email or by telephone (your preference), and will involve a survey similar to the one you just completed. Providing your email and work phone will be considered permission to contact you in the future. Thank you for your time to provide this information.

Name

| Email | Work Phone |
TRAYRA INFORMED SYSTEM CHANGE INSTRUMENT

As part of the evaluation of this project, we are tracking system change at a service provider level, at an agency level, and at the county system level. Please complete the following to help us understand your perception of change needed in these areas.

Organizational Change Self-Evaluation – The Current System

Rate the following statements regarding your agency as it currently operates.

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Written policy is established committing to trauma informed practices</th>
<th>Not at All True for My Agency</th>
<th>A Little True for My Agency</th>
<th>Somewhat True for My Agency</th>
<th>Mostly True for My Agency</th>
<th>Completely True for My Agency</th>
</tr>
</thead>
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<td>1.</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
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<td>4.</td>
<td>5.</td>
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<td>3.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
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<td>4.</td>
<td>5.</td>
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<td>5.</td>
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<td>6.</td>
<td>6.</td>
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<td>4.</td>
<td>5.</td>
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<td>7.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
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<td>8.</td>
<td>8.</td>
<td>2.</td>
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<td>4.</td>
<td>5.</td>
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<tr>
<td>9.</td>
<td>9.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
<td></td>
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<tr>
<td>10.</td>
<td>10.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>11.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>
12. A continuum of trauma informed intervention is available for children served by my agency. | 1 | 2 | 3 | 4 | 5 |
13. A child’s definition of emotional safety is included in treatment plans at my agency. | 1 | 2 | 3 | 4 | 5 |

Rate the following regarding your current individual practice from a trauma informed perspective.

<table>
<thead>
<tr>
<th></th>
<th>Not at all True for Me</th>
<th>A Little True for Me</th>
<th>Somewhat True for Me</th>
<th>Mostly True for Me</th>
<th>Completely True for Me</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.</td>
<td>I have a clear understanding of what trauma informed practice means in my professional role</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15.</td>
<td>I feel favorable in trying a new trauma informed intervention with children and families.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16.</td>
<td>I feel equipped to help children make meaning of their trauma history and current experiences from a trauma perspective.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17.</td>
<td>In practice, I am utilizing what I believe to be trauma informed interactions with children and families.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18.</td>
<td>I am willing to try a new form of intervention even if I have to follow a manual or protocol.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19.</td>
<td>I know better than academic research on trauma what the children and families I work with need.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20.</td>
<td>I am willing to use trauma informed interventions that researchers say are effective.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21.</td>
<td>Clinical experience with children and families is more important than what the research says about working with traumatized children.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22.</td>
<td>I would not use a trauma intervention if it means making a lot of changes to the way I currently do my work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Name: [ ]
Agency Affiliation/Role: [ ]
Email Address: [ ]
Phone Number: [ ]
If you would like to participate in continued evaluation of the training project, we may wish to contact you regarding your opinion on trauma informed change in our community. If you do not wish to be contacted again to complete this instrument, please initial below. Thank you for your help with this project.

_______ No thank you, I prefer to not be contacted again to complete this instrument.
Appendix B

HSIRB Approval Letters
Date: December 12, 2008

To: Jim Henry, Principal Investigator
    Connie Black-Pond, Co-Principal Investigator
    Margaret Richardson, Co-Principal Investigator

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 08-12-15

This letter will serve as confirmation that your research project entitled “Trauma Informed Child Welfare System Change Training” has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: December 12, 2009
Date: February 17, 2009

To: Jim Henry, Principal Investigator
   Connie Black-Pond, Co-Principal Investigator
   Margaret Richardson, Co-Principal Investigator

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 08-12-15

This letter will serve as confirmation that the change to your research project "Trauma Informed Child Welfare System Change Training" requested in your memo dated 2/12/2009 (addition of a checklist to be completed by professionals at each training site to collect anonymous information on children) has been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: December 12, 2009
Date: November 30, 2009

To: Jim Henry, Principal Investigator
    Connie Black Pond, Co-Principal Investigator
    Margaret Richardson, Co-Principal Investigator

From: Amy Naugle, Ph.D., Chair

Re: Extension and Changes to HSIRB Project Number 08-12-15

This letter will serve as confirmation that the extension and changes to your research project "Trauma Informed Child Welfare System Change Training" requested in your memo dated 11/24/09 (increase total subjects to 500; revise Trauma Informed System Change Instrument to evaluate for reliability and validity; data collection and analysis changes to facilitate evaluation of the instrument; include child outcome data; two instruments added—a checklist to help identify potentially traumatized children and a court report form) have been approved by the Human Subjects Institutional Review Board.

The conditions and the duration of this approval are specified in the Policies of Western Michigan University.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: December 12, 2010