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Psychometric Properties of the Trauma and Post-Trauma Well-Being Assessment Domains of the North Carolina Family Assessment Scale for General and Reunification Services (NCFAS G+R)

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Two new domains of the NCFAS-G+R, trauma and post-trauma well-being, were tested for reliability and validity in relation to previous NCFAS-G+R domains. Three family preservation programs provided case level data on 170 in-home service families over six months. Domains were tested for reliability using Cronbach's alpha, factor structure was explored, and convergent validity was examined through correlations of new scale items with domain ratings on the NCFAS-G+R. Assessment ratings were cross tabulated with practice and outcome variables. Reliability of the new domains was established with Cronbach's alphas of .811 and .905, respectively, factor structure was confirmed, new scale items and domains correlated predictably and significantly with other NCFAS domains. Outcome variables were influenced by trauma assessment ratings. Displaying good psychometric properties, the trauma-focused assessment domains hold promise for assisting child welfare practitioners assess trauma symptomology, and post-trauma well-being following services.

KEYWORDS trauma assessment, psychometrics, family preservation services, post-trauma well-being

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The recent literature indicates growing interest among child welfare practitioners on the impact of trauma on families and children in the child welfare system. This interest is fueled largely by recent research findings, including the Adverse Childhood Experiences study (ACES) conducted over many years by the Centers for Disease Control (a description of the study and a summary of findings is available at: <http://www.cdc.gov/violenceprevention/acestudy/>). Adverse experiences include various types of abuse (emotional, physical, and sexual), neglect (emotional and physical) and various forms of family dysfunction (e.g., domestic violence, substance abuse, mental illness). Each of these terms and risks is well known in child welfare.

ACEs are associated with increases in adult health risk behavior (Larkin & Felitti, 2013), serious health outcomes, social and emotional problems, and premature death (Brown et al., 2009). Dong, Anda, Felitti, Dube, and Williamson (2004) noted that any one ACE, is likely to be associated with multiple additional ACEs, and multiple ACEs are associated with accelerating risk of negative outcomes (Mersky, Topitzes & Reynolds, 2013). Larkin and Park (2012) found that 53% of 224 homeless adults in their study had experienced four or more ACEs, and the Brown et al. (2009) found that persons with six or more ACEs had an average decrease in life expectancy of 20 years.

Analyses of ACE data have demonstrated in children the connection between traumatic stress and problems on psychosocial, emotional, cognitive, physical, and brain development (Elroy & McHevey, 2014). Anda et al. (2006) documented impaired physiological brain development and decrements in brain function following childhood trauma. Children in the child welfare system are at risk of various types of trauma, and some well-intentioned features of the child welfare system (e.g., emergency child removal and placement) can be traumatic to the child and caregiver. Adults with ACEs are also at risk and caregivers with unresolved trauma histories are less likely to engage in treatment, decreasing the effectiveness of family centered social work interventions (Gardner, Loya & Hyman, 2014).

ACES focuses primarily on public health and mental health outcomes, but these findings are impacting child welfare policy and practice. There is interest in developing, defining and promoting trauma-informed child welfare systems (Hendricks, Alison, Conradi & Wilson, 2011), and states are developing workforce initiatives to help build the capacity of social workers and other providers to embrace trauma-informed practice (Fraser et al., 2014). Educators are also responding to the focus on trauma. A recent graduate social work textbook includes an entire chapter on assessment and interventions for trauma victims (Thyer, Dulmus, & Sowers, 2013), and promising clinical approaches are being developed and tested such as the development of trauma-focused cognitive behavioral therapy (Jensen et al., 2014).

The research indicates that trauma affects family functioning and well-being in predictable ways. To help bridge the fields of public health, mental health and social work, two new domains have been added to the North

Carolina Family Assessment Scales for General and Reunification Services (NCFAS-G+R) to assist practitioners to assess trauma and post-trauma well-being. The NCFAS-G+R is widely used in child welfare and child protection. The scale provides a framework for assessment of families on 10 domains of family functioning (environment, parental capabilities, family interactions, family safety, child well-being, social/community life, self-sufficiency, family health, caregiver/child ambivalence, and readiness for reunification) at intake and at the end of service. The NCFAS-G+R scale is normally used after in-home visits by the social worker or family therapist and has demonstrated reliability and validity in child welfare (Reed-Ashcraft, Kirk & Fraser, 2001, Kirk, Kim & Griffith, 2005), and now is used routinely and intervention research (Coll, Stewart, Morse & Moe, 2006; De la Rosa, Perry & Johnson, 2009; Farrell, Britner, Guzzardo & Goodrich, 2010; Johnson et al, 2008).

The new domains were developed using the same strategy as on previous domains. Areas of inquiry for assessment were identified in the literature and on the basis of current public child welfare policy and practice requirements. Scale structure was derived and content applied by scale developers. Resulting domain and scale items were reviewed by an expert panel of family preservation program practitioners and administrators. Most social workers are neither health professionals nor mental health professionals, so the resulting two new domains focus on assisting them to identify symptomology (symptoms, conditions, and behaviors) associated with histories of trauma, enable them to rate symptom severity to inform in-home and other service planning, and to identify and rate indicators of post-trauma well-being following services.

Among the most cogent descriptions of the impact of trauma on children is that of Pinna and Gerwitz (2013), who discuss symptomology as a function of age/stage of child development:

- *Infants may:*
  - bond weakly or fail to bond with parent/caregiver;
  - exhibit excessive crying;
  - become non-responsive to stimulation or attempts to comfort;
  - develop poor or disrupted sleep patterns

- *Pre-school age children may:*
  - exhibit hyperactivity/arousal;
  - suffer developmental delays;
  - exhibit onset of apparent disabilities (cognitive/emotional/psychological);
  - experience nightmares;
  - display difficulties in emotional regulation (tantrums, aggression);
  - exhibit developmental regression (behavioral, bowel and bladder functioning)

- *School-age children may:*
  - exhibit hyperactivity, depression/anxiety;
  - exhibit developmental delays and disabilities;
  - experience nightmares;
  - suffer altered sleep/wake patterns;
  - exhibit school problems, social problems;
  - display behavioral problems (impulse control).

- *Adolescents may:*
  - exhibit school problems (academic and behavioral), disability;
  - become depressed or excessively anxious;
  - engage in premature and/or risky sexual activity (pregnancy, STDs);
  - engage in substance use/abuse;
  - engage in criminal activities;
  - display suicidal behaviors;
  - engage in self-injurious behaviors (cutting, tattooing, piercing);
  - become aggressive or violent, may become sexually aggressive.

This taxonomic structure is amenable to instrument development for social work practice in that the terminology is not laden with professional jargon and should be understandable by professionals across disciplines. The new trauma domain was developed using Pinna and Gerwitz's description of trauma symptomology, including anchoring the definitions of scale items. The trauma domain items are anchored in public child welfare concerns: *traumatic sexual abuse of children*, *traumatic physical abuse of children*, *traumatic neglect of children*, *traumatic emotional/psychological abuse of children*, *parent/caregiver trauma*, and *overall trauma*.

The post-trauma well-being domain focuses specifically on recovery and healing of children after trauma has occurred, the status of the parent or caregiver following trauma, and on the caregivers' ability to support the child during the recovery and healing period and thereafter. The scale items of the post-trauma well-being domain are closely aligned with the Children's Bureau's domains of well-being (available at: https://training.cfsrportal.org/section-4-trauma-child-welfare-system/2453) which are based on the work of Lou, Anthony, Stone, Vu, and Austin (2008). The domain comprises: *post-traumatic cognitive/physical well-being of children*, *post-traumatic emotional/psychological well-being of children*, *post-traumatic social functioning of children*, post-*traumatic parent/caregiver support of children*, *post-traumatic parent/caregiver well-being*, and *overall post-traumatic well-being*.

The new trauma and post-trauma well-being domains assist practitioners with assessments. However, the domains are not diagnostic. Assessments conducted with these domains are intended to detect symptoms, and social workers should have training in trauma-informed practice in order to use their judgment to confidently rate the severity of symptoms.

Unlike all other domains on the NCFAS-G+R, the trauma and post-trauma well-being domains are not linearly related in pre-post service measurement. The trauma domain is used to assess both trauma and trauma symptomology, but trauma history cannot be changed even when trauma symptomology can be ameliorated, and different trauma histories may differentially impact well-being. Thus, computation of pre-post service different scores is not possible. Rather, the types of trauma comprising the trauma domain manifest in different ways, according to the psychological and mental health literature, and the post-trauma well-being domain is designed to assess level of functioning of the family and children with respect to those various manifestations at the end of services in terms of child welfare concerns and policies. For these reasons, the trauma is assessed at intake, and the post-trauma well-being domain is assessed at closure.

This article presents the findings of a field test of these new domains focusing on the utility of the domains in child welfare practice, the reliability of the domains, and convergent validity of the new domains with the pre-existing domains of the NCFAS G+R.

METHODS

Participating States and Confidentiality

Three states with long-standing, high-fidelity family preservation programs volunteered to participate in the study. All sites were experienced using the NCFAS scales, and two states received additional training from the National Family Preservation Network (NFPN) on the trauma and post-trauma well-being domains. NFPN served as the single point of contact with each state, provided technical assistance to all sites, and established data collection procedures tailored to each state's requirements for anonymity for children and families.

Study Protocol

Data collection occurred over 6 consecutive months in the spring and summer of 2014. Sites used the NCFAS-G+R, including the trauma and post-trauma well-being domains, during in-home assessments. Sites were instructed to apply the trauma domain to all families, not just those for whom a history of trauma might otherwise have been expected or reported, to assure that the trauma domain was capable of assessing for both inclusion and exclusion of traumatic histories and recurring trauma. The post-trauma well-being domain was used at closure only for families for which at least one scale item on the trauma domain was below baseline at intake, based on the logic that if there was no history of trauma or trauma symptomology detected at intake, there would be no reason to assess for post-trauma well-being. The sites removed all identifying information and provided data in an Excel data template.

Study Sample

Samples of convenience at the sites comprised 170 families and 352 children. Only families with complete data are included in the analyses. Sample sizes vary across analyses because not all families had completed services by the end of the data collection stage. Therefore there are no closure ratings on the NCFAS-G+R for those families, nor are there ratings on the post-trauma well-being domain for those families even if those families had one or more scale items rated below baseline on the trauma domain at intake. However, those families may have had complete intake data and they are included on the NCFAS G+R and the new trauma domain reliability analyses.

Regarding demographics, the parents/primary caregivers ranged in ages from 17 to 65 years, (9% were younger than age 21 years), 40% were between the ages of 21 and 30 years, 35% were between ages 31 and 40 years, and the remaining 16% were older than age 40 years. The 352 children were fairly evenly distributed across age groupings: 24% were infants or toddlers (ages 0–2 years), 28% were preschool age (ages 3–6 years), 29% were school-age through preadolescent (ages 7–12 years), and 19% were adolescents (ages 13–18 years).

The preponderance of primary caregivers was female (89%). Most caregivers were White (66%), 29% were African-American, and the remaining 5% represented all other racial identities. Only 2% identified themselves as Hispanic. Child gender was evenly split at 50% males and 50% females. With respect to racial identity, 54% of children were identified as White, 32% as African-American, and 15% as "other." The child sample was 6% Hispanic.

Regarding child/caregiver relationships: 90% were biological children, 3% adoptive children, 6% grandchildren, and 1% other. At the time of intake, 79% of children were living with the birth or adoptive parent, 10% with a relative a guardian, 10% were in foster care, and 1% were with "other." At closure, 82% were living with the birth or adoptive parent, 5% with a relative or guardian, 12% in foster care, and 1% living elsewhere.

Neglect was the most frequently reported maltreatment at 75%; 23% had experienced physical abuse and 10% had experienced sexual abuse. Approximately half (51%) of children were reported as having experienced family conflict. Adoption disruption affected 5% of children.

Overall, the study population provides a broad representation of demographics and maltreatment types normally found throughout the country, although Hispanics and races other than White and African-American are underrepresented.

RESULTS

Preexisting Trend Analysis

A series of cross tabulations was conducted to determine whether there were pre-assessment trends in demographics or maltreatment variables that could

interfere with interpretation of subsequent analyses. Child age was cross tabulated with maltreatment or reason for child welfare involvement (none, physical abuse, sexual abuse, neglect, family conflict, adoption disruption) and living arrangement at intake and at closure. A few slight trends were evident (e.g., sexual abuse was somewhat more likely to involve adolescents), but none was statistically significant with alpha set at $p < .05$, using the Chi-square analysis for categorical data. There were no age-related differences on living arrangement at intake or closure.

The child maltreatment categories were cross tabulated with type of service provider (none, mental health services, agency social worker/general, agency social worker/specialized, other) to see if different categories of maltreatment reported at intake tended to be referred to different types of service providers. There were no significant referral trends for trauma services based solely on the type of maltreatment reported.

The series of analyses indicates that there were no systematic differences in types of maltreatment, living arrangement, or types of service provider as a function of child age, and no systematic differences in the type of service provider as a function of the type of child maltreatment reported at intake (prior to trauma assessment).

Family Functioning on the NCFAS-G+R

When using the NCFAS-G+R in practice, the definition of baseline/adequate is the level of family functioning above which no mandated public agency response is necessary, although the family may benefit from receipt of voluntary services. Being rated below baseline (i.e., in the problem range) on any domain indicates a family in need of services, although the services may not be mandatory (depending on the types, severity and number of problems).

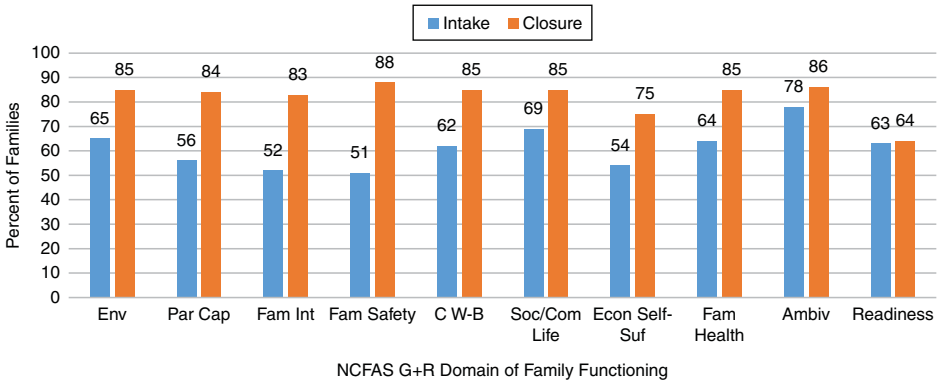

FIGURE 1 Proportion of families rated as being at or above Baseline/Adequate at intake and closure on 10 domains of the NCFAS-G+R ($N = 170$ at intake, $N = 113$ at closure).

Figure 1 presents the proportions of families rated as being at or above baseline on the original domains of the NCFAS-G+R at intake and closure.

As shown in Figure 1, on a number of domains nearly half of all families were rated as being in the problem range of functioning at intake. At closure, however, in most cases three quarters or more of all families were rated as being at or above baseline. The population changes seen in Figure 1 are typical of changes observed in similar populations of child welfare service recipients being served by family preservation service programs (Kirk et al., 2005).

The NCFAS-G+R has been demonstrated to be reliable in a variety of child welfare settings and models, including in-home service programs. Reliability should be reassessed in any study with respect to the specific practice setting, service model, workers and families being served. In the present study, reliability of the new domains is examined in combination with the original domains. Table 1 presents the ratings, standard deviations, and reliability statistics (Cronbach's alpha) for each of the domains of the NCFAS-G+R data in the study.

At intake the mean domain ratings ranged from 3.17 (Social/Community Life) to 3.48 (Family Interactions) indicating that the mean ratings fell between baseline/adequate (a rating of 3) and mild problem (a rating of 4), approximately in the middle of the scale. The standard deviations ranged from 0.92 to 1.35 indicating a dispersion of ratings across the 6-point range of rating options, ranging from clear strength to serious problem. The Cronbach's alphas derived from analysis of the intake data ranged from .870 to .924, demonstrating good reliability across all domains in this practice setting. These

TABLE 1. Domain Ratings of the NCFAS-G+R at Intake and Closure and Their Reliability ($N = 170$ at Intake, $N = 113$ at Closure)

	Intake			Closure		
Domain Name	Rating*	Standard deviation	Cronbach's alpha	Rating*	Standard deviation	Cronbach's alpha
Environment	3.24	1.35	.895	2.49	1.25	.925
Parental Capabilities	3.42	1.25	.861	2.61	1.23	.920
Family Interactions	3.48	1.12	.889	2.50	1.09	.937
Family Safety	3.43	1.25	.868	2.31	1.19	.922
Child Well-Being	3.38	1.13	.903	2.47	1.17	.910
Social/Community Life	3.17	0.92	.908	2.63	1.12	.910
Economic Self-Sufficiency	3.43	1.35	.921	2.79	1.29	.900
Family Health	3.22	1.13	.863	2.32	1.08	.918
Parent/Child Ambivalence	3.14	1.07	.870	2.25	1.03	.875
Readiness for Reunification	3.42	1.25	.924	2.96	1.78	.957

*Rating scale points: 1 = clear strength, 2 = mild strength, 3 = baseline/adequate, 4 = mild problem, 5 = moderate problem, 6 = serious problem.

alphas indicate good internal consistency in the application of the scale items in relation to the overarching domain ratings.

At closure the mean domain ratings ranged from 2.25 (parent/child ambivalence) to 2.96 (Readiness for Reunification) such that the mean domain ratings fell between baseline/adequate and mild strength, slightly towards the strengths end of the scale. Standard deviations ranged from 1.03 to 1.29, again indicating dispersion of ratings across the 6-point range of options. Cronbach's alphas for the NCFAS-G+R closure ratings ranged from .875 to .957, indicative of good reliability as reflected by good internal consistency of application of scale items. Overall, the findings suggest that the NCFAS-G+R was used reliably at both intake and closure by social workers providing information for the study.

Analysis of Trauma and Post-Trauma Well-Being Scales and Domains

Reliability

The purpose of the study was to examine the trauma and post-trauma well-being domains in practice, and in relation to the entire NCFAS-G+R process of in-home assessment of family functioning. Table 2 presents the mean ratings for each of the scale items in the trauma domain. The mean ratings ranged from 2.52 (Sexual Abuse) to 3.99 (Trauma History of Parent/Caregiver), with a rating of 1=clear strength, 3 = baseline/adequate, and 6 = serious problem. The standard deviations ranged from 1.22 to 1.38, indicating dispersion across the 6-point scale. Consistent with the instruction to assign the overall domain score independently of the average of the item ratings, the overall domain rating was 3.7, higher than all other mean ratings except parent/caregiver history of trauma. Thus, if individual scale items were found to be in the problem range they were likely to influence social workers to increase the severity of the overall trauma rating, which indicates the need for trauma-related services. Reliability analyses of the trauma domain data ($N = 170$) produced a Cronbach's alpha of .811, indicative of good internal consistency and reliability of use by the social workers in the study, interacting with the families in the study.

TABLE 2 Trauma Domain Item Mean Ratings and Standard Deviations ($N = 170$)

Trauma Domain Item	Item Rating*	Standard Deviation
Traumatic Sexual Abuse	2.52	1.27
Traumatic Physical Abuse	2.78	1.38
Traumatic Neglect	3.44	1.35
Traumatic Emotional/Psychological Abuse	3.55	1.25
Traumatic History of Parent/Caregiver	3.99	1.29
Overall Trauma	3.70	1.22

*Rating scale points: 1 = clear strength, 2 = mild strength, 3 = baseline/adequate, 4 = mild problem, 5 = moderate problem, 6 = serious problem.

A similar analytic approach was applied to the post-trauma well-being domain. Approximately 20% of all families (19%) did not have any trauma items rated below baseline at intake (indicating that the trauma domain assessment process excluded approximately 20% of all families from post-trauma well-being assessment based on this criterion). Due to exclusion of some families at intake from post-trauma well-being assessment, and some additional families not having completed services at the end of the data collection, the post-trauma well-being sample size is 113. The mean item ratings and standard deviations for the scale items comprising the post-trauma well-being domain are presented in Table 3.

The mean ratings for the post-trauma well-being scale items ranged from 2.24 to 2.88, placing the population of families comprising the sample between the baseline/adequate and mild strength ratings on all scale items and the overall domain rating. The standard deviations, which ranged from 1.08 to 1.32 indicate a continued dispersion of ratings across the six point scale, and suggest that there were still a number of families who were rated in the problem range at the time of closure, but some families were rated much higher than baseline, falling in the mild strength to clear strength range. Reliability analyses of the post-trauma well-being domain data ($N = 113$) resulted in a Cronbach's alpha of .905, a statistic indicative of good internal consistency and reliability.

Principal components analyses

The trauma and post-trauma well-being domains were developed for a specific purpose, so the construct names were predetermined during scale conceptualization and design: "trauma" to coincide with the trauma literature, particularly the ACE study, and models employed to develop content for pre-service assessments; "post-trauma well-being" to coincide with the Children's Bureau's policy statements on desirable outcomes for children and families relating to well-being, and the models the Children's Bureau used to develop them. A principal components analysis was conducted for each set of scale

TABLE 3 Post-Trauma Well-Being Domain Item Mean Ratings and Standard Deviation ($N = 170$)

Trauma Domain Item	Item Rating*	Standard Deviation
Cognitive and Physical Well-Being	2.24	1.11
Emotional and Psychological Well-Being	2.50	1.11
Social Functioning	2.42	1.08
Parent/Caregiver Support of Child	2.39	1.25
Parent Caregiver Well-Being	2.88	1.32
Overall Post-Trauma Well-Being	2.81	1.21

*Rating scale points: 1 = clear strength, 2 = mild strength, 3 = baseline/adequate, 4 = mild problem, 5 = moderate problem, 6 = serious problem.

TABLE 4 Principal Components Analyses and Scale Item Correlations for the Trauma and Post-Trauma Well-Being Domains ($N = 170$ for Trauma, $N = 113$ for Post-Trauma Well-Being)

Trauma Scale Items	Factor loading	Correlation of Items*	Post-Trauma Well-Being Items	Factor Loadings	Correlation of Items*
Traumatic Sexual Abuse	.548	.41**	Cognitive/Physical Well-Being	.824	.69**
Traumatic Physical Abuse	.717	.54**	Emotional/Psychological Well-Being	.762	.62**
Traumatic Neglect	.712	.62**	Social Functioning of Child	.800	.63**
Traumatic Emotional Abuse	.792	.66**	Parent/caregiver support for child	.813	.78**
Parental Trauma	.621	.61**	Parent/Caregiver Well-Being	.810	.84**
Overall Trauma	**.908**		**Overall Post-Trauma Well-Being**	**.928**	

*In each case this is the correlation of the scale item with its associated overall domain rating. ** All correlations significant at $p < 0.001$.

items, using SPSS V23.0, with Varimax rotation, to measure the variance of observed variables that correspond to each of the two constructs, and to determine if consideration of any item reduction was warranted. Results indicated that scale content conformed to intended design. The proportion of variance explained in the trauma analysis was 52.61% with only one component extracted. The proportion of variance explained in the post-trauma well-being analysis was 67.96%, and again, only one component was extracted. These data are presented in Table 4.

Factor loadings above .700 are considered to be a standard cut point for retention (Kaiser, 1974). Factor loadings on all but two items in the Table exceeded .700. The factor loading of .548 on traumatic sexual abuse may be due in part to the fact that there were only 16 cases involving sexual abuse in the sample. The loading of .621 on the parental trauma item is acceptable, and the item is highly correlated with the overall trauma rating ($r = .61, p < .001$). Neither of these items is weak enough to warrant reduction, although the behavior of the parental trauma item and the traumatic sexual abuse item bear additional scrutiny in future studies with larger sample sizes, particularly relating to sexual abuse of the child. The correlations between the scale items and associated domains were robust, and all are significant ($p < .001$). Given

TABLE 5 Correlations Between Selected Trauma Domain Scale Items and NCFAS G+R Domain Ratings at Intake (N=169 in All Cases)

Domain or Scale Label	Scale or Domain Rating*	Pearson r Statistic	Probability
Overall Parental Capability-Intake	3.50		
Parent/Caregiver Trauma	3.99	.355	$p < .01$
Overall Family Interactions-Intake	3.51		
Parent/Caregiver Trauma	3.99	.194	$p < .05$
Overall Family Safety-Intake	3.53		
Traumatic Sexual Abuse	2.52	.351	$p < .01$
Traumatic physical abuse	2.78	.435	$p < .01$
Traumatic neglect	3.44	.439	$p < .01$
Overall Child Well-Being-Intake	3.30		
Traumatic Sexual Abuse	2.52	.273	$p < .01$
Traumatic Physical Abuse	2.78	.316	$p < .01$
Traumatic Neglect	3.44	.290	$p < .01$
Traumatic Emotional/Psych Abuse	3.55	.364	$p < .01$
Overall Social/Community Life-Intake	3.19		
Parent/Caregiver Trauma	3.98	.293	$p < .01$
Overall Family Health-Intake	3.24		
Traumatic Sexual Abuse	2.52	.389	$p < .01$
Traumatic Physical Abuse	2.78	.271	$p < .01$
Traumatic Neglect	3.44	.353	$p < .01$
Traumatic Emotional/Psych Abuse	3.55	.323	$p < .01$
Parent/Caregiver Trauma	3.99	.367	$p < .01$

*Arithmetic average of rating scale points: 1 = clear strength, 2 = mild strength, 3 = baseline/adequate, 4 = mild problem, 5 = moderate problem, 6 = serious problem.

the strength of the overall factor loadings and correlations of items within each domain, the underlying constructs are considered to be confirmed.

Convergent validity with the NCFAS G+R

The findings from reliability analyses and directionality of these two new domains are encouraging. However, to see how the new domains worked in concert with existing domains on the NCFAS G+R convergent validity among domains was examined. The NCFAS G+R domain ratings of family functioning can vary for a variety of reasons even in the absence of a history of trauma or trauma symptomology for children, caregivers, or both. However, if there is a history of trauma, that trauma and recovery from trauma due to services may logically relate to family functioning generally, and more specifically to particular domains of the NCFAS G+R. Therefore, using family and child data from the 170 families in the study, correlations were computed between the NCFAS G+R domain ratings at intake and closure and various trauma ratings at intake and post-trauma well-being ratings at closure.

The selections of NCFAS-G+R domains and scale items from the trauma and post-trauma well-being domains were based on pairing the trauma and post-trauma scale items that logically and theoretically would be expected to impact the NCFAS G+R domain ratings. Table 5 presents the positive correlations between the NCFAS G+R domain ratings at intake and the selected scale items from the new trauma domain. Each of the hypothesized relationships is statistically significant and some are robust.

Among the more robust is the correlation between overall parental capabilities at intake and a parent or caregivers history of trauma. The correlation is .355, indicating that a traumatic history may adversely affect the parent's ability to care for his or her own children. Similarly, symptomology associated with various forms of traumatic maltreatment including sexual abuse, physical abuse, and neglect are associated with problems in overall family safety with correlations ranging from .351 to .439. Overall child well-being is similarly associated with traumatic symptomology on various forms of abuse including sexual abuse, physical abuse, neglect, and emotional/psychological abuse, with correlations ranging from .273 to .364. Overall family health at intake is associated with traumatic histories and symptomology, with traumatic child sexual abuse and parent/caregiver history of trauma having the most negative influence, with correlations of .389 and .367, respectively.

The strength of these correlations suggests that while the theorized influences of traumatic symptomology on the original domains of the NCFAS G+R do exist, are systematic, and are statistically significant, they are not so compelling as to suggest that the new trauma domain is superfluous and that the same information could be obtained by using only the original domains. The contents of the definitions of the scale items in the trauma domain are

TABLE 6 Correlations Between Selected Post-Trauma Well-Being Scale Items and NCFAS G+R Domains Ratings at Closure (N=113 in All Cases)

Domain or Scale Label	Scale or Domain Rating*	Pearson r Statistic	Probability
Overall Parental Capabilities-Closure	2.64		
P-T Parent/Caregiver Support for Child	2.39	.567	$p < .01$
P-T Parent/Caregiver Well-Being	2.89	.645	$p < .01$
Overall Family Interactions-Closure	2.50		
P-T Parent/Caregiver Support for Child	2.39	.440	$p < .01$
P-T Parent Caregiver Well-Being	2.89	.527	$p < .01$
Overall Family Safety-Closure	2.37		
P-T Parent Caregiver Support for Child	2.39	.645	$p < .01$
P-T Parent Caregiver Well-Being	2.89	.662	$p < .01$
Overall Child Well-Being-Closure	2.41		
P-T Cognitive/Physical Well-Being-Child	2.25	.568	$p < .01$
P-T Emotional/Psychological Well-Being-Child	2.50	.563	$p < .01$
P-T Social Functioning-Child	2.42	.576	$p < .01$
Overall Social/Community Life-Closure	2.61		
P-T Parent Caregiver Support for Child	2.42	.448	$p < .01$
P-T Parent Caregiver Well-Being	2.89	.550	$p < .01$
Overall Family Health-Closure	2.43		
P-T Cognitive/Physical Well-Being-Child	2.25	.556	$p < .01$
P-T Emotional/Psychological Well-Being-Child	2.50	.436	$p < .01$
P-T Parent/Caregiver Well-Being	2.89	.628	$p < .01$

*Arithmetic average of rating scale points: 1 = clear strength, 2 = mild strength, 3 = baseline/adequate, 4 = mild problem, 5 = moderate problem, 6 = serious problem.

different than the definitions of the related original NCFAS G+R domains and their attendant scale items. The strength of these correlations suggests that while the new information is consistent with overall family functioning, both positive and negative, the new information provided by the trauma assessment has added value and may be uniquely useful.

Ratings for scale items on the post-trauma well-being domain were available only for families that had at least one problem rating on the trauma scales items at intake, a criterion met by 113 families. Correlations between domain closure ratings on the NCFAS G+R and various scale items from the post-trauma well-being domain were computed on the basis of logical and theoretical associations. Each of the hypothesized relationships is statistically significant, and many are robust. These data are presented in Table 6.

Each of the mean domain ratings and scale ratings in Table 6 is above baseline (i.e. less than 3.0), suggesting that amelioration of traumatic symptomology is associated with improved family functioning on companion domains within the NCFAS G+R. Positive post-trauma parent/caregiver support for the child and the parent/caregiver's own well-being are positively

correlated with overall parental capabilities at closure, with robust correlations of .567 and .645, respectively. Similarly, the same two post-trauma scale items are positively correlated with overall family interactions at closure, with correlations of .440 and .527, respectively. Most compellingly, amelioration of parent traumatic symptomology is most strongly associated with overall family safety at closure, with parent/caregiver support of the child and the parent/caregiver's own well-being being strongly associated with overall family safety; the correlations being .645 and .662, respectively.

Amelioration of child trauma symptomology is associated with improvements in both child well-being and family health. Post-trauma strengths in cognitive and physical well-being, emotional and psychological well-being, and social functioning are positively correlated with overall child well-being at closure. Overall family health similarly benefits from the trauma informed approach, with correlations of .556 for cognitive and physical well-being and .436 for emotional and psychological well-being. Improvement in parent/caregiver well-being is also highly correlated with improvements in overall family health, with a correlation of .628.

Positive correlations, even robust and compellingly strong correlations, do not equate to causality. However, the presence of the positive correlations between traumatic histories/symptomology and problematic family functioning at intake, and additional positive correlations between post-trauma well-being of children and parents and improved family functioning are noteworthy, and support the practice of assessing for trauma in families involved with the child welfare system, targeting services on the basis of symptomology, and assessing for post-trauma well-being at case closure to inform various practice and legal decisions.

Trauma and Post-Trauma Well-Being in Relation to Practice Variables and Service Outcomes

Previous analyses determined that assignment to trauma services was not affected by child age or by type of child maltreatment, per se. However, it does appear that service provision is affected by information relating to trauma symptomology. When traumatic sexual abuse was rated below baseline, there was a significant trend for sexual abuse victims to be referred to a mental health service provider for trauma services (chi-square=10.92, $df = 4$, $p < .05$). Other trends included traumatic neglect victims being referred to general service workers rather than other types (chi-square = 10.63, $df = 4$, $p < .05$), and emotional/psychological abuse victims being referred to mental health service providers (chi-square = 12.47, $df = 4$, $p < .05$).

These results suggest that while trauma symptomology affects overall ratings on the trauma domain, it is the specific type of trauma, in combination with severity, which appears to influence service referral. However, these results are

only suggestive because the data used to explore these relationships came from three different programs and it is likely that available services were not evenly distributed across those sites. These factors invoke guarded optimism.

Placement outcomes are particularly important to family preservation programs and other in-home services. In this study, being placed or remaining in foster care at closure was found to be significantly related to being below baseline on post-trauma social functioning of the child (chi-square = 13.22, $df = 3$, $p < .01$), post-trauma parent/caregiver support of child (chi-square = 19.93, $df = 3$, $p < .01$), and overall post-trauma well-being (chi-square = 29.66, $df = 3$, $p < .01$). In every case, being below baseline/adequate increases the probability of remaining in or being placed in foster care. Again, however, the absence of reliable data on placement options available in each site limit the strength of these findings.

DISCUSSION

This article presents the findings of a field test of two domains recently added to the NCFAS-G+R to increase the scale's utility to practitioners using the NCFAS-G+R during in-home assessments and in other practice settings, by including content related to histories of trauma and trauma symptomology that may negatively impact family functioning and child welfare, as well as post-trauma improvements in child well-being and parent/caregiver well-being important to case practice decisions relating to placement, permanency, child and family safety, and overall family functioning.

Analyses of the reliability of both the original NCFAS-G+R domains and the new domains of trauma and post-trauma well-being, using Cronbach's Alpha as the statistic for reliability, indicate reliable scale properties of both the old and new domains in the three practice settings that participated in the study. Participating agencies operate high fidelity family preservation service programs, and workers at each site were experienced using the NCFAS G+R during in-home assessments. Workers had little or no trouble using the new domains, which are constructed to be very similar in form to the original NCFAS-G+R domains.

Reliability of the new domains, expressed as Cronbach's alpha, were quite respectable at .811 for trauma, and .905 for post-trauma well-being. The underlying constructs of both domains was confirmed, and scale items from the new domains were significantly correlated with original NCFAS-G+R domains that logic and theory would anticipate. Further, as a practice tool, the trauma domain was capable of both including and excluding families on the basis of trauma history and symptomology, and the post-trauma well-being results indicate that manifestations of trauma can be reduced with appropriate in-home and other services, and post-traumatic well-being expressed in terms that are relevant to public child welfare policy and practice requirements.

Analyses of the trends and associations of scale item ratings on the new domains with practice variables and outcome variables indicate substantial added value of this information to social work practice and the use of the NCFAS-G+R. These findings support the practice of assessing for trauma and traumatic histories affecting families involved with child welfare, and that the impact of trauma on children and caregivers can be ameliorated.

It should be noted that in the present study most of the participating social workers had received training on the provision of services to families and children exhibiting trauma symptomology. Some workers specialized in providing trauma-related services. The post service ratings on post-trauma well-being domain and post service ratings on other domains of the NCFAS-G+R suggest that effective services were delivered by workers with basic trauma-informed practice training, by social workers specializing in trauma service, and by mental health providers. Depending on the level of training, the availability of specialized services, and the severity of trauma symptomology noted during assessment, consultation with professionals specializing in the amelioration and treatment of trauma may be warranted.

Caution is warranted with respect to some findings in this study because it cannot be assured that all of the sites had equal access to the same level of worker training or a full complement of service providers. The levels of worker training, distribution of services and referral sources across the three participating agencies is unknown, but is likely not equivalent. Additional research is needed to replicate the initial reliability findings, and to further explore, referral decision-making and service outcomes in relation to the trauma and post-trauma well-being domain ratings. However, the information relating to trauma histories and trauma symptomology appears to have influenced practice decisions by social workers, and positive post-trauma well-being ratings for both children and parents/caregivers was significantly associated with positive service outcomes. Most desirable would be a larger sample study in a practice setting or settings in which a known and sustained array of services is available for children and families affected by trauma permitting further examination of the apparent added value of trauma assessment to service referral decisions and treatment outcomes.

These new domains of the NCFAS-G+R were developed to help practitioners embrace trauma-informed practice and to embrace new knowledge and information relating to the impact of trauma not only on symptomology but also on the capacity of families to recover from the deleterious effects of trauma through the deliberate delivery of services focused on trauma symptomology. The new domains appear to work as intended, and when incorporated in the NCFAS G+R, offer in-home and other practitioners additional tools for their work with vulnerable children and families.

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