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Article *in* Journal of Interpersonal Violence · November 2019

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Exploratory Structural Equation Modeling Analysis and Validity of the Family Needs Screener

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Abstract

Assessment that accurately categorizes families' risk for family violence (i.e., intimate partner violence and child maltreatment) and identifies areas of family need is essential for prevention program planning, practice, and resource allocation. The Family Needs Screener (FNS) assesses risk for intimate partner violence and child maltreatment. It is used as a tool to prioritize those who are in the greatest need of services as well as plan prevention efforts in selected prevention services offered to military families. To date, no peer-reviewed studies examine the factor structure of the FNS. In this study, we examined measurement aspects of the FNS as an assessment tool in identifying risk of family violence. Data were drawn from Army families ($N = 18{,}159$) who were screened between 2009 and 2013 and matched to substantiated cases of family violence. Exploratory structural equation modeling (ESEM) was used to examine the factor structure, measurement invariance, and predictive validity of the FNS. Results supported a shortened measure with a five-factor structure and full gender invariance. In particular,

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relationship issues were predictive of both intimate partner violence and child maltreatment. In addition, family of origin/history of family violence was predictive of substantiated cases of child maltreatment. Findings support the use of the FNS to assess risk, allocate, and plan for services in an Army population. Implications for scale modifications and use, as well as prevention efforts, are discussed.

Keywords
family violence, assessment, ESEM, gender invariance, military, child maltreatment, intimate partner violence

Family violence is comprised of intimate partner violence (IPV), including physical, emotional, and sexual abuse by a current or former intimate partner, and child maltreatment (CM), including physical, emotional, and sexual abuse as well as physical and emotional neglect of a child. Both share risk factors such as parental anger and hyperreactivity, parental stress, decreased parental self-esteem or increased parental depression, and family conflict or decreased marital satisfaction (Stith et al., 2004, 2009). IPV is also a risk factor for CM (Bidarra et al., 2016). Military families who experience IPV are 2 times as likely to have a substantiated report of child abuse than those who do not experience IPV (Rumm et al., 2000). Military families may also experience increased and/or additional risk factors. For example, young military families experience high levels of social isolation which has been noted as one of the most significant risk factors for CM (Kinard, 1995; Milner, 1994). Evidence also suggests that recent deployment increases the risk for IPV (McCarroll et al., 2010).

Family violence often results in deleterious outcomes for both adults and children. For the victimized partner, IPV often results in increased rates of poor health, injury, chronic pain and disease, depression, gastrointestinal issues, substance use, sexually transmitted infections, and posttraumatic stress disorder (Campbell, 2002; Coker et al., 2002). Similarly, children affected by CM suffer a range of poor emotional and health outcomes in childhood and adolescence (Herrenkohl & Herrenkohl, 2007; Lanier et al., 2010), as well as adulthood (Gilbert et al., 2009; Kaplow & Widom, 2007).

As the consequences of family violence become clearer, initiatives have focused on prevention efforts through universal (i.e., focused on improving and maintaining healthy intimate relationships and positive parenting practices; Altafim & Linhares, 2016) and selected programming. Selected

programs focus on an identified population that has particular characteristics. Typically, selected programs define families' eligibility to participate by using screening tools. Thus, screening tools need to accurately categorize families' risk status as well as recognize areas of family needs for program planning, practice, and resource allocation (e.g., Slep & O'Leary, 2001). In particular, screening assessments can help ensure that the content of services is appropriate and the level of services families receive matches their need. Thus, the ability of a screening tool to accurately and reliably classify at-risk families is of central importance in allocating resources to families who need them most, identifying and engaging the appropriate audience, and appropriately tailoring services.

Home visitation programs are one type of selected programming targeting prevention of CM. One such program is the Army New Parent Support Program (NPSP), a home visitation program for families at risk for family violence who are expecting a child or have one or more children through 3 years of age. NPSP is part of the Army Family Advocacy Program (FAP), which assists families who are at risk for family violence by providing targeted support and prevention services in accordance with Army policies and procedures. The screening tool used by the Army NPSP is the Family Needs Screener (FNS; Kantor & Straus, 1999), which assesses risk for IPV and CM. The FNS is used as a tool to prioritize those who are in the greatest need of services and to plan prevention efforts.

FNS

Originally developed for the Air Force, the FNS purportedly assesses 10 risk factors associated with family violence, including both nonmalleable factors (i.e., demographic factors, family of origin violence and neglect, prior family violence) and malleable factors (i.e., parental stress, depression, self-esteem, substance misuse, violence approval, relationship discord, lack of support). As used in practice, FAP staff introduce the FNS and review the question topics with parents before they complete the measure. Fifty-three of the 59 items that comprise the FNS are scored by coding items as a zero or one, with a score of one indicating a risk factor for family violence.[1] The scores applied to each of the 53 items are summed for a total FNS score. In the development of the FNS (Kantor & Straus, 1999), a 75% cutoff score was used to classify family need. This translates to practice with families considered "high-needs" if their total FNS score was nine or above and "low-needs" if their total score was below nine. Families are also considered high-needs if they endorsed any one of five items considered in the scale development to be automatic qualifiers (e.g., prior family violence, uncontrollable anger).

In practice, families assessed as low-needs are typically offered general assistance with parenting, such as parenting skills classes, play groups, other support groups, or less intensive services. Families assessed as high-needs are offered intensive home visits in addition to other FAP or community services. For families receiving home visits, home visitors use the FNS and their clinical judgment to plan visit content and activities. However, there are no established criteria for use of the scores associated with each of the FNS risk factors. One report found that the content planned to be delivered to families matched the areas of need (Kaye et al., 2016); yet without consistent criteria for identification, this remains a subjective judgment. Although the FNS has been used by the U.S. Military for 20 years, review and analysis of the FNS is limited. In addition to the development of the FNS conducted by Kantor and Straus (1999), two non–peer reviewed evaluations of the FNS have been conducted (Pittman & Taylor, 2002; Wyse, 2007).

Pittman and Taylor (2002) used Kantor and Straus's data in an attempt to replicate the original analysis. Both Kantor and Straus (1999) and Pittman and Taylor (2002) employed list-wise deletion of women who were single or not currently pregnant, examining the scale for only a subset of the population for whom services are intended. Pittman and Taylor (2002) generally replicated Kantor and Straus's (1999) findings. They were, however, unable to replicate Kantor and Straus's (1999) cut-score of nine. Pittman and Taylor also questioned the imbalance of items representing each of the 10 subscales, suggesting that factors with more items may have an overrepresentation in the scale, which could influence need classification. Based on these results, Pittman and Taylor (2002) suggested a modified scale with under half the items.

In a separate sample of mothers from Air Force families, Wyse (2007) examined the factor structure of the FNS using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) as well as the internal consistency and predictive validity of the proposed factors. None of the models tested demonstrated a good fit. Wyse (2007), however, concluded that the FNS had adequate reliability and dependability, but the cut-score resulted in a fairly low sensitivity (i.e., less than half of the families with substantiated abuse classified as high-need). Wyse recommended a shortened version of the FNS, although the items were identified in a backward-stepwise regression predicting CM as opposed to identification by factor weights. However, the items identified were not consistent with those retained by Pittman and Taylor (2002), and items used in practice reflect those from the original scale development (Kantor & Straus, 1999).

In each of these studies, the predictive ability of the FNS was examined using the Likert-type scores from each item, in stark contrast to standard practice, which dichotomizes parents' responses to each item. In the only

peer-reviewed evaluation of the FNS, Travis and colleagues (2015) analyzed need classification based on FNS scores in a sample of mothers from Air Force families. Their findings suggested that high/low-needs classifications based on the cut-score of nine and automatic qualifiers were predictive of subsequent CM. They did not, however, examine the measurement of the scale beyond the predictive validity of need classification and score differences on each of the 10 factors between low- and high-needs classification in mothers.

The standard use of this tool in practice in combination with these findings have failed to establish clarity regarding the reliability and validity of the FNS (e.g., non-replicability of cut-score, poor model fit). In addition, each of the previous studies were conducted within the population of the Air Force. Yet the Army is the largest service branch within the U.S. Military, thus examining the utility of the FNS in an Army population remains important and untested. Similarly, prior analyses included only mothers, so the question of gender invariance remains untested. Finally, published research has not tested the factor structure of the FNS and the previous unpublished studies examining the FNS mainly employed EFA followed by CFA and were unable to attain good fitting models. Further examination of the FNS items, factor structure, cut-score, and predictive validity is warranted. A reliable and valid measurement of family need is central to the progression of scientific knowledge as well as accurate identification of military families in need of services. It is important that the dimensionality of the scale (e.g., number of latent factors) and the nature of its dimensions (e.g., strength and direction of factor loadings) are established before one proceeds to other forms of analyses, such as predictive validity or group differences. Factorial validity, or accurate dimensionality, is essential for developing or supporting theoretical models. Therefore, it facilitates interpretations of family need with respect to other variables such as maternal depression or abuse potential. For example, if one has used a 10-factor measure of family need but the hypothesized multidimensional structure is not supported in a specific sample, it would be erroneous to subsequently examine outcomes (e.g., substantiated abuse) of the multiple facets of this concept.

The purpose of this study was to examine measurement aspects of the FNS as an assessment tool in identifying risk of family violence. Specifically, we sought to further the psychometric validation of the FNS by building on what is currently known about the FNS and examining the factor structure and predictive validity of the FNS. As the FNS has only been used with a female sample, a critical point of assessment is whether it can be used across different individuals. In particular, if the FNS performs differently between mothers/female caregivers and fathers/male caregivers, then measurement biases

could occur, leading to unfounded comparisons. On the contrary, if comparisons are similar, then findings can be generalized between male and female caregivers. Thus, measurement invariance was investigated to better understand the construct and to inspect the generalizability of the FNS to fathers/male caregivers.

Method

Participants and Procedures

Secondary, archival, data were collected and matched from two databases: the Client Tracking System (CTS) used by Army NPSP, and the Army Central Registry (ACR), which contains data on all Army families, including data on violence incidents. Army families worldwide ($N = 18{,}159$), who were screened for NPSP services between 2009 and 2013 and matched between the two databases, were included in the sample. All families were expecting the birth or adoption of a child or had a child under age three. Participating parents/caregivers ($N_{male} = 1{,}944$; $N_{female} = 16{,}158$) ranged in age from 16 to 55 years ($M = 26.12$; $SD = 5.28$) with partners' ages ranging from 16 to 76 years ($M = 27.46$; $SD = 5.82$). Participants were primarily White and non-Hispanic (56%; 17% Black, non-Hispanic; 14% Hispanic; 13% Other; 2% unreported). The majority of participants were mothers who were the spouse of an active duty service member ($n = 10{,}695$; service member $n = 5{,}542$; family member $n = 12{,}508$; not available $n = 108$).

Measures

FNS. The FNS (Kantor & Straus, 1999) has 59 items associated with 10 risk factors of family violence: demographics, stress, relationship discord, support, substance abuse, violence approval, family of origin violence and neglect, self-esteem, depression, and prior family violence. *Demographic* risk is assessed by 15 items including several standard demographic survey items measuring the socioeconomic status of families (e.g., Kantor & Straus, 1987). Items assess factors such as age, marital status, military status, ethnicity, and education.

Eight of the 10 factors are assessed via three to 10 questions utilizing a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). *Stress* is assessed by five items, including three items specific to sources and buffers of pregnancy-related stress (e.g., "This is not a good time for me to have a baby") and two items on current perceived stress levels (e.g., "This is a very stressful time for me"). *Relationship discord* measures areas

of relationship distress and dissatisfaction with the current relationship. Five items adapted from the Personal and Relationships Profile (Straus et al., 1999) are included (e.g., "I wish my partner and I got along better"). *Support* is assessed by 10 items and includes aspects of instrumental support (i.e., I only have a few friends/family to help with the baby), supportive communication (e.g., "There is someone I can talk to openly about anything"), social isolation (e.g., "I feel very isolated"), and aspects of financial distress (e.g., "My income is often inadequate for basic needs (rent, food, clothing, transportation, etc.)"). These items are adapted from a previous checklist used for NPSP enrollment. Three items assess *substance abuse* for both oneself (e.g., "I sometimes drink enough to feel really high or drunk") and one's partner ("My partner sometimes drinks five or more drinks at a time, but mostly on weekends"). *Violence approval* includes four items assessing normative attitudes about spousal violence (e.g., "I can think of a situation where I would approve of a wife slapping a husband's face") and corporal punishment (e.g., "It is sometimes necessary to discipline a child with a good, hard spanking"). Six items measure *family of origin violence and neglect*. These items measure violent socialization (e.g., "When I was a teenager, I was hit a lot by my mother or father") and the parent's history of neglect and childhood unhappiness (e.g., "I have unhappy memories of my childhood"). Five items measuring *self-esteem* (e.g., "I frequently feel as if I am not as good as others") are derived from the Rosenberg Self-Esteem Scale (Rosenberg, 1979). *Depression* is assessed with four items (e.g., "I feel sad quite often") modified from the Personal and Relationships Profile Depressive Symptoms subscale (Straus et al., 1999) and the previous enrollment checklist.

The last factor includes two items to assess *prior family violence* indicated by *yes* (1) or *no* (2). These items ask the parent if there has been prior involvement in suspected or verified cases of CM or IPV for the respondent and the respondent's partner.

Scaled items are scored such that responses (i.e., *agree* or *strongly agree* for positively worded items and *disagree* or *strongly disagree* for reverse scored items) each are scored as one. An indication of *yes* on either of the prior family violence items are scored as one. Six demographic items are unscored (i.e., sponsor's military status, pregnancy/adoption status, number of children in the home, parent race/ethnicity, and partner race/ethnicity) with the other demographic items receiving a score of one if risk criteria are met (e.g., under 20 years of age, single/divorced/separated/widowed, living with partner for 1 year or less). The scores of each of the remaining 53 items are summed with a score of nine or higher indicative of a high-need classification. Automatic qualifiers include five items—one from each of the following factors: stress (i.e., *feeling out of control*), relationship discord (i.e., *uncontrollable anger*),

and depression (i.e., *feeling life is not worth living*), and both items assessing prior family violence (i.e., *CM, IPV*). Responses of *agree* or *strongly agree* for the scaled items and *yes* on either of the prior family violence items automatically classify the respondent as high-needs.

Family violence. The presence or absence of substantiated cases of CM and IPV occurring after the completions of the FNS were drawn from the ACR.

Data Analysis

While seemingly attractive, CFA requires strong measurement science not often available in practice, including the fallible nature of items as perfect indicators of a single construct (Morin et al., 2016). As a result, exploratory structural equation modeling (ESEM) has been recommended (Asparouhov & Muthen, 2009; Marsh et al., 2014; Morin et al., 2013). ESEM allows for a more appropriate examination of factor structure by allowing cross-loadings (EFA aspect) as well as the use of advanced statistical methods (CFA aspects). One advantage of ESEM is the demonstration of substantially better fit and less correlated factors than the corresponding CFA solutions (Joshanloo & Lamers, 2016; Marsh et al., 2011; Morin et al., 2016) as well as the applicability of ESEM in clinical research (Marsh et al., 2014). Accordingly, the application of ESEM seems to be suitable to the examination of the FNS.

Analyses were performed with Mplus 8.1 (Muthén & Muthén, 1998–2017). Negative items were reversed prior to data analyses so that higher scores reflect higher levels of need. Items were then dichotomized, per clinical practice. While Kantor and Straus (1999) conceptualized demographics and prior family violence as three of the 10 FNS factors, Wyse (2007) found that items comprising the Demographics and Prior Family Violence subscales did not represent single constructs. Thus, the items comprising these subscales were not included in the factor model, reducing factors from 10 to eight. In addition, three of the stress items (assessing feelings specific to pregnancy) may be better suited as demographic risk items rather than dimensions of the scale and were not included in the factor model testing, leaving seven factors.

ESEM factor model. In the first phase of the analysis, we estimated a seven-factor ESEM model using weighted least squares means and variance adjusted (WLSMV) estimator as it is suited to the ordered-categorical nature of the items (Lubke & Muthén, 2004). WLSMV estimates models with missing data, although there was less than 1% of missing FNS responses based on the full sample ($N = 18{,}159$). Cases (less than 1% of the full sample) were

dropped from the analysis due to missing data on all variables in the model, retaining 99.5% of families ($N = 18{,}070$). ESEM was used as an exploratory analysis first due to the untested nature of the FNS with the objective of identifying a parsimonious and meaningful factor structure. In particular, items that did not load onto any of the estimated factors were iteratively dropped. Additional factors were eliminated from the model if items loaded highly onto more than one factor or if there was no conceptual support or meaningfulness for the item loadings.

Multigroup analysis. In the second phase of the analysis, measurement invariance was tested across genders (females vs. males) on the basis of the final ESEM model to investigate the generalizability of the FNS. A stepwise series of analyses were conducted beginning with a multigroup ESEM with WLSMV and then testing six increasingly restrictive models (Guay et al., 2015; Morin et al., 2013; Tóth-Király et al., 2016). The multigroup ESEM models testing varying degrees of invariance on the model parameters included (a) configural invariance (equality of loading across groups without constraints applied), (b) metric or weak invariance (factor loadings are invariant), (c) scalar or strong invariance (factor loadings and item thresholds are invariant), (d) strict invariance (factor loadings, item thresholds, and uniqueness are invariant), (e) invariance of the variance-covariance matrix (factor loadings, item thresholds, uniqueness, and variance-covariances are invariant), and (f) latent mean invariance (factor loadings, item thresholds, uniqueness, variance-covariances, and latent means are invariant).

Goodness of fit. Commonly used goodness-of-fit measures were used to assess the measurement models and measurement invariance models. Although likely to be inflated by sample size and sensitive to minor misspecification, chi-square (χ^2) is reported. Model fit was assessed through examination of the comparative fit index (CFI; $\geq$0.95 for good, $\geq$0.90 for acceptable), the Tucker–Lewis index (TLI; $\geq$0.95 for good, $\geq$0.90 for acceptable), and the root mean square error of approximation with its 90% confidence interval (CI) (RMSEA; $\leq$0.06 for good, $\leq$0.08 for acceptable; Brown, 2015; Hu & Bentler, 1999). When comparing the nested models in the phase of measurement invariance, relative changes in fit indices were examined with the following criteria (ΔCFI and ΔTLI decrease $\leq$0.010 and ΔRMSEA increases $\leq$0.015; Chen, 2007; Cheung & Rensvold, 2002).

Predictive validity. In the third phase of the analysis, the predictive validity of the FNS for family violence was tested. This was examined in three ways. First, the ESEM model identified in the previous steps was used to predict

family violence with covariates (e.g., age, education; Capaldi et al., 2012; Travis et al., 2015) and automatic qualifiers currently used in practice (i.e., feelings of uncontrollable anger, feeling out of control, feeling life is not worth living, and self-reported prior family violence) using WLSMV. Second, the classification of need status was examined through both the scale score and automatic qualifying items. First, the cumulative score for this model was examined in reference to the 75% cutoff designation in practice for need classification (Kantor & Straus, 1999). Next, the five specified automatic qualifiers, along with the inclusion of an item assessing social isolation as this has been found to be a risk factor for military families (Kinard, 1995; Milner, 1994), were examined with regard to their predictive ability on family violence using a grouped probit model. Thus, families could be classified as high-needs in one of three ways: (a) having an FNS score greater than the 75% cutoff and endorsing one or more of the automatic qualifiers; (b) having an FNS score greater than the 75% cutoff, but not endorsing any of the automatic qualifiers; or (c) having an FNS score less than the 75% cutoff, but endorsing one or more of the automatic qualifiers. This was followed by an examination of the sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the need classification overall and by gender. Third, a grouped structural model, developed from the previous two steps, was examined using WLSMV.

Results

ESEM

Model fit indices for the models can be seen in Table 1. For each of the iterations of the ESEM models, the approximate fit indices all indicate good model fit. In the seven-factor model, there were two co-linear items and three items that did not load onto any of the factors. Dropping these five items and the substance abuse factor, which only retained two items, resulted in a better fitting six-factor model; however, additional items did not load onto any factors and were dropped (Table 2). One factor was comprised only of cross-loaded items; these nontarget loading items could indicate a conceptual overlap between different facets of family need or may not provide a clear picture of facets of family need. These four additional items were dropped, and a five-factor model was tested. Considering conceptual distinction between factors and parameter estimates in addition to fit indices (e.g., Morin et al., 2016), the five-factor ESEM model was retained. In this model, all items loaded strongly on their respective factors (ranging from .44 to .99), whereas cross-loadings were weaker (–.12 to .28; see Table 2). Factors

Table 1. ESEM Factor Models and Invariance Testing.

Model	χ^2	*df*	CFI	TLI	RMSEA	(90% CI)	$\Delta\chi^2(df)$	ΔCFI	ΔTLI	ΔRMSEA
ESEM 7 Factor	5,848.84***	458	.979	.968	0.025	[.025, .026]				
ESEM 6 Factor	5,135.38***	345	.979	.969	0.028	[.027, .028]				
ESEM 5 Factor	4,413.18***	248	.978	.966	0.030	[.030, .031]				
ESEM 5 Factor Gr	3,300.87***	606	.985	.981	0.022	[.021, .023]				
Configural	4,287.96***	496	.979	.968	0.029	[.028, .030]				
Weak	2,971.97***	611	.987	.984	0.021	[.020, .021]	175.53 (115)***	0.008	0.016	−0.008
Strong	3,093.28***	634	.986	.984	0.021	[.020, .021]	157.36 (23)***	−0.001	0.000	0.000
Strict	3,300.87***	606	.985	.981	0.022	[.021, .023]	63.57 (2)***	−0.001	−0.003	0.001
Factor variance-covariance	2,968.52***	621	.987	.984	0.020	[.020, .021]	68.13 (15)***	0.002	0.003	−0.002
Latent mean	3,060.29***	626	.987	.984	0.021	[.020, .021]	82.36 (5)***	0.000	0.000	0.001

Note. ESEM = exploratory structural equation modeling; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; Gr = grouped.
***$p < .001$.

Table 2. ESEM.

Original Factor and Items	Seven-factor ESEM							Six-factor ESEM						Five-factor ESEM				
	1 (λ)	2 (λ)	3 (λ)	4 (λ)	5 (λ)	6 (λ)	7 (λ)	1 (λ)	2 (λ)	3 (λ)	4 (λ)	5 (λ)	6 (λ)	RD (λ)	SUP (λ)	PSY (λ)	VA (λ)	FO (λ)
Stress																		
STR4	.13	−.04	.48	**.49**	.02	.05	−.09	**.49**	.15	.07	.50	.03	−.04					
STR5	.00	−.09	.43	**.69**	−.02	.09	−.01	**.45**	.02	−.02	.71	−.01	.04	.08	.08	**.56**	.13	.05
Relationship discord																		
RD1	**1.00**	.04	−.06	−.03	−.02	−.06	−.05	−.07	**.99**	.01	−.03	−.02	−.07	**.99**	−.01	−.02	−.08	−.04
RD2	**.99**	.03	−.01	.00	.01	−.03	−.03	−.01	**1.00**	.00	.00	.01	−.04	**1.00**	−.01	.00	−.04	.01
RD3	**.65**	.06	.12	.05	.02	.07	.06	.12	**.66**	.06	.07	.04	.08	**.68**	.08	.05	.11	.04
RD4	**.82**	.00	.08	.04	.02	.04	.04	.09	**.83**	−.01	.05	.03	.06	**.84**	.01	.03	.10	.03
RD5	**.23**	−.08	.16	.35	.10	.15	.11											
Social support																		
SUP1	−.09	**.17**	.52	.08	.08	−.04	−.01	.39	−.15	**.40**	.07	.08	−.01	−.08	**.44**	.01	.05	.11
SUP2	.02	**.24**	.49	.43	−.01	.00	−.03	.37	.00	**.38**	.45	−.01	−.02					
SUP3	.15	**.12**	.10	.21	.03	.05	.04	.05	.15	**.12**	.23	.04	.05					
SUP4	.18	**.56**	−.16	.10	−.02	.10	.01	−.35	.20	**.44**	.14	−.02	.02					
SUP5	.04	**.92**	−.06	.03	.00	.32	−.01	−.20	.12	**.59**	.17	.05	.05	.10	**.51**	.24	.01	.02
SUP6	−.07	**.85**	.04	.03	.02	.32	−.05											
SUP7	.01	**.53**	.22	−.01	.17	.04	.02	.00	−.01	**.59**	.00	.17	.04	−.01	**.58**	.04	−.01	.16
SUP8	−.14	**.56**	.49	−.02	−.01	−.05	.01	.22	−.20	**.77**	−.02	−.02	−.01	−.16	**.78**	−.03	.00	.00
SUP9	.16	**.46**	.40	−.04	.00	−.08	.02	.17	.11	**.64**	−.05	−.01	−.02	.13	**.65**	−.05	.00	−.01
SUP10	.10	**.73**	.33	.00	.03	−.08	.07	−.01	.05	**.89**	−.01	.02	.02	.05	**.87**	.05	−.01	−.01

(continued)

Table 2. (continued)

Original Factor and Items	Seven-factor ESEM							Six-factor ESEM						Five-factor ESEM				
	1 (λ)	2 (λ)	3 (λ)	4 (λ)	5 (λ)	6 (λ)	7 (λ)	1 (λ)	2 (λ)	3 (λ)	4 (λ)	5 (λ)	6 (λ)	RD (λ)	SUP (λ)	PSY (λ)	VA (λ)	FO (λ)
Substance abuse																		
SA1	.06	*.02*	−.02	.26	*−.03*	**.84**	−.06											
SA2	.10	*−.02*	−.08	.15	*.00*	**.75**	*.00*											
SA3	.37	*−.04*	.06	*.01*	*.02*	**.22**	.07											
Violence approval																		
VA1	−.06	*.00*	.05	*.01*	*−.02*	.28	**.50**	.06	*−.04*	*−.03*	.07	*.02*	**.56**	*−.03*	−.04	*.04*	**.57**	.05
VA2	.15	*−.03*	*−.01*	.05	*−.02*	*−.01*	**.79**	−.06	.07	.05	.05	*−.03*	**.74**	.09	*.02*	*.03*	**.76**	−.03
VA3	.08	*.02*	−.06	*.03*	*.01*	−.05	**.96**	−.17	*−.02*	.13	*.01*	*−.02*	**.97**	*−.02*	.07	*.00*	**.98**	−.05
VA4	−.07	*.02*	*.02*	*−.01*	*.01*	.30	**.66**	.03	−.05	*−.03*	*.05*	.04	**.71**	−.05	−.04	*.02*	**.72**	.08
Family of origin																		
FO1	−.03	*−.01*	.04	−.11	**.74**	.45	.17	.05	.03	−.04	−.11	**.78**	.45	*.02*	−.03	−.06	.28	**.83**
FO2	−.03	.03	*.00*	−.10	**.83**	.44	.05	*.01*	.04	*−.02*	−.10	**.85**	.34	*.02*	*−.02*	−.03	.14	**.90**
FO3	.04	−.08	.04	.06	**.68**	.10	*.00*	.04	*.02*	*−.02*	.04	**.67**	.09	*.01*	*.01*	.07	−.03	**.70**
FO4	.04	.14	−.12	.07	**.78**	−.06	−.07	−.22	*−.01*	.18	.04	**.76**	−.08	*−.02*	.17	.11	−.12	**.62**
FO5	.03	−.11	.08	.23	**.73**	*.00*	*−.01*	.05	*−.01*	*−.01*	.20	**.71**	.03	*.00*	.05	.21	−.04	**.68**
FO6	*.00*	.05	−.08	.18	**.80**	−.06	−.08	−.15	−.05	.11	.15	**.79**	−.08					

(continued)

Table 2. (continued)

Original Factor and Items	Seven-factor ESEM							Six-factor ESEM						Five-factor ESEM				
	1 (λ)	2 (λ)	3 (λ)	4 (λ)	5 (λ)	6 (λ)	7 (λ)	1 (λ)	2 (λ)	3 (λ)	4 (λ)	5 (λ)	6 (λ)	RD (λ)	SUP (λ)	PSY (λ)	VA (λ)	FO (λ)
Self-esteem																		
SE1	*−.01*	.30	−.20	**.53**	*.01*	*−.01*	*−.02*	−.31	*.00*	.19	**.55**	*.01*	−.06	*−.03*	.12	**.65**	−.12	*−.03*
SE3	−.06	*.01*	*.01*	**.79**	.09	−.05	.03	*.00*	−.05	−.04	**.81**	.09	*.01*	−.04	−.04	**.82**	*−.01*	.08
SE4	*−.02*	.05	−.08	**.78**	.04	−.11	.07	−.10	*−.02*	*−.03*	**.80**	.03	*.01*	*−.02*	−.05	**.83**	*−.02*	*.01*
SE5	*−.02*	.04	−.08	**.84**	*.01*	−.09	.06	−.09	*−.01*	−.05	**.86**	*.00*	*.01*	*−.02*	−.07	**.89**	*−.02*	*−.01*
Depression																		
DEP1	*.03*	.19	.20	**.56**	*−.01*	.04	*.02*	.12	.05	.20	**.58**	*.00*	.04	.07	.21	**.56**	.07	*.01*
DEP2	*−.01*	.33	*−.01*	**.58**	*−.02*	*.03*	*.01*	−.13	*.01*	.26	**.61**	*−.02*	*.02*	*.00*	.23	**.65**	*−.01*	−.04
DEP3	*.02*	*.00*	.04	**.67**	*−.01*	.06	.06	*.04*	*.04*	*−.04*	**.69**	*−.01*	.06	.05	−.04	**.68**	.09	*−.01*
DEP4	.07	.05	.26	**.71**	*.00*	*.01*	*.00*	.24	.08	.07	**.73**	*.00*	*.01*	.12	.11	**.67**	.08	*.02*

Note. Target factor loadings are in bold. Nonsignificant parameters ($p \geq .05$) are italicized. Five factors are as follows: RD = relationship discord; SUP = social support; PSY = psychological distress; VA = violence approval; and FO = family of origin violence and neglect.

reflected the dimensions of *relationship discord* (Factor 1; four items); *support* (Factor 2; six items); a combination of the original *stress, self-esteem, and depression* factors termed "psychological distress" (Factor 3; nine items); *violence approval* (Factor 4; four items); and *family of origin violence and neglect* (Factor 5; five items). Sum scores of these items ranged from 0 to 26 ($M = 4.88$; $SD = 4.08$).

Invariance Models

In the second phase of the analysis, measurement invariance was tested across gender on the five-factor solution. Configural models were successfully estimated and then constraints were sequentially added (see Table 1). All of the increasingly restrictive models provided a satisfactory level of approximate fit to the data (i.e., CFI and TLI $> .95$ and RMSEA $< .06$). Changes in approximate fit indices remained low and suggested that the observed changes were negligible, providing support for the weak, strong, strict, latent variance-covariance, and latent mean invariance across gender. The final grouped model was conducted (detailed in Table 3) and was the best fitting ESEM model (see ESEM Grouped Five-Factor Model in Table 1).

Predictive Validity

Family violence. Over 6% of families (1,148 out of 18,159) experienced family violence, including CM ($n = 627$: physical abuse = 261; sexual abuse = 5; emotional abuse = 57; neglect = 194) and/or IPV ($n = 613$). For individual families, CM instances ranged from 1 ($n = 419$) to 6 ($n = 1$) and IPV cases ranged from 1 ($n = 605$) to 3 ($n = 1$). Fewer than 1% of families who experienced violence ($n = 92$) experienced both CM and IPV. Total FNS scores from the scale, as currently used in practice (i.e., 53 scored items), ranged from 0 to 42 ($M = 9.05$; $SD = 5.97$).

Measurement model. The five-factor grouped ESEM model with covariates (MIMIC) predicting CM and IPV demonstrated good fit, $\chi^2(1,198) = 4,795.55$, $p < .001$; CFI =.96; TLI = .95; RMSEA (90% CI) = .020 [.019, .021], with relationship discord significantly predicting both IPV and CM and family of origin violence and neglect predicting CM. Full factor loadings are detailed in Table 4.

Need status. For the five-factor MIMIC model including covariates and the six identified automatic qualifiers (i.e., 37 scored items), scores ranged from 1 to 32 ($M = 6.91$; $SD = 4.74$). The score associated with the 75th percentile

Table 3. Five-Factor Model Grouped ESEM Factor Loadings.

Identified Factor and Items	RD (λ)	VA (λ)	SUP (λ)	FO (λ)	PSY (λ)
Relationship discord					
RD1	**.98**	−.04	*.00*	−.03	*−.01*
RD2	**.99**	*.00*	*.00*	*.00*	*.00*
RD3	**.67**	.14	.08	.05	.04
RD4	**.83**	.13	*.01*	.03	*.02*
Violence approval					
VA1	*−.03*	**.58**	−.07	.08	*.04*
VA2	.11	**.79**	*−.03*	*.00*	*.01*
VA3	*.00*	**.98**	*.01*	*.00*	*.00*
VA4	*−.04*	**.72**	−.09	.11	*.03*
Social support					
SUP1	−.09	.05	**.46**	.11	*−.01*
SUP5	.08	*.02*	**.53**	*.02*	.22
SUP7	−.04	*−.01*	**.61**	.16	*.03*
SUP8	−.20	*.00*	**.80**	*.00*	−.05
SUP9	.12	*.01*	**.67**	*.00*	−.08
SUP10	.02	*.00*	**.89**	*−.01*	.03
Family of origin violence and neglect					
FO1	*.01*	.26	−.03	**.83**	−.03
FO2	*.01*	.12	*.00*	**.90**	*.00*
FO3	*.00*	*−.03*	.04	**.68**	.08
FO4	*−.03*	−.12	.21	**.61**	.12
FO5	*.00*	−.04	.08	**.67**	.22
Psychological distress					
STR5	.09	.14	.09	.05	**.55**
SE1	*−.03*	−.12	.15	−.05	**.63**
SE3	*−.03*	*−.01*	*−.02*	.08	**.81**
SE4	*−.01*	*−.01*	*−.03*	*.00*	**.82**
SE5	*.00*	*−.02*	−.06	*−.03*	**.88**
DEP1	.07	.07	.23	*.01*	**.55**
DEP2	*−.01*	*−.02*	.26	−.05	**.64**
DEP3	.07	.10	*−.04*	*−.01*	**.66**
DEP4	.14	.08	.12	*.02*	**.65**

Note. Target factor loadings are in bold. Nonsignificant parameters ($p \geq .05$) are italicized. ESEM = exploratory structural equation modeling; PSY = psychological distress; SA = substance abuse; VA = violence approval; FO = family of origin.

Table 4. Five-Factor Grouped ESEM With Covariates Predicting Family Violence (MIMIC).

	Female					Male				
Items	RD (λ)	VA (λ)	FO (λ)	SUP (λ)	PSY (λ)	RD (λ)	VA (λ)	FO (λ)	SUP (λ)	PSY (λ)
Relationship discord										
RD1	**.96**	*−.04*	−.05	*.01*	*.01*	**.96**	*−.04*	−.04	*.00*	*.01*
RD2	**.99**	*.00*	*.00*	*−.01*	*.00*	**.99**	*.00*	*.00*	*−.01*	*.00*
RD3	**.67**	.17	.05	.08	*.01*	**.64**	.18	.04	.06	*.01*
RD4	**.83**	.15	*.03*	*.03*	*−.01*	**.82**	.17	*.03*	*.02*	*−.01*
Violence approval										
VA1	*−.02*	**.55**	.08	−.08	*.04*	*−.02*	**.47**	.05	−.05	*.04*
VA2	.09	**.82**	*.01*	*−.03*	*−.01*	.07	**.76**	*.01*	*−.02*	*−.01*
VA3	*.00*	**.97**	*−.01*	*.01*	*.00*	*.00*	**.96**	*−.01*	*.01*	*.00*
VA4	*−.05*	**.69**	.13	−.10	*.03*	*−.04*	**.61**	.08	−.06	*.03*
Family of origin violence and neglect										
FO1	*.01*	.16	**.85**	−.03	−.03	*.01*	.23	**.84**	−.03	*−.03*
FO2	*.00*	.02	**.92**	*.00*	*−.01*	*.00*	.03	**.89**	*.00*	*−.01*
FO3	*.01*	−.09	**.71**	*.02*	.06	*.01*	−.12	**.71**	*.02*	.08
FO4	*−.01*	−.16	**.62**	.18	.14	*−.01*	−.22	**.60**	.16	.18
FO5	*.00*	−.07	**.69**	.05	.20	*.00*	−.09	**.66**	.04	.26
Social support										
SUP1	−.14	.06	.09	**.45**	*−.02*	−.15	.08	.08	**.36**	*−.03*
SUP5	.07	*.01*	*.02*	**.52**	.23	.08	*.01*	*.01*	**.45**	.28
SUP7	*−.03*	*−.02*	.17	**.58**	*.03*	*−.04*	*−.03*	.20	**.62**	*.04*
SUP8	−.22	*.02*	*.00*	**.84**	−.06	−.28	*.02*	*.00*	**.80**	−.08
SUP9	.11	*.02*	*−.01*	**.66**	−.05	.16	*.03*	*−.02*	**.73**	−.08
SUP10	*.01*	*−.01*	*.00*	**.86**	.05	*.01*	*−.01*	*.00*	**.87**	.07
Psychological distress										
STR5[a]	*.04*	.18	.03	.05	**.57**	*.04*	.18	*.02*	.03	**.53**
SE1	*.00*	−.12	*−.04*	.15	**.61**	*.00*	−.16	*−.04*	.13	**.79**
SE3	−.04	*.00*	.07	−.03	**.81**	−.04	*.00*	.05	−.02	**.76**
SE4	*−.03*	*−.01*	*.01*	*−.03*	**.80**	*−.03*	*−.01*	*.00*	*−.02*	**.78**
SE5	*−.02*	*−.01*	*−.03*	−.09	**.88**	*−.02*	*−.01*	*−.02*	−.06	**.89**
DEP1	.06	.08	*.01*	.22	**.54**	.06	.08	*.01*	.16	**.54**
DEP2	*.01*	*−.04*	*−.03*	.24	**.62**	*.01*	*−.04*	*−.02*	.20	**.73**
DEP3[a]	*.03*	.10	*.00*	−.06	**.67**	*.03*	.10	*.00*	−.04	**.69**
DEP4	.10	.09	*.01*	.10	**.67**	.10	.09	*.01*	.07	**.69**

(continued)

Table 4. (continued)

Items	Female					Male				
	RD (λ)	VA (λ)	FO (λ)	SUP (λ)	PSY (λ)	RD (λ)	VA (λ)	FO (λ)	SUP (λ)	PSY (λ)
Covariates										
Service	.08	.07	.07	−.05	*.00*	.14	.09	*.03*	−.09	*−.02*
Kids	.10	*.03*	.07	.11	.10	*.04*	*.04*	*.06*	.18	.09
Age	.03	.03	*.00*	−.05	*.00*	*−.02*	*.05*	*.00*	*.03*	*−.02*
Partner age	−.06	−.06	−.07	−.03	−.03	*.03*	−.10	*−.04*	*.01*	*−.02*
PR kids	.03	.05	.08	.03	.03	*−.02*	*.01*	*.03*	*−.05*	*.02*
Education	.02	*.01*	.08	.03	.06	*−.03*	*.00*	.10	*−.02*	*.01*
Uncontrolled anger[a]	.19	.21	.17	.09	.24	.19	.25	.21	*.05*	.26
Prior IPV[a]	.05	.03	.10	*.00*	.03	.09	*.03*	*.05*	*.01*	*.02*
Prior CM[a]	.23	*.00*	.03	.07	.03	.28	*−.06*	.07	.06	*.01*
Isolation[a]	.23	.14	.16	.44	.39	.21	.21	.15	.38	.37
Outcomes										
IPV	.21	*.05*	*.03*	*.00*	*−.02*	.24	*.04*	*.13*	*−.10*	*−.13*
CM	.13	*.02*	.10	*.00*	*.07*	*.08*	*.01*	.15	*−.06*	*.09*

Note. Target factor loadings are in bold. Nonsignificant parameters ($p \geq .05$) are italicized. The disturbances of IPV and CM were allowed to correlate for the female model ($r = .29$, $p < .001$) as well as the male model ($r = .40$, $p < .001$). IPV = intimate partner violence; CM = child maltreatment; PR kids = children from a prior relationship in the home.
[a]Automatic qualifier.

was nine, indicating that a high-need status is assigned for families with a score of 10 or above (4,488 out of 18,159). At least one of the six automatic qualifier items was endorsed by 8,541 parents and was predictive of family violence, but differed for male and female caregivers and between CM and IPV. Thus, families were classified as high-needs in one of three ways: (a) having an FNS score greater than nine and endorsing one or more of the automatic qualifiers ($n = 4{,}051$), (b) having an FNS score greater than nine and not endorsing any of the automatic qualifiers ($n = 435$), or (c) having an FNS score less than or equal to nine and endorsing one or more of the automatic qualifiers ($n = 4{,}490$). When examined as a predictor of family violence, this high/low-needs designation was predictive of family violence (i.e., IPV or CM), $\chi^2(1) = 287.43$, $p < .001$; odds ratio (OR) = 3.12. This designation detects three quarters of families at risk for family violence (sensitivity = 76%), and only a small portion of families are classified as high need in cases where family violence does not occur (specificity = 97%; PPV = 10%; NPV = 51%; see Table 5). Examining gender differences, the need designation

Table 5. Automatic Qualifying Items Predicting Family Violence.

Automatic Qualifing Items	Female			Male		
	b	*SE*	β	*B*	*SE*	β
IPV						
Feeling out of control	0.03	0.05	.01	−0.12	0.13	−.05
Uncontrolled anger	0.27	0.05	.09***	0.31	0.12	.12*
Not worth living	0.19	0.08	.04*	−0.11	0.24	−.02
Prior IPV	0.10	0.06	.03†	−0.05	0.11	−.02
Prior CM	0.44	0.06	.11***	0.48	0.12	.17***
Isolation	0.10	0.05	.04†	0.22	0.11	.09*
CM						
Feeling out of control	0.15	0.05	.06***	0.13	0.11	.05
Uncontrolled anger	0.16	0.05	.06***	−0.01	0.12	−.003
Not worth living	0.20	0.08	.04*	0.03	0.21	.005
Prior IPV	0.51	0.05	.15***	0.41	0.10	.17***
Prior CM	0.11	0.07	.03	0.43	0.11	.15***
Isolation	0.06	0.05	.03	0.17	0.11	.07

Note. IPV = intimate partner violence; CM = child maltreatment.
†$p < .10$. *$p < .05$. ***$p < .001$.

appears to be a better predictor of family violence in males (sensitivity = 83%; specificity = 95%; PPV = 16%; NPV = 40%) than females (sensitivity = 74%; specificity = 98%; PPV = 9%; NPV = 52%).

Discussion

In this study, we sought to examine measurement aspects of the FNS, currently used to identify family violence risk in military families with children aged 3 years and under and their eligibility for intensive home visitation services. A key consideration of offering prevention services is assessment that accurately categorizes families' risk status for family violence as well as identifies areas of family needs for program planning, practice, and resource allocation (Slep & O'Leary, 2001). This study furthered the psychometric validation of the FNS through ESEM to identify the factor structure, gender invariance, and need categorization.

Results of the ESEM revealed a five-factor model including *relationship discord* (four items), *support* (six items), *psychological distress* (nine items), *violence approval* (four items), and *family of origin violence and neglect* (five items) that demonstrated gender invariance. The five-factor ESEM

MIMIC model indicates that the current FNS could be shortened to 28 scored items (from 53 scored items) comprising five factors, plus nine unscored items used as covariates, for a total of 37 items, and function with reliability and validity as a high-needs screener for services. Our results fully support the complete measurement invariance of the ESEM measurement model across genders. This indicates the FNS can be used with confidence for both males and females and supports the generalizability of the ESEM factor structure. This finding extends the FNS's applicability from initial psychometrics that examined only predictive validity with mothers. Interestingly, these analyses indicate that the FNS need designation is a better predictor of family violence for men than for women.

While current meta-analyses indicate that there may be few meaningful gender differences in risk markers for IPV perpetration (Spencer et al., 2016), subtypes of CM as well as childhood exposure to IPV may contribute to risk for IPV perpetration in adulthood that vary by gender (Jung et al., 2018). The gender invariance findings in our study support the use of the FNS in examination of potential gender differences related to home visitation services that focus on prevention of CM. One factor was associated with a gender difference in risk of CM in this study; substantiated cases of CM were significantly more likely to occur in families with mothers who reported higher levels of relationship discord. This may be useful in targeted program content beyond parenting topics commonly covered.

Two factors stood out in predicting substantiated cases of family violence: relationship discord and a family of origin violence or neglect. Specifically, families who reported higher levels of relationship discord were significantly more likely to experience IPV and CM. An intergenerational cycle of family violence was apparent in families with substantiated cases of CM, as they endorsed more items indicating that their family of origin was violent or neglectful than families who did not have substantiated cases of CM.

It is interesting that important covariates related to these factors extended beyond the five current automatic qualifiers of uncontrollable anger, feeling out of control, feeling life is not worth living, and self-reported prior family violence (i.e., CM and/or IPV). These demographic items, scored as part of the original FNS Demographics subscale, include being a Service member, the number of children in the home, the presence of children in the home from a previous relationship, parent/partner age, and low parent/partner education. These variables have all been identified in previous family violence research (e.g., Capaldi et al., 2012; Travis et al., 2015). In addition, feelings of isolation were also identified as an automatic qualifier, based on past research identifying social isolation as one of the most significant risk factors for CM in military families (Milner, 1994) as well as the predictive validity of the item on family violence. These covariates were related to each of the

five factors in the model, particularly for women. Notably, each of the covariates were related to relationship discord in women, and all covariates with the exception of age were related to family of origin violence and neglect in women. For men, Army service, uncontrollable anger, prior family violence, and feelings of isolation were related to relationship discord, whereas low education, uncontrollable anger, feelings of isolation, and prior IPV were all related to family of origin violence or neglect.

It may be important to consider novel items not currently represented in the FNS. Deployment status and number of deployments each hold promise as automatic qualifiers, as both are linked to increased relationship distress (Blow et al., 2013; Creech et al., 2017) and some forms of child neglect (Cozza et al., 2018). Substance misuse may also be important to consider. Although the items were dropped from the final model in this analysis, substance misuse is associated with deployment status, type of deployment experience(s), and number of deployments (cf., Blow et al., 2013; Lande, 2012; Skipper et al., 2014). In addition, there should be consideration of whether there may need to be unique automatic qualifiers for women and men as well as child factors (e.g., special needs, colic).

Implications for Practice

Our five-factor model represents both malleable and nonmalleable factors, indicating that a person's family history and current life circumstances contribute to his or her current level of risk for family violence. While one's history cannot be changed, the remaining four factors are malleable with client engagement and appropriate program planning. Specifically, delivery of content that addresses relationship issues, concrete and instrumental support, psychological distress, and violence approval in intimate partner and parent–child relationships can facilitate positive change in these areas. This study suggests that relationship discord is a key area to address; however, this not commonly incorporated into CM prevention efforts. Multifaceted prevention efforts may more accurately address the nature of risk for family violence, as family violence events were predicted using a multidimensional model of risk in this study.

Limitations and Future Research

This work extends our ability to generalize need status beyond mothers in the Air Force (i.e., Service member or spouse) to male and female Army parents, indicating its applicability to a more diverse sample. Practitioners should be cautioned that although the multidimensional nature of risk was predictive of family violence, not all families with a similar profile will experience

violence, as individual experiences are unique. In addition, these families were all offered Army NPSP services, so future work examining the impact of those services on family violence is merited. In addition, the examination of how individuals from different ethnicities may score on the FNS was beyond the scope of this study but may be interesting for future research.

In terms of the modified scale, there are three areas that warrant consideration. First, the factors are correlated, suggesting that there may be a higher order factor. Second, the *psychological distress* factor may be overrepresented as nine items were retained comprising this factor, while the other factors ranged from four to six items. Third, substance misuse items were dropped early in the fit process as they either did not load onto any factors or did not load onto any meaningful factors. Yet, alcohol and other substance misuse is known to contribute to increased risk of child neglect in military families (Cozza et al., 2018). One reason for this could be the confusing wording of the three substance misuse items; there were multiple facets of drinking or outcome behaviors described within each item statement (e.g., "I sometimes drink five or more drinks of alcohol at a time, but mostly on weekends"; "I sometimes drink enough to feel really high or drunk"). Alternatively, clients may not be willing to disclose their drinking patterns, possibly due to it being a de facto disclosure that one is consuming alcohol while pregnant/nursing/caring for young children or that it could jeopardize their work or personal situations. In addition, one item assessed partner substance misuse (i.e., "My partner sometimes drinks five or more drinks at a time, but mostly on weekends"). As our sample was predominately military spouses, it is possible they did not want to report their Service members' alcohol abuse for fear of their partner's job security.

Future administration of the FNS should consider adding items recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) or other measures of problematic alcohol consumption (i.e., AUDIT, CAGE). Substance misuse, construed more broadly than alcohol only, is also concerning across the military for soldier and family readiness and for family violence. Additional types of substances identified as problems in contemporary military research include prescription opioids and stimulants (Golub & Bennet, 2013; Kennedy et al., 2015) and energy drinks (Toblin et al., 2018). Thus, while substance misuse was not incorporated into the five-factor model we found, future work should test other items to assess risk for alcohol or substance misuse.

Conclusion

Overall, this work contributes to family violence research and practice by examining the psychometric properties of a screener that assesses risk of

family violence in military families with children aged 3 years and younger. Previous research demonstrated applicability of its classification (i.e., low/high-needs), but not factor structure, to female caregivers and were specific to the Air Force. ESEM modeling with increasing invariance analyses indicate it is appropriate to broaden use of the FNS to include fathers while also demonstrating that there is a more parsimonious factor structure. A shorter, stronger screening tool benefits families and helping professionals. In practice, time is often a precious commodity for helping professionals who may have heavy caseloads and screening measures may be viewed as a barrier to seeking help by families. In addition, this measure can be used with confidence for families where the father is the parent receiving services, either as a Service member or as the spouse of a Service member. Yet, these analyses also bring to light that there is room for further refinement of the measure, such adding relevant items that would be automatic qualifiers for NPSP service eligibility. At least one of these items, alcohol misuse, is a known risk factor for family violence in the military population.

The FNS is used to identify high-needs families and then to guide program planning tailored to each family. Work remains to define and standardize best practices in using specific risk factor scores in program planning. We are optimistic that a more refined factor structure can lead to better allocation of program resources and increased specificity of content and activities selected to meet each family at their current needs and strengths, reducing the risk of family violence as intervention continues.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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Note

1. While some demographic items are scored (e.g., military status, marital status, living situation), others are not scored (e.g., current pregnancy status, number of children in the home, ethnicity).

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