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Modeling posttraumatic stress disorder among victimized women on probation and parole : examining the impact of childhood victimization.

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MODELING POSTTRAUMATIC STRESS DISORDER AMONG VICTIMIZED
WOMEN ON PROBATION AND PAROLE: EXAMINING THE IMPACT OF
CHILDHOOD VICTIMIZATION

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DEDICATION

This dissertation is dedicated to:

1. My husband, Kyle, who encouraged and supported me throughout this process as we both pushed ourselves past what we thought was possible on our quest to build our life together.

2. My parents, Charles and Karen Efstration, who made numerous sacrifices so I could have the best educational opportunities and taught me to care deeply about underdogs. I am also deeply thankful for my in-laws, the Winhams and the Whites, for the love and support.

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4. My clients who teach me every day about life, love, and overcoming adversity.

ABSTRACT

MODELING POSTTRAUMATIC STRESS DISORDER AMONG VICTIMIZED
WOMEN ON PROBATION AND PAROLE: EXAMINING THE IMPACT OF
CHILDHOOD VICTIMIZATION

Katherine M. E. Winham

January 28, 2015

Women are the fastest growing segment of the criminal justice population in the
United States (Minton, 2013; Pew Center on the States, 2009). Research is needed to
understand Posttraumatic Stress Disorder (PTSD) among women involved with the
criminal justice system to inform prevention and rehabilitation efforts. Despite findings
suggesting that a mental health diagnosis of post-traumatic stress disorder (PTSD) is
common among women in this population (Lynch, DeHart, Belknap, & Green, 2012;
Salina, Lesondak, Razzano, & Weilbaecher, 2007), little research has examined the
presence of this disorder among women involved with the criminal justice system with
experiences of childhood victimization. Extant research indicates that women take
different pathways toward involvement with the criminal justice system than men (Daly,
1992). This approach, the gendered pathways perspective (Salisbury & Van Voorhis,
2009), recognizes that women who become involved with the criminal justice system
often have lives characterized by impoverished backgrounds, multiple victimization
experiences, psychological distress and mental illness with self-medication as a means of
coping. This research examined the structure of PTSD among 406 women on probation
and parole with a history of victimization using the Post-traumatic Diagnostic Scale

(PDS). Structural equation modeling was used to verify the structure of the PDS through five models: a one-factor model, numbing model, dysphoria model, dysphoric arousal model and DSM-5 model. Findings indicated that the dysphoric arousal model provided good fit to the data (X^2 (109) =302.26, $p < .001$; *CFI* = .93; TLI = .91; *RMSEA* = .07; *SRMR* = .04). Next, multiple indicators multiple causes (MIMC) analyses were conducted to examine differences in factor structure based upon exposure to childhood victimization (childhood physical or sexual victimization and childhood sexual victimization) controlling for sociodemographic variables. Findings from the first MIMIC analysis (X^2 (181) =503.67, $p < .001$; *CFI* = .91; TLI = .89; *RMSEA* = .07; *SRMR* = .06) provided adequate fit to the data, but indicated that symptom structure and severity was not significantly different for women based upon exposure to childhood physical and/or sexual victimization verses adult only victimization (B= .25, β = .08, SE= .17, p =.13). Results of the second MIMIC analysis (X^2 (147) =439.71, $p < .001$; *CFI* = .90; TLI = .89; *RMSEA* = .07; *SRMR* = .07) provided good fit to the data and indicated that exposure to childhood sexual victimization versus other types of victimization significantly predicted differences in PTSD symptom structure and greater severity (B= .29, β = .10, *SE*= .14, p =.04). However, childhood victimization accounted for only 1% of the variance in PTSD symptomology. Implications for assessment and treatment of this highly-victimized and traumatized population are discussed including the usefulness of addressing the symptoms of dysphoric arousal including sleep disturbance, irritability, and difficulty concentrating. Suggestions for public policy include increasing economic insecurity and revisiting current legal climate linking substance use with criminal justice involvement.

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INTRODUCTION

Problem Statement

Women represent the fastest growing segment of the criminal justice population

in the United States (Minton, 2013; Pew Center on the States, 2009). Researchers report

that 1 in 89 women is involved with the criminal justice system in the United States today

(Glaze & Bonczar, 2009; Pew Center on the States, 2009; Sabol & Couture, 2008).

Eighty-five percent of women sanctioned live in our communities under the control of

community corrections, including probation and parole (Greenfield & Snell, 2000).

Findings indicate that between 1995 and 2011, the total number of incarcerated women

rose 59%, and the total number of individuals under community corrections increased by

27% (Carson & Sabol, 2012; Gilliard & Beck, 1996; Glaze & Bonczar, 2007). This

increase in women's criminal justice involvement rates are largely attributed to: 1) the

War on Drugs, 2) mandatory minimum sentencing, and 3) the lack of preventive and

intervention programing to meet women's needs (Bloom, Owen, & Covington, 2004;

Tripodi & Pettus-Davis, 2013). While relatively little research has examined women

involved with the criminal justice system, studies have indicated that women often follow

certain "paths" toward criminal justice involvement which differ from those followed by

men (Chesney-Lind & Pasko, 2004; Daly, 1992; Salisbury & Van Voorhis, 2009). This

"gendered pathways" perspective suggests that women who become involved with the

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criminal justice system are often characterized by impoverished backgrounds, multiple victimization experiences, psychological distress and mental illness with self-medication as a means of coping, in addition to little social support, and poor physical health (Browne, Miller, & Maguin, 1999; Covington, 2007; Hall, Golder, Conley, & Sawning, 2012; Salina et al., 2007; Salisbury & Van Voorhis, 2009; Widom & Ames, 1994). One mental disorder in particular, posttraumatic stress disorder (PTSD), is thought to be highly prevalent among women in this population due to high rates of exposure to victimization and other traumatic events.

Posttraumatic Stress Disorder among Women Involved with the Criminal Justice System

Understanding PTSD among women involved with the criminal justice system starts with a basic understanding of PTSD, which is thought of as a maladaptive response to traumatic exposure, in the general population. Our modern understanding of trauma-related symptomology is most often conceptualized within the codified Diagnostic and Statistical Manual (American Psychiatric Association, 2013; DSM) published by the American Psychiatric Association (APA). The Substance Abuse and Mental Health Services Administration (SAMHSA) conceptualizes trauma as, "an *event*, series of events, or set of circumstances that is *experienced* by an individually as physically or emotionally harmful or life threatening and that has lasting adverse *effects* on the individual's functioning and mental, physical, social, emotional, or spiritual well-being" (SAMSHA, 2014, p. 7). Exposure to traumatic events and trauma-related symptoms have been a part of existence since we as humans evolved, and are rooted in the brain (Henry, 1992; Trimble, 1985). The response to trauma is rooted in our biology (Davidson, Stein,

Shalev, & Yehuda, 2004; Wolf et al., 2013), and takes on meaning through our socially-constructed definitions and expression of trauma and symptomology (Gilligan, 2009; Summerfield, 2001).

      Our modern understanding of trauma-related symptoms emerged as a result of certain historical events. Following World War II, the Vietnam War, and the Korean War, researchers and practitioners in the United States noticed in soldiers returning from violent combat symptoms including re-experiencing, numbing/avoidance, hyperarousal, and the alternation between numbing and re-experiencing the traumatic experience (Horowitz, 1976; Kardiner & Spiegal, 1947). The American Psychiatric Association (APA), cognizant that debilitating symptoms were experienced by many soldiers returning from the Vietnam War, developed and included the diagnosis of PTSD as a means to identify the common symptoms experienced by military trauma survivors in the 3rd edition of the *Diagnostic and Statistical Manual of Mental Disorders* (APA, 1980). At the time, other researchers were examining the symptoms of individuals who had experienced other types of traumatic experiences which were more interpersonal in nature, including child abuse and neglect, rape, and domestic battering (Bybee, 1979; Myers, 2008-2009; Ventrell, 1999-2000). Rape trauma syndrome, incest trauma, battered woman syndrome, and child abuse/sexual abuse syndrome all emerged during this time as a means to conceptualize these experiences and their associated symptomology for specific populations (Briere, 1984; Burgess & Holmstrom, 1974; Courtios, 1979, 2004; Walker, 1984). PTSD, as first included in the *DSM III* (APA, 1980), became increasingly utilized over time (Klerman, 1977) by researchers and practitioners to explain the observed symptoms of trauma in children and adults (see Table 1 for criteria).

Other syndromes (e.g., rape trauma syndrome) which highlighted a specific traumatic event as the origin for the symptomology were never incorporated into the *DSM III* or subsequent editions (van der Kolk & Najavits, 2013).

Since this time, researchers have studied and debated the symptoms of PTSD, examining their prevalence in a number of populations. However, PTSD symptoms remain primarily rooted in the context of symptoms commonly experienced by combat survivors (van der Kolk & Najavits, 2013).

PTSD, as described in the current *Diagnostic and Statistical Manual- 5th Edition*[1] (American Psychiatric Association, 2013; *DSM-5*), is thought to develop in response to traumatic event(s) where one is exposed to death, threatened death, actual or threatened serious injury, actual or threatened sexual violence through direct exposure or witnessing in person (see Table 1 for comparison of *DSM-III, DSM-IV, DSM-5* criteria). The disorder is characterized by symptoms including intrusion, persistent avoidance of stimuli, negative alterations in cognitions and mood, hyperarousal and reactivity (American Psychiatric Association, 2013).

Several studies have examined PTSD among women involved with the criminal justice system, finding it to be much more prevalent among this population than for women in the general population, where the lifetime PTSD rate for women is approximately 9.7% (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Lynch et al., 2012; Salina et al., 2007; Teplin, Abram, & McClelland, 1996). Teplin and colleagues

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[1] The switch from Roman numeral (e.g., *DSM-IV*) to Arabic number (e.g., *DSM-5*) was undertaken for the publication of *DSM-5* to allow for more frequent updates to the manual.

(Teplin et al., 1996) conducted the seminal study on PTSD prevalence with a randomly selected, stratified sample of 1272 female jail detainees awaiting trial in Chicago, Illinois. The women, on average, were 28 years old; forty percent of the women reported they were African American, 34% were non-Hispanic Whites, 25% were Hispanic, and 1.3% reported "other" racial/ethnic background. Nearly 80% reported that they had at least one child, and 37% reported that they had three or more children. Findings indicated that over 80% of the women had at least one psychiatric disorder or a substance use disorder, with 34% meeting criteria for a PTSD diagnosis, which is nearly 3.5 times the rate of the general population. Overall, these findings suggest that PTSD is especially prevalent among this population.

Salina and colleagues (Salina et al., 2007) studied 283 women diagnosed with an *DSM-IV* axis-I diagnosable psychiatric or substance use disorder who were placed in a large, urban jail treatment program. The women were mostly African American/Black (75%) followed by Caucasian/White (18%), Latina (5%), and "Other" (2%). Over 75% of the women met the *DSM-IV* criteria for PTSD (American Psychiatric Association, 2000; APA). Another study, conducted by Lynch and colleagues (Lynch et al., 2012) examined PTSD, mental health disorders and substance use among 491 female jail detainees in Colorado, District of Columbia, Idaho, and South Carolina. Women identified as White/Caucasian (38%), African American/Black (37%), Latina (15%), American Indian (4%), Asian/Pacific Islander (1%), multiethnic (2%) and other ethnic identities (3%). One quarter of the women were first time offenders, and 16% were charged with or convicted of a violent crime. Over half of the sample (53%) met lifetime

criteria for PTSD, and 28% met criteria for PTSD within the past 12 months per the *DSM-IV*.

These findings indicate that the prevalence of PTSD among criminal justice involved women is higher than that for women in the general population, and thus warrants further examination. However, the structure of PTSD symptoms, which are aggregated into symptom clusters or factors, has not been studied among women in this population, as it has in other high risk populations including military veterans and survivors of disasters (see Asmundson et al., 2000 for a review). Researchers suggest that symptomology may be trauma and population specific (Asmundson et al., 2000); this finding is crucial given that PTSD was originally developed to identify the symptomology of combat survivors (Kimerling, Ouimette, & Wolfe, 2002). This difference may be significant because while the symptoms experienced by women exposed to childhood victimization may have some overlap with those of combat soldiers, they are different in that these women never developed skills thought to buffer the effects of PTSD which many soldiers had a chance to accumulate before combat exposure (van der Kolk & Najavits, 2013). This is not to suggest that survivors of childhood victimization have more severe symptomology than survivors of other types of trauma, only that differences may exist in terms of the impact of certain trauma experiences on symptomology, and this should be further examined. Women involved with the criminal justice system are only beginning to be studied and recognized as a traumatized population in the PTSD literature (Hall et al., 2012). A first step lies in examining the structure of PTSD (Asmundson et al., 2000), which will provide a more contextual understanding of the symptoms which are most salient for women in this

population, with the eventual goal of developing assessments and interventions tailored to the needs of women involved with the criminal justice system.

In examining the factor structure of PTSD among individuals in various populations, several measures have been used to assess the 17 symptoms of PTSD per the *DSM-IV* criteria including the Post-traumatic Diagnostic Scale (Foa, 1996; PDS). The PDS identifies exposure to a specific traumatic event, then maps directly onto the 17 *DSM-IV* symptom severity criteria, prompting respondents to indicate how often during the past month a symptom has bothered them, with responses ranging from 'not at all' to '5 or more times a week or all the time'. PTSD symptoms per *DSM-IV* are conceptualized as occurring as part of three factors: intrusive recollection, avoidant numbing, and hyperarousal (American Psychiatric Association, 2000). Intrusive recollection (reexperiencing) includes the following five symptoms: 1) recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions; 2) recurrent distressing dreams of the event; 3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated); 4) intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event; and 5) physiological reactivity upon exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event. While *DSM-5* is currently used to diagnose PTSD, its recent release means that all research conducted on the factor structure of PTSD between 1998 and 2013 utilized the *DSM-IV* criteria (see Table 1 for a comparison of criteria).

Avoidant numbing is conceptualized as including the following seven symptoms: 1) efforts to avoid thoughts, feelings, or conversations associated with the trauma; 2) efforts to avoid activities, places, or people that arouse recollections of the trauma; 3) inability to recall an important aspect of the trauma; 4) markedly diminished interest or participation in significant activities; 5) feelings of detachment or estrangement from others; 6) restricted range of affect (e.g., unable to have loving feelings); and 7) sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span). Finally, hyperarousal is conceptualized as including the following 5 symptoms: 1) difficulty falling or staying asleep; 2) irritability or outbursts of anger; 3) difficulty concentrating; 4) hyper-vigilance; and 5) exaggerated startle response.

Utilizing factor analytic techniques, including exploratory and confirmatory factor analysis, researchers have noted inconsistent findings regarding the crucial factors with which to organize the symptoms of PTSD (Asmundson et al., 2000; Marshall, Schell, & Miles, 2013). Factor analysis is a statistical technique applied to a set of items when a researcher is interested in discovering or confirming whether variables in the set form a one-dimensional measure or coherent subsets which are relatively independent of one another (Tabachnick & Fidell, 2007). Two types of factor analysis include exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Exploratory factor analysis (EFA) uses an inductive strategy to identify underlying dimensions of a measure when there are no a priori expectations about its structure based on theory or prior research (Floyd & Widaman, 1995). Thus, the researcher allows a statistical procedure to examine correlations between variables and to generate a factor structure based upon these relationships (Myers, Gamst, & Guarino, 2006).

In contrast, confirmatory factor analysis is an approach which allows for the direct testing of the fit of a hypothesized factor structure with the observed covariance structure of the data (Floyd & Widaman, 1995). This approach requires researchers to hypothesize a particular model or factor structure which, based upon theory, underlies the variables measured in the study. The analysis then estimates the parameter values binding the variables together, completing the description of the model, and providing indices which assess the quality of fit between the model and the data (Myers et al., 2006). Confirmatory factor analysis has several advantages over exploratory factor analysis in examining factor structures as it permits the direct testing of hypothesized models of symptom structure and allows testing of competing model(s) (Floyd & Widaman, 1995).

In examining the structure of PTSD, researchers began with the symptom structure indicated in the *DSM-III*, and subsequently with the *DSM-IV* and its text revision in 2000 (American Psychiatric Association, 2000). Most factor analyses of PTSD symptoms have examined the *DSM-IV* (American Psychiatric Association, 2000) three factor structure, including intrusion, avoidance and numbing, and hyperarousal (see Table 2 for a description of factor structures for all models). However, this three-factor structure has failed to find support for the *DSM-IV* model (see Asmundson, Stapleton, & Taylor, 2004 for a review).

Additional studies using confirmatory factor analysis found support for two separate four-factor models for PTSD symptom structure which build upon each other (Asmundson et al., 2004). These distinct four-factor models include different sets of symptomology with some overlap. The *numbing model* was found by King and colleagues (King, Leskin, King, & Weathers, 1998) to best fit the PTSD symptomology

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among the war veterans and included the symptom constructs of intrusion, avoidance, numbing, and hyperarousal. This model was seen as superior to the *DSM-IV* typology because it separated the factor which was previously "avoidant numbing" into two factors: 1.) "avoidance" and 2.) "numbing." In contrast, Simms and colleagues (Simms, Watson, & Doebbeling, 2002) found support for PTSD symptoms among Gulf war veterans including intrusion, avoidance, dysphoria, and hyperarousal which was termed the *dysphoria model*. This model conceptually accounts for the general symptoms of dysphoria experienced by many individuals with PTSD by combining all 5 items from (King et al., 1998) numbing factor with the three items from the hyperarousal factor into a general dysphoria factor. Dysphoria is thought to help account for the symptoms often associated with depression which are common among individuals with PTSD (Simms et al., 2002). More recently, a 5-factor model developed by (Elhai et al., 2011) which is described as a *dysphoric arousal model* including the factors: re-experiencing, avoidance, numbing, dysphoric arousal, and anxious arousal found support among female victims of domestic violence and male and female opioid users. This model builds upon King and colleagues' (1998) numbing model and Simms and colleagues' (2002) dysphoria model by including the numbing factor from King's and the three dysphoria items from Simms' in a new factor named "dysphoric arousal," and renaming the "hyperarousal" factor as "anxious arousal." Finally, with the recent release of the *DSM-5*, a model based upon the four factor criteria including: intrusion, avoidance, alterations in cognitions and mood, alterations in arousal and reactivity warrants examination among this population (APA, 2013). No extant research has examined any of these factor structures among women on probation and parole with a history of victimization.

Table 1

Comparison of *DSM-III, DSM-IV* and *DSM-5* PTSD Criteria

	Model		
Criteria	*DSM-III*	*DSM-IV*	*DSM-5*
A	The person has experienced an event that is outside the range of usual human experience and that would be markedly distressing to almost anyone.	The person has been exposed to a traumatic event in which both of the following have been present: 1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others 2. the person's response involved intense fear, helplessness, or horror. Note: In children, this may be expressed instead by disorganized or agitated behavior.	The person was exposed to: death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence, as follows: (1 required) 1. Direct exposure. 2. Witnessing, in person. 3. Indirectly, by learning that a close relative or close friend was exposed to trauma. If the event involved actual or threatened death, it must have been violent or accidental. 4. Repeated or extreme indirect exposure to aversive details of the event(s), usually in the course of professional duties (e.g., first responders, collecting body parts; professionals repeatedly exposed to details of child abuse). This does not include indirect non-professional exposure through electronic media, television, movies, or pictures.
B	The traumatic event is persistently re-experienced in at least one of the following ways:	The traumatic event is persistently reexperienced in one (or more) of the following ways:	The traumatic event is persistently re-experienced in the following way(s): (1 required) 1. Recurrent, involuntary, and intrusive memories. Note: Children older than 6 may express this symptom in repetitive play.

1. recurrent and intrusive, distressing recollections of the event (in young children, repetitive play in which themes or aspects of the trauma are expressed)

2. recurrent distressing dreams of the event

3. sudden acting or feeling as if the traumatic event were recurring (including "flashback" or dissociative episodes, whether or not intoxicated)

4. intense psychological distress at exposure to events that symbolize or resemble an aspect of the traumatic event, including anniversaries

1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. Note: In young children, repetitive play may occur in which themes or aspects of the trauma are expressed.

2. recurrent distressing dreams of the event. Note: In children, there may be frightening dreams without recognizable content.

3. acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated). Note: In young children, trauma-specific reenactment may occur.

4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

5. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

2. Traumatic nightmares. Note: Children may have frightening dreams without content related to the trauma(s).

3. Dissociative reactions (e.g., flashbacks) which may occur on a continuum from brief episodes to complete loss of consciousness. Note: Children may reenact the event in play.

4. Intense or prolonged distress after exposure to traumatic reminders.

5. Marked physiologic reactivity after exposure to trauma-related stimuli.

C

Persistent avoidance of stimuli associated with the trauma or numbing of general responsiveness, as indicated by at least three of the following:	Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:	Persistent effortful avoidance of distressing trauma-related stimuli after the event: (1 required)

Persistent avoidance of stimuli associated with the trauma or numbing of general responsiveness, as indicated by at least three of the following:

1. efforts to avoid thoughts or feeling associated with the trauma

2. efforts to avoid activities or situations that arouse recollections of the trauma

3. inability to recall an important aspect of the trauma (psychogenic amnesia)

4. markedly diminished interest in significant activities (in young children, loss of recently acquired developmental skills such as toilet training or language skills)

5. feeling of detachment or estrangement from others

6. restricted range of affect

Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

1. efforts to avoid thoughts, feelings, or conversations associated with the trauma

2. efforts to avoid activities, places, or people that arouse recollections of the trauma

3. inability to recall an important aspect of the trauma

4. markedly diminished interest or participation in significant activities

5. feeling of detachment or estrangement from others

6. restricted range of affect (e.g., unable to have loving feelings)

7. sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

Persistent effortful avoidance of distressing trauma-related stimuli after the event: (1 required)

1. Trauma-related thoughts or feelings.

2. Trauma-related external reminders (e.g., people, places, conversations, activities, objects, or situations).

7. sense of foreshortened future (e.g., the patient does not expect to live very long or to have a successful career)

D Persistent symptoms of increased arousal (not present before the trauma), as indicated by at least two of the following:

1. difficulty falling or staying asleep

2. irritability or outbursts of anger

3. difficulty concentrating

4. hyper vigilance

5. exaggerated startle response

6. physiological activity upon exposure to events that symbolize or resemble an aspect of the traumatic event

Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

1. difficulty falling or staying asleep

2. irritability or outbursts of anger

3. difficulty concentrating

4. hypervigilance

5. exaggerated startle response

Negative alterations in cognitions and mood that began or worsened after the traumatic event: (2 required)

1. Inability to recall key features of the traumatic event (usually dissociative amnesia; not due to head injury, alcohol or drugs).

2. Persistent (and often distorted) negative beliefs and expectations about oneself or the world (e.g., "I am bad," "The world is completely dangerous.").

3. Persistent distorted blame of self or others for causing the traumatic event or for resulting consequences.

4. Persistent negative trauma-related emotions (e.g., fear, horror, anger, guilt or shame).

5. Markedly diminished interest in (pre-traumatic) significant activities.

6. Feeling alienated from others (e.g., detachment or estrangement).

7. Constricted affect: persistent inability to experience positive emotions.

E	Duration of disturbance (symptoms in "B," "C," and "D") of at least one month.	Duration of the disturbance (symptoms in Criteria B, C, and D) is more than one month.	Trauma-related alterations in arousal and reactivity that began or worsened after the traumatic event: (2 required) 1. Irritable or aggressive behavior. 2. Self-destructive or reckless behavior. 3. Hypervigilance. 4. Exaggerated startle response. 5. Problems in concentration. 6. Sleep disturbance.
F		The disturbance causes clinically significant distress or impairment in social, occupational, or n/other important areas of functioning.	Persistence of symptoms (in Criteria B, C, D and E) for more than one month
G	--	--	Functional significance Significant symptom-related distress or functional impairment (e.g., social, occupational).
H	--	--	Attribution Disturbance is not due to medication, substance use, or other illness.
Specifiers	*Specify:* "delayed onset" if symptom onset occurs at least six months after the traumatic event. Age-specific features. The disorder in children may present differently.	*Specify if*: Acute: if duration of symptoms is less than 3 months Chronic: if duration of symptoms is 3 months or more. With Delayed Onset: if onset of symptoms is at least 6 months after the stressor	*Specify if*: With delayed expression. Full diagnosis is not met until at least 6 months after the trauma(s), although onset of symptoms may occur immediately.

Table 2

Item mappings for the examined PTSD models

PTSD Symptoms	Model				
	DSM IV	Numbing	Dysphoria	Dysphoric Arousal	DSM 5*
B1: Intrusions	R	R	R	R	R
B2: Nightmares	R	R	R	R	R
B3: Flashbacks	R	R	R	R	R
B4: Emotional Reactivity	R	R	R	R	R
B5: Physiological reactivity	R	R	R	R	R
C1: Avoiding thoughts/feelings	A/N	A	A	A	A
C2: Avoiding persons/places/activities	A/N	A	A	A	A
C3: Memory problems	A/N	N	D	N	C/M
C4: Loss of interest	A/N	N	D	N	C/M
C5: Detachment	A/N	N	D	N	C/M
C6: Restricted Affect	A/N	N	D	N	C/M
C7: Sense of foreshortened future	A/N	N	D	N	--
D1: Sleep disturbance	H	H	D	DA	A/R
D2: Irritability	H	H	D	DA	A/R
D3: Difficulty concentrating	H	H	D	DA	A/R
D4: Hypervigilance	H	H	H	AA	A/R
D5: Exaggerated startle response	H	H	H	AA	A/R

Note: R = Reexperiencing; A/N = Avoidant Numbing; A = Avoidance; H = Hyperarousal; N = Numbing; D = Dysphoria; DA = Dysphoric arousal; AA = Anxious Arousal; C/M = Alterations in Cognitions and Mood; A/R = Alterations in Arousal and Reactivity

* The PDS does not include items to measure the 4 additional criteria in the DSM 5 diagnosis. Three of these missing items are from the Alterations in Cognitions and Mood (C/M) factor, one is from the Alterations in Arousal and Reactivity (A/R) factor.

Childhood Victimization as Contributing to PTSD among Women Involved with the Criminal Justice System

Childhood victimization, defined as either physical, sexual, psychological abuse, and/or neglect is an endemic problem in our society, impacting women in every culture, community, and socio-economic status (Breslau, Davis, Andreski, & Peterson, 1991; Briere & Jordan, 2004; El-Bassel, Witte, Wada, Gilbert, & Wallace, 2001; Finkelhor, Ormrod, & Turner, 2009b; Kessler et al., 1995). Women prisoners demonstrate higher rates of and more extensive childhood victimization histories when compared to women in the general population (Browne et al., 1999; McDaniels-Wilson & Belknap, 2008; Tjaden & Thoennes, 2000; Tripodi & Pettus-Davis, 2013). Childhood victimization rates among women in the general population have been found to be 26% for any type of childhood maltreatment (defined as physical abuse, emotional abuse, sexual abuse, neglect, and custodial interference or family abduction) by a caregiver and 35% for any type of childhood sexual victimization (Finkelhor, Turner, Shattuk, & Hamby, 2013). These rates are lower than rates of victimization among women involved with the criminal justice system, a finding which is thought to contribute to the higher incidence of PTSD among this population (Tripodi & Pettus-Davis, 2013).

Browne et al. (1999) examined childhood victimization in a sample of female inmates (*N*=150) in a maximum security prison in New York. The women were an average of 32 years old; 49% reported that they were African American, 25% were Hispanic, and 12% identified as White, non-Hispanic. Seventy percent of the women reported severe physical violence from a childhood or adolescent caregiver or parent. Fifty-one percent reported that their primary female caregivers had been physically

violent toward them, and 29% reported that their primary male caregiver had severely physically attacked them. More than half of the women (59%) reported experiencing some form of sexual abuse during childhood including: sexual exposure (49%), sexual touching (51%), and/or vaginal, oral, or anal penetration (41%). Perpetrators of childhood sexual abuse of these women included: biological, adoptive and stepfathers (27%); other male relatives (42%), non-relatives (including foster parents) (56%), and female relatives (2%). Half of the women (51%) who reported a history of sexual abuse indicated that it began between the ages of 0-9 and 42% reported that it began between the ages of 10 and 14. Additionally, 42% of these women reported that the sexual abuse continued for over a year, and over a quarter reported that it continued for more than three years. Only 24% of the victims reported that the childhood abuse ever came to the attention of outside authorities including police and social service agencies.

McDaniels-Wilson and Belknap (2008) noted similar rates of childhood victimization when studying the victimization histories of 391 women incarcerated in three minimum-, medium-, and maximum- security prisons in Ohio. The women were an average of 35 years old; 53% identified as African American, 45% identified as White, and the remaining 2% identified as Latina/Hispanic, Asian American, American Indian, and Bi-racial. Eighty-five percent of the women reported that they were mothers, with an average of 2.4 children. Findings indicated that 50% of the women experienced childhood sexual abuse; 10% reported that this abuse began before their 6th birthday, while 32% reported that it first occurred before the age of 12. Perpetrators were predominantly family members, but also acquaintances (e.g., dates, teachers, and neighbors), and strangers. Ages 6 to 11 were the highest risk in terms of childhood

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sexual abuse by a family member, while ages 12 to 17 were the highest risk for childhood sexual abuse by an acquaintance or stranger.

Recently, Tripodi and Pettus-Davis (2013) studied victimization, mental health, and substance use in 125 women prisoners soon to be released from two prisons in North Carolina. The women were 34 years old, on average, and 53% identified as Caucasian, 43% as African American, and 4% as Hispanic. Of the women studied, 33% reported that they were both physically and sexually abused as a child, 20% reported that they were physically but not sexually abused as a child, and 11% reported that they were sexually but not physically abused as a child. Results of a logistic regression analysis indicated that women who reported childhood abuse were more likely to indicate that they had been hospitalized for a psychological or emotional problem (disorder not specified).

While the prevalence of childhood victimization among justice involved women was first noted 15 years ago (Browne et al., 1999), little research has examined the impact of such victimization since that time with women under community corrections (Golder, Connell, & Sullivan, 2012; Golder et al., 2013). Evidence suggests that childhood victimization may have particularly deleterious consequences for women involved with the criminal justice system as compared to adult victimization (e.g., intimate partner violence; adult stranger rape or sexual assault, etc.) or trauma (e.g., disaster, genocide/refugee, witnessing neighborhood violence, unexpected death of a loved one, etc.) in terms of greater law-breaking behavior, substance use, and re-victimization (Briere, Kaltman, & Green, 2008; Cloitre et al., 2009; Golder, 2005; Golder

& Logan, 2011; Logan, Walker, Jordan, & Leukefeld, 2011; Tripodi & Pettus-Davis, 2013).

Minor to more severe mental health symptoms are also common among criminal justice involved women who have been exposed to childhood victimization including depression, increased suicidality, psychosis, and of course- PTSD (Au, Dickstein, Comer, Salters-Pedneault, & Litz, 2013; Briere & Spinazzola, 2005; Herman, 1992a, 1992b; Kennedy, Tripodi, & Pettus-Davis, 2013; King et al., 1998; Tripodi, Onifade, & Pettus-Davis, 2014; van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005). Research indicates that one incident of childhood victimization increases the chances that it will occur again (Finkelhor, Ormrod, & Turner, 2009a; Herman, 1992a, 1992b; Messman & Long, 1996; van der Kolk, 2000; Widom, Czaja, & Dutton, 2008), and multiple victimization experiences increase the negative effects on later mental health outcomes (Finkelhor et al., 2009b; Messman-Moore & Long, 2000; Messman & Long, 1996; Widom et al., 2008; Wyatt, Guthrie, & Notgrass, 1992).

It is crucial to note that the vast majority of individuals exposed to childhood victimization and other traumatic events do not go on to develop full PTSD or its symptoms. Conditional risk refers to the probability of having PTSD given exposure to a qualifying traumatic event. The National Comorbidity Sample, a probability sample including 3,000 women in the U.S. examined exposure to 12 types of trauma (such as life threatening accident, sexual assault, sexual molestation, witnessing, fire/disaster, combat or physical assault) and found that 20% of exposed women developed PTSD (Kessler et al., 1995). Similarly, results of the Detroit Area Study of 2,200 randomly selected women and men found that 18% of exposed women developed PTSD (Breslau et al.,

1998). Lastly, a slightly lower conditional risk of 11.7% was found for male and female respondents based upon their worst event in the DSM-5 field trials (Kilpatrick et al., 2013).

These studies found that exposure to certain traumatic stressors were associated with a higher conditional risk. In the NCS, rape (46% conditional risk for women; Kessler et al., 1995) was associated with the highest risk, followed by combat, childhood abuse/neglect, sexual molestation, and physical assault. Sexual violence accounted for half of the PTSD cases among women. In the Detroit Area Study, which examined conditional risk for both men and women, combat, sexual violence and physical violence together accounted for almost 40% of the PTSD incidence (Breslau et al., 1998). These findings suggest that sexual and physical victimization may be related to a higher conditional risk of PTSD development among women. One hypothesized reason for the higher conditional risk associated with physical and sexual victimization, particularly when it occurs during childhood, is the interpersonal nature of the trauma, specifically, the victim is traumatized by the very same people who are supposed to love and care for her (van der Kolk & Najavits, 2013). While little research has specifically examined the conditional risk of childhood verses adulthood victimization, this suggestion is supported by preliminary research indicating that exposure to childhood physical and sexual victimization are associated with PTSD development (Breslau, 2002; Schaaf & McCanne, 1998).

Additionally, research strongly suggests that sexual victimization, in particular, is indicative of PTSD development among women (Kessler et al., 1995). Beyond the aforementioned studies, numerous studies have indicated that sexual victimization is

associated with an elevated conditional risk including the Australian National Survey of

Mental Health which examined exposure to trauma and PTSD development among

10,641 participants (Creamer, Burgess, & McFarlane, 2001). They found that exposure

to rape and sexual molestation were the traumatic events most likely to be associated with

PTSD development. Another study, examining PTSD development among 2,509 adults

from four Mexican cities found that conditional risk was highest for those exposed to

sexual violence, followed by exposure to non-sexual violence (Norris et al., 2003).

Delineating the differential impact on PTSD symptoms, if it exists, of types of

victimization experiences based upon temporal factors (childhood vs. adult) as well as

type of victimization (e.g., sexual victimization vs. other types of victimization) may help

identify women who are at a greater risk for PTSD (Cloitre et al., 2009).

Purpose of Study

No known prior published research has examined differences in PTSD

symptomology for criminal justice-involved women based upon exposure to childhood

verses adult victimization, despite previous findings which suggest that the symptoms of

PTSD are common among these women with a history of childhood victimization

(Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013; Landes, Garovoy, & Burkman,

2013). Furthermore, researchers suggest that the expression of PTSD symptoms in

women who have experienced childhood victimization may differ from those who have

experienced other types of traumatic stressors (Hetzel-Riggin, 2009; Tripodi & Pettus-

Davis, 2013). Therefore, the present study aims to investigate the factor structure of

PTSD in a population of victimized women on probation and parole, and then further

examine 1) differences in structure based upon exposure to childhood verses adult

victimization and 2) differences based exposure to childhood sexual victimization when compared to any other type of victimization, controlling for sociodemographic variables. Understanding the structure of PTSD symptomology among this vulnerable population presents a potential first step in the development of targeted and trauma-focused interventions which could lead to promotion of positive post-release outcomes for women on probation and parole, including decreased recidivism rates and improved wellbeing.

The aims of the present study included 1) examining the structure of PTSD, 2) examining differences in symptom structure based upon exposure to childhood verses adult physical or sexual victimization, and 3) examining differences in symptom structure based upon exposure to childhood sexual victimization verses other childhood and adult victimization exposure. In order to meet these aims, first four models of PTSD symptom structure which fit the symptoms in other populations were examined using confirmatory factor analysis (CFA). Fit statistics were examined in order to determine the best fitting model. Models tested included: the numbing model (King et al., 1998, see Table 3, Figure 1), the dysphoria model (Simms et al., 2002, see Table 4, Figure 2), the dysphoric arousal model (Elhai et al., 2011, see Table 5, Figure 3), and the *DSM-5* model (APA, 2013, see Table 6, Figure 4) to determine which model provided the best fit to the symptoms experienced by victimized women on probation and parole. Research has shown that individuals exposed to certain *types* of victimization experiences may endorse symptoms differently. Thus, in order to examine the effects of childhood victimization specifically, multiple indicators multiple causes (MIMIC) structural analyses were used to examine factor structure of the best-fitting CFA in two models of childhood victimization: 1) based upon exposure to at least one experience of childhood sexual or

physical abuse, controlling for sociodemographic factors including participant age, race, educational attainment, work status, homelessness, controlled environment status during the past year, and correctional status (Figure 5), and 2) based upon exposure to at least one experience of childhood sexual victimization, controlling for the same sociodemographic factors (Figure 6).

Significance of the Study to Social Work and Criminal Justice

Understanding PTSD symptom structure is crucial to the development of interventions to treat the mental health needs of women on probation and parole. As will be examined in Chapter II, according to the gendered pathways perspective women tend to follow distinct pathways toward criminal justice involvement, differing from those taken by men (Salisbury & Van Voorhis, 2009). One path in particular, 'harmed and harming' is characterized by childhood victimization experiences leading to severe psychological distress and mental health problems, including PTSD. This psychological distress leads to emotional and impulse dysregulation that increases the likelihood that women will self-medicate with alcohol and drugs (Herman, 1992a; van der Kolk, Pelcovitz, et al., 1996). The relationship is thought to be complicated and multi-directional: as women use these substances, engagement in high risk behaviors, including law-breaking activities, and exposure to additional victimization increase, often prompting additional distress, substance use, and an ongoing cycle of risks, including risk of involvement in the criminal justice system (Cohen et al., 2000; Engstrom, El-Bassel, & Gilbert, 2012; Engstrom, Shibusawa, El-Bassel, & Gilbert, 2011; White & Widom, 2008; Widom & Ireland, 1995; Wilson & Widom, 2009, 2010). Since the research suggests that

PTSD plays a crucial role in this pathway, understanding PTSD symptomology is crucial to the development of effective interventions for this population.

In terms of social work specifically, this research aims at furthering the field through the lens of understanding PTSD symptomology for an at-risk population. These research aims are built within the theoretical context of person-in-environment, developing a richer understanding of how environmental factors from the micro-level (childhood victimization, individual responses to childhood victimization such as PTSD symptomology) to the mezzo-level (probation or parole involvement, lack of access to appropriate treatment) can shape outcomes. Social work perspectives are uniquely poised to be informed as well as inform the research aims below through its study of the impacts of environmental deprivation (which may include marginalization and/or discrimination) as well as individual resilience in determining outcomes.

In summary, in this first chapter, an introduction to women involved with the criminal justice system and PTSD among women in this population was presented. Additionally, an introduction to PTSD factor structure and childhood victimization among women in this population was presented. Finally, a discussion of study aims and implications for the field of social work was presented. The next chapter will present the history and development of PTSD as a disorder and the gendered-pathways perspective which theoretically links childhood victimization with current PTSD among women involved in the criminal justice system.

Table 3

Numbing Model of PTSD symptoms based upon King et al. (1998)

Latent Factor	Posttraumatic Diagnostic-Symptom Severity Subscale Item (Foa, 1996)
Reexperiencing	B1: Intrusions (PDS 1) B2: Nightmares (PDS 2) B3: Flashbacks (PDS 3) B4: Emotional Reactivity (PDS 4) B5: Physiological reactivity (PDS 5)
Avoidance	C1: Avoiding thoughts/feelings (PDS 6) C2: Avoiding persons/places/activities (PDS 7)
Numbing	C3: Memory problems (PDS 8) C4: Loss of interest (PDS 9) C5: Detachment (PDS 10) C6: Restricted Affect (PDS 11) C7: Sense of foreshortened future (PDS 12)
Hypervigilance	D1: Sleep disturbance (PDS 13) D2: Irritability (PDS 14) D3: Difficulty concentrating (PDS 15) D4: Hypervigilance (PDS 16) D5: Exaggerated startle response (PDS 17)

Figure 1

PTSD Numbing Model CFA
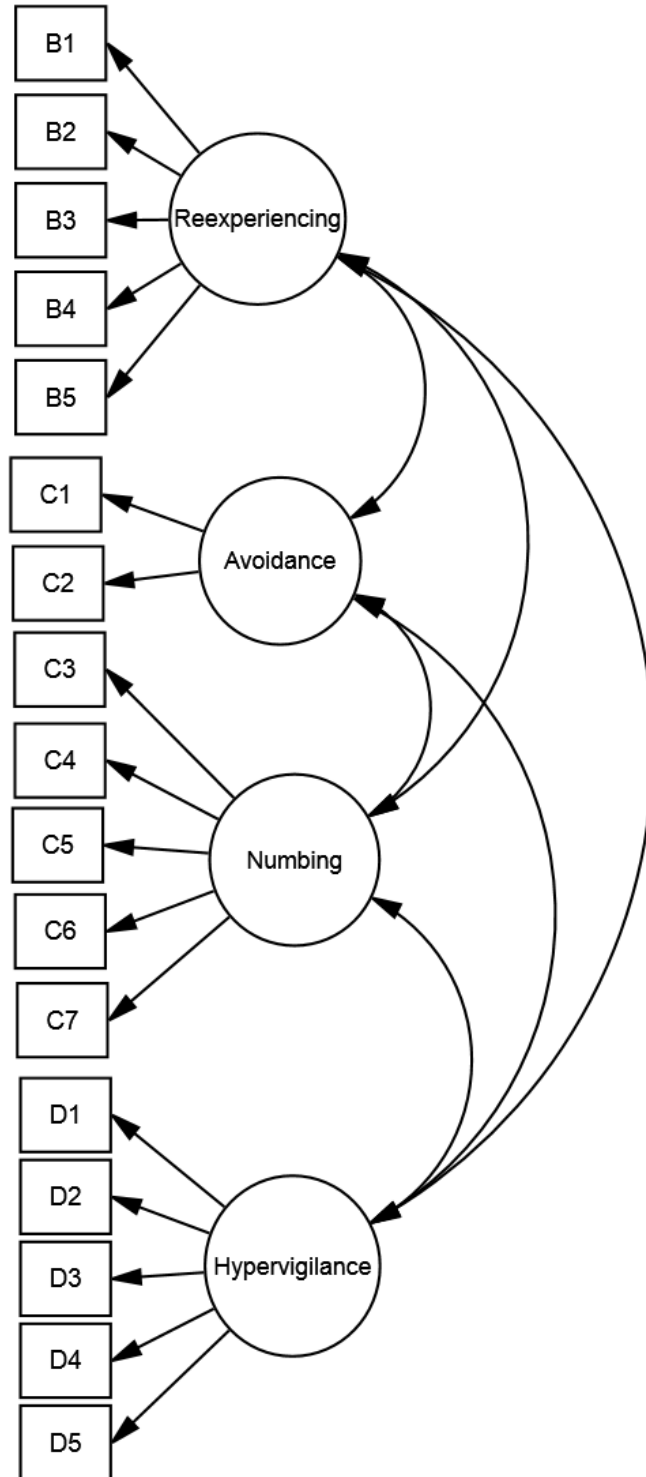
Table 4

Dysphoria Model of PTSD symptoms based upon Simms et al. (2002)

Latent Factor	Posttraumatic Diagnostic-Symptom Severity Subscale Item (Foa, 1996)
Reexperiencing	B1: Intrusions (PDS 1) B2: Nightmares (PDS 2) B3: Flashbacks (PDS 3) B4: Emotional Reactivity (PDS 4) B5: Physiological reactivity (PDS 5)
Avoidance	C1: Avoiding thoughts/feelings (PDS 6) C2: Avoiding persons/places/activities (PDS 7)
Dysphoria	C3: Memory problems (PDS 8) C4: Loss of interest (PDS 9) C5: Detachment (PDS 10) C6: Restricted Affect (PDS 11) C7: Sense of foreshortened future (PDS 12) D1: Sleep disturbance (PDS 13) D2: Irritability (PDS 14) D3: Difficulty concentrating (PDS 15)
Hyperviglance	D4: Hypervigilance (PDS 16) D5: Exaggerated startle response (PDS 17)

Figure 2

PTSD Dysphoria Model CFA
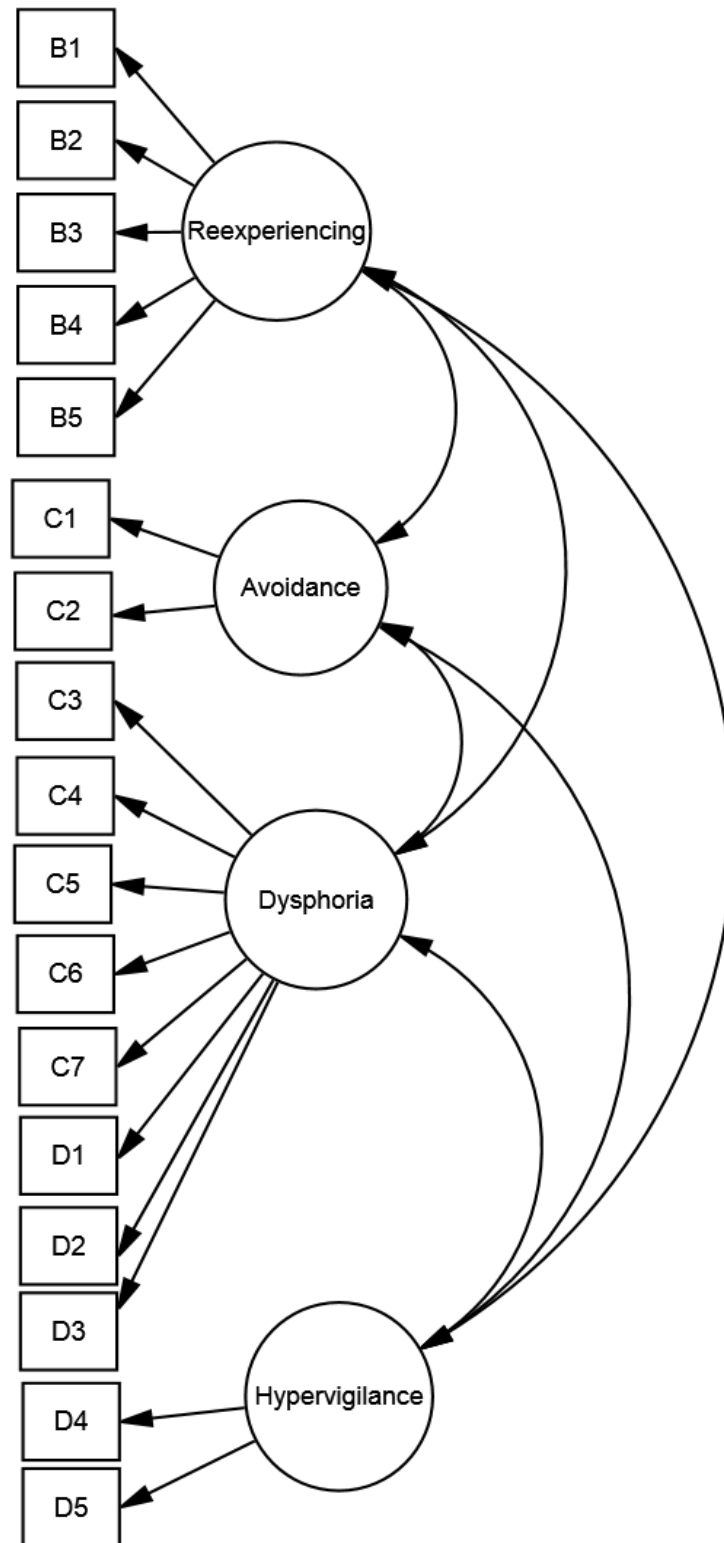
Table 5

Dysphoric arousal model of PTSD symptoms based upon Elhai et al. (2011)

Latent Factor	Posttraumatic Diagnostic-Symptom Severity Subscale Item (Foa, 1996)
Reexperiencing	B1: Intrusions (PDS 1)
	B2: Nightmares (PDS 2)
	B3: Flashbacks (PDS 3)
	B4: Emotional Reactivity (PDS 4)
	B5: Physiological reactivity (PDS 5)
Avoidance	C1: Avoiding thoughts/feelings (PDS 6)
	C2: Avoiding persons/places/activities (PDS 7)
Numbing	C3: Memory problems (PDS 8)
	C4: Loss of interest (PDS 9)
	C5: Detachment (PDS 10)
	C6: Restricted Affect (PDS 11)
	C7: Sense of foreshortened future (PDS 12)
Dysphoric Arousal	D1: Sleep disturbance (PDS 13)
	D2: Irritability (PDS 14)
	D3: Difficulty concentrating (PDS 15)
Anxious Arousal	D4: Hypervigilance (PDS 16)
	D5: Exaggerated startle response (PDS 17)

Figure 3

PTSD Dysphoric Arousal Model CFA
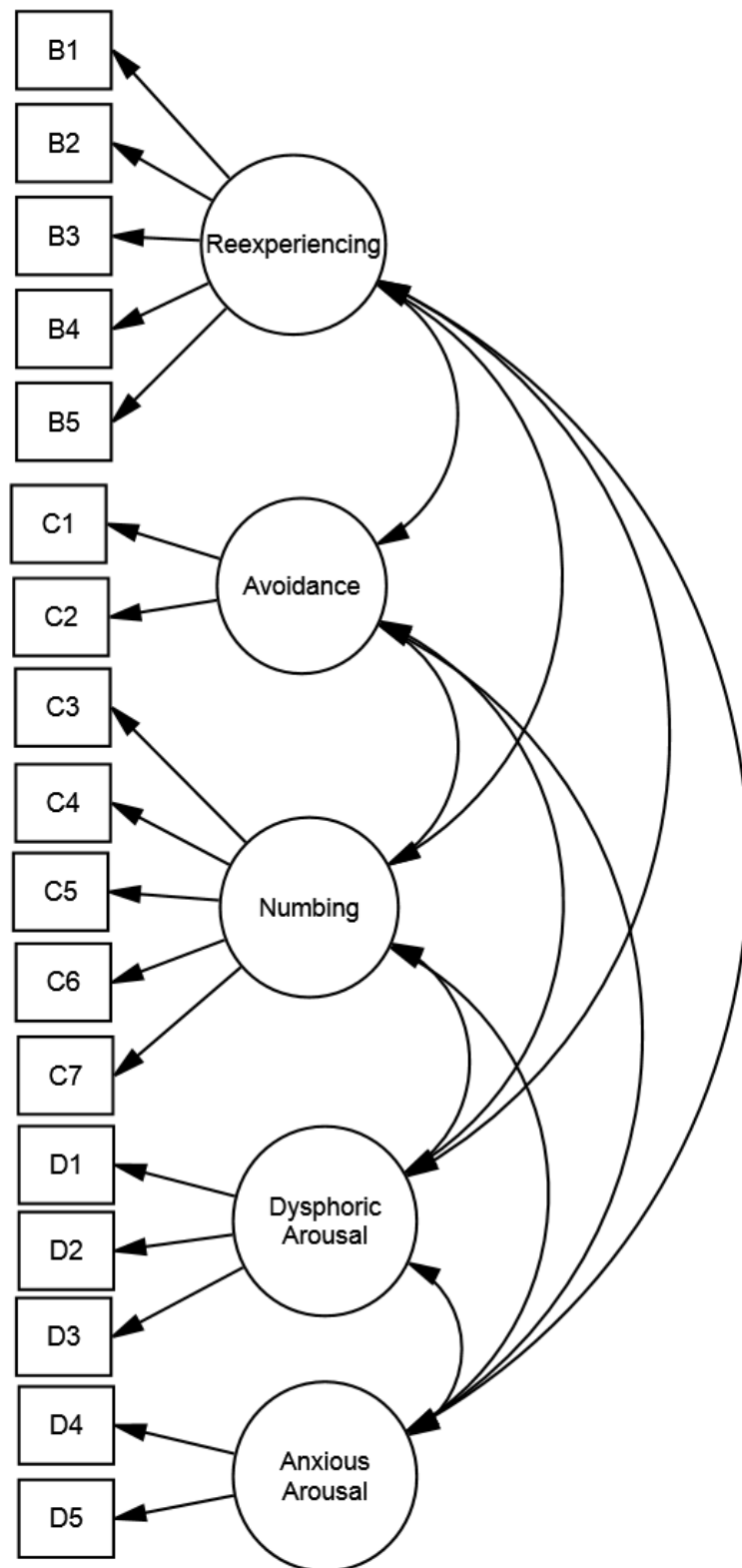
Table 6

DSM-5 model of PTSD symptoms based upon American Psychiatric Association (2013), only 16 of 20 symptoms are available for examination

Latent Factor	Posttraumatic Diagnostic-Symptom Severity Subscale Item (Foa, 1996)
Reexperiencing	B1: Intrusions (PDS 1)
	B2: Nightmares (PDS 2)
	B3: Flashbacks (PDS 3)
	B4: Emotional Reactivity (PDS 4)
	B5: Physiological reactivity (PDS 5)
Avoidance	C1: Avoiding thoughts/feelings (PDS 6)
	C2: Avoiding persons/places/activities (PDS 7)
Alterations in Cognitions and Mood	Memory problems (PDS 8)
	Negative Beliefs and Expectations about oneself and the world*
	C5: Distorted blame of self and others for the traumatic event*
	C6: Persistent negative trauma-related emotions*
	C5: Loss of interest (PDS 9)
	C6: Detachment (PDS 10)
	C7: Restricted Affect (PDS 11)
Alterations in arousal and reactivity	D3: Irritability (PDS 14)
	Self- destructive or reckless behavior*
	D5: Hypervigilance (PDS 16)
	D6: Exaggerated startle response (PDS 17)
	D4: Difficulty concentrating (PDS 15)
	D2: Sleep disturbance (PDS 13)

* denotes items which are new to the DSM-5, and thus not included in the PDS measure.

Figure 4

PTSD DSM-5 Model CFA
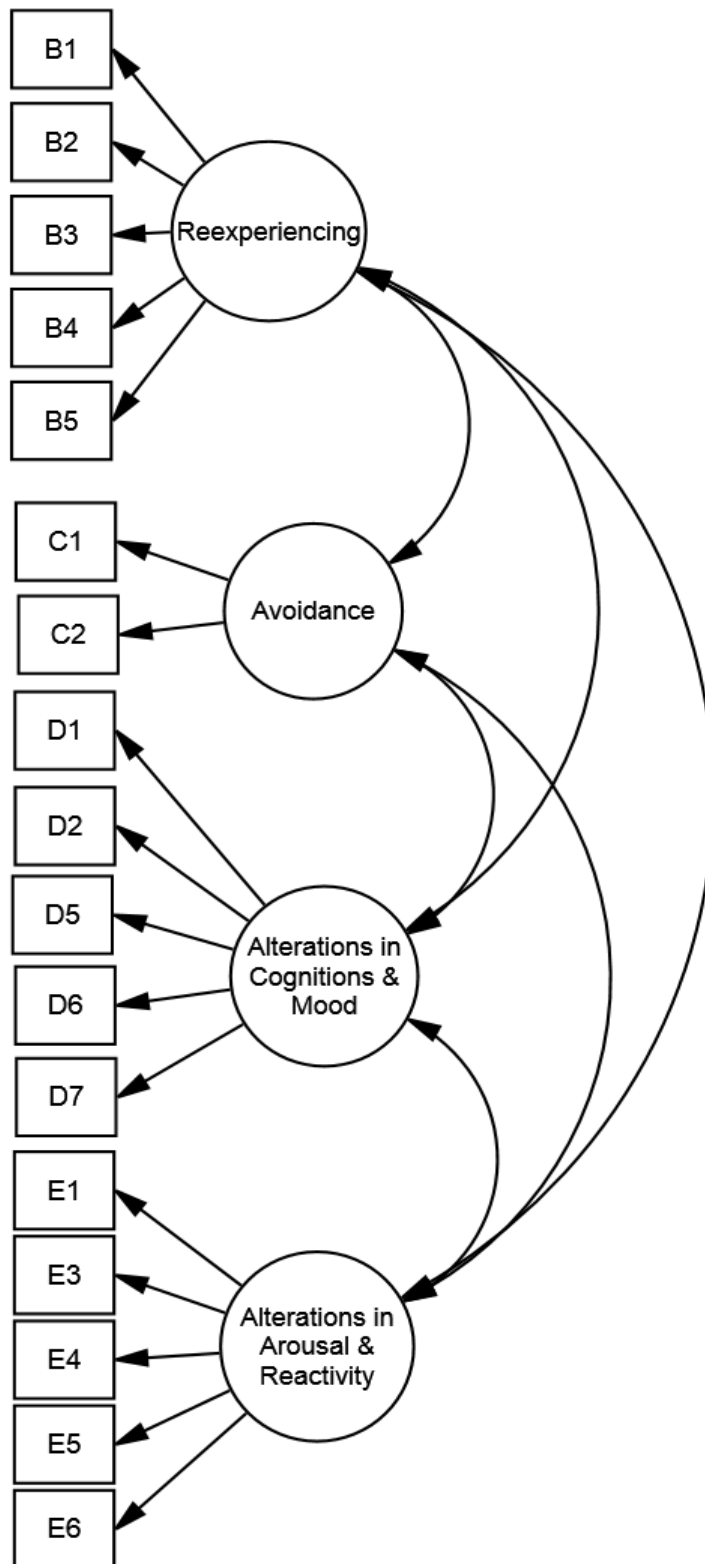
Figure 5

MIMIC Model Examining Exposure to Childhood Physical or Sexual Abuse
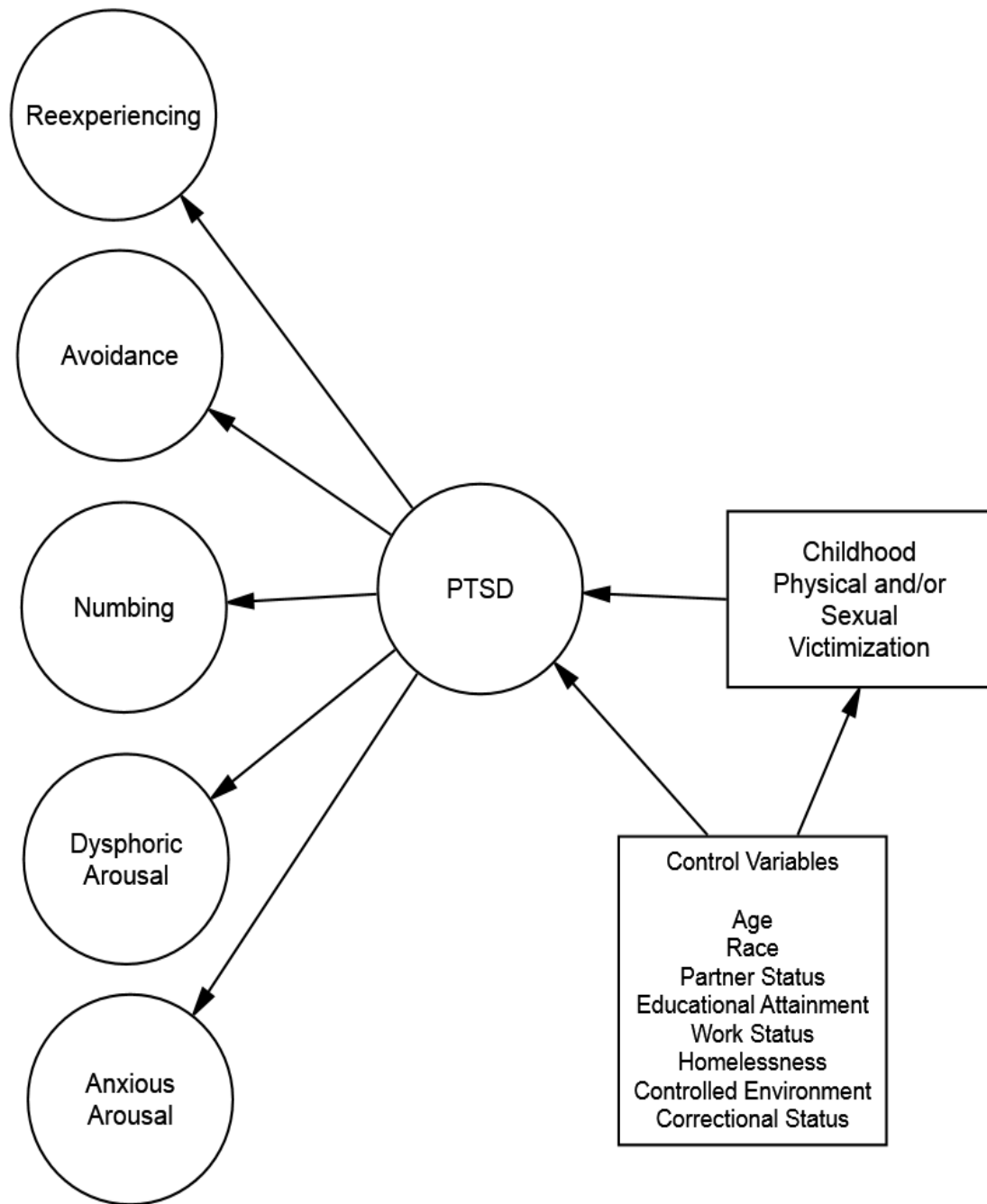
Figure 6

MIMIC Model Examining Exposure to Childhood Sexual Victimization
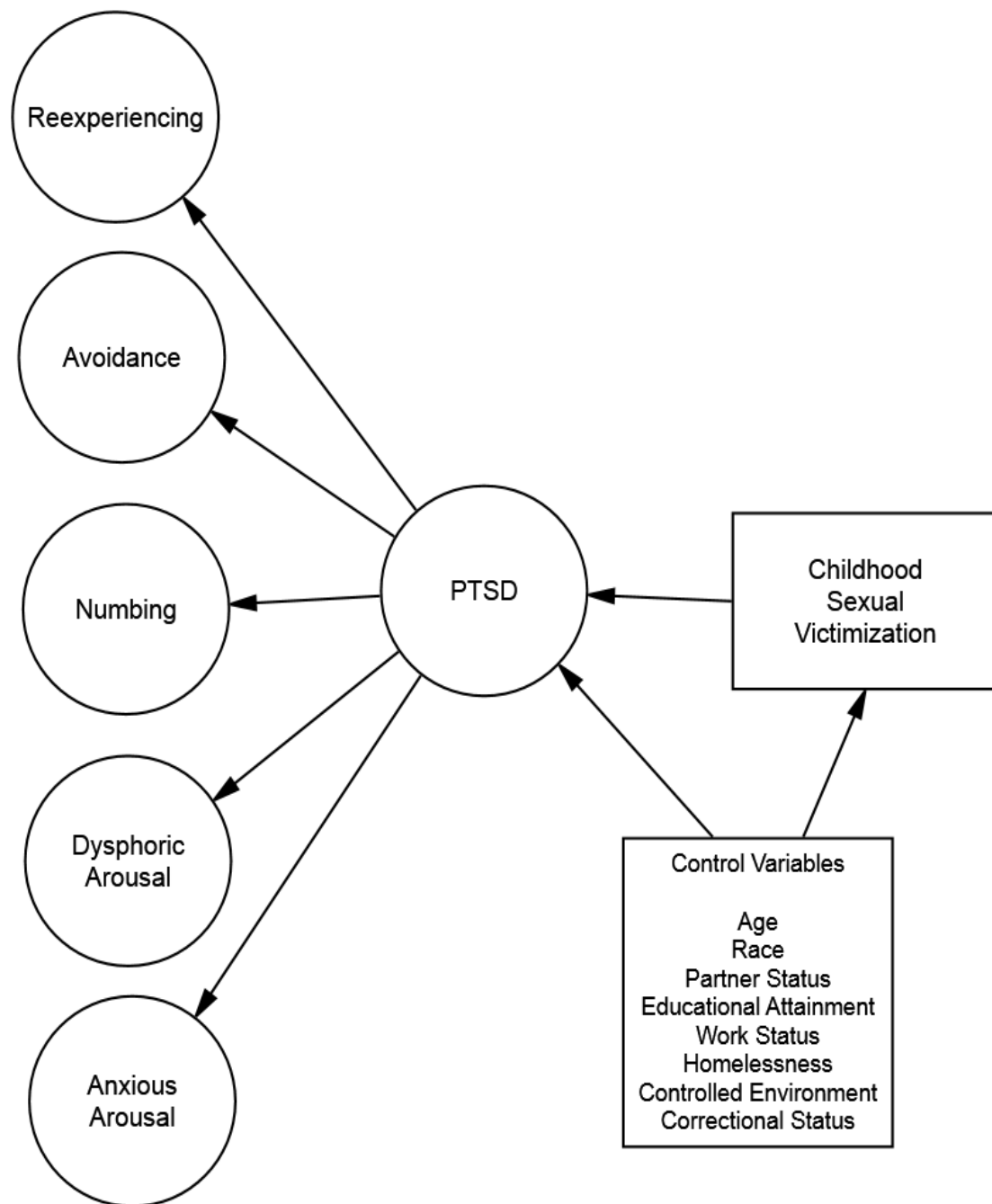
CHAPTER II

THEORETICAL PERSPECTIVES

This chapter reviews the emergence of PTSD as a mental health construct laying

the foundation for an understanding of the current factor structure of PTSD which is

addressed in Chapter III. Additionally, the gendered pathways perspective is described

providing theoretical linkages between childhood victimization and PTSD among women

involved with the criminal justice system.

Emergence of PTSD as a Mental Health Construct: A Brief History

Ancient History to the 19th Century. Psychological trauma and the associated

symptomology has been documented since ancient times (Birmes, Hatton, Brunet, &

Shcmitt, 2003). Some of the earliest well-known significant writings and literature

including the *Epic of Gilgamesh* (George, 1999) dating from 3,000 BC, and the *Iliad*

(Homer, 1950) dating from 850 BC describe heroes experiencing traumatic events and

symptomology. This includes the traumatic death of close companions during battle, and

subsequent experience of symptoms including re-current and intrusive recollections of

the death, sleep disturbances including nightmares, and feelings of

detachment/dissociation associated with a sense of foreshortened future (Birmes et al.,

2003; van der Kolk, Weisaeth, & Van der Hart, 1996). Indeed, chronicles of

psychological trauma and the associated symptomology (also known as traumatic stress)

in the ancient literature often involved heroic actions in the face of violence and death

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and the tragic effects on the individual (Birmes et al., 2003). From the time of antiquity onward, chroniclers noted the sometimes odd behavior of their heroes, reporting isolated cases of agitation, dissociation, and nightmares (Birmes et al., 2003). These observations were used by philosophers to inform the theories of human nature, as evidenced by Descartes' (1989) 17th century observation that events which lead to fear can inform human behavior long after the event is over. Up until the 18th century, the study of psychological trauma and traumatic stress was undertaken only by writers, including Shakespeare in *Henry IV (*Shakespeare*, 1961), Romeo and Juliet (*Shakespeare, 1992), and *Macbeth (*Shakespeare, 1993); and historians such as the French chronicler, (Froissart, 1978) account of Peter of Bearn.

This gradually changed as medical doctors became aware of post-traumatic symptoms, largely through the sheer number of people experiencing post-traumatic symptoms as a result of witnessing or experiencing violence and death as a result of train crashes, the Napoleonic Wars and the American Civil War (Birmes et al., 2003). Soldiers during the Civil War frequently reported heart palpitations and chest pains, thought to be related to physical stress, prompting the label of *soldier's heart, irritable heart, effort syndrome,* and *DaCosta's syndrome* (Birmes et al., 2003; Tomb, 1994; van der Kolk, Weisaeth, et al., 1996). Indeed, Weir Mitchel (1861-1865), a physician during the American Civil War, is credited with the first medical reference to the symptoms that we now associate with PTSD, with his use of descriptors such as fits of hysterics with excessive emotionality, lethargy, withdrawal, and physical and psychological exhaustion (O'Brien, 1998; Tomb, 1994) which were subsequently referred to as *nostalgia.*

World War I, Freud, and the *Diagnostic and Statistical Manuals I and II*.

World War I marked the first large scale observations of and attempts at treating

traumatic stress (Tomb, 1994). *Shell shock theory* emerged during this time, focusing on

a soldier's predisposition toward trauma symptoms including reactive capabilities and a

stunned nervous system and mind (Tomb, 1994; van der Kolk, Weisaeth, et al., 1996).

Symptoms commonly noted included irritability, stupor, nightmares, trembling, and

exaggerated startle responses (O'Brien, 1998). During this time, the first biological

studies of damage to the central nervous system were conducted (e.g., physiological and

psychological responses to epinephrine and intolerance to carbon monoxide), prompting

the development of the term *psychic trauma* to explain symptoms indicating damage to

the central nervous system without objective injuries (Southwick, Bremner, Krystal, &

Charney, 1994). Together, *shell shock* and *psychic trauma* were responsible for 20,000

hospitalizations among the British population during World War I and the years

immediately following (Gersons & Carlier, 1992). Treatment was focused on the

soldier's desire not to return to combat, equating the symptoms with personal weakness

and cowardice (Birmes et al., 2003). In Germany, treatments were often noxious, anti-

therapeutic and inhumane including electric shock therapy and isolation in dark rooms,

leading many soldiers to prefer to return to the frontlines untreated (Birmes et al., 2003;

O'Brien, 1998; van der Kolk, Weisaeth, et al., 1996). In France, the understanding and

treatment of what we now know as combat related PTSD symptomology was no better.

For instance, a firsthand account by a soldier in France, Louis Ferdinand Destouches,

with the pen-name C'eline (1952) recounts how he was placed under medical

observation with other *psychologically wounded* soldiers, and after several days, soldiers

were sorted into three groups: 1) soldiers who returned to the front, 2) soldiers who were sent to a psychiatric hospital, and 3) soldiers who were considered malingerers, and sent to the firing squad.

Coinciding with World War I and its aftermath, Sigmund Freud examined trauma-related neurosis, setting the stage for the modern scientific and theoretical understanding of PTSD (Birmes et al., 2003; Wilson, 1994). Freud first introduced "Seduction Theory" to explain symptoms of *psychic neurosis* (which roughly translate to what we see as anxiety symptoms today), but later shifted to "intrapsychic fantasy" as the mechanism underlying neurosis (Masson, 1984; Wilson, 1994). Seduction theory was conceptually centered on the idea that during childhood, a number of real traumatic experiences or emergency-type events could occur which the child might find profoundly distressing (Brett, 1993). Based upon the degree of threat experienced by the ego, and the associated anxiety, the individual would use repression as a defense mechanism to escape the unpleasant memories and emotions of the traumatic event (Freud, 1957, 1966). The use of repression to avoid these unpleasant memories would often lead to neurotic behaviors or symptoms, prompting the individual to sometimes seek treatment. Crucial to the theory was the idea that these events occurred in reality, and not in the individual's mind. Additionally, Freud recognized a number of events which generated "illness" with "special frequency" including World War I, physical injury, child abuse, and railroad collisions. He also describes patients' symptoms associated with these events including a) nightmares), b) physiological reactivity, and c) flashbacks, setting the stage for symptom criteria found in the *DSM-III* and beyond (Freud, 1957, 1966).

Freud also distinguished between the mechanisms underlying "normal neuroses" (e.g., anxiety related to daily life), and "war neurosis" (e.g. trauma-related symptoms) in his famous address at the International Psycho-Analytic Congress in Budapest in 1918 (Wilson, 1994). He argued that with war neuroses, there is a conflict between the Superego and Id, and that neuroses and repression are used to grapple with the horror of warfare and level of fear. Freud, under mounting pressure from conservative Vienna society, went on to reformulate his theory regarding the nature of traumatic events, no longer supporting Seduction theory and its references to libidinal impulses, and instead focusing on intra-psychic fantasy, imagery, and thoughts rather than actual memories of traumatic events, such as childhood abuse (Brett, 1993). This shift away from treating the person in the context of real, traumatic events to instead focusing on their fantasies which could be entirely in the mind minimized or disavowed the role of the external-based stressor in impacting the individuals' behavior (Jones, 1953; Masson, 1984). The impact of the so-called trauma on the individual was thus seen as acute and temporary in nature (Masson, 1984). This meant that prolonged symptoms were not perceived as related to the traumatic event, and instead attributed to pre-morbid traits of the individual. In one of his final books, *Beyond the Pleasure Principle*, Freud (1928) slightly altered his perspective to a slightly more balanced position, arguing that traumatic events were external stressors, strong enough the break through an individual's "protective shield" inflicting injury to the person, and disrupting the individual's equilibrium or coping capacity. The traumatic experience might then evolve further where this disequilibrium allows other stressors (traumatic and otherwise) to overwhelm the depleted coping capacity, laying a path for chronic PTSD or comorbid conditions.

In 1952, thirteen years after Freud's death, the American Psychiatric Association

published its first diagnostic and statistical manual (American Psychiatric Association,

1952; DSM-I) including a category "Transient Situational Personality Disorders," with

the subcategory, "Gross Stress Reaction" (see Table 7 for *DSM I* and *DSM II* criteria).

The *DSM-I* criteria for Gross Stress Reaction is thought to clearly reflect Freud's latter

perspective of traumatic neuroses, due to its 1) inclusion of criteria which characterize the

disorder as an "acute reaction" to "unusual stress", 2) indication that prolonged

symptoms suggested the strong possibility of a pre-morbid/co-morbid condition, 3)

explicit statement that proper treatment, or elimination of the stressor itself would lead to

a quick recovery, regardless of severity. The *DSM-II* (American Psychiatric Association,

1968) released in 1968, 16 years after the first DSM, re-classified "Gross Stress

Reaction" into a new category, "Adjustment reaction of adult life," which curiously

included no criteria, and instead only three vignettes of stressful life events (e.g. fear

associated with military combat leading to symptoms including trembling and hiding).

This new diagnosis was considered grossly inadequate by many, especially considering

the number of macro-level stressful events (e.g., World War II, the Vietnam War,

increasing recognition of childhood physical and sexual abuse) and the advancements of

the medical and mental health community during that time in understanding post-

traumatic symptoms/neuroses (Wilson, 1994). Several notable scholars during that time

continued the study of post-traumatic symptoms including psychoanalyst, Ambram

Kardiner, whose *Traumatic Neurosis of War* (Kardiner, 1941; Kardiner & Spiegal, 1947)

was based upon his experiences treating PTSD during and after World War I in an

American Veterans hospital. Grinker and Spiegel (1945) published their detailed

description of 65 clinical cases of traumatic stress in *Men Under Stress*. Finally, the

American psychologist, Lif (1967) *Hiroshima- Death in Life* explored the experiences of

9,000 survivors of the atomic bomb. While the literature detailing the psychological

trauma of concentration camp survivors are too numerous to describe here, a study by

Eitinger (1961) is notable because it describes the trauma-related symptoms of 1,300

Danes who survived German concentration camps. He found many of the same post-

traumatic symptoms were common among survivors, however varied in intensity and

relative importance across individuals.

Table 7

Comparison of *DSM I* and *DSM II* Criteria

DSM I (1952)	*DSM II* (1968)
000-x81 GROSS STRESS REACTION	307.3 ADJUSTMENT REACTION OF ADULT LIFE
UNDER CONDITIONS OF GREAT OR UNUSUAL STRESS, A NORMAL PERSONALITY MAY UTILIZE ESTABLISHED PATTERNS OF REACTION TO DEAL WITH OVERWHELMING FEAR. THE PATTERNS OF SUCH REACTION DIFFER FROM THOSE OF NEUROSIS OR PSYCHOSIS CHIEFLY WITH RESPECT TO CLINICAL HISTORY, REVERSIBILITY OF REACTION, AND ITS TRANSIENT CHARACTER.	EXAMPLE: RESENTMENT WITH DEPRESSIVE TONE ASSOCIATED WITH AN UNWANTED PREGNANCY AND MANIFESTED BY HOSTILE COMPLAINTS AND SUICIDAL GESTURES.
WHEN PROMPTLY AND ADEQUATELY TREATED THE CONDITION MAY CLEAR RAPIDLY. IT IS ALSO POSSIBLE THAT THE CONDITION MAY PROGRESS TO ONE OF THE NEUROTIC REACTIONS. IF THE REACTION PERSISTS, THIS TERM IS TO BE REGARDED AS A TEMPORARY DIAGNOSIS TO BE USED ONLY UNTIL A MORE DEFINITIVE DIAGNOSIS IS ESTABLISHED.	EXAMPLE: FEAR ASSOCIATED WITH MILITARY COMBAT AND MANIFESTED BY TREMBLING, RUNNING AND HIDING.
THIS DIAGNOSIS IS JUSTIFIED ONLY IN SITUATIONS IN WHICH THE INDIVIDUAL HAS BEEN EXPOSED TO SEVERE PHYSICAL DEMANDS OR EXTREME EMOTIONAL STRESS, SUCH AS IN COMBAT OR IN CIVILIAN CATASTROPHE (FIRE, EARTHQUAKE, EXPLOSION, ETC.). IN MANY INSTANCES THIS DIAGNOSIS APPLIES TO PREVIOUSLY MORE OR LESS "NORMAL" PERSONS WHO HAVE EXPERIENCED INTOLERABLE STRESS.	EXAMPLE: A GANSER SYNDROME ASSOCIATED WITH DEATH SENTENCE AND MANIFESTED BY INCORRECT BUT APPROXIMATE ANSWERS TO QUESTIONS.
THE PARTICULAR STRESS INVOLVED WILL BE SPECIFIED AS (1) COMBAT OR (2) CIVILIAN CATASTROPHE.	

***DSM-III*, PTSD, and Moving Beyond Military Populations.** PTSD emerged as

a separate diagnosis for the first time in 1980 with the publication of the *DSM-III*

(American Psychiatric Association, 1980). Placed in the new category of anxiety

disorders, the new nomenclature of "post-traumatic" meaning "after-injury" reflected

changes in one's wellbeing and the presence of symptoms following exposure to a

traumatic event. Other changes included an algorithm of requirements in order to make a

diagnosis and differentiate that diagnosis from other disorders, namely, an individual had

to manifest at least four symptoms from three symptom clusters (e.g., re-experiencing the

trauma, numbing and detachment, and changes in personality). Additionally, changes

were made in describing the severity of the stressor, such that the "recognizable stressor"

would "evoke significant symptoms of distress in almost everyone." Thus, a shift in

understanding PTSD had occurred such that PTSD was no longer seen as a pathology

only seen in individuals with pre-morbid neurosis, but instead PTSD was "the normal

human reaction to abnormally stressful life-events"(Wilson, 1994, p. 692). The presence

of psychopathology was indicated by whether the symptoms persisted over time and

impacted life functioning. These changes form the theoretical understanding of PTSD as

it exists today in the *DSM-5*, namely that there is a continuum of symptom severity as

well as impact of symptoms on psychosocial functioning, and that variables and

processes influence the manifestations of both (Wilson, 1994). Researchers since this

time have examined the impact of personal and environmental factors on the expression

of PTSD symptoms and functional impairments. The inclusion of PTSD in the *DSM-III*

led to an increased acceptance in the medical and mental health community that PTSD

was a diagnostic entity and dramatically increased the study of PTSD, its symptom

structure, treatment, and expansion to the effects of trauma in populations of various

types of trauma survivors, including survivors of childhood abuse (Davidson & Foa,

1993). Thus, being given the diagnosis of PTSD helped to validate and give a voice to

the experiences of many victims of traumatic events who were suffering (Wilson, 1994).

This research and refinement of the definition of trauma itself, and the associated

symptoms would continue with the publication of the *DSM-IV* in 1992 and its text

revision in 2000, both of which made PTSD criteria selections based upon clinical

consensus, and not studies of individuals with PTSD, themselves. The changes are

detailed in the literature review in Chapter III.

The *DSM-5* and Present Areas of Inquiry. Most recently, with the publication

of *DSM-5*, the categorization of PTSD has continued to evolve, moving from the anxiety

disorder section, to a new section titled Trauma- and Stressor- Related Disorders. This

organizational change is considered the most significant revision made to the PTSD

criteria in *DSM-5* (Weiss, 2012). The task group who revised the PTSD diagnosis for

DSM-5 required substantive evidence and approval by four separate committees before

symptoms were included in the *DSM-5* criteria (for a detailed explantation of the process

see Friedman, 2013). This approach was thought to result in the limiting of new

symptoms from being included in the criteria, with the stated goal of updating the *DSM-5*

more frequently than its predecessors. The *DSM-5* field trials examined the test-retest

reliability among diagnosticians as well as compared the *DSM-IV* and *DSM-5* criteria and

factor structure in two internet surveys examining a total of 3,323 veterans and non-

veterans (Friedman, 2013). They found that the prevalence of PTSD using *DSM-5*

criteria was similar to *DSM-IV* and the 4-factor *DSM-5* model fit the data better than the

3-factor *DSM-IV* model. Other changes included the addition of two subtypes, 1)

preschool (applies to children younger than 6 years old), and 2) dissociative, because

neuroscience research indicates that presentation and treatment may be different in these

subtypes (Lanius, Brand, Vermetten, Frewen, & Spiegel, 2012; van der Kolk & Courtois,

2005).

In looking specifically at the changes to the *DSM-5* in terms of childhood

victimization, it is important to note that this was the first time childhood sexual abuse

was specifically included as an example of a stressful event leading to PTSD (Friedman,

2013; Friedman, Resick, Bryant, & Brewin, 2011). The post-traumatic symptomology of

childhood victimization seen in child and adult survivors has been a source of frequent

debate in the trauma field (Weiss, 2012). This is in part due to findings that exposure to

childhood victimization, especially when repeated or sustained over time, leads survivors

to exhibit a more complex symptom presentation which additionally includes major

disturbances in affect, self-concept, interpersonal problems, and somatic symptoms than

the four-factor symptoms included in the *DSM-5* diagnosis (Briere et al., 2008; Briere &

Spinazzola, 2005; Cook, Blaustein, Spinazzola, & Van der Kolk, 2003; van der Kolk et

al., 2005). This more complex presentation was first identified by trauma researcher

Judith Herman (Herman, 1992a, 1992b) in the 1970's-80's, and *DSM-5* designates it as

"PTSD and its associated features" (also known as C-PTSD) (American Psychiatric

Association, 2013). A stream of research conducted independent of the APA has found

support for C-PTSD symptomology in a number of trauma-exposed populations (Cloitre

et al., 2009; van der Kolk & Najavits, 2013; van der Kolk, Pelcovitz, et al., 1996; van der

Kolk et al., 2005), although consensus has yet to be reached regarding operationalization of the included symptoms (Weiss, 2012).

In summary, the historical context for PTSD can be traced to almost the beginning of recorded human civilization. Throughout history, post-traumatic symptoms have arisen as people interacted with their environments facing natural disasters, wars, genocides, and suffered from maltreatment and victimization. Over time, writers, philosophers, psychologists, physicians, psychoanalysts and social scientists have worked to advance identification and understanding of psychological responses to these types of traumatic events. Over the last century the scientific study of the psychological impacts of traumatic events developed including naming, defining and classifying common reactions to them within the spectrum of recognized mental health conditions and disorders as post-traumatic stress disorder (PTSD). The definition of PTSD has both expanded (i.e. in terms of including a variety of trauma experiences) and narrowed (i.e. through the use of diagnosis itself, and in terms of requiring a certain set and number of symptoms), leading to the definition we have today in the recently released *DSM-5*. While the DSM-based diagnosis remains controversial, the nomenclature used allows for the universal descriptive study and treatment of the disorder. Among others, current areas of research and debate include further delineating the symptoms and factor structure of PTSD in terms of different populations (Weiss, 2012).

Understanding PTSD among Women and the Gendered Pathways Perspective

While PTSD was predominantly developed as a disorder to explain the symptoms of male survivors of war, research and clinical findings demonstrate that women experience PTSD symptoms often as a result of victimization-related trauma, which they

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are more likely to encounter than males (Tolin & Foa, 2002; Tolin & Foa, 2006). For

women, traumatic events leading to PTSD symptoms tend to be interpersonal in nature

including child abuse and neglect, rape, and domestic battering (Bybee, 1979; Myers,

2008-2009; Ventrell, 1999-2000). Beginning in 1962, with the publication of an article

on "The Battered Child Syndrome," the toll that child abuse and neglect took on children

was publically acknowledged and treated as a true social problem, worthy of government

involvement (Myers, 2008-2009).

Specific-trauma related symptoms including rape trauma syndrome, incest

trauma, battered woman syndrome, and child abuse/sexual abuse syndrome emerged

during the middle and later 20th century to understand the trauma-related symptomology

for predominantly female populations (Briere, 1984; Burgess & Holmstrom, 1974;

Courtios, 1979, 2004; Walker, 1984). These were never included in the DSM; instead,

PTSD as a disorder has been expanded over time to expressly include the traumatic

etiology of victimization which is more common among women than men. Over the past

few decades, several large-scale epidemiological studies have indicated that victimization

experiences including childhood rape (Epstein, Saunders, & Kilpatrick, 1997), adult

forcible rape (Zinzow et al., 2012), combined childhood physical and sexual abuse

(Schaaf & McCanne, 1998) and intimate partner violence (IPV) (Scott-Tilley, Tilton, &

Sandel, 2010) are especially predictive of PTSD symptom development among women.

As our knowledge of both PTSD and effects of traumatic events on women has

expanded, evidence has suggested that women may be more likely to develop PTSD than

men following traumatic exposure (Tolin & Foa, 2006). Some have suggested that this

increased conditional risk is associated with the higher incidence of sexual victimization

experiences for women when compared to men (Kessler et al., 1995; Komarovskaya, Booker Loper, Warren, & Jackson, 2011; Norris & Slone, 2013). Taken together, these findings have moved PTSD away from its origins as a mental health disorder associated with men alone.

Gendered Pathways Perspective

The focus of the analysis now shifts to providing a theoretical background for the prevalence of PTSD among women involved with the criminal justice system, providing a lens for understanding how childhood victimization leads to psychological distress and PTSD, increasing women's chances of engaging in behaviors which facilitate involvement with the criminal justice system. The gendered pathways perspective (GPP) is an approach to understanding females' distinct pathways to initial criminal justice involvement and recidivism as compared to men. GPP recognizes the broad disadvantages and social circumstances which put women at risk for criminal justice involvement, which are inherently gendered experiences (Daly, 1992; Salisbury & Van Voorhis, 2009). Situated firmly in the person-in-environment perspective (Ritzer & Goodman, 2004), GPP recognizes the biological, psychological, and social realities which are unique to the female experience and fuses these key parts into theoretical trajectories that describe female offender populations (Belknap & Holsinger, 2006). As described by Salisbury and Van Voorhis (2009), GPP argues that women's criminal activity is influenced by "factors either (a) not typically seen with men, (b) typically seen with men but in even greater frequency with women, or (c) seen in relatively equal frequency but with distinct personal and social effects for women" (p. 543), based upon the work of several criminal justice scholars (Belknap & Holsinger, 2006; Chesney-Lind

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& Shelden, 2004; Gavazzi, Yarcheck, & Chesney-Lind, 2006; Holsinger, 2000; Holtfreter & Morash, 2003; Reisig, Holtfreter, & Morash, 2006). This perspective emerged out of qualitative criminological scholarship focused on understanding female offending (Daly, 1992) and has been supported by a couple of quantitative studies (Mulvey, 2013; Salisbury & Van Voorhis, 2009). GPP is informed by several fields including psychology, social work, social welfare, addictions, and feminist theory (Daly, 1992; Salisbury & Van Voorhis, 2009).

Kathleen Daly's (1992) seminal quantitative work provided an essential foundation to the pathways perspective, highlighting the role of abuse, substance abuse, poverty, dysfunctional families and intimate relationships which characterize the lives of women involved with the criminal justice system. As part of her seminal study, Daly (1992) reviewed collateral information from presentence investigation reports (PSIs) for 40 women convicted of felonies.

Qualitative analysis revealed five different pathways or typologies by which women became involved with the criminal justice system. Daly labeled each identified pathway as follows: *street women* (25%), *harmed-and-harming women* (38%), *drug-connected women* (15%), *battered women* (13%), and *other* (10%). The *street women* typology most closely approximates the theoretical prototype identified in the feminist literature (Chesney-Lind, 2002b; Chesney-Lind & Pasko, 2004) which is characterized by a history of childhood abuse and neglect, whereby the young woman attempts to flee her abusive environment and turns to substance use in an effort to cope with early trauma. Ultimately, she becomes entrenched in a life of prostitution and petty crime to meet survival needs. The *harmed-and-harming woman* also experienced an abusive childhood,

but engages in interpersonally aggressive crimes. She is afflicted with psychological illness and substance addiction. The *battered woman* experiences abuse within the context of adult, intimate relationships with her partner. As she attempts to fight back and protect herself, her behaviors result in criminal justice involvement. Finally, the *drug-connected woman* experiences no childhood trauma, but becomes involved in the drug trade either through associations with a romantic partner or her own children. A remaining 10% of women were unclassifiable (i.e., "other"), with no apparent history of substance abuse or childhood abuse. Not fitting into Daly's framework, these women's lives were not characterized by disadvantage. They appeared to be motivated by greed instead of meeting survival needs, and abused positions of trust to perpetuate crime.

More recently, Salisbury and Van Voorhis (2009) used a path analytic approach to examine three gendered pathways to women offender's incarceration in a cohort of 313 female probationers. These women were 32 years old, on average, slightly more than two-thirds identified as White (*n* = 204), with the remaining approximately 30% identifying as African American (*n* = 90). Results indicated support for three gendered-pathways including: "1) a pathway beginning with childhood victimization that contributed to historical and current mental illness and substance abuse; 2) a relational pathway in which women's dysfunctional intimate relationships facilitated adult victimization, reductions in self-efficacy, and current mental illness and substance abuse; and 3) a social and human capital pathway in which women's challenges in the areas of education, family support, and self-efficacy, as well as relationship dysfunction contributed to employment/financial difficulties and subsequent imprisonment" (p. 541). In terms of the first path, Salisbury and Van Voorhis (2009) found specifically that

childhood victimization, while not directly related to incarceration, was indirectly related as the impetus for psychological sequelae, specifically depression and anxiety, which directly influenced women's incarceration through substance abuse.

More recently, Jones, Brown, Wanamaker, and Greiner (2014) used a cross-sectional design to examine pathways to crime for 663 female juvenile offenders under community corrections in New York state. The girls were 14 years old, on average, and identified as Caucasian (70.5%), African American (17.4%) or Hispanic (8.7%). The authors identified items from the Youth Assessment and Screening Instrument associated with a gendered pathways perspective including "incorrigibility," "kicked out of home", "history of abuse", "family-level poverty", "runaway attempts", "child neglect", "substance abuse", and "mental health issues". These items were compared with items suggesting a more traditional, anti-social criminological pathway, including "manifestations of violence", "school suspensions", "antisocial peers", and "defies parental authority". Using a proximity-scaling technique, they classified the teens into categories based upon the pathway which fit them best, finding good fit for both the gendered pathways perspective (47.8%) as well a more traditional antisocial pathway (51.7%).

Taken together, these findings from retrospective interviews and quantitative research suggest that experiences of physical and sexual victimization in childhood and adulthood, poverty, and substance use are commonly observed among women involved with the criminal justice system, contributing to their criminal justice involvement and recidivism (Browne et al., 1999; Chesney-Lind, 2002a; Chesney-Lind & Shelden, 2004; McDaniels-Wilson & Belknap, 2008; Salisbury & Van Voorhis, 2009). Victimization,

especially beginning in childhood, takes a primary role in this perspective, positing that childhood victimization is a catalyst to later criminal justice involvement as girls make attempts to escape abusive home environments or self-medicate the psychological distress that they experience as a result of the victimization experience(s) through several common attempts to cope. Research evidence suggests that childhood victimization may have particularly deleterious consequences for women involved with the criminal justice system as compared to adult victimization (e.g., intimate partner violence; adult stranger rape or sexual assault, etc.) or trauma (e.g., disaster, genocide/refugee, witnessing neighborhood violence, unexpected death of a loved one, etc.) in terms of greater law breaking behavior, substance use, psychological distress, and re-victimization (Briere et al., 2008; Cloitre et al., 2009; Golder, 2005; Golder & Logan, 2011; Logan et al., 2011; Tripodi & Pettus-Davis, 2013).

Both qualitative (Chesney-Lind & Shelden, 2004; Daly, 1992) and quantitative (Mulvey, 2013; Salisbury & Van Voorhis, 2009) research has supported an unfortunately common pathway to criminal justice involvement marked by childhood victimization which contributed to the development of past and current psychological distress, including PTSD, and substance use. For many women, childhood victimization is followed by attempts to escape through running away, a behavior for which girls are more frequently arrested than boys, despite similar occurrence rates (Chesney-Lind, 2000). This initial arrest then begins juvenile justice involvement for many girls and often ultimately leads to a) their incarceration if they continue to flee abusive homes or violate conditions of probation or parole, b) surviving on the streets, c) sex trading and drug use, and/or d) relationships with sometimes violent men who provide for their needs

(Arnold, 1990; Chesney-Lind & Shelden, 2004; Gilfus, 1992). Findings suggest that childhood victimization in girls increases their chances of criminal justice involvement as a minor by 73%, and increases women's lifelong chances of arrest for violent crime by 30% (Widom & Ames, 1994).   Childhood victimization may precipitate the path for economically-disadvantaged women toward later justice involvement. It comes as no surprise then that childhood victimization, especially in the form of physical and sexual abuse, has been called one of the most significant factors leading to female involvement in the criminal justice system (Bloom et al., 2004).

CHAPTER III

REVIEW OF THE LITERATURE

This review of the literature will provide information showing the current state of

PTSD factor structure and its examination among victimized population. The review will

begin with a brief presentation of research which has examined the structure of PTSD

symptoms, starting with the *DSM-IV,* from which all of the current factor analysis

research is taken. Next, the review will progress to two highly supported four-factor

models including King, et al.'s (1998) numbing model and Simms, et al.'s (2002)

dysphoria model. Next, the review will present a recently developed five-factor model,

Elhai, et al.'s (2011) dysphoric arousal model, which has received promising support, and

the newly-published *DSM-5* model (American Psychiatric Association, 2013). While

very few studies have examined the factor structure of PTSD in victimized populations,

these studies will be highlighted throughout the review, where they exist.

Factor Structure of PTSD

The symptoms of Posttraumatic stress disorder (PTSD) have been the focus of

debate predating its formal codification in the *Diagnostic and Statistical Manual of*

Mental Disorders-III (American Psychiatric Association, 1980; DSM-III).   This ongoing

discussion has continued through the adaptation of the *DSM-IV* (American Psychiatric

Association, 2000), and most recently with the release of the *DSM-5* (American

Psychiatric Association, 2013). One of the most discussed issues regarding PTSD

symptomology concerns the optimal framework for conceptualizing the core symptoms of PTSD. The core symptoms are crucial because they are thought to represent direct causal mechanisms underlying the disorder; thus, understanding them essentially informs the nature of the disorder itself (Asmundson et al., 2000; Cattell, 1978). Continued knowledge building regarding the structure of PTSD is thought to form the foundation for diagnosis, assessment, prevention, and treatment (Marshall et al., 2013). Understanding these factors is especially important with the recent publication of the *DSM-5* which is seen as a step toward better understanding these core symptoms, although little research has been presently published in this area. These symptom clusters are thought to have different mechanisms and have different functional relationships with interpersonal functioning, physical health, and other symptoms which are often comorbid with PTSD. As conceptualized in the *DSM-IV*, PTSD is classified as an anxiety disorder, characterized by three clusters of symptoms following exposure to a traumatic life event (American Psychiatric Association, 2000). These three distinct clusters are composed of 17 symptoms, reflecting the phenomenon of: 1) *re-experiencing* (Criterion B), e.g. intrusive thoughts about the trauma, 2) *avoidance and emotional numbing* (Criterion C), e.g. avoidance reminders of the trauma, and 3) *hyperarousal* (Criterion D), e.g. hypervigilance (see Table 1). The symptom clusters were accepted into the diagnosis based upon clinical consensus. The basic rationale is that if the DSM description of PTSD symptom clusters is accurate, then factor analytic studies should yield three factors supportive of the three primary symptom clusters above.

The measurement of PTSD symptom clusters are based upon assessments. A number of measures have been developed to assess PTSD symptomology per *DSM-IV*

17-symptom criteria (American Psychiatric Association, 2000). These assessments are used to screen individuals for PTSD, aid in diagnostic assessment of PTSD, and monitor changes in PTSD symptoms. They have also been used to examine the structure of PTSD symptoms among different populations (Yufik & Simms, 2010). The Clinician Administered PTSD Scale (Blake et al., 1995; Blake et al., 1990; CAPS), a structured interview, is administered by individuals trained in the assessment. *DSM-IV*-based self-report measures (see Table 1 for list of 17 symptoms) are commonly used including the Posttraumatic Diagnostic Scale (Foa, 1996; Foa, Cashman, Jaycox, & Perry, 1997; PDS); the PTSD Checklist for *DSM-IV* (Weathers, Litz, Herman, Huska, & Keane, 1993; PCL), and Post-traumatic Stress Disorder Questionnaire (Cross & McCanne, 2001; PTSD-Q). Some of the assessments, such as the PCL, are furthered tailored to populations expected to have specific types of traumatic experiences. The PCL has three versions: the PCL-M (military) which asks about symptoms in response to "stressful military experiences" to be used with active service members and Veterans, the PCL-C (civilian) which asks about symptoms in relation to generic "stressful experiences" which can be used with any population, and the PCL-S (specific) which asks about symptoms in relation to an identified "stressful experience".

Since its adoption, many researchers have examined the adequacy of these clusters through first exploratory factor analyses, and later confirmatory factor analyses. Exploratory factor analysis (EFA) is used to identify the underlying dimensions of a measure when there are no a priori expectations about its structure based on theory or prior research (Floyd & Widaman, 1995). EFAs of the 17 *DSM-IV* symptoms found two- (Taylor, Kuch, Koch, Crockett, & Passey, 1998), three- (Foa, Riggs, & Gershuny, 1995;

Maes et al., 1998), and four- (Sack, Seeley, & Clarke, 1997; Shelby, Golden-Kreutz, & Andersen, 2005; Smith, Redd, DuHamel, Vickberg, & Ricketts, 1999) factor structures, with no solution replicating the symptom clusters found in the *DSM-IV*.

Confirmatory factor analysis (CFA), which allows for the direct testing of the fit of a hypothesized factor structure with the observed covariance structure of the data (Floyd & Widaman, 1995), has also been used to examine the factor structure of PTSD in *DSM-IV*. CFA has several advantages over EFA in elucidating the structure of PTSD as it permits the direct testing of hypothesized models of symptom structure and allows testing of competing model(s) (Floyd & Widaman, 1995). The numerous models tested utilizing CFA range from evaluating the specific *DSM-IV* factor structure to replicating EFA results (Asmundson et al., 2000; Baschnagel, O'Connor, Colder, & Hawk, 2005; Buckley, Blanchard, & Hickling, 1998; Cordova, Studts, Hann, Jacobsen, & Andrykowski, 2000; Elklit & Shevlin, 2007; Palmieri & Fitzgerald, 2005; Palmieri, Marshall, & Schell, 2007; Palmieri, Weathers, Difede, & King, 2007). However, according to the literature reviewed, no extant literature used CFA to examine the *DSM-IV* PTSD symptom structure in criminal justice populations or populations exposed to childhood victimization.

Komarovskaya et al. (2011) examined *PTSD* symptoms, but not factor structure, per *DSM-IV* criteria in a sample of 266 male and female inmates. Results of regression and MANOVA analysis indicated that women reported significantly greater PTSD symptoms than men in all three symptom clusters (avoidance, intrusion, or/and hyperarousal). Interpersonal sexual trauma had a significant relationship to total PTSD symptom severity. All four types of trauma studied (general trauma, witnessing harm to

others, interpersonal nonsexual trauma, interpersonal sexual trauma) accounted for 12% of the variance in PTSD symptom severity.

Cordova and colleagues (Cordova et al., 2000) examined the factor structure of PTSD among a sample of 142 breast cancer survivors. PTSD symptoms were measured using the PTSD Checklist- Civilian Version (Weathers et al., 1993; PLC-C). Using CFA, they compared a one-factor model to the *DSM-IV* three-factor model and found moderate support for the *DSM-IV* model (Cordova et al., 2000). Despite this finding, few other studies utilizing confirmatory factor analysis have found support for the *DSM-IV* model (Asmundson et al., 2000; Palmieri & Fitzgerald, 2005; Palmieri, Marshall, et al., 2007; Palmieri, Weathers, et al., 2007; Yufik & Simms, 2010). Instead, the vast majority of findings support a four-factor, intercorrelated model (Hetzel-Riggin, 2009; King et al., 1998; Krause, Kaltman, Goodman, & Dutton, 2007; Simms et al., 2002). Indeed, based on model fit, two distinct four-factor models of PTSD symptom structure—King et al.'s (1998) numbing model and Simms et al.'s (2002) dysphoria model--are widely viewed as superior to the three factor structure embodied in the *DSM-IV*.

The Numbing Model

The numbing model was first examined using CFA by King et al. (1998; Table 3, Figure 1), who utilized the EFA findings of Foa et al. (1995) who argued that the *DSM-IV* symptom clusters of avoidance and emotional numbing should be split into two separate symptom clusters. King and colleagues examined the factor structure of PTSD among 524 treatment-seeking male military veterans, 70% of whom met criteria for PTSD per the *DSM-IV* criteria (King et al., 1998). The Clinician-Administered PTSD Scale (Blake et al., 1990; CAPS) was used for the analysis which includes the 17 individual *DSM-IV*

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symptoms. For this analysis, King and colleagues used CFA to test the following

models: 1) a four factor intercorrelated model (subsequently referred to as the numbing

model), 2) a two factor hierarchical model, 3) a single factor hierarchical model, and 4) a

single factor intercorrelated model. The best fit model was the four factor, first-order

model which posits the existence of four intercorrelated factors including re-

experiencing, effortful avoidance, emotional numbing, and hyperarousal (Table 1). Two

of the symptom clusters, re-experiencing and hyperarousal, map directly onto clusters

proposed for the *DSM-IV*. The model differs from *DSM-IV* clusters in hypothesizing that

the Criterion C symptom cluster is composed of two separate symptom sets assessing

avoidance and emotional numbing, which was based upon Foa et al. (1995) earlier

conclusion based upon EFA that symptoms of avoidance and numbing embody two

different mechanisms. The numbing model has been well supported in several studies

examining populations with different trauma experiences including peacekeepers with

chronic pain (Asmundson, Wright, McCreary, & Pedlar, 2003), cancer survivors

(DuHamel et al., 2004), Spanish-speaking and English-speaking survivors of community

violence (Marshall, 2004), sexually-harassed women (Palmieri & Fitzgerald, 2005),

Cambodian refugees (Palmieri, Marshall, et al., 2007), and disaster workers exposed to

the World Trade Center ground zero (Palmieri, Weathers, et al., 2007).

Palmieri and Fitzgerald (2005) examined PTSD symptom structure in 1,218

women who reported a variety of sexual harassment experiences at work. The 17-

symptoms of PTSD were measured through the PCL-Civilian version (Weathers et al.,

1993). They examined the fit of several models including the *DSM-IV*, the numbing

model, and the dysphoria model (see below). Results indicated no support for the *DSM-*

IV model, and the numbing model was found to be preferable to the dysphoria model. According to the current literature review, no extant literature used confirmatory factor analysis to examine PTSD symptom structure per the numbing model in criminal justice populations or populations exposed to childhood victimization.

The Dysphoria Model

The dysphoria model was developed by Simms et al. (2002; Table 4, Figure 2) in response to findings from several EFA (Buckley et al., 1998; Simms & Watson, 1999; Taylor et al., 1998) as part of their examination of PTSD factor structure among 1,896 deployed gulf war veterans and 1,799 non-deployed controls. Most of the participants were male (91%) and Caucasian (96%). The dysphoria model uses four factors to cluster the symptoms of PTSD (Table 1). Two of the symptom clusters (i.e. re-experiencing and avoidance) map directly onto clusters found in the numbing model. The model differs from the numbing model, however, in positing a dysphoria factor which is thought to assess non-specific psychological distress characteristic of various disorders. For this analysis, Simms et al. (2002) used the PTSD Checklist-Military Version to assess PTSD symptomology, testing 6 models of PTSD symptomology: 1) a one factor model, 2) a two factor model, 3a) a three-factor model based on *DSM-IV* criteria, 3b) a second three-factor model, 4a) a four factor numbing model based on King, et al., 4b) a new four-factor dysphoria model. The dysphoria model includes a new dimension, dysphoria, which contains all symptoms construed in the numbing model as measuring emotional numbing as well as three of the five symptoms regarded in the *DSM-IV* as assessing hyperarousal. The hyperarousal dimension is retained, but indicated by only the last two *DSM-IV* hyperarousal symptoms (i.e. *hypervigilance* (D4) and *exaggerated startle*

response (D5). Simms et al. (2002) found that the dysphoria model provided superior fit to the data in multiple subsamples including a sample of deployed participants who reported exposure to traumatic combat stressors. In this model, dysphoria is thought on a conceptual level to relate to general distress and help explain the comorbidity between PTSD and other disorders including major depressive disorder and generalized anxiety disorder (Hetzel-Riggin, 2009; Simms et al., 2002).

The dysphoria model has been examined and supported as superior to the *DSM-IV* model and the numbing model in studies with several different populations including college students with a trauma history (Elhai, Gray, Docherty, Kashdan, & Kose, 2007), disaster workers at the World Trade Center ground zero (Palmieri, Weathers, et al., 2007), individuals who sustained whiplash due to a motor vehicle accident (Elklit & Shevlin, 2007), female survivors of intimate partner violence (Krause et al., 2007), and women exposed to sexual and/or physical abuse or assault (Hetzel-Riggin, 2009).

Krause et al. (2007) examined PTSD symptom structure among low income, minority women who reported intimate partner violence during the past year. The women studied were part of two samples: 396 women presenting to treatment at a medical care facility (e.g., urgent care facility, hospital emergency room, gynecology clinic) and 405 women seeking services specifically for intimate partner violence. The vast majority of the women in both samples were African American (90% and 81% respectively), and the majority of women in both samples reported yearly household incomes of $15,000 or less. PTSD was assessed using the PLS (Weathers et al., 1993). CFA was used to examine the fit of several models including the three-factor *DSM-IV* model (American Psychiatric Association, 2000), the four-factor numbing model, and the

four-factor dysphoria model. Findings indicated that the dysphoria model provided superior fit in both samples.

Hetzel-Riggin (2009) examined PTSD symptom structure among 2,378 female undergraduates who were survivors of sexual or physical abuse or assault. The sample was split into five groups based upon type of victimization history: childhood sexual abuse survivors (n = 254), childhood physical abuse survivors (n =406), adult sexual assault survivors (n =577), adult physical assault survivors (n = 299), and survivors of multiple types of abuse (i.e. childhood sexual and physical abuse) (n =842). Using the 17-symptom PTSD-Q (Cross & McCanne, 2001; Watson, Juba, Manifold, Kucala, & Anderson, 1991), she tested several models including the three-factor *DSM-IV* model, the four-factor numbing and the four-factor dysphoria model. In all of the samples of survivors, the dysphoria model provided superior fit to the data. This study is the only one known to examine PTSD structure based upon exposure to specific types of victimization experiences (i.e. childhood physical). No extant literature has used confirmatory factor analysis to examine the dysphoria model PTSD symptom structure in criminal justice populations.

In an attempt to compare the fit of the three-factor DSM-IV model, four-factor numbing model and four-factor dysphoria model, Yufik and Simms (2010) conducted a metaanalysis of 40 studies, utilizing *DSM-IV*-based PTSD measures.   The total sample size across studies was 14,827 participants; the two most common trauma types included IPV (12 studies; n = 2,995) and combat experiences (10 studies; n = 7,461). Using aggregated correlation matrices, they applied confirmatory factor analysis to test the fit of these two four-factor competing models. Results indicated that the *DSM-IV* model

displayed poor fit and while both of the four factor models displayed good fit, the dysphoria model had marginally better fit than the numbing model.

Most recently, Marshall et al. (2013) examined the factor structure of PTSD comparing the three-factor *DSM-IV* model, four-factor numbing model and four-factor dysphoria model in 29 separate data sets, all of which examined PTSD using *DSM-IV*-based assessments. The most common types of trauma were warzone exposure (9 samples) and interpersonal violence (9 samples). They compared correlation matrices (covariance matrices were not available for all studies), applying the same approach as Yufik and Simms (2010). Findings replicated those from Yufik and Simms, indicating that the *DSM-IV* model performed much more poorly than the numbing or dysphoria models.

The Dysphoric Arousal Model

Elhai et al. (2011) developed a 5-factor model through renaming three symptoms (sleep disturbance, irritability, and difficulty concentrating) which were in contention in the numbing and dysphoria models, as a new factor termed, "dysphoric arousal." The remaining two symptoms of hyperarousal (hypervigilance and exaggerated startle response) were termed, "anxious arousal." They compared the fit of this 5-factor model to the numbing model and the dysphoria model in a sample of 252 women who were survivors of domestic violence. Findings indicated that both of the four-factor models demonstrated adequate fit, and the 5-factor, dysphoric arousal model demonstrated good fit.

While relatively new, this five-factor model has been supported in several studies of war veterans, primary care medical patients, individuals with opioid dependence, earthquake victims, and witnesses of violent riots (Armour et al., 2012; Reddy, Anderson, Liebschutz, & Stein, 2013; Wang et al., 2011). Reddy et al. (2013) examined PTSD symptoms in 151 men and women with opioid dependence, testing the *DSM-IV* model, the numbing model, the dysphoria model, and the dysphoric arousal model. They found that the 5-factor, dysphoric arousal model fit the data best, followed by the dysphoria model, the numbing model, and the *DSM-IV* model, respectively. According to the present literature review, no extant literature used CFA to examine PTSD symptom structure using the dysphoric arousal model in criminal justice populations or populations exposed to childhood victimization.

While further research is needed to examine the dysphoric arousal model as it compares to the numbing and dysphoria models, many scholars have argued that the *DSM-IV* formulation of PTSD is clearly inadequate (DuHamel et al., 2004; Hetzel-Riggin, 2009; King et al., 1998; Palmieri, Weathers, et al., 2007; Simms et al., 2002). This commonly-held conviction has prompted the recurrent observation that the *DSM* should be reformulated to align the conceptualization of PTSD with results from CFA. These calls for revision were heeded in the development of PTSD for *DSM-5*, which embraces some of the findings derived from CFA, (Asmundson et al., 2003; Calhoun et al., 2012; Friedman et al., 2011; Kilpatrick, 2013; Marshall, 2004).

The *DSM-5* Model

The *DSM-5* makes several important changes in the diagnosis of PTSD, removing it from the "Anxiety Disorders" chapter (American Psychiatric Association, 2000), and

placing it in a new chapter, "Trauma and Stressor-Related Disorders"(American

Psychiatric Association, 2013). Another significant change is the restriction on the range

of traumatic events included; Criterion A1 requires direct exposure to the traumatic

event, indirect exposure through in-person witnessing another's exposure to a traumatic

event, learning of a loved one's traumatic experiences, repeated or extreme exposure that

may involve persistent or extreme exposure to aversive details of a gruesome trauma

which must be experienced in person (American Psychiatric Association, 2013). Criteria

A2 (i.e. subjective reactions of intense fear, helplessness, or horror to the stressor event)

was removed as a requirement for the disorder following findings that its' addition did

not improve diagnostic accuracy. Finally, the symptom clusters reflect a replacement of

the three-factor model seen in *DSM-IV* with a new four-factor model including: 1)

intrusion (Criterion B), e.g. recurrent, involuntary, and intrusive memories, 2) *persistent*

avoidance of stimuli (Criterion C), e.g. avoidance of reminders of the trauma, 3) *negative*

alterations in cognitions and mood (Criterion D), e.g. inability to recall key features of

the traumatic event, and 4) *hyperarousal and reactivity* (Criterion E), e.g. hypervigilance.

The most prominent change, thus, is the splitting of *DSM-IV* criterion C into two separate

criteria (C and D, respectively), which was undertaken following research suggesting that

avoidance and numbing symptoms are distinct from one another in terms of

psychopathology and treatment (Asmundson et al., 2003; Forbes et al., 2011; Friedman et

al., 2011). Beyond these changes, three of the symptoms from *DSM-IV* were revised and

expanded including B1 (intrusive recollections, C7 (sense of foreshortened future), and

D2 (irritability and anger), and three new symptoms were added including: 1) persistent,

distorted beliefs of self or others (*DSM-5*, symptom D3), 2) persistent, negative

emotional states (*DSM-5*, symptom D4), and 3) reckless or self-destructive behavior (*DSM-5*, symptom E2).

Given the recent publication of the *DSM-5*, little research has yet to examine its factor structure other than to compare criteria and prevalence of PTSD with the new diagnostic criteria (Carmassi et al., 2013; Elhai et al., 2012; Friedman et al., 2011; Kilpatrick et al., 2013; Santiago et al., 2013). According to the current literature review, no extant literature has been published examining the factor structure of *DSM-5* as compared to the numbing and dysphoria models, and no research has used confirmatory factor analysis to examine the *DSM-IV* PTSD symptom structure in criminal justice populations or populations exposed to childhood victimization. However, this could change at any time, given the fact that many researchers are interested in examining the factor structure of the newly proposed criteria. Researchers are revising their assessments to meet the *DSM-5's* updated criteria and some of these assessments became recently available including the CAPS-5 and PCL-5. However, researchers caution that scores from *DSM-5* based assessments cannot be directly compared to scores from *DSM-IV* assessments due to the removal of 1 symptom and addition of 3 new symptoms.

Summary

In summary, several observations are notable regarding the research literature on the structure of PTSD. Despite the growing number of studies examining the issue, no clear consensus has emerged regarding the best factor structure. This lack of consensus may be attributable to sample differences, methodological differences, or random error (Marshall et al., 2013; Yufik & Simms, 2010). Findings do clearly indicate that the *DSM-IV* model provides an inadequate description of PTSD symptom structure. The

numbing model and dysphoria models have emerged as four-factor alternatives to the *DSM-IV* framework of PTSD symptom structure. However, the model fit, as assessed by commonly reported fit statistics, in these confirmatory factor analysis studies is merely adequate but not good, indicating that improvements can be made to these four factor models. Elhai et al. (2011) five factor "dysphoric arousal" model has recently emerged as a promising alternative, and the *DSM-5*, with its updated criteria, offers another promising means of understanding PTSD structure, but due to its novelty, has yet to be studied among any population. No extant research, according to this review, has ever examined PTSD factor structure among women involved with the criminal justice system, which is unfortunate because research suggests that PTSD symptomology is often population specific (Tripodi & Pettus-Davis, 2013; Yufik & Simms, 2010), and victimization is exceptionally common among this population. Since prior findings suggest that childhood victimization may have particularly deleterious impact on psychological distress, including PTSD, understanding whether the factor structure of PTSD differs based upon exposure to childhood victimization is crucial. In order to address these unknowns, the gendered pathways perspective is used as a theoretical anchor to understanding the complicated relationships between childhood victimization and resulting PTSD symptomology. Understanding the factor structure of PTSD in this population, and its relationship to specific types of childhood victimization experiences is an important first step in understanding women's pathways to crime, and thus means for interventions and rehabilitation.

CHAPTER IV

METHODOLOGY

The methods for the present study including the research questions, research design, sample, recruitment and data collection procedures, protection of human subjects, measures and proposed data analysis which are described below.

Research Questions

The research questions for this study are as follows:

1. Is posttraumatic stress disorder (PTSD) better conceptualized by a numbing model, a dysphoria model, a dysphoric arousal model, or a *DSM-5* model among a victimized group of women on probation and parole using Foa's Post-traumatic Diagnostic scale (Foa et al., 1997)?

   Explanation: The four models to be tested are based upon previous findings explained above. Model 1 (Table 3, Figure 1), the numbing model, is based upon the findings of (King et al., 1998). Model 2 (Table 4, Figure 2), the dysphoria model, is based upon the findings of (Simms et al., 2002). Model 3 (Table 5, Figure 3), the dysphoric arousal model, is based upon the findings of (Elhai et al., 2011). Model 4 (Table 6, Figure 4) is based upon the *DSM-5* symptom structure (includes only 16 out of the 20 DSM-5 items). Each model will be tested individually with Confirmatory Factor Analysis (CFA).

2. Is there a different factor structure of PTSD for women with a history of childhood victimization (physical or sexual abuse) verses women with a history of only adult victimization controlling for sociodemographic variables (participant age, race, educational attainment, work status, homelessness, controlled environment status during the past year, and correctional status)?

   Explanation: Following selection of the best fitting model (from the numbing, dysphoria, and DSM-5 models explained and tested in RQ 1 above) a Multiple Indicators Multiple Causes (MIMIC) model was used to test a structural model examining the direct effects of exposure to at least one incident of childhood physical or sexual victimization on PTSD factor structure (Figure 5).

3. Is there a different factor structure of PTSD for women with a history of childhood sexual victimization verses a history of other types of victimization controlling for sociodemographic variables (participant age, race, educational attainment, work status, homelessness, controlled environment status during the past year, and correctional status)?

   Explanation: In order to address the third research question, a Multiple Indicators Multiple Causes (MIMIC) model was used to test a structural model examining the direct effects of exposure to at least one incident of childhood sexual victimization on PTSD factor structure (Figure 6).

Background

This research study utilizes baseline data from the Women's Health Research Study (WHRS), a longitudinal study of victimized women on probation and parole

funded through a grant from the National Institute on Drug Abuse (R01DA027981; Golder, PI). Aims of WHRS included examining victimization, physical and psychological health, and social outcomes for women on probation and parole in order to develop a more meaningful understanding of this highly at risk population.

Research Design

This study is a secondary analysis of cross-sectional survey data. Individuals participating in the study were all women on probation or parole who reported a history of victimization.

Sample

In the WHRS, the sample consisted of 406 women on probation and parole in Jefferson County Kentucky. Women, 18 and older, were selected for inclusion in the study if they were a) currently on state probation or parole in Jefferson County, b) reported that they had sex with either men only or men and women (women who were recently incarcerated were asked about their sexual activity in the year prior to their incarceration), c) reported any experience of physical or sexual victimization as a child or as an adult which was perpetrated by a caregiver, intimate partner, or non-intimate partner (i.e. stranger, acquaintance), and d) could speak English at least at a conversational level. The sample for the present study consists of data from all participants ($N = 406$) collected at baseline. All participants reported some form of victimization in their lifetimes, as defined by any experience of physical or sexual victimization as a child or as an adult which was perpetrated by a caregiver, intimate partner, or non-intimate partner (i.e. stranger, acquaintance). Some women experienced both childhood and adult

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victimization, and others experienced only one type or the other. Frequencies of victimization experiences during childhood and adulthood were also examined. Data were collected from the total sample on a variety of indicators, including demographics, victimization, substance use, sexual behaviors, psychological distress, coping, and law-breaking behaviors, among others.

Recruitment and Data Collection Procedures

In the WHRS, the women were recruited face to face at probation or parole offices in the county, and through direct mailings to women on probation and parole within the county, advertisements in the local newspaper and on public access TV, and on the website *Craigslist*.   They were also recruited through flyers placed in the community. Screening for eligibility was conducted by telephone (89%) and face to face (11%). Procedures included a short screening process which did not collect any identifying information until the screener determined that the potential participant was qualified to join the study, and the participant expressed interest in participating. Prior to being asked screening questions, potential participants were verbally informed about the nature of the study, expected duration of participation, procedures to be followed, reasonably foreseeable risks or discomforts, descriptions of potential benefits, disclosure of appropriate alternative procedures or courses of treatment, a statement describing the extent to which confidentiality of records would be maintained, and an explanation of whom to contact regarding questions about the research and research subjects' rights. Eighty-two percent of the total 517 women screened were eligible for participation in the study. The most common reasons for ineligibility included no history of victimization, not on probation or parole, and reporting only female sex partners. The majority of

women were recruited through direct mail ($n = 170$, 32.9%) and "other" (i.e. referral from a mother, friend, probation officer, cousin, and co-worker; $n = 154$, 32.8%). Other recruitment sources included: flyers ($n = 75$, 14.5%), community-based organizations ($n = 58$, 10.6%), direct contact ($n = 48$, 9.3%), and news/radio/internet ($n = 12$, 2.3%).

The women participated in face-to-face audio computer assisted interviews (Nova Research Company, 2003; ACASI) in convenient locations such as public libraries, local restaurants, and social service agencies. These interviews were conducted between October 2010 and June 2012 by master's level female social workers. Each interview lasted approximately two hours. The interviews were all conducted between October 2010 and June 2012. The women were provided with a voucher for bus transportation and compensated $35 for their participation.

Protection of Human Subjects

The WHRS was approved by the University of Louisville Institutional Review Board after full committee review.

Measures

The WHRS used a whole series of measures to gather data on victimization, physical and psychological health, and social outcomes for women on probation and parole. Socio-demographic information was collected including age, racial/ethnic background, relationship status, educational attainment, work status, correctional status, whether they had been placed in a controlled environment during the past year and current homelessness (See Appendix A). For the present study, the following measures were selected from these series of measures used in the study.

Sociodemographic Characteristics. Five variables measured sociodemographic characteristics. Age was measured in years. Race/ethnicity was categorized as African American/ Black, White/Non-Hispanic, or other races (including Hispanic, Asian or Pacific Islander, Native American or Multi-Racial). Partner status was measured by three categories: single or never married; married or living with a sexual partner of the opposite sex; or separated, divorced, or widowed. Work status included five categories: unemployed; working full or part time; disabled; students; and other. Educational attainment was measured as less than high school diploma, high school graduation or GED, trade or technical training, some college or college diploma, and some graduate school or graduate school diploma. Homelessness was assessed through a single item asking whether the woman considered herself to be homeless (0/No; 1/Yes). In addition to these sociodemographic characteristics, whether a woman reported being in a controlled environment during the past 12 months (0/No; 1/Yes) and her correctional status (i.e. on probation, parole or both) were also assessed.

Post-Traumatic Stress Disorder. PTSD symptoms were evaluated using the symptom severity subscale from Foa's Posttraumatic Stress Diagnostic Scale (Foa, 1996; Foa et al., 1997; PDS; see Table 7 for all items). The PDS is a 49-item self-report measure used in clinical and research settings to measure severity of PTSD symptoms related to a single, identified traumatic event. The PDS assesses all *DSM-IV* criteria for PTSD (Criteria A-F), and inquires about symptoms experienced during the past month. Thus, in addition to measuring the severity of PTSD symptoms (Criteria B, C, & D), it inquires about the experience of a traumatic event(s) (Criterion A), the duration of symptoms (Criterion E), and the impact of symptoms on daily functioning (Criterion F).

The PDS is divided into four sections: Part 1: a trauma checklist; Part 2: participants

describe their most upsetting traumatic event (i.e. when it happened, if anyone was

injured, perceived life threat, whether event resulted in helplessness or terror); Part 3: 17

PTSD symptoms; Part 4: interference of the symptoms upon daily functioning. The focus

of the present analysis concerns Part 3 which measures symptom severity by summing

responses to 17 items which indicate how often a particular PTSD symptom has bothered

the respondent during the past month (0= not at all; 1=once a week or less/once in a

while; 2= 2 to 4 times a week/ half the time; 3= 5 or more times a week/ almost always)

with higher scores indicating greater severity for a possible score of 0-51. These 17-

items from the PTSD map onto the *DSM-IV* criteria (see Table 1), and match the items in

other PTSD measures including PTSD-Q (Watson et al., 1991), CAPS (Blake et al.,

1995; Blake et al., 1990), and PCL-Civilian and Military versions (Blanchard, Jones-

Alexander, Buckley, & Fomerls, 1996; Weathers et al., 1993).

Findings from Foa et al. (1997) indicate that the mean scores for a sample of 128

men and women with PTSD were 33.59 (*SD* =9.96) for total symptom severity. 8.95 (*SD*

=3.68) for re-experiencing, 13.63 (*SD* =4.76) for avoidance, and 11.02 (*SD* = 10.54) for

arousal. In contrast, the non-PTSD group (*N* = 120) obtained a mean score of 12.54 (*SD*

=10.54) on the total scale, 3.64 (*SD* =3.18) on the re-experiencing scale, 4.54 (*SD* =4.83)

on the avoidance scale, and 4.36 (*SD* =3.97) on the arousal scale. They found excellent

overall internal consistence (α =.92), and very good internal consistency for symptom

subscales (α ranging from .78 to .84). Repeated administration over 2 to 3 weeks yielded

an 87% agreement rate (kappa = .74) between diagnoses and adequate stability in

symptom severity (all *r*'s =.77 to .85). Additionally, satisfactory validity has been found

for diagnoses derived from the PDS and those derived from a structured clinical interview (kappa of .65, 82% agreement). Finally, the PDS is correlated with other measures of PTSD ($r = .78$), measures of anxiety (The Revised Impact of Events Scale; State-Trait Anxiety Inventory; $r's = .73-.74$), and a measure of depression (Beck Depression Inventory; $r = .79$). These correlations raise the issue as to whether the PDS is a measure of PTSD or a more general measure of psychological distress. Given the high comorbidity of PTSD with anxiety and mood disorders, these findings are not surprising.

The PDS has demonstrated good reliability for both the overall scale and subscales in several studies. Baschnagel et al. (2005) utilized a modified version of the PDS in their study of the factor structure of PTSD in 528 undergraduates in New York following the terror attacks on the World Trade Center finding a total alpha score of .92. Sullivan and Holt (2008) used the PDS to examine PTSD among 212 women exposed to intimate partner violence. They found reliability for the overall scale and the subscales was good (total score $\alpha = .92$, reexperiencing $\alpha = .87$, avoidance and numbing $\alpha = .82$, arousal $\alpha = .80$). Weaver, Resnick, Kokoska, and Etzel (2007) utilized the PDS in two samples ($n = 25, 31$) of women who has experienced intimate partner violence, and found a total scale alpha coefficient of .94.

Childhood Victimization. Childhood physical, psychological and sexual abuse (see Appendix A for items) were measured through items from the Revised Conflict Tactics Scale ($\alpha = .79-.95$) and Tolman's Psychological Maltreatment of Women Inventory ($\alpha = .92-.95$). A sample item measuring physical abuse (Straus, Hambly, Boney-McCoy, & Sugarman, 1996) included, "How often did your parent and/or caregiver physically hurt you on purpose?" A sample sexual abuse item (Straus et al.,

1996) was, "How often did your parent or caregiver force or threaten you to have sexual intercourse and it actually happened?" Responses for all items ranged from never (0) to more than once most days (6). Responses from the four items for physical abuse and three items on sexual abuse were averaged, providing mean scores for childhood physical and sexual abuse.

To answer the study research questions, childhood victimization was conceptualized and operationalized in two separate ways: only childhood sexual and physical abuse were used to split the sample between women with and without a history of physical and/or sexual childhood victimization. This was based upon findings indicating that these two types of childhood victimization are especially linked to greater PTSD symptomology (Choi, Klein, Shin, & Lee, 2009; Cloitre et al., 2009). Based upon responses to the above explained frequency items, the sample was split between women who reported 1 or more incident of physical or sexual abuse and women who reported no incidents of childhood physical or sexual abuse (RQ 2). The sample was also split to measure childhood sexual abuse (RQ 3) based upon exposure to one or more incident of childhood sexual victimization.

Analysis Plan

Univariate Analysis. This first step of the analysis was to examine the descriptive statistics for sociodemographic and model variables including measures of central tendency, outliers, normality, linearity, and homoskedascity. The means, standard deviations, minimum observed values, maximum observed values, and range was presented for each variable. Skewness and kurtosis was examined for each variable; skewness values greater than 3 and kurtosis values greater than 10 may be problematic

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for maximum likelihood estimation (Kline, 2011). No variables needed to be transformed in order to produce normal distributions (Tabachnick & Fidell, 2007). Outliers were examined and truncated three standard deviations from the mean.

Multivariate Analysis. Secondly, a bivariate analysis was conducted, examining correlations among model variables to determine whether variables share enough variation to be relevant in the present study. Correlations among model variables were examined for multicollinearity and multivariate outliers (Tabachnick & Fidell, 2007). Multicollinearity occurs when two or more variables are highly correlated (> .90), limiting the researcher's ability determine their separate effects on the DV. In order to address multicollinearity, moderate to high inter-correlations (>.70) were identified, and one of the variables may be removed or combined with another variable. The data was screened for multivariate outliers by computing Mahalanobi's distance.

Structural Equation Modeling: Confirmatory Factor Analyses and MIMIC Models. Thirdly, four separate confirmatory factor analyses were conducted in order to answer the first research question examining the factor structure of PTSD among women on probation and parole through the numbing model, the dysphoria model, the dysphoric arousal model, and the *DSM-5* model. The fourth step used a MIMIC model approach to test two separate models of childhood victimization, answering the second and third research questions. Structural equation modeling (SEM), specifically confirmatory factor analysis (CFA) and multiple indicators multiple causes (MIMIC), was chosen as the analytic technique because it allows for the measurement of latent constructs and analysis of causal paths among constructs (Kline, 2011). Benefits of SEM include 1) allowing the measurement and examination of underlying theoretical concepts (e.g., PTSD) which

would be difficult to measure by examining a mean score of observed variables, 2) because multiple indicators are used to measure latent constructs, SEM allows for measurement error in models, and 3) SEM allows the estimation of direct effects in structural models (Kline, 2011). Thus, SEM was selected as the preferred approach for the present analysis, allowing the testing of four *a priori* specified models (the numbing model, the dysphoric model, the dysphoric arousal model, and the DSM-5 model) about the underlying structure of the measurement models, and subsequent testing of two structural (MIMIC) models. My intent was to estimate parsimonious, theoretically-based model(s).

The SPSS program, version 22, was used to examine the descriptive statistics and correlations, then the data were analyzed through the *Mplus* structural equation modeling program (Muthén & Muthén, 1998-2012). Full information maximum likelihood procedure was used for all estimates because it is robust to violations of multivariate normality and handles model estimation with missing data through estimating variable means and intercepts (Kline, 2011; Muthén & Muthén, 1998-2012; Peters & Enders, 2002). Maximum likelihood is an iterative process which determines the likelihood for different parameter values to find the values with the maximum likelihood, given the data. The researcher specifies the parameters to be estimated in the model, and *Mplus*: 1) computes the sample variance/covariance matrix (S), 2) Using the model parameters computes the variance/ covariance matrix ($\sum$). Estimates are selected to fit the model as closely as possible, maximizing agreement. For all significance tests, alpha was set at <.05.

Confirmatory Factor Analyses: Testing Four Models of PTSD Symptom Structure. In order to address the first research question regarding the factor structure of PTSD among victimized women on probation and parole, confirmatory factor analysis (CFA) was used to test four PTSD symptom models (Table 1). Advantages to this approach include the flexibility of model specification and the ability to assess model fit against the observed data (Kline, 2011). A maximum likelihood parameter estimates (MLR) estimator was be used for all analyses. All factors were be allowed to correlate, and no correlated errors were included in the models. The goodness of fit between the hypothesized model and the sample data was assessed by four fit indexes using established critical values including: chi-squared (X^2), comparative fit index (*CFI*), tucker lewis fit index (TLI), the root mean square error of approximation (*RMSEA*), and Standardized Root Mean Square Residual (*SRMR*) (Hu & Bentler, 1999) (Table 8). While non-significant chi-square values indicate good model fit ($p <.05$), in large sample sizes, this test is often too conservative to determine good model fit, thus results for model fit were examined in the context of the *CFI, RMSEA*, and *SRMR* fit as well. Modification indices were examined for improving model fit, and theoretically-based re-specifications may be made. In order to compare model fit between the four models, fit statistics were utilized to select the best fitting model. Unstandardized regression, standardized regression (beta) weights and standard errors for the structural model are presented.

PTSD Factor Structure Differences Based Upon Exposure to Childhood Physical or Sexual Victimization. In order to address the second question, regarding differences in PTSD factor structure for women with and women without a history of childhood physical or sexual victimization, a multiple indicators multiple models

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(MIMIC) approach was used. MIMIC structure modeling is a method for detecting

heterogeneity in populations where regular multiple group analysis cannot be used due to

insufficient sample size (Hauser & Goldberger, 1971; Muthén, 1989b)[2]. A single

covariance matrix is used for MIMIC model analyses, with covariates (in this case, a

dichotomous variable measuring exposure to either childhood physical and/or sexual

victimization) included to account for group mean differences in the latent variable (i.e.,

PTSD factor structure) (Muthén, 1989b). The MIMIC model directly tests the influence

of the covariates on the factor structure examining: 1) differences in PTSD observed

symptomology based upon exposure to victimization, and 2) differences in PTSD latent

factor structure based upon exposure to victimization (Muthén, 1989a, 1989b). Utilizing

the best fit CFA from RQ 1, exposure to childhood physical or sexual victimization was

added to the model as predicting PTSD. Model fit was assessed using the same fit

statistics indicated in Table 8.

PTSD Factor Structure Differences Based Upon Exposure to Childhood

Sexual Victimization. Finally, in order to address the third research question, regarding

differences in PTSD factor structure based upon aggregate childhood victimization

exposure, a MIMIC structural modeling approach was utilized. Again, MIMIC model

was selected as the appropriate analytic technique given that the sample size was too

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[2] Preliminary analysis indicates insufficient sample size for SEM when sample is split into two groups: women with a history of childhood physical or sexual abuse ($n = 278$), and women without a history of childhood physical or sexual abuse ($n = 127$) ($n > 200$; Kline, 2011, p. 12).

small for multiple group analysis[3]. Utilizing the best fit CFA from RQ 1, childhood

sexual victimization was added to the model as predicting PTSD examining: 1)

differences in PTSD observed symptomology based upon exposure to childhood sexual

victimization, and 2) differences in PTSD latent factor structure based upon exposure to

childhood sexual victimization. Model fit was assessed using the same fit statistics

indicated in Table 8.

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[3] Preliminary analysis indicates sample size would not meet >200 criteria for multiple group analysis: women with a history of sexual abuse (n =157), and women without a history of sexual abuse (n =249)

Table 8

Fit indices for assessing and comparing model fit

Measures of Model Fit	Meaning	Acceptable Fit
Chi-squared (X_M^2)	$X_M^2 = (N-1)F_{ML}$ F_{ML}= statistical criterion (fit function) minimized in ML estimation, which is compared with the model degrees of freedom (df_M)	Not sig.
Comparative Fit Index (*CFI*)	$CFI = 1 - \dfrac{X_M^2 - df_M}{X_B^2 - df_b}$	≥.95, good fit ≥ .90, adequate fit
Tucker Lewis Index (*TLI*)	$TLI = 1 - \dfrac{X_{df(null)}^2 - X_{df(prop)}^2}{X_{df(null)}^2 - 1}$	≥.95, good fit ≥ .90, adequate fit
Root Mean Square Error of Approximation (*RMSEA*)	$RMSEA = \sqrt{\dfrac{X_M^2 - df_M}{df_M\,(N-1)}}$	≤.05, good fit .05-.08, adequate fit
Standardized Root Mean Square Residual (*SMSR*)	*SMSR* = a measure of the overall difference between the observed and predicted correlations	<.08, good fit

CHAPTER V

RESULTS

This chapter presents study results, beginning with the univariate analysis, followed by the multivariate analysis, and finally presenting the results of the factor analyses (RQ 1) and results of the MIMIC models (RQ 2 and 3).

Univariate Analysis

Sociodemographic Characteristics. Sample characteristics are presented in Table 9. Women in the sample, on average, were 37 years old (SD=10.18, Range 19 to 69 years), White (50.5%) or African American/Black (41.6%), and single (43.8%) or divorced, separated, or widowed (38.2%). Most of the women were unemployed (39.7%) or working (28.8%), many had a high school diploma or GED (36%) or additional education including trade school (3.4%), some college/college graduation (30.0%), or graduate school (3.2%). Over a third of the women reported that they were homeless (34.0%), and over half had stayed in a controlled environment during the past year (57%). The majority of the women were on probation (74.2%), with the remaining women on parole (23.9%) or both (2.9%).

Overall, the continuous variables appeared to be normally distributed. No problematic skewness (>3) or kurtosis (>10) values were found with the exception of

homelessness (skewness =5.20, kurtosis= 60.16), which was not transformed as it is a

dummy-coded variable.

Table 9

Sociodemographic characteristics: Mean/percentage, standard deviation, observed range, skewness, and kurtosis

Indicator		Mean (*SD*)/ Percentage	Range	Skew	Kurtosis
Age		37.2 *(10.24)*	19-69	.23	-.78
Race	African American	41.6%		1.39	2.04
	White	50.5%			
	Other	7.6%			
Partner Status	Single	43.8%		.11	-1.79
	Married/Living with partner of opposite sex	16.5%			
	Divorced/separated/ widowed	38.2%			
Educational Attainment	Less than a high school diploma/GED	27.1%		.37	-1.30
	GED/HS diploma	36.0%			
	Trade School	3.4%			
	Some college/college degree	30.0%			
	Some graduate school/ grad. Degree	3.2%			

Work Status	Unemployed	39.7%	1.02	.37
	Working	28.8%		
	Disabled	20.2%		
	Student	3.7%		
	Other	6.4%		
Homeless		34.0%	5.20	60.16
Correctional Status	Probation	74.2%	1.56	1.46
	Parole	23.9%		
	Probation and Parole	1.9%		
Controlled Environment/ 12 months		57.4%	-.30	-1.92

PTSD Characteristics of the Sample. *PTSD Sample Description: Lifetime*

exposure to traumatic events, Most bothersome traumatic event, length of time since

the most bothersome event, and meeting DSM-IV Criteria for PTSD. The PDS

measures lifetime exposure to traumatic events (Table 11), the type of traumatic event

which women reported to be the *most bothersome* (Table 12), and the length of time since

the most bothersome event (Table 13) in its assessment of PTSD. While not part of the

final analysis, these variables were examined to provide a more complex description of

the sample and the types of traumatic events related to the women's symptoms. Over

half of the women (60%) reported that they had experienced sexual contact when they

were 18 or younger with someone 5 or more years older, making this the most common

type of traumatic event experienced. No specifics (e.g., the women's age when the

sexual contact occurred, whether it was consensual if the women was over the age of

legal consent, etc.) regarding this type of sexual contact were collected as part of this

assessment. The next most common type of event was imprisonment (47%), followed by

non-sexual assault by someone [they knew] (44%) and sexual assault by someone [they

knew] (40%). Non-sexual assault by a stranger was also common, experienced by over a

third (39%) of the women, as was sexual assault by a stranger (36%). Only 14% of the

women reported that they had not experienced any of the traumatic events listed.

In terms of the traumatic event that bothered them the most, sexual assault by

someone [they knew] (22.2%) was cited the most frequently. Other top events included:

other [unspecified] traumatic event (16%), accident (11.6%), and imprisonment (10.1%).

Other events that women indicated were the most bothersome included sexual assault by

a stranger (6.9%), sexual contact [when they] were 18 or younger with someone 5 years

or more older (6.7%), and life-threatening illness (5.7%). Only 14% of the women reported that they had not experienced any of the traumatic events listed or that they did not find any traumatic event to be bothersome.

The majority of the women reported that their most bothersome traumatic event occurred 5 or more years ago (52.2%), and just under a quarter (22.2%) reported that the event occurred 3-5 years ago. Thirteen percent (13.1%) reported that the event occurred 6 months to 3 years ago, and the rest of the women reported that the traumatic event had occurred 6 months or more recently.

Overall, in terms of meeting *DSM IV* criteria for PTSD, the results of scoring the PDS indicated that 85.5% of the women had experienced at least one qualifying traumatic event, and almost half of the women (48.6%) met criteria for PTSD (Table 14). This is much higher than the 9.7% lifetime PTSD rate for women in the general population (Kessler et al., 1995), but similar to the rates of 34% and 53% among incarcerated women found by Teplin et al. (1996) and Lynch et al. (2012), respectively. This is lower than the rate (75%) found by Salina et al. (2007) among incarcerated women with an Axis I diagnosable condition.

Symptom severity was an average of 18.12 (SD=14.08, Range = 0-51) for all the women. Among the women who met criteria for PTSD, the average symptom severity was much higher at 28.25 (*n*= 196, SD=10.31), than it was on average for women who did not meet criteria for PTSD (*n*= 201, M=8.34, SD=9.66). On average, women in this study reported that just over three of their life domains were impacted by their symptoms (3.24, SD=2.83). These findings indicate that the women in this study who met criteria for PTSD were on average, less symptomatic than men and women with PTSD in other

samples who were survivors of a variety of different traumatic events including fires, accidents, combat, natural disaster (M= 33.59, SD= 9.96; Foa et al., 1997), but more symptomatic on average than men and women without PTSD in that sample (M=12.54, SD=10.54). When compared with women in another sample who had experienced intimate partner violence and met criteria for PTSD (M=25.54, SD=13.83; Weaver et al., 2007), the women in the present sample who met criteria for PTSD were on average, more symptomatic.

Table 10

Lifetime exposure to different types of traumatic events

Type of Incident	Frequency Reporting Exposure	Percent Reporting Exposure
Accident	127	31
Disaster	104	26
Non-sexual assault by someone you know	177	44
Non-sexual assault by a stranger	159	39
Sexual assault by someone you know	160	40
Sexual assault by a stranger	143	36
Sexual contact when you were 18 or younger with someone 5 or more years older	241	60
Military combat/War zone	8	2
Imprisonment	192	47
Torture	58	14
Life-threatening illness	118	29
Other traumatic event	128	32

Table 11

Types of traumatic event that 'bothers them the most' experienced by participants

Type of Incident	Frequency	Percent
Accident	47	11.6
Disaster	6	1.5
Non-sexual assault by someone you know	12	3
Non-sexual assault by a stranger	3	.7
Sexual assault by someone you know	90	22.2
Sexual assault by a stranger	28	6.9
Sexual contact when you were 18 or younger with someone 5 or more years older	27	6.7
Imprisonment	41	10.1
Torture	5	1.2
Life-threatening illness	23	5.7
Other traumatic event	65	16
Total	347	85.5
Missing		
Don't know	1	.2
Refuse to answer	2	.5
Not applicable	56	13.8
Total	59	14.5

Table 12

Length of time since the 'most bothersome' event occurred

Length of Time	Frequency	Percent
Less than 1 month ago	10	2.5
1 to 3 months ago	9	2.2
3 to 6 months ago	14	3.4
6 months to 3 years ago	53	13.1
3 to 5 years ago	90	22.2
More than 5 years ago	212	52.2
Total	349	86.0
Missing		
Don't Know	2	.5
Refuse to answer	2	.5
Not Applicable	53	13.1
Total	57	14.0

Table 13

PTSD scoring per the PDS

PDS Subscale	Mean (*SD*)/ Percentage	Range
Exposure to Any Traumatic Event	85.5%	
Criteria for Diagnosis	48.6%	
Symptom Severity	18.12*(14.08)*	0-51
Number of Life Domains Impacted	3.24 *(2.83)*	0-8

PTSD Symptoms. Next, descriptives were calculated for each of the 17 PTSD symptom items (Table 15). No problematic values were noted, and given the appearance of normal distributions, no variables were transformed. The most commonly endorsed symptoms included hypervigilance (M=1.40, SD= 1.24), exaggerated startle response (M=1.38, SD= 1.20), sleep disturbance (M=1.32, SD= 1.25), difficulty concentrating (M=1.25, SD= 1.15), emotional reactivity (M=1.21, SD= 1.03), irritability (M=1.19, SD= 1.11), and avoiding persons/places and activities (M=1.18, SD= 1.22). The least common symptoms included flashbacks (M=.77, SD= .93), memory problems (M=.78, SD= 1.09), loss of interest (M=.84, SD= 1.08), and nightmares (M=.87, SD= 1.02). A complete description is available in Table 15. Cronbach's alpha for this scale in the present sample was high (α= .97).

Table 14

PTSD symptom severity descriptives

Latent Construct	Variable	Mean	Std. Deviation	Range	Skew	Kurtosis
PTSD	B1: Intrusions	1.09	1.05	0-3	.60	-.85
	B2: Nightmares	.87	1.02	0-3	.88	-.44
	B3: Flashbacks	.77	.93	0-3	1.08	.23
	B4: Emotional reactivity	1.21	1.03	0-3	.48	-.91
	B5: Physiological reactivity	.92	1.02	0-3	.85	-.45
	C1: Avoiding thoughts/ feelings	1.17	1.14	0-3	.51	-1.17
	C2: Avoiding persons/ places/activities	1.18	1.22	0-3	.48	-1.38
	C3: Memory problems	.78	1.09	0-3	1.01	-.23
	C4: Loss of interest	.84	1.08	0-3	1.01	-.39
	C5: Detachment	1.04	1.12	0-3	.64	-1.02
	C6: Restricted affect	.99	1.13	0-3	.69	-1.00
	C7: Sense of foreshortened future	1.02	1.17	0-3	.69	-1.08
	D1: Sleep disturbance	1.32	1.25	0-3	.23	-1.59
	D2: Irritability	1.19	1.11	0-3	.38	-1.22
	D3: Difficulty concentrating	1.25	1.15	0-3	.31	-1.36
	D4: Hypervigilance	1.40	1.24	0-3	.13	-1.60
	D5: Exaggerated Startle response	1.38	1.20	0-3	.21	-1.50

Childhood Victimization. Finally, descriptives were examined for four childhood physical abuse items and three childhood sexual abuse items and are presented in Table 16 to help describe the sample's experiences with specific types of victimization experiences. Sixty-three percent (M=.63, SD= .49) of the women reported that as a child, a caregiver had physically hurt them on purpose, 37% (M=.37, SD= .48) reported that a caregiver had beat them up, 26% (M=.26, SD= .44) reported that a caregiver had attacked them with a weapon and they were afraid the caregiver would injure, rape or kill them, and 14% (M=.14, SD= .35) reported that a caregiver had used a gun or knife to get something from them. In terms of childhood sexual victimization, 33% (M=.33, SD= .47) of the women reported that a caregiver had forced or threatened them to do sexual things other than sexual intercourse, 23% (M=.23, SD= .42) reported that a caregiver had forced or threatened them to have sexual intercourse and it actually happened, and 20% (M=.20, SD= .40) reported that a caregiver had forced or threatened them to have sexual intercourse, but it did not actually happen.

Scores for these items were summed into their respective categories (childhood physical or childhood sexual victimization), then two dichotomous variables were created indicating whether women had at least one experience of 1) childhood physical victimization (M=.64, SD= .48) or 2) childhood sexual victimization (M=.39, SD= .49). In order to answer the second research question examining exposure to childhood physical and/or sexual victimization, a third dichotomous variable was created (M=.69, SD= .46) whereby 69% of the women reported at least one experience of childhood physical or sexual victimization. Descriptives for these summary variables are presented in Table 15. These rates of childhood victimization are similar to those found in other

samples of criminal justice-involved women (70% childhood physical victimization, 59%

childhood sexual victimization; Browne et al., 1999), and slightly higher than those found

by Tripodi and Pettus-Davis (2013) who found 20% reported only childhood physical

abuse, 11% reported only sexual abuse, and 33% reported both physical and sexual

abuse.

Table 15

Childhood victimization descriptives by victimization item and composite variable

Construct	Variable	Mean	Std. Deviation	Range
Childhood Physical Victimization	Physically hurt you on purpose	.63	.49	0-1
	Beat you up	.37	.48	0-1
	Use a knife or a gun to get something from you	.14	.35	0-1
	Attack you with a weapon and you were afraid they would injure, rape or kill you	.26	.44	0-1
Childhood Sexual Victimization	Force or threaten you to do sexual things other than sexual intercourse	.33	.47	0-1
	Force or threaten you to have sexual intercourse but it did not actually occur	.20	.40	0-1
	Force or threaten you to have sexual intercourse and it actually happened	.23	.42	0-1
Childhood Victim.	Childhood Physical Abuse Only	.64	.48	0-1
	Childhood Sexual Abuse Only	.39	.49	0-1
	Childhood Physical or Sexual Abuse	.69	.46	0-1

Multivariate Analysis

Next, a bivariate analysis was conducted, examining correlations among all model variables to determine whether variables share enough variation to be relevant in the present study (Table 16). Findings indicated strong, positive correlations between all PTSD symptom variables, ranging between .36 and .81. The highest correlation (.81) was between D4: hypervigilance and D5: exaggerated startle response. Other high correlations were between C1: avoiding thoughts/feelings and C2: avoiding persons/places/activities (.74), and between B4: emotional reactivity and B5: physiological reactivity (also .74). Childhood physical or sexual victimization was surprisingly only correlated with the following PTSD symptoms: C6: restricted affect (.11); D2: irritability (.11); D3: difficulty concentrating (.11); D4: hypervigilance (.13); and D5: exaggerated startle response (.11). Childhood sexual victimization was significantly, positively correlated with the following PTSD symptoms: C2: avoiding persons/places/activities (.14); C5: detachment (.11); D2: irritability (.10); D3: difficulty concentrating (.13); and D5: exaggerated startle response (.11). In terms of the sociodemographic control variables, there were significant, small positive correlations between age and the following PTSD symptoms: B: intrusions; B3: flashbacks; C4: loss of interest; C7: sense of foreshortened future; and D1: sleep disturbance. Homelessness was also positively correlated with all of the PTSD symptoms ($r = .12$-$.22$), with the exception of C1. Homelessness was also positively correlated with childhood physical/sexual victimization (.13) and sexual victimization only (.14). There was a significant, small positive correlation between placement in a correctional environment during the past year and a history of childhood sexual victimization (.11). None of the

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other sociodemographic variables were significantly correlated with any of the PTSD symptoms or childhood victimization. Overall, the intercorrelations among PTSD symptoms showed moderately high convergent validity (>.50), and discriminant validity when correlated with childhood victimization and sociodemographic variables (Kline, 2011).

Correlations among model variables were additionally examined for multicollinearity and multivariate outliers (Tabachnick & Fidell, 2007). No extremely high inter-correlations were identified (> .70), with the exception of a few high correlations between PTSD symptom items described above. Results of Mahalanobi's distance test examining all ordinal and interval level variables revealed no issues with multivariate outliers (<.001). Multivariate normality, multivariate outliers, homoscedascity, and multicollinearity were assessed prior to analysis, revealing no problematic values or violations of normality.

Table 16. Correlations among model variables (N=606)

Latent Construct	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
PTSD	1. B1	—																										
	2. B2	.68**	—																									
	3. B3	.68**	.69**	—																								
	4. B4	.73**	.65**	.70**	—																							
	5. B5	.62**	.62**	.62**	.74**	—																						
	6. C1	.62**	.56**	.56**	.63**	.67**	—																					
	7. C2	.58**	.56**	.56**	.61**	.66**	.74**	—																				
	8. C3	.61**	.56**	.60**	.66**	.66**	.69**	.57**	—																			
	9. C4	.55**	.69**	.52**	.59**	.55**	.55**	.59**	.51**	—																		
	10. C5	.56**	.69**	.51**	.55**	.51**	.53**	.61**	.69**	.72**	—																	
	11. C6	.62**	.66**	.66**	.66**	.60**	.62**	.69**	.62**	.59**	.60**	—																
	12. C7	.65**	.35**	.39**	.65**	.65**	.66**	.66**	.39**	.50**	.60**	.59**	—															
	13. D1	.56**	.50**	.67**	.52**	.65**	.66**	.65*	.36**	.69**	.56**	.66**	.56**	—														
	14. D2	.56**	.69**	.66**	.58**	.52**	.52**	.52**	.60**	.65**	.56**	.66**	.52**	.71**	—													
	15. D3	.56**	.67**	.67**	.50**	.69**	.67**	.67**	.66**	.65**	.55**	.69**	.51**	.62**	.67**	—												
	16. D4	.69**	.66**	.65**	.52**	.52**	.55**	.59**	.37**	.66**	.52**	.65**	.65**	.56**	.57**	.60**	—											
	17. D5	.56**	.69**	.52**	.52**	.51**	.51**	.58**	.39**	.62**	.51**	.65**	.67**	.55**	.61**	.60**	.81**	—										
Child Vic.	18. Phys/ Sex. Vic.	.03	.00	-.02	.03	-.03	-.02	.06	.00	.06	.09	.11*	.08	.08	.11*	.11*	.12**	.11*	—									
	19. Sex Vic	.06	.06	.02	.03	.01	.03	.14**	.06	.07	.11*	.07	.08	0	.10*	.12**	.09	.11*	.52**	—								
Socio.	20. Age	.12*	.07	.10*	.05	.07	.05	.08	.09	.12*	.09	.08	.10*	.13*	.07	.05	.06	.00	-.05	.05	—							
	21. Race	-.17	.00	-.02	.00	-.05	.02	.01	-.05	-.03	-.02	-.02	-.04	-.03	-.02	.00	.01	.02	.14**	.06	-.12**	—						
	22. Part.	.05	.04	.01	.00	.00	.00	.03	.00	.05	.02	.06	.04	.07	.05	.09	.07	.05	.09	.07	.38**	.17**	—					
	23. Edu.	-.06	-.05	-.03	-.02	.00	-.01	-.03	-.05	-.06	-.05	.03	.04	-.04	.01	-.08	-.03	-.03	.03	-.07	.11*	.03	.08	—				
	24. Work	.03	-.01	.01	.01	.06	.03	.02	.03	.07	.03	.06	.02	.07	.04	.05	.02	.05	.07	.04	.04	.00	.05	-.02	—			
	25. Home.	.16**	.12*	.16**	.16**	.15**	.08	.16**	.16**	.13**	.16**	.21**	.19**	.20**	.22**	.21**	.17**	.15**	.12**	.14**	-.02	-.04	.02	-.02	.06	—		
	26. Correc.	.02	.00	-.02	.01	.02	.00	-.01	-.04	-.03	-.03	-.01	-.07	-.06	-.04	-.06	.03	-.04	.06	.09	.12*	.05	.08	.01	.02	.07	—	
	27. Contr.	.05	.01	.00	.02	-.02	.01	.00	-.02	.01	.03	.01	.02	.04	.01	.04	.04	.05	.11*	.07	-.07	.11*	.05	-.01	.05	.15**	.14**	—

Structural Equation Modeling: Confirmatory Factor Analyses and MIMIC Models examining PTSD Factor Structure

Model Identification. Model identification is key to estimation of latent models; a model is identified if it is theoretically possible to calculate a unique estimate for every one of its parameters (Kline, 2011). Thus, in order for a model to be identified, the number of free parameters must be less than or equal to the number of observations (also known as the counting rule), and every latent variable must be assigned a scale (Kline, 2011). In the present analysis, one of the factor loadings for each set of observed variables was set to one. This provides a scale and helps to identify the model. Generally, each latent variable must have at least three observed measures to identify it; however, an exception to this rule may be made when there are only two observed measures on a latent construct, as long as there are fewer parameters to be estimated when compared to the number of known observations, making the complete model over-identified. The observed variable which was set to one for each factor is known as the marker variable. The marker variables for each factor were selected based upon high inter-item correlations with the other items on the factor (Kline, 2011). They were also selected, whenever possible, to preserve continuity across the different factor models. Marker variables selected included B1, C1, C3, D1, and D4 depending on the respective models. The error terms were additionally set to one for all models. No issues with model identification were noted.

One Factor Model. Results of the one-factor model indicated poor fit (X^2 (119) =699.54, $p < .001$, $CFI =.78$, $TLI = .75$, $RMSEA =.11$, $p <.001$, $SRMR =.07$) to the data. Thus, this model was not examined for further analyses. The standardized item loadings

were all of substantial magnitude (>.50) and are presented for this model and all the

subsequent models in Table 17.

Table 17

Standardized item loadings for the one factor, numbing, dysphoria, dysphoric arousal, and DSM 5 models

Item	Model				
	1 Factor	Numbing	Dysphoria	Dysphoric Arousal	DSM 5
B1: Intrusions	.87	.88	.88	.88	.88
B2: Nightmares	.84	.89	.89	.89	.89
B3: Flashbacks	.84	.91	.91	.91	.91
B4: Emotional Reactivity	.84	.89	.89	.89	.89
B5: Physiological reactivity	.84	.87	.87	.87	.87
C1: Avoiding thoughts/feelings	.78	.88	.90	.88	.88
C2: Avoiding persons/places/activities	.80	.90	.89	.91	.91
C3: Memory problems	.79	.79	.74	.79	.81
C4: Loss of interest	.84	.89	.83	.88	.91
C5: Detachment	.85	.90	.87	.90	.91
C6: Restricted Affect	.76	.78	.80	.78	.75
C7: Sense of foreshortened future	.80	.82	.84	.82	--
D1: Sleep disturbance	.82	.88	.87	.91	.88
D2: Irritability	.81	.88	.86	.91	.88
D3: Difficulty concentrating	.80	.87	.84	.87	.86
D4: Hypervigilance	.76	.86	.92	.92	.86
D5: Exaggerated startle response	.79	.88	.96	.96	.88

The Numbing Model. Examination of parameter estimates of the model and their

associated critical ratio values revealed adequate fit between the hypothesized model and

the data (X^2 (113) =377.98, $p < .001$; $CFI = .90$; TLI = .88; $RMSEA = .08$; $SRMR = .05$),

indicating that the proposed model adequately accounted for the observed variances,

covariances, and error co-variances among the indicators (Figure 7). Correlations

between latent variables are presented in Table 19. The indicators specified to measure

each factor all demonstrated relatively high factor loadings on that per Kline's (2011)

recommendation (>.70) which are displayed in Table 18. Additionally, the estimated

correlations between the factors were not excessively high (>.90). The estimated

correlations ranged between .71-.88, with the strongest correlations between avoidance

and reexperiencing ($r = .88$, $p < .001$) and between numbing and hypervigilance ($r = .88$,

$p < .001$).

Table 18

Correlations of latent measures within the numbing model

	Reexperiencing	Avoidance	Numbing	Hypervigilance
Reexperiencing	1.00			
Avoidance	.88**	1.00		
Numbing	.86**	.85**	1.00	
Hypervigilance	.80**	.71**	.88**	1.00

$p \leq .01$

Figure 7

Final Fitted PTSD Numbing Model CFA
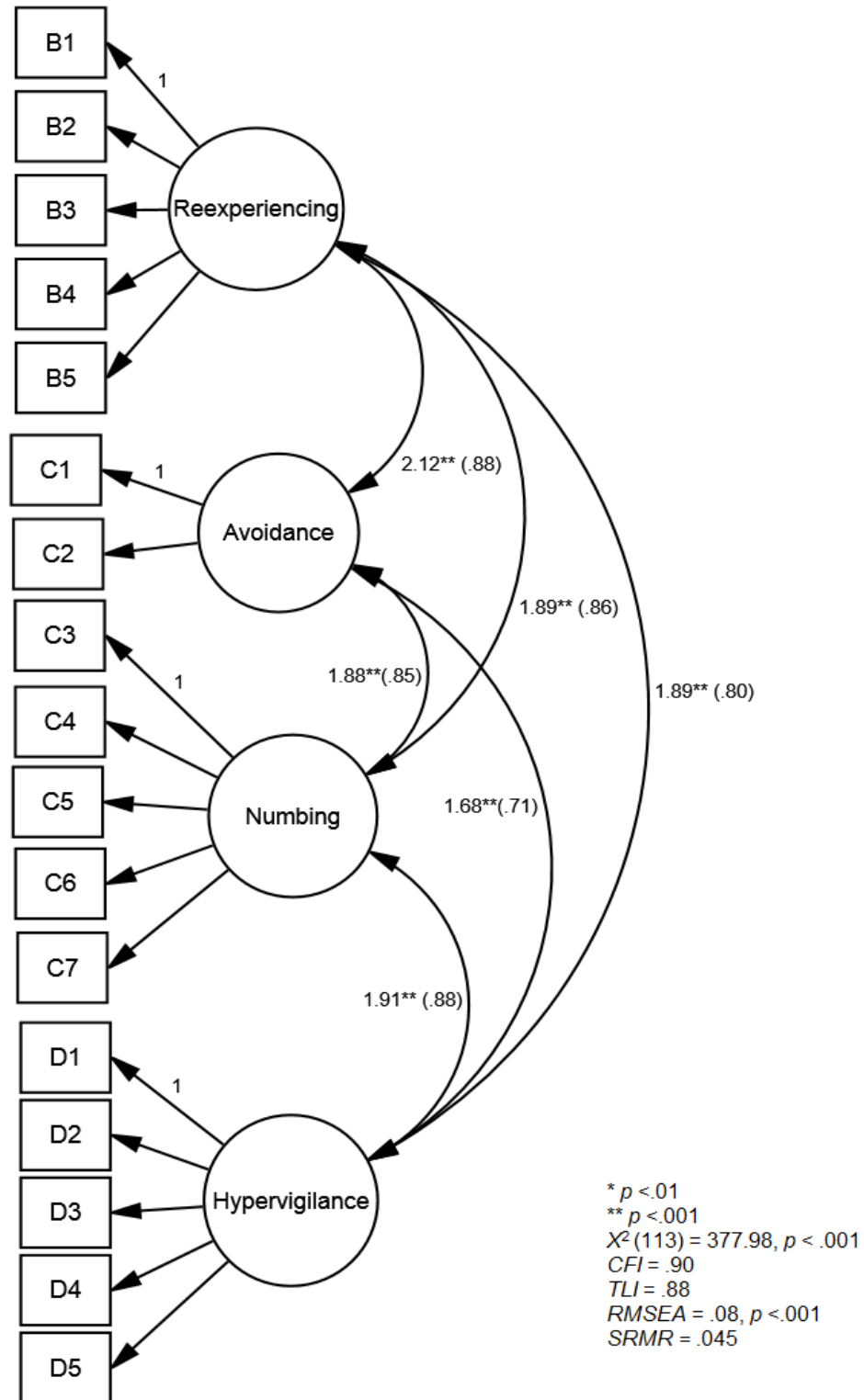
The Dysphoria Model. The dysphoria model also provided adequate fit to the data (X^2 (113) =381.110, $p < .001$; $CFI = .90$; TLI = .88; $RMSEA = .08$; $SRMR = .05$) and is presented with its standardized and unstandardized factor loadings in Figure 8. Correlations between latent variables within the dysphoria model are presented in Table 20. The factor loadings were all statistically significant and were of substantial magnitude (Table 18) indicating good convergent validity, and the estimated correlations between the factors were not too high (>.90), indicating discriminant validity. Estimated correlations ranged between .64-.86, with the strongest correlations between avoidance and reexperiencing ($r = .86$, $p <.001$) and between dysphoria and reexperiencing ($r = .86$, $p <.001$).

Table 19

Correlations of latent measures within the dysphoria model

	Reexperiencing	Avoidance	Dysphoria	Hypervigilance
Reexperiencing	1.00			
Avoidance	.86**	1.00		
Dysphoria	.86**	.81**	1.00	
Hypervigilance	.70**	.64**	.85**	1.00

p ≤ .01

Figure 8

Final Fitted PTSD Dysphoria Model CFA
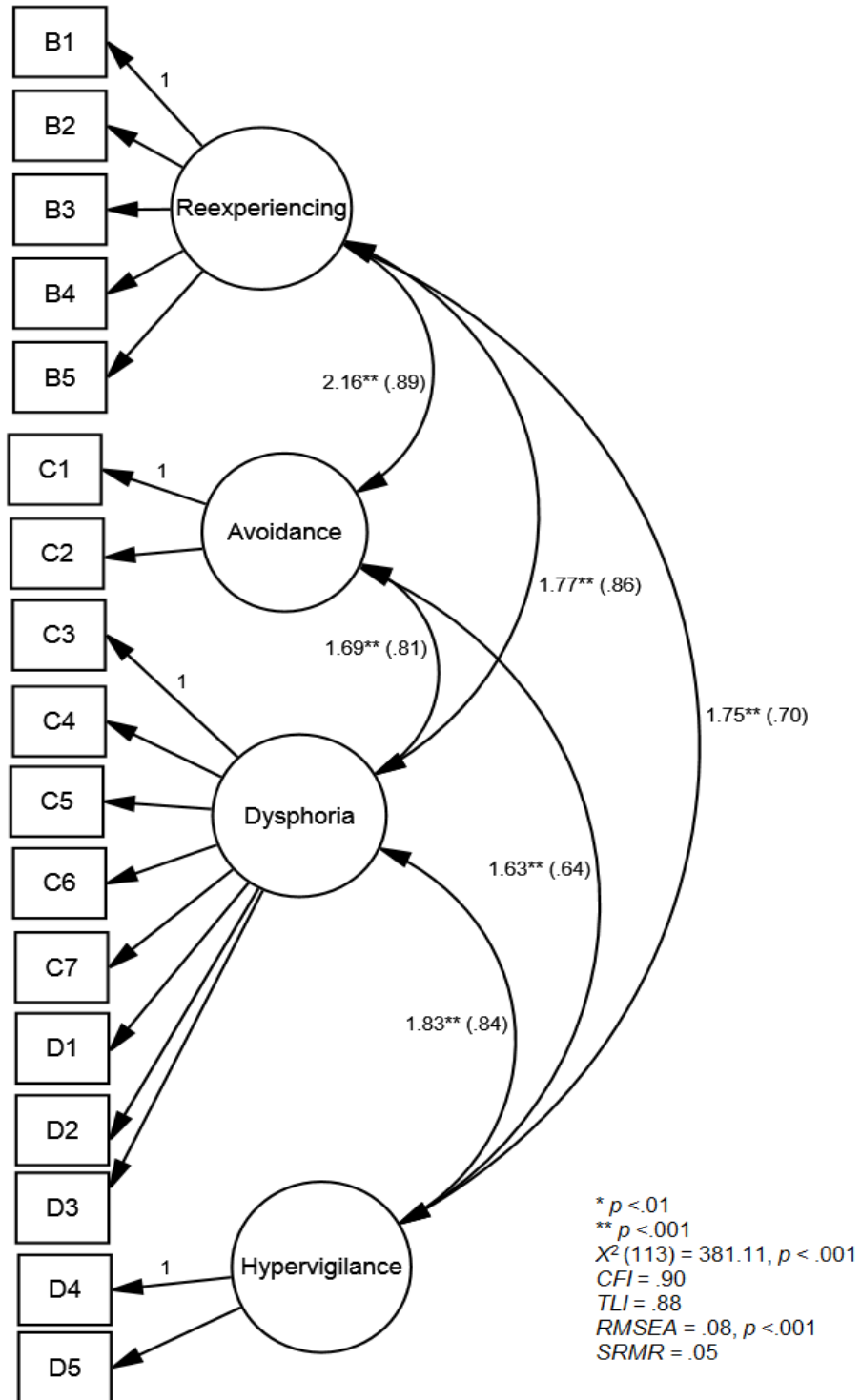
The Dysphoric Arousal Model. The dysphoric arousal model provided good fit to the data (X^2 (109) =302.26, $p < .001$; *CFI* = .93; TLI = .91; *RMSEA* = .07; *SRMR* = .04) and is presented with its standardized and unstandardized factor loadings in Figure 9. Correlations between latent variables within the dysphoric arousal model are presented in Table 21. The factor loadings were all statistically significant and were of substantial magnitude (Table 18) indicating good convergent validity, and the estimated correlations between the factors were not too high (>.90), indicating discriminant validity. The estimated correlations ranged between .64-.88, with the strongest correlations between avoidance and reexperiencing ($r = .88$, $p <.001$) and between numbing and dysphoric arousal ($r = .87$, $p <.001$).

Table 20

Correlations of latent measures within the dysphoric arousal model

	Reexperiencing	Avoidance	Numbing	Dysphoric Arousal	Hypervigilance
Reexperiencing	1.00				
Avoidance	.88**	1.00			
Numbing	.86**	.85**	1.00		
Dysphoric Arousal	.80**	.70**	.87**	1.00	
Hypervigilance	.70**	.64**	.79**	.85**	1.00

$p \leq .01$

Figure 9

Final Fitted PTSD Dysphoric Arousal Model CFA
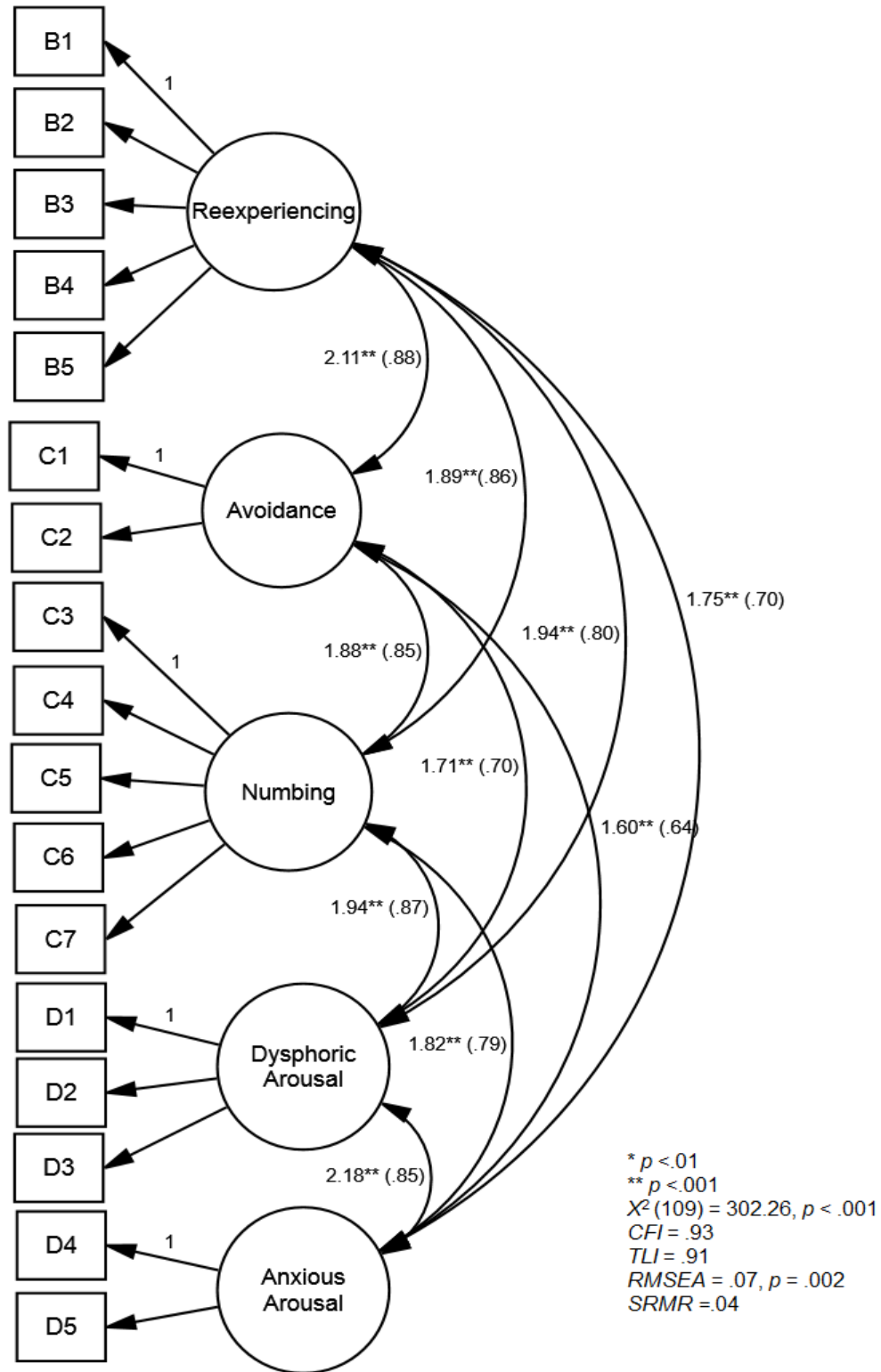
The DSM 5 Model. The DSM-5 model provided adequate fit to the data (X^2 (109) =326.89, $p < .001$; *CFI* = .90; TLI = .88; *RMSEA* = .08; *SRMR* = .04) and is presented with its standardized and unstandardized factor loadings in Figure 10. Correlations between latent variables within the DSM-5 model are presented in Table 22. The factor loadings were all statistically significant and were of substantial magnitude (Table 18) indicating good convergent validity; estimated correlations between the factors indicated discriminant validity. Estimated correlations ranged between .71-.88, with the strongest correlations between avoidance and reexperiencing ($r = .88$, $p < .001$) and between alterations in cognitions and mood and reexperiencing ($r = .86$, $p < .001$).

Table 21

Correlations of latent measures within the DSM 5 model

	Reexperiencing	Avoidance	Alterations in Cognitions and Mood	Alterations in Arousal and Reactivity
Reexperiencing	1.00			
Avoidance	.88**	1.00		
Alterations in Cognitions and Mood	.86**	.85**	1.00	
Alterations in arousal and reactivity	.80**	.71**	.84**	1.00

$p \leq .01$

Figure 10

Final Fitted PTSD DSM 5 Model CFA
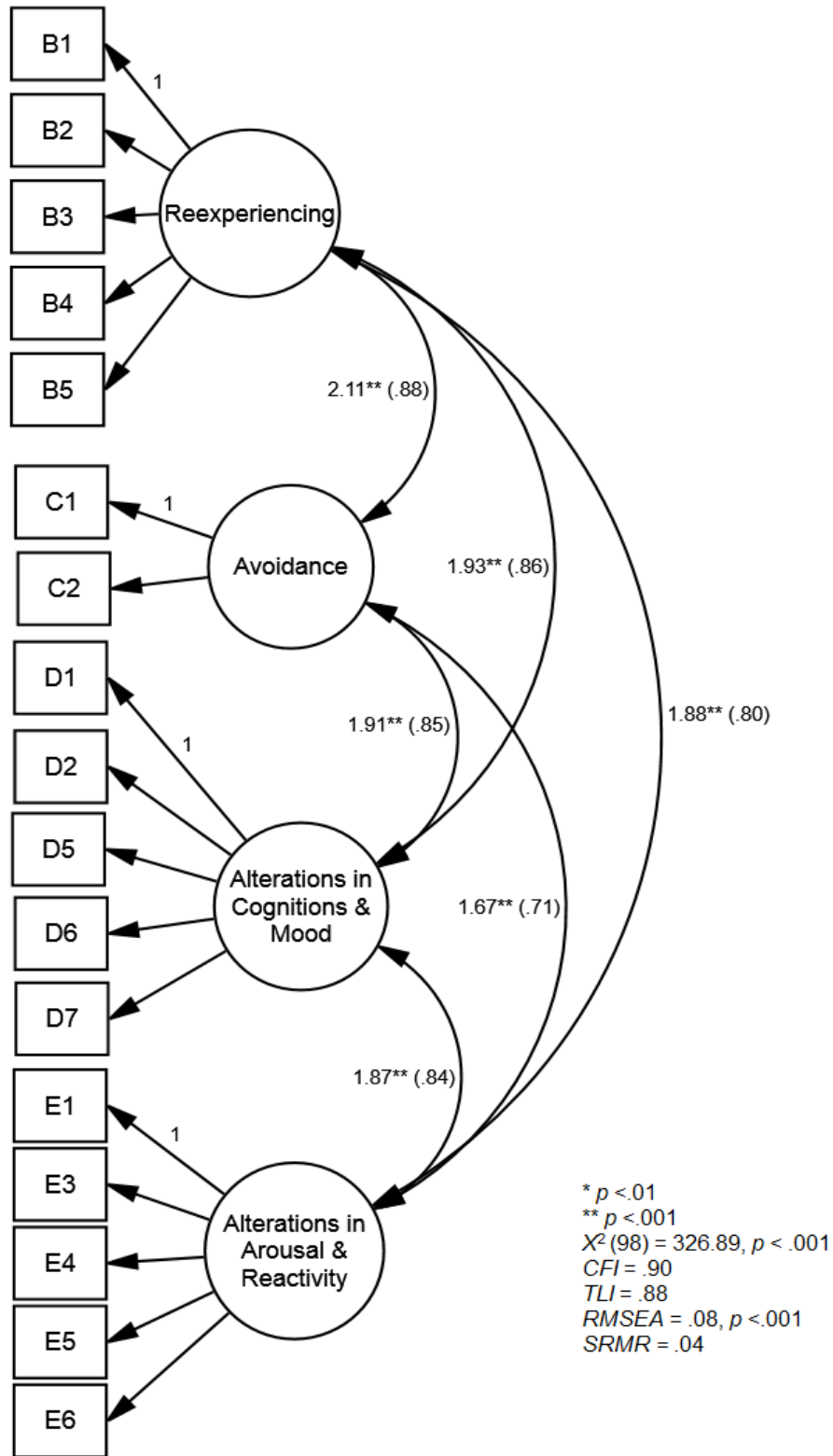
Selecting Best Model from Factor Analyses. Through examining fit statistics

for all five models (see Table 22), the dysphoric arousal model was selected as the best

model due to its slightly better fit including a lower, although still significant, chi-square

value, higher CFI and TLI values, and lower RMSEA values when compared to the other

models. Model fit for this model is adequate to good for all fit statistics with the

exception of chi-squared which is sensitive to larger sample sizes.

Modification indices were examined for this model to determine if there were

theoretically-justified possible modifications that could be made to improve model fit.

Findings suggested that model fit could be significantly improved by allowing C3:

memory problems to load on the Reexperiencing or Avoidance factors, as well as its

current factor, Numbing. Findings also suggested that model fit would be improved if

C4: loss of interest and C5: detachment were allowed to correlate. Despite these

findings, for parsimony and comparison, and due to already adequate fit, the model was

not modified, and was left as the original dysphoric arousal model. This model will be

used to answer the remaining research questions.

Structural MIMIC Models

PTSD Factor Structure Differences Based Upon Exposure to Childhood

Physical or Sexual Victimization. In this first MIMIC model childhood physical or

sexual victimization was allowed to predict PTSD structure, controlling for age, partner

status, education, race, work status, homesslessness, controlled environment status during

the past year and correctional status. Results of the model indicated adequate fit to the

data (X^2 (181) =503.67, $p < .001$; $CFI = .91$; $TLI = .89$; $RMSEA = .07$; $SRMR = .06$);

however, childhood physical or sexual victimization did not significantly predict PTSD symptoms (B= .25, β = .08, SE= .17, p =.13). Only one of the control variables, age, was a significant predictor of PTSD symptoms (B= .01, β = .10, *SE*= .01, p =.04) and accounted for 2% of the variance in PTSD. Age was significantly, positively related to PTSD symptomology, such that every 1 year increase in age was associated with a .10 increase in PTSD symptoms. Two control variables, race (B= .08, β = .15, *SE*=.02, p =.001) and homelessness (B= .10, β = .14, *SE*=.04, p =.004) were significant predictors of childhood physical or sexual victimization, together accounting for 4% of the variance in childhood physical or sexual victimization.

A post-hoc analysis was conducted on race and results are presented in Table 23. Results indicated that women in the "other" category, which was composed of 31 women identifying from the following groups: 1 Asian/Pacific Islander, 6 Native Americans, 13 multiracial women, and 8 women identifying as "other," were 9.33 times more likely to report a history of childhood physical or sexual abuse. However, the effect of race on childhood victimization was very small, accounting for 2% of the variance in childhood physical or sexual victimization (Nagelkerke R^2=.02).

Current homelessness was significantly, positively associated with a history of childhood sexual or physical victimization, such that current homelessness was associated with having a history of childhood victimization. Other control variables, including partner status, education, work status, controlled environment status during the past year and correctional status did not significantly predict PTSD or childhood physical or sexual victimization, and were not included in the final analysis. This final model is presented in Figure 10. Factor loadings for the PTSD latent constructs were high and

significant including reexperiencing (B= 1.00, β = .90, *SE*= .00, *p* =.001), avoidance (B= .95, β = .87, *SE*= .08, *p* =.001), numbing (B= .98, β = .97, *SE*= .07, *p* =.001), dysphoric arousal (B= 1.02, β = .90, *SE*= 10, *p* =.001), and anxious arousal (B= .96, β = .83, *SE*= .10, *p* =.001).

Table 22

Comparison of fit statistics for all factor models

Measures of Model Fit	Acceptable Fit	Model				
		1 Factor	Numbing	Dysphoria	Dysphoric Arousal	DSM 5
Chi-squared (X_M^2)	Not sig.	699.54, df=119	377.98 df=113	381.11 df= 113	302.26 df=109	326.89 df=98
Comparative Fit Index (*CFI*)	≥.95, good fit ≥ .90, adequate fit	.78	.90	.90	.93	.90
Tucker Fit Index (*TLI*)	Same as CFI	.75	.88	.88	.91	.88
Root Mean Square Error of Approximation (*RMSEA*)	.05-.08, adequate fit	.11	.08	.08	.07	.08
Mean Square Residual (*SMSR*)	<.08, good fit	.07	.05	.05	.04	.04

Figure 11

Final MIMIC model presenting unstandardized regression coefficients (standardized estimates provided in parentheses) examining the structure of PTSD based upon exposure to childhood physical or sexual victimization among women on probation and parole
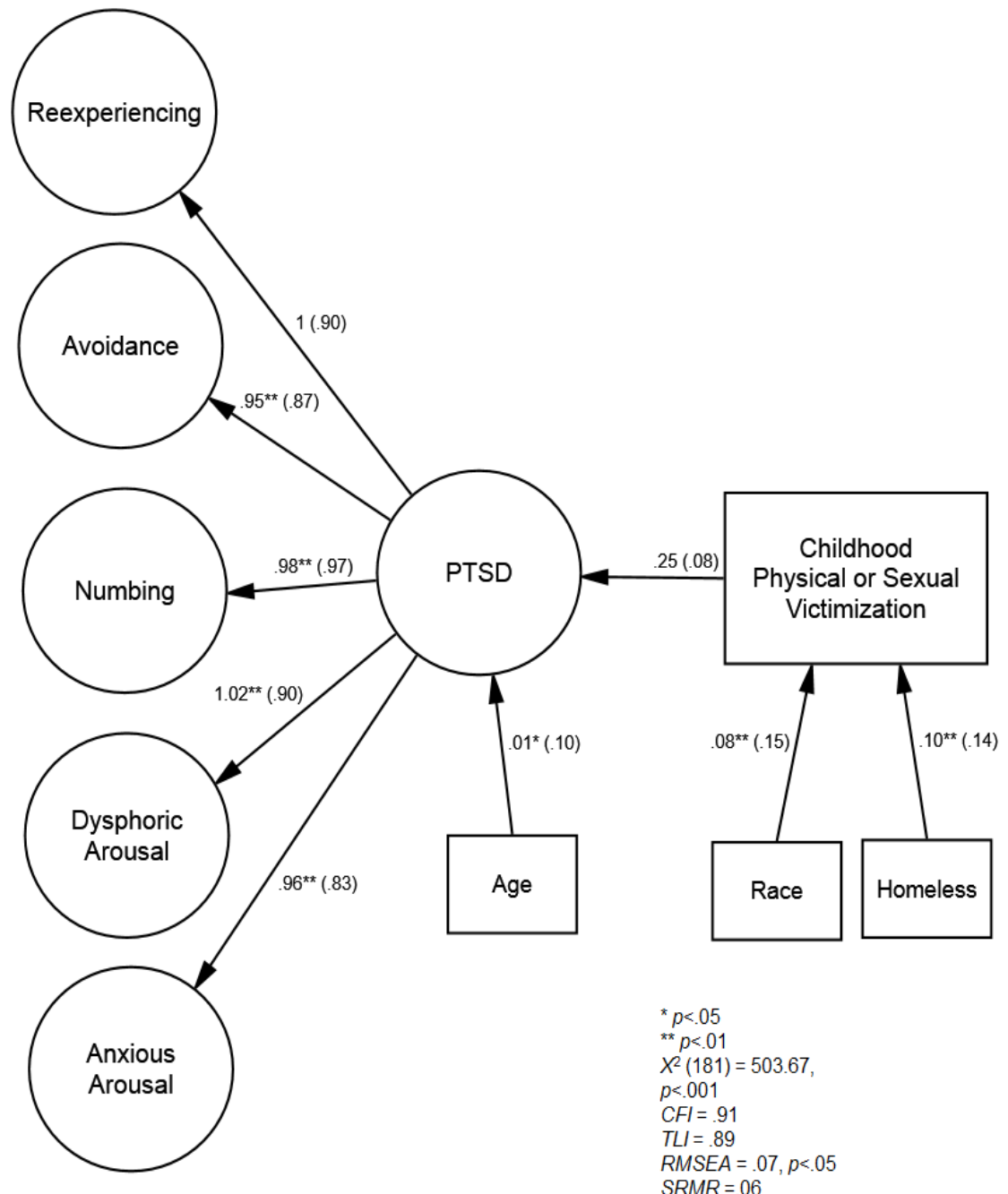
Table 23

Posthoc analysis of the effects of race on childhood physical/sexual victimization

DEPENDENT VARIABLE			
Childhood Physical/Sexual Victimization	Final Model Nagelkerke R^2: .02 X^2 (1, N= 405) = 8.66**		
	B	**SE B**	e^B
Race Overall	.43**	.15	1.60
African American	.60**	.16	1.83
White	.86**	.15	2.36
Other	2.23**	.61	9.33

*p < .05. **p < .01.

PTSD Factor Structure Differences Based Upon Exposure to Childhood

Sexual Victimization. In this second MIMIC model childhood sexual victimization was

allowed to predict PTSD structure, controlling for age, partner status, education, race,

work status, homelessness, controlled environment status during the past year and

correctional status. Results from the second MIMIC model indicated adequate fit data

(X^2 (147) =439.71, $p < .001$; $CFI = .90$; TLI = .89; $RMSEA = .07$; $SRMR = .07$), with

childhood sexual victimization significantly predicting PTSD symptoms (B= .29, β = .10,

$SE= .14$, $p =.04$). As expected, this significant, positive relationship suggests that a

history of childhood sexual victimization is associated with higher levels of PTSD

symptoms. However, this effect was small, indicating that childhood victimization

accounted for only 1% of the variance in PTSD after controlling for everything else in the

model.

None of the control variables were significant predictors of PTSD, and only one

of the control variables, homelessness, was a significant predictor of childhood sexual

victimization (B= .11, β = .14, $SE= .03$, $p =.001$), accounting for 2% of the variance in

sexual victimization. Women who are currently homeless were significantly more likely

to have experienced childhood sexual victimization. Other control variables, including

partner status, education, work status, controlled environment status during the past year

and correctional status did not significantly predict PTSD or childhood physical or sexual

victimization, and were not included in the final analysis. This final model is presented

in Figure 11. Factor loadings for the PTSD latent constructs were high and significant

including reexperiencing (B= 1.00, β = .90, $SE= .00$, $p =.001$), avoidance (B= .95, β =

.87, $SE= .08$, $p =.001$), numbing (B= .98, β = .96, $SE= .07$, $p =.001$), dysphoric arousal

(B= 1.02, β = .90, *SE*= .10, *p* =.001), and anxious arousal (B= .96, β = .83, *SE*= .10, *p*

=.001).

Figure 12

Final MIMIC model presenting unstandardized regression coefficients (standardized estimates provided in parentheses) examining the structure of PTSD based upon exposure to childhood sexual victimization only among women on probation and parole
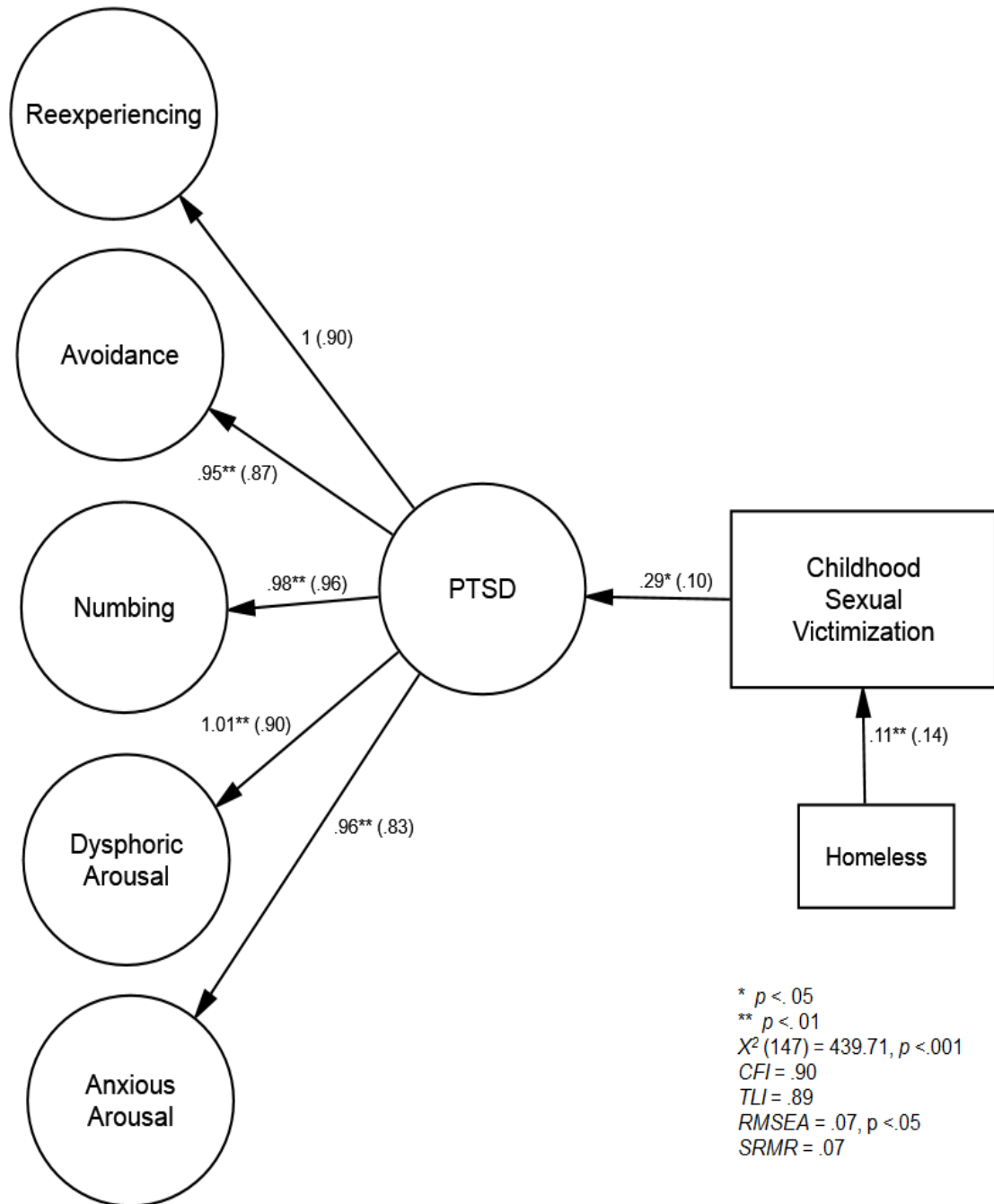
CHAPTER VI

DISCUSSION

In light of earlier research that identifies the prevalence of PTSD and victimization among women involved with the criminal justice system, the current findings suggest that understanding PTSD symptomology as well as further exploring the impact of victimization experiences on PTSD hold promise for reducing symptomology among women in this population. This final chapter will discuss these findings as well as implications for practice and policy and conclude with a discussion of limitations and directions for future research.

Study Findings

PTSD and Victimization among Women on Probation and Parole

Guided by the gendered pathways perspective, findings from the current analysis illustrate the impact of trauma and victimization experiences on the lives of women on probation and parole. The most general conclusion to be drawn from this data is that approximately half of the women met full *DSM-IV* criteria for PTSD (48.6%), which is over four times the lifetime rate for women in the general population (9.7%), but similar to rates for incarcerated women (for discussion and examples see Lynch, et al., 2012, 53%; Teplin, et al., 1996; 34%). It is important to keep in mind that all comparisons are made with the understanding that women in the current study were sampled based upon

exposure to childhood or adult victimization. Findings from the present study seem to indicate a higher conditional risk (48.6%) for developing PTSD than we would expect when compared to other epidemiological studies of non-criminal justice involved women including in the National Comorbidity Sample (20%, Kessler et al., 1995) and the Detroit Area Study (18%, Breslau et al., 1998).

The higher conditional risk reported by women in the current sample may be attributed to their exposure to victimization. Indeed, 60% of the women reported a sexual experience with someone who was more than 5 years older than them when they were 18 or younger, although we do not know from this item if the women were over the age of consent and/or if the sexual experience(s) were consensual. Almost half (44%) reported non-sexual assault by someone they knew and 40% reported sexual assault by someone they knew. Sexual victimization, specifically sexual assault by someone they knew was the most commonly cited "most bothersome" traumatic event. This is congruent with prior evidence which has suggesting that physical and sexual violence carry the highest conditional risk (Grella, Lovinger, & Warda, 2013; Norris & Slone, 2013), and that sexual victimization, specifically, is most highly associated victimization experience with PTSD development in women (Breslau et al., 1998). For example, in the NCS rape alone was associated with a 46% conditional risk for women, and sexual violence accounted for half of all PTSD cases among women (Kessler et al., 1995).   In summary, many of the women in the present sample were exposed to the types of traumatic events which were most likely to lead them to develop PTSD, based upon prior research.

While many women reported that experiences of victimization were their most bothersome experiences, some women reported exposure to a variety of other traumatic

events. As part of the PDS, the women were asked to indicate their most bothersome

event (results presented in Table 11); 16% of the women selected "other traumatic event"

and typed in the following written responses indicating their most bothersome events.

They are presented without edits to provide the truest sense of their responses.

A DEAD OF A FRIEND
a trailer fire that killed my nephew & niece in 1973
alcoholism and addiction
ANOTHER PERSON DYING RIGHT IN FRNT F ME
ATTACKED
BABYS DIED
BANKROBBERY
BEDBUGS
BEING DIAGNOSED AS A DIABETIC, WAS IN COMA FOR 13 DAYS
BROTHER MURDERED SISTER SHOT MOM MURDERED
BROTHER WAS KILLED BY A DRUNK DRIVER
CAR ACCIDENT AT AGE SIX
car accidents, terrorism
CAR WRECK ,CANCER, GUNSHOT
CHILDREN TAKEN AWAY
d and watched other girls being badly beaten while on the streets
DALOT OD DEATH AND FAMILYILLNESS,
DEATH
death in the family
DEATH OF A CHILD
DEATH OF BROTHER
death of child from SIDS
Death of loved ones and my children taken from me
DEATH OF MY BROTHER
DEATH OF MY MOTHER
death of parent, death of fiance, miscarriage
DEATH OF BOTH PARENTS
Death of my 15 year old son in 2009
DIVORCE
divorce, mom getting hit on, using drugs with father and other family members
Don't Know
ELECTRICUSION OF FATHER, HUSBAND SHOT BY POLICE, suicide of younger bother
EVREY ORGAN SHUT DOWN IN MY BODY

experienced arguing while in a car and getting thrown from a moving car

family members apartment burned

FINDING 15 DAY OLD DAUGHTER DEAD

FIRE

FOUND MY BROTHER WHEN HE WAS KILLED

GOT DRUGGED B A CAR BROKEN LEG AS RESULT

got hit by car

Having to get a call to many hours after the fact my husband of less than a year/kids father was killed my best friend of 10yrs. was gone.

HEART ATTACK

HEARTATTACK FOUND FATHER DECEASED

held at gun point, locked in bathroom,

held hostage

heroin addiction, then put on methadone throughout pregnancy...giving birth to child addicted to methadone

HOME BURNED DOWN TWICE BY HUSBAND

HOUSE FIRE

I HAD A BOY FRIEND SHOOT HIMSELF IN FRONT OF ME

I had my sons father hit my with a high heal shoe and busted my stitches two day after my sergey

i have lost both my parents

I LOST MY CHILD BY A GUN

I WATCHED MY SISTER GETTING RAPED WHEN WE WAS KIDS. BY SOMEONE WE PLAYED WIT AS KIDS.

IN A COFFIN

ive seen my mom get the crap beat out of her ive seen my dad tried to kill him self and my mom the same way...

KIDNEY SURGY

LOOSING A CHILD

LOSE OF MY LEFT EYE

Losing custody of my child   Also, witnessed 2 overdoses in my home

Lost sister due to a car running over her, death of mother due to car accident, death of father, child molestation at age 6

MANSLAUGHTER

me having cancer

MOM IS IN PRISON

moms cancer and precacerous cells on cervix being thrown down stairs by ex boy

Mother beat me with objects and burned me with clothing irons and lightbulbs as a child

MOTHER DIED OF A MASSIVE HEART ATTACK 11/22/2006

MOTHER GOT HAND CUT OFF AT WORK WHEN I WAS 4

Mothers death and near child death after taumatic delivery
MOTOR CYCLE ACCIDENT
motorcycle reck
MURDER (2)
MURDER OF 3 FRIENDS. BIRTHING A STILLBORN INFANT. DAD IN AND OUT
PRISON. WITNESSING DAD ATTEMPT SUICIDE. DAD CHASING A DEER THROUGH
THE WOODS IN CAR
MY BEST FRIEND WAS MURDERED IN 2006
MY BOYFRIEND OVERDOSED IN JUNE
my father shot himself and i found him after he died
MY FIANCE' BEING KILLED
MY GRANDMOTHER HITTING ME WITH A BULT AND SOMETIMES NOT LETTING
ME GO TO SCHOOL SHE WOULD MAKE ME WALK
my mother was abused by my father I was abused by both my brothers and my first two
husbands. I watched my father die of cancer.
MY MOTHER WAS STABBED TO DEATH WHEN I WAS 12
MY SON DIED
my sons father shot himself in front of me and i had to hold his head together util the
ambulance got there
MY YOUNGEST DAUGHTER PASSED AWAY LAYING BESIDE ME IN BED
MY MOTHER DIED I WAS TEN
RA[P]E
Rape
RAPE (3)
Raped
RAPED
ROBBERIES
ROBBERY
ROUGH SEX INCLUDING PARENTS HAVING PORNO'S UP REALLY LOUD AND
BEING LEFT ALONE UPSTAIRS WHILE THEY HAVE LOUD SEX DOWNSTAIRS.
saw my friend get shot
SEVERE CAR ACCIDENT AND WITNESSED ALOT OF ABUSE ON WOMEN
SEX AGAINST MY WILL
shot in my head by my dad i n1992
SHOT, HELD HOSTAGE, KIDNAPPED
SHOT BEAT ON ND RAPED AND HELD HOSTAGE
SICKLE
sister shot through heart with cross bow
SISTERS DEATH
son dying

TOLD THRER WAS NO HOPE FOR ME BY A MENTAL HEALTH PROVIDER.
TOOK CARE OF DAD UNTIL HE PASSED AND FAVORITE UNCLE DIED BUT
WORST WAS CHILDREN BEING REMOVED FROM ME
unexpected loss of my boyfriend in 2007
was in a car accident 4/29/12
was in car accident with my grandmother and watched her die
watching mother die from COPD
Watching my mother get her nose bitting off. Watching my friend get drug 10-15 blocks by a
car.
WENT 2 JAIL 4 MUDER DID 11YEARS
were molested by my ex husband and my sisters were as well
WHEN I CAME HOME FROM PRISON I FOUND OUT MY FAVORITE AUNT HAD
DIED TWO YEARS BEFORE I CAME HOME, AND MY FAMILY HIDE IT FROM ME.
witnessd suicide
Woke up next to fiance' and he had passed due to an overdose.
woke up to my lil cuzin had been shot!
XULLY ABUSED

These quotes capture the variety and severity of traumatic events to which these

women were exposed, providing a richer, if heart-breaking, contextual understanding of

the most traumatic events in these women's lives from their perspective. The most

common "other" responses seemed to include [traumatic] death or injury of a loved one,

sexual and non-sexual assaults (which we might characterize as victimization), accidents,

and illnesses.

Some of these "other" traumatic events seem to tie into criminal justice

involvement in terms of law-breaking behavior, (e.g., "went 2 jail 4 mu[r]der did 11

years,") or traumas that occurred as a result of or while the respondent was incarcerated

(e.g., "When I came home from prison I found out my favorite aunt had died two years

before I came home, and my family hid (sic) it from me."). It is worth noting that 10%

of the women reported that incarceration was their most bothersome traumatic

experience. These criminal-justice related traumatic events may provide a lens for further understanding trauma experiences which are unique to this population, and may warrant further examination.

The trauma of the incarceration experience itself is increasingly being explored by research in the field. DeVeaux (2013), using his first-hand experience of incarceration for 25 years, describes the nature of incarceration itself as a traumatic experience, referring to it as the "experience of being locked in a cage." He and other scholars have highlighted the standard procedural, yet potentially traumatizing, parts of the incarceration experience including the loss of privacy; constant scrutiny of guards; and separation from family, friends, and other supports; reflecting that these "micro-traumas" may be part of the intended emotional or psychological punishment of offenders (DeVeaux, 2013; Douglas, Plugge, & Fitzpatrick, 2009; Harner & Riley, 2013). The woman whose aunt died while she was incarcerated may be referring to this type of traumatic event, which was brought on by the incarceration experience and then exacerbated by her family's lack of honesty regarding her favorite aunt's death. Interestingly, findings suggest that some women express feelings of safety or relief during intake at women's prisons in escaping homelessness, sex work, violent partners, pimps and dealers (Loper, 2002). These women feel a small sense of psychic relief at the respite from these ongoing traumatic stressors that separation from these environments through incarceration brings (Blackburn, Mullings, & Marquart, 2008).

Other scholars have focused on the impact of victimization which is often a part of the incarceration experience including witnessing violence, and the threat of or actual verbal, physical and sexual victimization from guards and other inmates (DeVeaux, 2013;

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Douglas et al., 2009; Sangoi & Goshin, 2014). Preliminary findings indicate that these traumatic experiences exacerbate preexisting mental health conditions including PTSD (Harner & Riley, 2013). Further research is needed to understand the complexities of preexisting trauma coupled with the effects of incarceration-related trauma among women involved with the criminal justice system.

Benefits of implementing such programming include controlling and reducing the cost of heathcare for women involved with the justice system, in particular, controlling the high cost of higher levels of care including mental health housing units and inpatient stays, more effective behavioral management strategies, safer interactions between correctional staff and women under corrections, and greater job satisfaction for correctional employees (Miller & Najavits, 2012).

The Factor Structure of PTSD among Women on Probation and Parole

The most commonly experienced symptoms included hypervigilance, exaggerated startle response, sleep disturbance, difficulty concentrating, emotional reactivity, irritability, and avoiding persons/places and activities. Similar to prior findings by Krause et al. (2007) who studied women exposed to IPV, women in the current sample highly endorsed dysphoric mood symptoms such as sleep disturbance, irritability, and difficulty concentrating. Hypervigilance symptoms were highly endorsed as they have been in other samples (Hetzel-Riggin, 2009; Krause et al., 2007). Compared to other samples, such as Krause et al. (2007) and Hetzel-Riggin (2009) who studied female survivors of sexual/physical abuse, the women in the current study were less likely to endorse some of the "hallmark" symptoms of PTSD (i.e., only associated with this disorder) such as intrusions and avoiding thoughts and feelings. This is an interesting novel finding which

suggests that women in this population may be more likely to display some of the numbing, anxiety, and depression symptoms of PTSD instead of the PTSD symptoms which are only seen in this disorder. Findings from the first research question seem to further support this finding that mood symptoms may be key to understanding PTSD symptomology among this population.

The first research question examined whether posttraumatic stress disorder (PTSD) was better conceptualized by a one-factor model, a numbing model, a dysphoria model, a dysphoric arousal model, or a *DSM-5* model among a victimized group of women on probation and parole using Foa's Post-traumatic Diagnostic scale (Foa et al., 1997). Results from the five CFA's presented in Chapter IV indicated that all except for the one factor model provided adequate fit to the PTSD symptoms experienced by women on probation and parole with a history of victimization. However, the dysphoric arousal model provided the best fit to the symptomology experienced by the women. This supports findings from Elhai et al. (2011) and others, indicating that the symptoms they referred to as dysphoric arousal (composed of D1: sleep disturbance, D2: irritability, and D3: difficulty concentrating) represent a separate construct from the numbing model's arousal factor and the dysphoria model's dysphoria factor which incorporate these symptoms into larger factors. Using this five-factor model resulted in uniformly large factor loadings that were at least as large as the largest of the numbing, dysphoria, and DSM-5 models' loadings. Overall goodness of fit was marginally better for the dysphoric arousal model.

These findings seem to help explain the role of depression in PTSD among women in this population, suggesting that symptoms D1-D3: sleep disturbance,

irritability, and difficulty concentrating do not fit well with the DSM-IV's hyperarousal criterion (other items include hypervigilance and exaggerated startle response) which is focused on the physiological fear of a particular stimulus, and is an anxiety-related response. They also do not fit with the numbing criterion (other items include memory problems, loss of interest, detachment, restricted affect, and a sense of foreshortened future) which represents an overall numbing of responsiveness, and is visibly a depression-related construct. Instead, these dysphoric arousal symptoms appear to stand on their own (Armour, Carragher, & Elhai, 2013; Elhai et al., 2011; Reddy et al., 2013).

The dysphoric arousal symptoms appear to be both depression- and anxiety-related, and may be useful in providing a more nuanced understanding of the both depressive and anxious symptoms which are often experienced by individuals post-trauma. These symptoms, in particular sleep disturbance and difficulty concentrating, were some of the most commonly endorsed among women in this population, indicating that these anxiety/depression hybrid symptoms are especially common among women in this population. Understanding the need to address sleep disturbances among women in this population may be important, as sleep disturbances have been found to limit the effectiveness of first-line treatments for PTSD and targeted sleep training has shown promise in accelerating recovery from PTSD symptomology (Germain, 2013).

In terms of the preferred fit of the dysphoric arousal model, it is interesting to note that both the dysphoria model and the dysphoric arousal model separate out the mood symptoms which we find in depression or anxiety disorders from the features which are seen only in PTSD (e.g., flashbacks, intrusive thoughts about the event, etc.; Elhai et al., 2011). This separation may have contributed to the dysphoric arousal model's superior

fit, and provides a more contextual understanding of the phenomenology of PTSD as a

disorder as including both event-related symptoms (i.e., intrusions) and mood-related

symptoms (i.e., irritability).

Given the prevalence of PTSD symptomology among women involved in the

criminal justice system and its implications for psychological distress, substance use, and

potentially ongoing criminal justice involvement (DeHart, Lynch, Belknap, Dass-

Brailsford, & Green, 2014; Golder, 2005; Golder, Gillmore, Spieker, & Morrison, 2005;

Golder et al., 2013; Salisbury & Van Voorhis, 2009; Tripodi & Pettus-Davis, 2013), it is

critical that rehabilitation for women in this context address PTSD symptomology. To

the best of our knowledge, this is an area which is not systematically addressed in current

programming. Despite a well-documented need, many women involved with the

criminal justice system receive no substance abuse nor mental health treatment while

incarcerated or under community corrections, let alone trauma-informed care (Beck &

Maruschak, 2001; Freudenberg, Daniels, Crum, Perkins, & Richie, 2005; Trestman, Ford,

Zhang, & Wiesbrock, 2007). Trauma-informed services have been defined by Harris and

Fallot (2001) as those which 1) take trauma into account, 2) avoid trigger trauma-related

reactions, or re-traumatizing the woman and 3) allow survivors to manage their trauma

symptoms successfully so they can access and benefit from services.

Several programs have been developed with a trauma-informed approach to

address the effects of trauma for women in correctional settings. Some approaches which

have been reviewed in current literature include *Women's Integrated Treatment* (a hybrid

of *Beyond Trauma/ Helping Women Recover)* (a hybrid of Beyond Trauma/ Helping

Women Recover; Covington, Burke, Keaton, & Norcott, 2008) and *Seeking Safety*

(Najavits, 2002). Each of these treatments utilize a cognitive-behavioral perspective, while incorporating elements of relational therapy and expressive/ experiential approaches. Modules include a varying number of sessions on violence, abuse and trauma, the impact of trauma, and healing from trauma, and emphasize the development of coping skills through specific exercises to improve emotional wellness and a sense of safety (Najavits, 2002). They are designed to be implemented in a variety of settings including inpatient, outpatient, and correctional settings, making them plausible for the treatment of women under community corrections (Miller & Najavits, 2012). The approach taken by these programs to addressing PTSD symptomology are consistent with the findings of the current study.

Both of these approaches include best practices for the trauma-responsive treatment among female criminal justice populations which include 1) gender responsive treatment, and 2) integrated treatment of substance abuse (Covington, 2008; Najavits, 2002; Zlotnick, Johnson, & Najavits, 2009). Gender-responsive treatment has been defined as including " creating an environment through site selection, staff selection, program development, content and material that reflects an understanding of the realities of women's and girl's lives and is responsive to their strengths and challenges" (Covington et al., 2008, p. 377). Treatment from this perspective involves training staff and other care providers (therapists, case managers, corrections officers) in the gendered experiences and responses which are common to women who have experienced trauma (Covington, 2008; McCampbell, 2006). These include an awareness of the typical trauma experiences among women involved with the criminal justice system as compared to men which include repeated childhood physical or sexual victimization, increased

likelihood of developing PTSD when exposed to violence, more likely to manifest internalizing symptoms and engage in self harm, and that treatment should emphasize empowerment, emotional regulation, and safety (for a review see Miller & Najavits, 2012). Gendered responsive assessments are presently being developed and tested to more accurately identify women's risks and needs upon entering the criminal justice system in order to help tailor interventions to their needs; one such assessment includes items for assessing needs in terms of current and past abuse, mental health, self-esteem, self-efficacy, parenting issues, substance abuse, and relationship issues (Salisbury, Van Voorhis, & Spiropoulos, 2009).

Integrated substance use treatment is the second major supported component of trauma-informed care for women in this population, and originated from the work of Minkoff (2001) for treatment of co-occurring disorders. Using the holistic health model of addiction, which incorporates the environmental and sociopolitical aspects of disease, substance abuse is treated through three steps: pretreatment services (recovery-priming), 2) recovery mentoring through primary treatment, and 3) sustained post-treatment recovery support services (Covington & Bloom, 2006).

Findings thus far indicate that these interventions have promising outcomes for women in this population. *Beyond Trauma/ Helping Women Recover* was effective in reducing symptoms of PTSD, particularly sleep disturbances, depression symptoms, and anxiety symptoms in women in several criminal justice settings (Covington et al., 2008). A pilot study examining the effectiveness of *Seeking Safety* among 17 incarcerated women found that following completion of the 12 week program, 50% of the women no longer met criteria for PTSD and 65% reported no substance use disorder at the 3-month

follow up (Zlotnick, Najavits, Rohsenow, & Johnson, 2003). Other studies examining

the effectiveness of these treatments have shown promising results in terms of reducing

PTSD symptoms and substance abuse among women involved with the criminal justice

system (Messina, Calhoun, & Braithwaite, 2014; Miller & Najavits, 2012; Oklahoma

Department of Corrections, 2013; Zlotnick et al., 2009). These findings are particularly

important given the strong associations between past trauma, PTSD symptomology,

substance use and recidivism (Fedock, Fries, & Kubiak, 2013).

From a policy perspective, beyond ensuring that a treatment is trauma-informed,

gender-responsive, and integrates treatment of substance abuse, several logistical

considerations are noted for the utilization of these interventions with women under

community corrections. These policy changes include ensuring that women are assessed

and connected to integrated, community-based treatment, that women are assigned to all-

female caseloads and are treated in women-only groups, and that probation or parole

officers are trauma-informed as to not trigger or re-traumatize women on their caseloads

(Fedock et al., 2013; Golder, Higgins, Hall, & Logan, 2014; Miller & Najavits, 2012).

Additionally, in order for women to fully participate in treatment, the economic realities

of women's lives should be addressed including reducing barriers to participation by

providing for transportation and childcare (Covington, 2008).

**The Impact of Childhood Victimization on PTSD among Women on Probation and
Parole**

The second and third research questions examined whether there was different

factor structure of PTSD for women with a history of childhood victimization

conceptualized as: 1) physical or sexual abuse (RQ 2), 2) sexual abuse only (RQ 3),

controlling for sociodemographic variables (participant age, race, educational attainment, work status, homelessness, controlled environment status during the past year, and correctional status). Findings from both MIMIC models indicated that childhood victimization was not a significant predictor of PTSD symptomology, as evidenced by a null finding in the first model examining childhood physical or sexual victimization and a significant finding but very small amount of variance explained ($R^2=.02$) in the second model examining childhood sexual victimization only. These findings are surprising given the research suggesting that childhood victimization, and especially sexual victimization are especially indicative of PTSD development for women (Grella et al., 2013; Hetzel-Riggin, 2009; Tripodi & Pettus-Davis, 2013). To our knowledge, this is the first research to examine the impact of childhood victimization specifically on PTSD symptomology, and among victimized women in this population, these early childhood victimization experiences do not appear to be salient. One potential reason for the null finding may be that the women had experienced other traumatic events (e.g., death of a child; being shot, raped, and held hostage [as an adult]), either on their own or in addition to childhood victimization, and due to exposure to these other traumatic events, the symptoms resulting from exposure to childhood victimization did not stand out. The impact of these multiple traumatic events are not accounted for in the current study, presenting potential holes in teasing out the effects of childhood victimization on PTSD symptomology. A number of studies have indicated that multiple trauma experiences are related to greater overall PTSD symptomology (Hagenaars, Fisch, & van Minnen, 2011; McDonald, Borntrager, & Rostad, 2014; Simpson, Anne Comtois, Moore, & Kaysen, 2011), which may provide a more complete understanding of the impact of victimization

or other trauma on PTSD symptoms among women in the population beyond singling out a particular type of victimization experience (i.e., childhood physical or sexual) as key to understanding PTSD among this population.

A study conducted by Hagenaars et al. (2011), examining 110 male and female survivors of multiple trauma experiences may help shed light on some of these findings. When comparing PTSD symptomology from individuals exposed to childhood vs. adult victimization, they found significantly greater symptomology among those exposed to childhood victimization. They also compared individuals who had experienced a single trauma vs. those with multiple trauma experiences, finding that those exposed to multiple trauma experiences reported greater symptom severity. These findings are common sense, and yet the finding is novel, as few studies have systematically studied the impact of specific types or constellations of traumatic experiences on PTSD symptomology among different populations. One reason for the lack of research in this area may be the complexity involved in exploring and differentiating the impacts of multiple traumatic experiences, while also addressing the impacts of biological or social resiliency and coping which prevent or assuage the associated symptoms. Findings from the current study seem to generate many more questions than they answer. Exposure to multiple traumatic events may be part of the development of greater symptomology; however, the type of event may also be key. Examining the impact of lifetime, not just childhood, exposure to violence: physical and/or sexual may be an important next step in understanding the impact of certain types of events on PTSD symptomology.

In terms of the gendered pathways perspective, a specific path between childhood victimization and PTSD symptomology, such as the *harmed and harming* or *street*

woman paths identified by Daly (1992), and then supported by the work of other scholars (Mulvey, 2013; Salisbury & Van Voorhis, 2009), were not found. However, the overall findings strongly support the prevalence of a variety of victimization and/or other traumatic events and PTSD symptomology among women in this population. Further research is needed to more fully map out the pathways between experiences of victimization and PTSD, substance use, and law-breaking behaviors among this population, and findings from this study indicate that there may be considerable complexity in understanding these dynamics. In particular, the relationships around trauma and victimization either related to (i.e., loss of loved one while incarcerated) or directly involving (i.e., verbal victimization by correctional staff) the criminal justice system may be an area to further explore, given that they represent a unique victimization experience unlikely to have been experienced by members of the general population.

Age. Age was significantly related to PTSD symptoms in the first MIMIC model, such that older women were more likely to report greater symptomology. While this relationship was significant, it accounted for only 2% of the variance in PTSD symptoms. The average age for women in the current sample was 37 years (range 19-69), and prior large scale epidemiological research has suggested that women's peek PTSD prevalence is in their early 50's, and lowest prevalence is in their early 70's. Data from several large cross-sectional studies of community samples (Kessler et al., 1995) and trauma survivors (Ditlevsen & Elklit, 2010) indicate that rates are high for women in their early 20's (11.2% among community samples (CS), 33.7% among trauma exposed samples (TS) before dropping in the early 30's (10.6% CS; 26.2% TE), then starting a gradual incline until the early 50's when they peek (no percentages available for CS; 42.8% for TE).

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Perhaps women in this sample are following a similar trajectory in terms of age-related effects on their symptomology. Additionally, most of the women reported that their most bothersome traumatic event occurred more than 5 years ago, indicating the persistence of these symptoms over time.

Some have pointed to the role of fluctuations in reproductive hormones across the menstrual phase and reproductive state in women as increasing their sympathetic system reactivity as a neurobiological means for understanding why PTSD is both higher for women than men and appears to peek during the early 50's (Rasmusson & Friedman, 2002). This increased activity in the sympathetic nervous system has been found to be present in men and women with PTSD. Preliminary findings that exposure to traumatic stress during different hormonal phases may increase vulnerability to PTSD symptomology on a neurobiological level (Rasmusson & Friedman, 2002). Menopausal women have been found to display increased epinephrine and cardiovascular responses to stress as compared to premenopausal women. This may point to a neurobiological cause for the increase in PTSD symptomology during the early 50's. Further research is needed to determine the role of age in the symptomology of PTSD among women in this population.

Race. Race significantly predicted a history of childhood physical or sexual victimization, but explained only 2% of the variance in childhood victimization. Post-hoc analyses indicated that the 31 women identifying from the following groups: 1 Asian/Pacific Islander, 6 Native Americans, 13 multiracial women, and 8 women identifying as "other," were 9.33 times more likely to report a history of childhood physical or sexual abuse. Interestingly, significant differences were not found for African

American women as compared to White women. These finding suggests that race

warrants further examination in terms of victimization, and potentially PTSD

symptomology.

Prior findings suggest that experiences of racial discrimination may heighten the

relationships between stressors and psychological distress (Murry, Brown, Brody,

Cutrona, & Simons, 2001), a process which may shed light on factors impacting the

severity of PTSD symptoms that women experience.   Hardy (2013) and others (Pieterse,

Carter, Evans, & Walter, 2010; Sanders-Phillips, 2009) refer to experiences of

discrimination as a "traumatic form of interpersonal violence," leading to trauma-related

symptomology. Other scholars have discussed the systemic racism that people of color

experience as traumatic events, in that they lead to feelings of hopelessness, helplessness,

and fearing for one's safety and survival (Ponds, 2013). Ponds (2013) and others (Hardy,

2013) critique the *DSM* in that racial trauma is not recognized, nor is the additional racial

stress that is placed upon people of color when assessing symptoms of various disorders.

From their perspective, this indicates a failure to acknowledge the micro- and larger

traumas that people of color experience.

Considering explanations for the current findings, several possible explanations

emerge including, 1) a layering of various types of traumatic events (e.g., childhood

sexual abuse plus the experience of racial trauma) which have varying impacts on PTSD

symptomology, 2) a possible null finding in that there is no real relationship between race

and childhood victimization, or 3) a relationship may exist; however, the measurements

used may not fully capture the relationship due to poor construction, or other

measurement flaws. Further research is needed to determine whether symptoms of racial trauma are similar to those of PTSD, and how they impact women in this population.

Homelessness. In both MIMIC models, women who were currently homeless were more likely to report a history of childhood victimization. In the first and second MIMIC model, current homelessness explained 2% of the variance in childhood victimization in each model. The link between childhood victimization and current homelessness has been explored and supported by a number of researchers (Evenson, 2009; Mental Health Policy Research Group, 1998; Rattelade, Farrell, Aubry, & Klodawsky, 2014). This link has also been examined within the context of the gendered pathways perspective which highlights a path between early victimization experiences for girls and their subsequent running away to escape these traumas (Chesney-Lind, 2002b; Chesney-Lind & Pasko, 2004; Chesney-Lind & Shelden, 2004; Daly, 1992). These girls and young women often find themselves living on the streets engaging in petty crime and/or prostitution, or are considered runaways, and thus become involved with the criminal justice system.

Aside from these well-documented pathways between childhood victimization and homelessness, another possibility is that current homelessness is serving as an identifying variable to indicate a subsample of women who may be at a higher risk for victimization and severe mental illness than other women involved with the criminal justice system who have been victimized. Bonugli, Lesser, and Escandon (2013) in their qualitative study of 11 homeless women found that the experiences of early victimization, homelessness, and severe mental illness were a particularly debilitating and stigmatizing experience for women. Homelessness increases women's chances for

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further victimization, which increases the likelihood that they will experience the symptoms of PTSD and other mental health sequelae, as well as their chances for recidivism (Bonugli et al., 2013). These women likely represent a higher risk for negative mental and physical health outcomes (Bonugli et al., 2013) when compared to other women involved with the criminal justice system, and further research is needed so that proper assessments and interventions can be developed to address their unique needs which include housing at a minimum.

Limitations

A number of limitations were noted in the present study. These included sampling limitations, use of retrospective measures of victimization, and cross-sectional design.

Sampling Limitations. A limitation is noted in that participants were not randomly sampled, and instead were sampled based upon exposure to childhood or adult victimization experiences, making comparisons to non-victimized populations impossible. Future research would benefit from random sampling of women on probation and parole to determine if similar conclusions can be drawn regarding victimization exposure and PTSD symptomology among a random sample of this population. However, findings suggest that 20% of the women who were currently on probation and/or parole in Jefferson County, KY at the time of data collection participated in the current analysis, thus the sample does include a significant part of the total population.

Use of Retrospective Measure of Victimization. The measurement of childhood victimization used in the present analysis is retrospective, which means that it is collected though participants recalling past events. This is in contrast to prospective measures of childhood victimization which are gathered at the time that the event(s) occurred. Both types of measurements have advantages and drawbacks to measuring childhood victimization (Brown, Cohen, Johnson, & Salzinger, 1998). Relatively few prospective longitudinal studies of the effects of childhood victimization have been conducted, which is due to the fact that longitudinal research is expensive, with protracted data collection and challenges maintaining participants over time. However, prospective longitudinal designs allow the researcher to examine the long-term effects of victimization and establish the temporal sequencing of effects which is crucial to the examination of causal relationships (Holden, Geffner, & Jouriles, 1998; Straus, 1994; Widom & Shepard, 1996). Additionally, prospective measures have the benefit of recency, reducing the chances that the events are forgotten or distorted by later experiences (Tajima, Herrenkohl, Huang, & Whitney, 2004). However, recent events may also be underreported if the issues are particularly sensitive, such as childhood victimization, where the child may fear that disclosure will lead to a negative outcome for them (e.g., retaliation from their abuser, removal from their home, etc.).

Given all of the challenges of prospective measures of childhood victimization, researchers frequently rely on retrospective designs to examine childhood victimization. Benefits include the fact that they are much less costly and time consuming to conduct than prospective measures. However, major drawbacks include the fact that memories are subject to distortion, early events may be forgotten or selectively recalled, and

perceptions of childhood events may be shaped by subsequent experiences (Hilton, Harris, & Rice, 1998; McGee, Wolfe, Yuen, Wilson, & Carnochan, 1995). Details of the events including their frequency, dates, and general time periods may be forgotten or distorted. However, adult retrospective reports of childhood victimization would not likely raise the issue of mandated legal reporting, thus participants may feel able to use more candor in their responses. Interestingly, research has found that respondents of retrospective measures of childhood abuse are more likely to under- than to over-report the victimization experiences. Reasons for this underreporting were explored by Femina, Yeager, and Lewis (1990) as including a desire to forget the victimization, embarrassment, and wanting to protect one's parents from knowledge of the victimization. (Brown et al., 1998) found that underreporting was sometimes due to the belief that one "deserved the punishment." And finally, underreporting may occur because children are sometimes simply too young to remember very early victimization experiences; determined that individuals have very little recall of experiences prior to the age of 3, and limited recall of experiences which occurred between the ages of 3-5. These potential limitations of retrospective design should be kept in mind when interpreting findings from the current analysis.

Cross-sectional Design. Cross-sectional design of the current study is noted as a limitation due to the inability to make causal inferences among study variables. Thus, it is impossible to conclude that victimization experiences in childhood or at any other time cause the symptoms that the women were experiencing at the time of the data collection. A longitudinal design examining distinct cohorts may provide a richer understanding of the direct links between victimization experiences and PTSD symptomology.

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Policy Implications and Directions for Future Research

While our findings suggest PTSD symptoms are common among women on probation and parole with lifetime histories of victimization, there are additional factors which must be considered in a gendered pathways understanding of women's criminal justice involvement. The gendered pathways perspective centers on recognizing the links between childhood victimization, PTSD, substance use, and women's criminal justice involvement. These relationships exist in part due the current legal climate which links substance use and legal consequences (Engstrom, 2008; Tripodi & Pettus-Davis, 2013). From a policy perspective, the first step to changing these pathways for women would begin by addressing the legal response to substance use. In order to change these pathways, public health and public policy must focus on the separation of substance use from criminal outcomes, as well as assessment and treatment of the population, paying particular attention to substance use and mental health outcomes, while addressing barriers which hinder women's ability to engage in treatment. Economic security, including access to housing, employment, health insurance, food, and other material resources is a crucial part of engaging and treating this population, and reducing recidivism (Golder et al., 2014; Salisbury & Van Voorhis, 2009). Promoting overall economic safety along with gains in feelings of safety through mental health treatment may be best for supporting long-term rehabilitation in women (Bonugli et al., 2013).

Summary and Conclusion

In summary, the present study illuminated the victimization and other traumatic experiences of women on probation and parole, indicating that women had experienced a variety of traumatic experiences, often beyond one experience of victimization. This

study measured the symptoms of PTSD among this population, and identified the best fitting factor structure for symptoms among this population, highlighting the presence of dysphoric arousal symptoms to provide a starting point for assessment and interventions which are trauma-informed, gender-responsive, and integrates treatment of substance abuse. Interestingly, childhood physical and sexual abuse did not predict different PTSD symptomology, which is possibly due to the variety and severity of traumatic events endured by the women. Age, race, and homelessness were small but salient controls in the tested models, pointing to the need for further study of these contextual factors in understanding women's experiences of victimization and PTSD. Public policy approaches must address these and other contextual factors, especially substance use and economic stability, in the treatment and rehabilitation of women involved with the criminal justice system. Future research should further explore the relationships between different types of victimization experiences, poly-victimization and repeated trauma, and age of first victimization experience in understanding the complex relationships between victimization and symptomology. This approach including knowledge-building, trauma informed treatment, and policy interventions provide the most complete approach to addressing the needs of victimized women involved with the criminal justice system.

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of *Research on Adolescence, 20,* 210-236. doi: 10.1111/j.1532-7795.2009.00624.x

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Zinzow, H. M., Resnick, H. S., McCauley, J. L., Amstadter, A. B., Ruggiero, K. J., & Kilpatrick, D. G. (2012). Prevalence and risk of psychiatric disorders as a function of variant rape histories: results from a national survey of women. *Soc Psychiatry Psychiatr Epidemiol, 47,* 893-902. doi: 10.1007/s00127-011-0397-1

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Zlotnick, C., Najavits, L. M., Rohsenow, D. J., & Johnson, D. M. (2003). A cognitive behavioral treatment for incarcerated women with substance use disorder and posttraumatic stress disorder: Findings from a pilot study. *Journal of Substance Abuse Treatment, 25*, 99-105.

Sociodemographic Variables

Age

When is your birthday?
1/1/1920 - 12/31/1991= mm/dd/yyyy
2097= Don't know
2098= Refuse to Answer
2099= Not Applicable

Calculated Variable: AGE = AGE(DOB, TODAY)

Racial/Ethnic Background

Which group best describes your racial/ethnic background?
RACE   race/ethnicity   1
0= African American or Black (non-Hispanic)
1= Hispanic or Latina
2= White (non-Hispanic)
3= Asian or Pacific Islander
4= Native American
5= Multi-racial
6= Other
7= Don't Know
8= Refuse to Answer
9= Not Applicable

Relationship Status

Please check all that apply to you from the list below regarding your marital status.
          (Check all that apply)
__ Single (never married)
__ Married
__ Common law married/living as married
__ Living with a sexual partner of the same sex
__ Living with a sexual partner of the opposite sex
__ Separated
__ Divorced
__ Widowed
__ Don't Know
__ Refuse to Answer
__ Not Applicable

Educational Attainment

What is the highest grade of school you have completed?
0= No formal schooling
1= 8th grade or less
2= Less than high school graduation
3= GED
4= High school graduation
5= Trade or technical training
6= Some college
7= College graduate
8= Some graduate school
9= Graduate degree
97= Don't Know
98= Refuse to Answer
99= Not Applicable

Work Status

Select the option below that best describes your current work situation.
0= Unemployed or laid off and looking for work
1= Unemployed and not looking for work
2= Working full-time, 35 hours a week or more
3= Working part-time, less than 35 hours a week
4= Have a job, but not at work because of extended illness, maternity leave, furloughed,
       or strike
5= Full-time homemaker
6= In school only
7= Retired
8= Disabled, not able to work
9= In prison/ jail
10= In the military
11= Other
97= Don't know
98= Refuse to Answer
99= Not Applicable

Controlled Environment During Past Year

Have you been in a controlled environment in the past 12 months, since [PASTYR]?

0= No
1= Yes
8= Refuse to Answer

If [question above] is equal to 0, then skip [this question].

What type of controlled environment have you been in during the past 12 months?

Please check all that apply from the list below.
0= No
1= Yes
8= Refuse to Answer

__ Jail/prison
__ Alcohol/drug treatment
__ Medical treatment
__ Psychiatric treatment
__ Other

How many days have you been in a controlled environment in the past 12 months?
0 – 365 = range
997= Don't Know
998= Refuse to Answer
999= Not Applicable

Probation/Parole Status

Which are you currently on with the Kentucky Department of Corrections?
Please check the appropriate response below.
0= Probation
1= Parole
2= Both Probation and Parole

Homelessness

Do you consider yourself to be homeless?

0=No
1=Yes
7= Don't know
8= Refuse to Answer
9= Not Applicable

Physical Victimization

1. How often did your parent and or caregiver physically hurt you on purpose (including grabbing, slapping, burning, scalding, punching, choking, throwing you around, or harshly spanking you)?

2. How often did your parent and or caregiver beat you up?

3. How often did your parent and or caregiver use a knife or gun or some other thing (like a club or a bat) to get something from you?

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4. How often did your parent and or caregiver attack you with a weapon in their hands or you were afraid they wanted to injure, rape, or kill you?

Sexual Victimization

1. How often did your parent and or caregiver force or threaten you to do sexual things other than sexual intercourse (for example forced petting or forced oral sex)?

2. How often did your parent and or caregiver force or threaten you to have sexual intercourse but it did not actually occur?

3. How often did your parent and or caregiver force or threaten you to have sexual intercourse and it actually happened?

CURRICULUM VITAE

Katherine M. E. Winham, ABD
February 2015

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University of Louisville
Kent School of Social Work
Louisville, KY 40292
katie.winham@louisville.edu

PROFESSIONAL PREPARATION

July 2013-Present	**Doctor of Philosophy Candidate** Kent School of Social Work University of Louisville, Louisville, KY Dissertation: *Modeling posttraumatic stress disorder among women on probation and parole: Examining the impact of childhood victimization* Projected Graduation Date: May 2015
August 2012	**M.S.S.W. Social Work** Kent School of Social Work University of Louisville, Louisville, KY 4.00 Cumulative GPA
December 2009	**M.S. Marriage and Family Therapy** Human Development and Family Studies Auburn University, Auburn, AL 3.91 Cumulative GPA
December 2006	**B.S. Psychology**, University of Georgia, Athens, GA Magna Cum Laude

RESEARCH INTERESTS

Effects of victimization and other trauma on mental and physical health outcomes and high risk behaviors (substance use, HIV risk behavior, sex-trading)

Mental health disorders related to trauma among marginalized populations (women, children, families living in poverty, women involved with the criminal justice system)
Relationship satisfaction in at-risk and under-studied populations
Student/ Trainee development of cultural and clinical competence in social work practice and educational settings
Influence of policy on mental health service utilization among vulnerable populations

TEACHING INTERESTS (Classroom, online, and hybrid formats)

Direct Practice
Psychopathology/Mental Health Treatment
Human Behavior and the Social Environment
Research Methods
Family Systems
Crisis Intervention
Cultural Diversity and Oppression

RESEARCH POSITIONS

August 2011 – Present	**Doctoral Fellow/ Research Assistant**
	Kent School of Social Work, University of Louisville
	Louisville, KY
	Analyzing data collected as part of a social work-led grant from the National Institute on Drug Abuse (R01DA027981) to examine relationships among victimization, mental health issues, substance use and HIV risk behaviors for women involved with the criminal justice system.
	Developed skill at using Mplus software.
August 2007 - August 2008	**Graduate Research Assistant**
	Alabama Community Healthy Marriage Initiative
	Auburn, AL
	Co-facilitated psychoeducational programming in a group format.
	Engaged in data entry, cleaning, and analysis.
August 2004 – May 2005	**Research Assistant**
	Psychology Infant Lab
	University of Georgia
	Athens, GA
	Screened participants and facilitated experiments of infant attention and affective responses to stimuli.
	Coded infant affective responses.

| August 2004 – May 2005 | **Research Assistant**
Psychology Parent/Child Problem Solving Lab
University of Georgia
Athens, GA
Coded parent-child interactions using Observer software to examine observational data.
Attained interrater reliability while working as part of a research team. |

TEACHING POSITIONS

| August 2012 – August 2013 | **Marriage and Family Therapy Practicum Supervisor**
Family Ministries, Archdiocese of Louisville
Louisville, KY
Provided instruction including live supervision and case consult to master's level marriage and family students.
Completed assessments of students' competencies and professional development. |

| August 2012 – December 2012 | **Part Time Instructor**
Master's Level Psychopathology
Kent School of Social Work
University of Louisville, Louisville, KY
Designed syllabus and course content based upon CSWE core competencies.
Taught course using a variety of in-person and online instructional formats.
Provided students with frequent feedback regarding their learning through papers, tests, quizzes, and reflections. |

| August 2009 – December 2009 | **Graduate Teaching Assistant**
Auburn Abroad in Italy
Study Abroad Program
Ariccia, Roma, Italy
Provided instruction to undergraduate students focused on facilitating development of interpersonal skills and cultural competencies.
Graded student assignments and provided feedback. |

CLINICAL POSITIONS

August 2013 – Present	**Licensed Marriage and Family Therapist** Private Practice Jacksonville Beach, FL 32250 Providing psychotherapy to individuals, couples, and families. Specializing in working with couples on issues related to conflict, communication, and sexuality. Trained in PREPARE/ENRICH, a relationship inventory and skill-building program. Treatment modalities include cognitive-behavioral therapy, structural family therapy and emotionally-focused therapy. TRICARE in-network provider.
August 2012 – July 2013	**Licensed Marriage and Family Therapist** Private Practice Louisville, KY
January 2012 – August 2012	**Marriage and Family Associate** Family Ministries, Archdiocese of Louisville Louisville, KY
August 2011 – May 2012	**Social Work Macro-Practice Doctoral Intern** Boys and Girls Haven Louisville, KY
August 2010 – August 2011	**Foster Child Therapist** New Beginnings Family Services, Inc. Louisville, KY
February 2010 - August 2010	**Child/Adolescent Therapist** Advantage Behavioral Health Systems Athens, GA
August 2007 - August 2009	**Clinic Intern Therapist** Auburn University Marriage and Family Therapy Center Auburn University, AL
August 2008 - August 2009	**Intern Therapist** East Alabama Mental Health Family and Children Services Opelika, AL

August 2008 - August 2009	**Intern Therapist** Auburn University Employee Assistance Program, Auburn University, AL

LEADERSHIP POSITIONS AND AWARDS

January 2009 – August 2009	**Student/Associate Member Representative** Alabama Association for Marriage and Family Therapy Auburn, AL
August 2008 – August 2009	**Vice President of Marriage and Family Therapy** Graduate Student Organization Auburn University Auburn, AL
February, 2009	**Connie Salts Student Award** Alabama Association for Marriage and Family Therapy Auburn, AL

REFEREED JOURNAL ARTICLES

Golder, S., Hall, M. T., Logan, T., Higgins , G. E., Dishon, A. J., Renn, T., & **Winham, K.** (2014). Substance use among victimized women on probation and parole. *Substance Use and Misuse, 49,* 435-447. doi: 10.3109/10826084.2013.844164

REFEREED JOURNAL ARTICLES (Accepted for Publication)

Winham, K. M., Engstrom, M., Golder, S., Renn, T., Higgins, G.E., & Logan, T. (in press). Childhood victimization, attachment, psychological distress, and substance use among women on probation and parole. *American Journal of Orthopsychiatry.*

Engstrom, M., **Winham, K. M.**, & Gilbert, L. (in press). Types and characteristics of childhood sexual abuse: How do they matter in HIV sexual risk among women in methadone treatment in New York City? *Substance Use & Misuse.*

BOOK CHAPTERS (Under Review)
Winham, K. M., & Higgins, G. E. (Submitted November 2014). *Sex trading and prostitution. (Book chapter).*

MANUSCRIPTS IN PREPARATION

Winham, K. M., Golder, S., Brown, A., Renn, T., Higgins, G. E., & Logan, T. (in progress). *Psychological and social predictors of HIV risk behaviors among victimized women on probation and parole*. Anticipated submission to *Social Work in Public Health* May 2015.

Winham, K. M., Keiley, M. K., & Nelson, J. (in progress). *Marital satisfaction in mothers of children with autism spectrum disorders: Modeling the impact of depressotypic attributions and spousal support.* Anticipated submission to *Family Relations* May 2015.

Winham, K. M., Golder, S., Sar, B. K. (in progress). *Trauma events among women on probation and parole*. Anticipated submission to *Trauma, Violence, & Abuse* June 2015.

Winham, K. M., Golder, S., Sar, B. K. (in progress). *Modeling posttraumatic stress disorder among women on probation and parole: Examining the impact of childhood victimization*. Anticipated submission to *Trauma, Violence, & Abuse* June 2015.

Winham, K. M., Renn, T., Hall, M. T., Golder, S., Higgins, G. E., & Logan, T. (in progress). *A latent class analysis of childhood victimization and intimate partner violence among women on probation and parole: Examining mental health and health risk behaviors*. Anticipated submission to *Journal of Family Violence* July 2015.

Winham, K. M., Renn, T., Golder, S., & Logan, T. (in progress). *A latent class analysis of adult attachment among women on probation and parole: Implications for mental health symptomology, substance use, and HIV risk behaviors*. Anticipated submission to *Journal of Offender Therapy and Comparative Criminology* August 2015.

Renn, T., Golder, S., **Winham, K.**, Brown, A., Logan, T. (in progress). *Examining psychosocial factors effect on physical health and service utilization among a sample of victimized women on probation and parole.*

Brown, A., Golder, S., Renn, T., **Winham, K.**, Higgins, G. E., Logan, T. (in progress). *Attachment, coping, childhood victimization, and substance use among victimized women on probation and parole.*

REFEREED PRESENTATIONS

Winham, K. M., Renn, T., Golder, S., Higgins, G. E., & Logan, T. (March, 2015).

Heterogeneity of victimization experiences among women on probation and parole: A latent class analysis. Paper accepted for presentation at the Academy of Criminal Justice Sciences, Orlando, FL.

Winham, K. M., Renn, T., Hall, M., Golder, S., Higgins, G. E., & Logan, T. (January, 2015). *A latent class analysis of childhood victimization and intimate partner violence among women on probation and parole: Examining mental health and health risk behaviors.* Paper accepted for presentation at the Society for Social Work and Research, New Orleans, LA.

Winham, K. M., Golder, S., Renn, T., Higgins, G. E., & Logan, T. (November, 2014). *Correlates of sex trading in victimized women on probation and parole.* Paper accepted for presentation at the American Society of Criminology, San Francisco, CA.

Winham, K. M., Golder, S., Sar, B. K., Higgins, G. E., Renn, T., Hall, M. T., & Logan, T. (October, 2014). *The structure of posttraumatic symptoms in victimized women on probation and parole.* Paper accepted for presentation at the Council on Social Work Education, Tampa, FL.

Winham, K. M., & Keiley, M. K. (October, 2014). *Marital satisfaction in mothers of children with autism spectrum disorders.* Poster presentation at the American Association for Marriage and Family Therapy, Milwaukee, WI.

Winham, K. M., Golder, S., Renn, T., Higgins, G. E., & Logan, T. (February, 2014). *Victimized women on probation and parole: Understanding substance use, attachment and distress.* Paper presented at the Academy of Criminal Justice Sciences, Philadelphia, PA.

Winham, K. M., Owen, J., & Adelson, J. L. (January, 2014). *Relationship commitment among African American couples with young children following a relationship education program: A dyadic analysis.* Paper presented at the Society for Social Work and Research, San Antonio, TX.

Winham, K. M., Renn, T., Dishon, A., Golder, S., Higgins, G., & Logan, T. (November, 2013). *Examining HIV risk behavior in women on probation and parole: Social and psychological predictors.* Paper presented at the American Society of Criminology, Atlanta, GA.

Renn, T., Golder, S., Dishon, A., **Winham, K.**, Logan, T., & Higgins, G. (November, 2013). *Examining psychosocial factors' effect on physical health and service utilization among victimized women on probation and parole.* Poster presentation at the American Society of Criminology, Atlanta, GA.

Dishon, A., Renn, T., **Winham, K.**, Golder, S., & Logan, TK. (November 2013). *Psychological distress, self-esteem, and child victimization: A SEM mediation model.* Paper presented at the American Society of Criminology, Atlanta, GA.

Renn, T., Golder, S., Dishon, A., **Winham, K.**, Logan, T., & Higgins, G. (October, 2013). *Examining psychosocial factors' effect on physical health and service utilization among victimized women on probation and parole.* Poster presentation at the American Public Health Association, Boston, MA.

Renn, T., Golder, S., **Winham, K.**, Dishon, A., Logan, T., & Higgins, G. (October, 2013). *A preliminary investigation of health decision-making among a sample of women on probation and parole through structural equation modeling.* Poster presentation at the American Public Health Association, Boston, MA.

Winham, K., Dishon, A., Renn, T., Golder, S., Higgins, G., & Logan, T. (September, 2013). *Victimized women on probation and parole: Understanding attachment and distress.* Paper presented at the Institute on Violence, Trauma, and Abuse Conference, San Diego, CA.

Renn, T., Golder, S., **Winham, K.**, Dishon, A., Logan, T., & Higgins, G. (June, 2013). *A preliminary investigation of health decision-making among a sample of women on probation and parole through structural equation modeling.* Paper accepted for presentation at the International Conference on Social Work in Health and Mental Health, Los Angeles, CA.

Dishon, A., **Winham, K.**, Renn, T., & Golder, S. (November 2012). *Involvement in substance use among women on probation and parole: An attachment and coping perspective.* Paper presented at the American Society of Criminology, Chicago, IL.

Dishon, A., Renn, T., **Winham, K.,** & Golder, S. (July 2012). *Attachment, coping, and substance use among women on probation and parole.* Paper presented at the International Family Violence and Child Victimization Research Conference, Concord, NH.

Bradford, A., Adler-Baeder, F., Kirkland, C., Lucier, M., Lathem, B., Stover, C., **Efstration, K.**, Decker, J., Calligas, A., Smith, T., & Ketring, S. (2008). *Differences in relational outcomes for marriage education by sex and ethnicity.* Paper presented at the National Council on Family Relations, Little Rock, AK.

MASTERS THESIS

Efstration, K. M., & Keiley, M. K. (2009). *The effect of depressotypic attributions on marital satisfaction as mediated by spousal support and moderated by length of marriage in mothers of children with Autism Spectrum Disorders.* Thesis Advisor, Margaret Keiley, Ed. D.

PROFESSIONAL SERVICE

2014	Ad Hoc Reviewer for *Violence and Victims.*
2014	Ad Hoc Reviewer for *AIDS and Behavior*.
2010 - 2011	Program committee member planning annual conferences for the Kentucky Association for Marriage and Family Therapy (KAMFT).
2008 - 2009	Elected Student/ Associate Member Representative for the Alabama Association for Marriage and Family Therapy (ALAMFT).
2008	Student volunteer to national conference for the American Association of Marriage and Family Therapy (AAMFT).

UNIVERSITY SERVICE

2008-2009	Vice-President for Marriage and Family Therapy, Department of Human Development Graduate Student Association
2009	Student representative at the International Quality of Life Awards in New York City

COMMUNITY SERVICE

2014-2015	Premarital Couples Program Development at Christ Episcopal Church, Ponte Vedra Beach, FL
2007	Multiple Family Group Facilitation to Adolescent Sex Offenders at the Mt. Meigs Juvenile Department of Youth Services Facility
2005 - 2006	Crisis Call Intervention at the Sexual Assault Center of Northeast Georgia
2006	Shelter Assistant at Project Safe, a Domestic Violence Shelter in Athens, GA

PROFESSIONAL LICENSES and MEMBERSHIPS in PROFESSIONAL ORGANIZATIONS

Society for Social Work and Research

Licensed Marriage and Family Therapist (FL License No. MT2819)

Licensed Marriage and Family Therapist (Inactive, KY License No.10-22)

Florida Association for Marriage and Family Therapy

American Association for Marriage and Family Therapy, Clinical Member and Supervisor Candidate