Journal of Substance Abuse Treatment xxx (xxxx) xxx

Contents lists available at ScienceDirect

Journal of Substance Abuse Treatment

journal homepage: www.elsevier.com/locate/jsat

Poking the bear: The inapplicability of the RNR principles for justice-involved women

1. Introduction

For more than five decades, the development of risk classification assessments, corrections-based treatment, and the associated outcome research have been focused on justice-involved men. Thus, not surprisingly treatment frameworks and correctional policies have been established from a male perspective. Women have also been incarcerated for more than five decades, without suitable recognition of the literature to guide policy and procedures for their specific needs. Parallel statements have been repeated in dozens of research articles, books, other scholarly works, and policy recommendation reports as early as 1980, with more literature developing throughout the 1990s (Browne et al., 1999; Covington, 1998; Daly, 1992, 1994; Grella & Joshi, 1999; McClellan et al., 1997; Najavits et al., 1997; Owen, 1998; Steffensmeier & Allen, 1998; Zlotnick, 1997). However, little has changed for women within the justice system (Van Voorhis, 2001). Was it published in invisible ink? It certainly bears repeating, because by 2019, the number of women in prison in the United States had grown over seven times higher than in 1980, and the annual increases were consistently larger than those for men (Beck, 2001; Carson, 2020). Now, more than 230,000 women are in prisons and jails across the country, a number that has risen globally by 53% since 2000 (Bronson & Carson, 2019; Carson, 2020; Walmsley, 2017).

Critical policy changes and harsher sentencing laws for drug-related crimes played a crucial role in the rapid increase in women's incarceration throughout the 1980s and 1990s (Beck, 2001). Surely, this increase in incarceration removed the cloak of invisibility and created legislative change requiring appropriate models of substance use treatment and criminal justice supervision. Women-focused assessments and gender- and trauma-responsive programs for justice-involved women were swiftly developed and became more accessible (Covington, 1999, rev. 2008 & 2019); Van Dieten, 2008; Van Dieten & MacKenna, 2001; Van Voorhis et al., 2009, 2010), but the application within the criminal justice system remained sparse (Chitsabesan & Bailey, 2006; Grella, 2008; Grella et al., 2000; Oser et al., 2009; Van Gundy & James, 2022).

Naturally, corresponding research on the effectiveness of specialized treatment for women in jail and prison was difficult to generate without extramural funding to establish and evaluate custody-based gender-responsive programs.[1]

Today, a large body of treatment outcomes research on justice-involved women exists. One must recognize the plethora of available randomized controlled trials (RCTs), meta- analyses, and literature reviews (see Breuer et al., 2021; Ford et al., 2013; Gobeil et al., 2016; Karlsson & Zielinski, 2020; King, 2017; Kubiak et al., 2016; Messina et al., 2010; Messina et al., 2012; Messina, Bloom, et al., 2020; Messina & Calhoun, 2021; Saxena et al., 2014; Saxena et al., 2016; Witkiewitz et al., 2014; Wright et al., 2012; Wyrick & Atkinson, 2021).

Moreover, a decade of research has consistently shown that compared with their male counterparts, justice-involved women have *different pathways into, and out of, criminal and substance-using behaviors* (Balis, 2022; Block et al., 2010; Bowles et al., 2012; Campbell et al., 2020; Karlsson & Zielinski, 2020; Lynch et al., 2017; Messina, Bloom, et al., 2020; Michalsen, 2019; Morash & Kashy, 2021; Owen et al., 2017; Sarteschi & Vaughn, 2010; Saxena & Messina, 2021; Scott et al., 2016; Van Gundy & James, 2022; Van Voorhis, 2012; Wattanaporn & Holtfreter, 2014; Wright et al., 2012; Wyrick & Atkinson, 2021).

A pathways perspective recognizes the specific challenges and strengths in women that arise from social hierarchies (Daly, 1992, 1994; Wattanaporn & Holtfreter, 2014; Wright et al., 2012). Such hierarchies have created differences across gender and gender roles (e.g., patriarchy and sexism) and other complex interpersonal and financial disadvantages that speak to the lived realities of women (Benda, 2005; Bloom, 2000; Chesney-Lind & Pasko, 2004; Morash & Kashy, 2021). Moreover, these complex disadvantages and dangers, intersectional inequalities, and differences in social capital continue for women during incarceration (Balis, 2022; Beck & Stroop, 2017; Breuer et al., 2021; Owen et al., 2017).

Acknowledging the accumulation of literature on the needs and recovery processes of justice-involved women (and girls) is vital to the implementation of proper assessments, treatment services and settings, supervision alternatives, policy recommendations, and continued research for further advancement in the field of criminal justice. Continuing to provide women with risk classification assessments and treatment services designed for men, aggregating evaluation data and controlling for gender, or generalizing research outcomes from men to women are uninformative to the field and disadvantageous to the recovery of women (Atabay, 2014; Blanchette & Brown, 2006; Campbell et al., 2020; Cobbina, 2010; Greiner et al., 2015; Harer & Langan, 2001; Kissin et al., 2014; Mahtani, 2020; Messina, Bloom, et al., 2020; Messina et al., 2010; Salisbury et al., 2016; Sarteschi & Vaughn, 2010; Thompson

[1] In response the outrage over drug-exposed infants during the 1990s, solicitations for specialized treatment models for substance-using pregnant and postpartum women were sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA) and the National Institute on Drug Abuse (NIDA), such as *The Residential Women and Children/Pregnant and Postpartum Women Demonstration Program* (see Grella, 2008). Similar solicitations for the provision of specialized programming for women in corrections were not available.

https://doi.org/10.1016/j.jsat.2022.108798
Received 22 July 2021; Received in revised form 30 March 2022; Accepted 4 May 2022
Available online 8 May 2022
0740-5472/

& McGrath, 2012; Van Voorhis, 2012, 2001; Wardrop et al., 2019). This commentary outlines over a decade of corrections-based treatment outcomes research among criminal justice-involved women[2] and applies the findings to the current criminal justice paradigm.

1.1. The Risk-Need-Responsivity principles

The most widely used framework for guiding correctional interventions and forecasting recidivism is the Risk-Need-Responsivity (RNR) principles (Andrews et al., 1990). The RNR principles are contextualized within personality and cognitive social learning theory (Akers & Jennings, 2015; Bandura & McClelland, 1977) and outline who should receive what type of treatment and how it should be delivered to effectively reduce recidivism (Bonta & Andrews, 2007). The risk principle emphasizes that the most effective interventions are those that target offenders at the highest risk of recidivism and that the intensity of treatment should increase as the risk to reoffend increases (Bonta et al., 2000; Lowenkamp et al., 2006). The need principle emphasizes that reductions in recidivism can only be achieved by targeting dynamic (i.e., changeable) criminogenic risk factors (i.e., underlying needs) that are associated with future offenses. The responsivity principle asserts that styles and modes of interventions must be matched to the learning styles, abilities, and characteristics of the participants.

The model outlines the central eight dynamic risk factors that need to be addressed to prevent recidivism, which are made up of the moderate four (i.e., poor relationships/family issues, lack of education/employment, lack of pro-social leisure/recreation, and substance use) and the big four risk factors (i.e., antisocial/criminal behavior, antisocial personality patterns, antisocial cognition, and antisocial associates) (Andrews & Bonta, 2010). The literature maintains that the big four risk factors are the strongest predictors of recidivism and therefore should be the primary focus of corrections-based treatment (Hanson et al., 2009; Lipsey et al., 2001; Lowenkamp et al., 2006; Pearson et al., 2002).

The body of supportive literature for the RNR principles has reported that the central eight risk factors are predominantly predictive of recidivism across age (Grieger & Hosser, 2013), ethnic groups (Gutierrez et al., 2013), and gender (Andrews, 2012; Andrews et al., 2001; Andrews et al., 2011; Bonta & Andrews, 2007; Brusman-Lovins et al., 2007; Rettinger & Andrews, 2009; Smith et al., 2009). However, other studies have scrutinized the RNR model, contending that no consistent relationship exists between high-risk men and recidivism (Brusman-Lovins et al., 2007; Taxman et al., 2006; Thanner & Taxman, 2003); that varying empirical support exists for antisocial cognition, antisocial peers, education/employment, and recreation with recidivism (Van Horn, 2018; Wooditch et al., 2014); that the principles are based on a deficit model (e.g., a deficiency in a person versus strengths) (Ward & Laws, 2011; Ward & Stewart, 2003); that it does not account for the complex interactions among criminogenic needs and destabilizing factors (e.g., mental health status, housing needs, and psychological developmental and maturity) (Taxman & Caudy, 2015); and that findings from men are inappropriately generalized to women (Balis, 2022; Blanchette & Brown, 2006; Olson et al., 2003; Reisig et al., 2006; Salisbury et al., 2008; Salisbury & Van Voorhis, 2009) and other subgroups (Thompson & McGrath, 2012).

1.2. The predictive validity of the RNR principles for women

The focus of this commentary is not to provide a review the RNR literature, but to call attention to major questions that have been posed about the RNR principles' applicability to women:

- Do the underlying assumptions and assessments defining high-risk men also define high- risk women? If so, should the primary focus of treatment for a high-risk woman be intensive treatment focused on the big four?
- Should low-risk women be ineligible for treatment services based on requirements of available funding streams following the RNR principles? If so, is that a cost-effective model based on women's unique needs upon reentry (e.g., parenting/pregnancy needs)?
- Are the central eight inclusive of women's needs or indicative of how common predictive factors may still result in different service needs for women and men?
- Is treatment more effective for women if the content prioritizes their primary needs?
- Are we identifying reliable predictive factors forecasting recidivism for women?
- We further question if we are quantifying vital treatment outcomes for women beyond recidivism.

As past and current research on justice-involved women posits that women's specific needs are far more relevant to guiding their treatment focus, models of treatment delivery, setting, supervision, and recovery, we address the applicability of the need principle first (Atabay, 2014; Balis, 2022; Campbell et al., 2020; Gobeil et al., 2016; Greenfield et al., 2007; Heilbrun et al., 2008; Karlsson & Zielinski, 2020; Kissin et al., 2014; Messina et al., 2003; Messina et al., 2010; Messina et al., 2016; Messina & Zwart, 2021; Michalsen, 2019; Saxena et al., 2014, 2016; Saxena & Messina, 2021; Wright et al., 2012; Wyrick & Atkinson, 2021).

1.2.1. The need principle: Interventions must target specific criminogenic needs

The RNR model's main premise is that treatment needs should be based on dynamic criminogenic risk factors that are related to criminal behavior. Yet extensive literature reveals that women have both static and dynamic gender-related needs correlated with recidivism that are not directly accounted for in the RNR's central eight. For example, compared with their male counterparts, justice-involved women report a higher prevalence of histories of adverse childhood experiences (ACEs), such as neglect and emotional, physical, and sexual abuse (Karlsson & Zielinski, 2020; Leban & Gibson, 2020; Messina et al., 2007; Messina & Schepps, 2021). ACEs are highly correlated with early engagement in substance use and crime (as early as 14 years old), adolescent pregnancy, homelessness, intimate partner violence (IPV), sex work (Benda, 2005; Grella et al., 2005; Lynch et al., 2017; Messina & Grella, 2006; Reisig et al., 2006; Vanwesenbeeck, 2017; Wright et al., 2012), and female- perpetrated violence (Babcock et al., 2003; Kruttschnitt et al., 2002; Kubiak et al., 2017; Saxena & Messina, 2021).

Certainly, ACEs are critical factors negatively affecting women and men (Gajewski-Nemes & Messina, 2021; Horwitz et al., 2001; Messina & Schepps, 2021). However, when compared with men, studies show a stronger correlation for women among types of ACEs, continued IPV into adolescence and adulthood (in the community and in custody), a more pronounced intergenerational impact, and greater severity of chronic mental and physical health outcomes (DeHart, 2008; Grella et al., 2005; Karlsson & Zielinski, 2020; Kernsmith, 2006; Leban & Gibson, 2020; Messina et al., 2007; Miller-Perrin & Wurtele, 2016; Owen et al., 2017; Reed et al., 2021; Sarteschi & Vaughn, 2010; Saxena & Messina, 2021; Wright et al., 2012; Wyrick & Atkinson, 2021).

Based on the consistent findings that women's early childhood adversity is correlated with subsequent harmful behaviors, researchers began to explore distinctive factors associated with treatment outcomes for women compared to men. To begin to untangle treatment outcome data, Pelissier et al. (2003) assessed predictors of postrelease recidivism among 1842 men and 473 women. Among the 32 variables included in the model, only one variable was significantly unique to women (i.e., a

[2] The research reviewed in detail throughout this article is predominantly from samples of women in prison. In an attempt to move away from stigmatizing terms such as “women offenders” and “incarcerated women”, we use the term suggested by the National Institute of Corrections “justice-involved women”.

history of mental health treatment increased the likelihood of recidivism).

Thirteen variables were uniquely associated with recidivism for men, but only four were significant for both men and women and in opposite predictive directions. Variables that increased recidivism for men but decreased recidivism for women included disciplinary infractions during incarceration, counseling during supervision, previous criminality, and number of monthly collateral contacts.

Another study compared recidivism risk factors among a large sample of custody-based treatment participants (4386 women and 4164 men) and also found a notable lack of predictive factors for women (Messina et al., 2006). Of the 11 variables in the models, the strongest predictor of return to custody for both men and women was poor psychological functioning. The single unique factor for women was previous education, with higher education reducing the likelihood of return to prison. In contrast, previous employment significantly decreased return to prison for men.

Mannerfelt and Håkansson (2018) conducted separate multivariate analyses for 3674 men and 407 women, exploring predictive factors of recidivism. The multivariate regression analysis for women showed that out of 14 variables included in the model, having a substance-using partner and having a property crime as crime of commitment were positively associated with recidivism among the women. The analysis for men included 22 variables in the model (mirroring the women's model with additional predictors). Regression analysis showed that a lifetime history of heroin use, amphetamine use, injection drug use, property crime, and difficulty of controlling violent behavior were all positively associated with recidivism. Thus, for women a relationship with as substance-using partner was more predictive of recidivism than their own substance use.

But this was not the case for men.

Hamilton et al. (2016) explored variables most prevalent in women's lives in their analytical model among 8815 women and found that the women-centered factors associated with recidivism were primarily related to social support (e.g., having minor children, no child support, and legal contact restrictions/involvement with child protective services) and victim/exploitation experiences (e.g., IPV and sex work). Brennan et al. (2012) found eight reliable yet complex pathways to women's recidivism, linking multiple women-centered factors from the previous literature, including sexual/physical abuse, lower social capital, poor relational functioning, and extreme mental health issues. Other studies contend that women-centered factors and how they intersect with race/ethnicity and poverty are a more accurate depiction of their recovery and recidivism (Bloom, 2000; Boppre, 2019; Huebner et al., 2009; Mitchell & Davis, 2019).

This literature shows that justice-involved women are at a differential risk for recidivism than their male counterparts, with many historical and relational factors (e.g., underlying needs) associated with their criminal behaviors. When the analytical models quantify women-centered variables, many predictive factors are discovered including their trauma-related mental health issues, their children, and financial responsibilities. The RNR's need principle does not factor in the complex, distinct, and full reality of women's life histories of trauma and abuse, pathways to criminality, and unique needs for recovery.

It follows that the predictive validity of gender-neutral risk assessments are also not as robust for women (Blanchette & Brown, 2006; Brennan et al., 2012; Greiner et al., 2015; Harer & Langan, 2001; Hollin & Palmer, 2006; Van Voorhis, 2001; Van Voorhis et al., 2008; Van Voorhis et al., 2009; Van Voorhis et al., 2010). Evidence shows increased predictive validity for women when assessments are inclusive of women-centered needs, such as trauma and mental health histories (Lynch et al., 2017; Wardrop et al., 2019). Van Voorhis et al. (2009, 2010) created the Women's Risk Needs Assessment (WRNA) as a stand-alone needs assessment or as a supplement for gender-neutral tools, such as the Level of Service Inventory-Revised (Andrews & Bonta, 1995) and the Northpointe COMPAS (Brennan et al., 2008). The WRNA and the WRNA Trailor (WRNA-T) account for factors that are empirically more persistent in the lives of justice-involved women (and correlated with recidivism) and included measures of trauma and abuse, unhealthy relationships, depression, parental stress, safety, financial considerations, anger, housing safety, family support, and personal strengths such as self-efficacy (Salisbury, 2016; Salisbury et al., 2008;Salisbury et al., 2016 ; Van Voorhis et al., 2010).

In their application of WRNA, Salisbury et al. (2008) assessed whether the inclusion of measures of women's needs (as risk factors) was related to poor prison adjustment and recidivism among 156 women admitted to multiple prisons. Although the study found different patterns across prisons, ACEs and dysfunctional relationships were associated with poor prison adjustment and victimization, while limited self-efficacy and parental stress were identified as risk factors for women upon release. Patterns were replicated across eight separate prison samples, seven pre-release samples, and six probation samples and resulted in recommendations for women-centered needs assessments for each type of supervision setting (Salisbury et al., 2016; Van Voorhis et al., 2010).

Wardrop et al. (2019) assessed the predictive validity of the gender-informed risk/need assessment tool with 620 women and a matched comparison group of 657 men in Canadian custody. Interestingly, the gender-informed factors (e.g., earlier substance use, absent employment history, ACEs, and IPV) significantly related to recidivism for women also predicted recidivism for the men, and the ratings incrementally predicted return to custody better than other established tools (i.e., Static Factor Assessment). The authors suggest that risk assessments tools should look beyond the factors routinely assessed in research and identify novel dynamic factors that contribute to risk for men and women (and guide treatment services).

Even though some of the moderate four (i.e., relationships/family issues, education/employment, lack of pro-social leisure/recreation, and substance use) risk factors may overlap for men and women, this overlap does not imply that the level of importance of that need is the same for men and women (Hollin & Palmer, 2006). For example, in a 9-year longitudinal study assessing primary risk factors of recidivism among 304 women on probation/parole revealed that women whose financial needs decreased were less likely to be rearrested (Morash & Kashy, 2021). The authors suggest that this finding highlights the importance of considering a gender-specific definition of economic marginalization.

We contend that women's gender-related needs are the pivotal factors to address in guiding assessment, treatment development, and gender-responsive policies to aid in women's recovery during incarceration and upon release. The exclusion of quantified risk factors that are more prevalent among women is a major concern, as those are also the factors/needs that guide treatment planning and correctional placement/setting. Accepting the contention that women's needs are embedded in the central eight does not impact women-specific policy decisions or inform the field about the direct, indirect, and complex interactions of women's central needs (particularly surrounding their trauma-related mental health, relationships, and pregnancy/parenting issues) (Brennan et al., 2012; Breuer et al., 2021; Messina, Bloom, et al., 2020; Scott et al., 2016). Thus, for the need principle to be applicable for women, it must directly acknowledge such women-centered needs, including additional vulnerabilities during and after confinement, as opposed to those only presented in the central eight as a result of male-generated research findings.

1.2.2. The risk principle: provide the most intensive treatment to those at the highest risk of recidivism (the big four for men - antisocial/criminal behavior, antisocial personality patterns, antisocial cognition, and antisocial associates)

To discuss the risk principle's applicability to women, we review a series of recent research studies (data collected from 2014 to 2019) conducted with 1118 women convicted of serious or violent offenses (i.

e., the big four for women) who participated in brief or intensive interventions designed for women with histories of ACEs and violence. The first study included a sample of women in the highest risk classification—the security housing unit (SHU), those who have committed violent offenses against staff, other residents, and the public. Residents in the SHU have a higher prevalence of criminogenic risks, following the RNR big four antisocial behaviors (e.g., serious criminal careers, gang affiliations, and violence). The pilot study assessed the efficacy of a six-session manualized intervention designed for women who have experienced trauma associated with ACEs (i.e., *Healing Trauma: A Brief Intervention for Women*, Covington & Russo, 2021, rev. 2016 & 2021) among 39 women in the SHU. Results demonstrated preliminary support for the effectiveness and feasibility of the brief intervention for women in the highest risk classification. The women in the SHU exhibited significant improvement across measures of depression, anxiety, post-traumatic stress disorder (PTSD), aggression, anger, hostility, and social connectedness from the brief intervention (Messina, Zwart, and Calhoun, 2020). Effect sizes were moderate to large, with the largest impact on physical aggression (Cohen's *d* 0.82).

The *Healing Trauma* SHU pilot study was replicated with 682 high-risk (i.e., high-need) women in prison (i.e., those with co-occurring disorders, frequent disciplinary infractions, or conflict with staff/others). Using a peer-facilitated model, the study found significant reductions for anxiety, depression, PTSD, psychological distress, aggression, and anger (Messina & Zwart, 2021). Significant increases were found in empathy, social connectedness, and emotional regulation. Effect sizes were small to moderate, with the largest impact on depression, PTSD, and angry feelings (Cohen's *d* ranged from 0.51, 0.41, 0.42, respectively). Anger expression measures approached significance ($p = .061$; $p = .051$).

The findings of the pilot studies show that the *Healing Trauma* six-session brief intervention was significantly impactful for high-risk/high-need women, and those with the highest incidence of childhood trauma and abuse derived the most benefit (Messina & Schepps, 2021). Brief interventions are not typically intensive treatment. Brief interventions are, however, a cost-effective strategy to fill the gap between availability of programs (i.e., wait lists) and more intensive treatment placement (SAMHSA, 2014). *Healing Trauma* is psychoeducational, designed to provide information surrounding the lifelong impact of trauma and the development of coping skills. The positive findings endorse providing *appropriate content within an intervention*, versus more intensity, for *those at the highest risk of recidivism* (as defined by the big four from the RNR model). However, these pilot studies were limited to measures of pre- and postchange, without the benefit of a comparison group.

Building upon the pilot studies with funding from the National Institute of Justice, Messina and Calhoun (2021) conducted an RCT assessing a gender-responsive and intensive 20- session manualized violence intervention (i.e., *Beyond Violence*, Covington, 2014) among 123 women primarily incarcerated for violent crimes (e.g., murder, attempted murder, manslaughter, and assault). Results from the participants randomized to the *Beyond Violence* program had significantly lower mean scores than the control participants on depression *($p < .05$),* anxiety *($p < .01$)*, PTSD *($p < .05$)*, physical aggression *($p < .01$)*, hostility *($p < .05$)*, indirect aggression *($p < .001$)*, and expressive anger (i.e., anger used to manipulate or threaten) *($p < .001$)*. Due to nature of the crimes and the lengthy sentences, the study could not explore post–release outcomes.

In an earlier RCT comparing *Beyond Violence* with a 44-session Assaultive Offender Program in a women's prison in Michigan, Kubiak et al. (2016) found similar positive changes in anger and aggression for the *Beyond Violence* participants. While both groups experienced improvement in anger and mental health, women randomized to the *Beyond Violence* intervention had stronger declines in anxiety *($p < .05$)* and state anger (i.e., outward expression or control of others) *($p < .01$)* than women in the treatment-as-usual anger program. The longitudinal follow-up showed that the women who participated in the *Beyond Violence* program were significantly less likely to recidivate (i.e., arrest or time in jail) than women in the treatment-as-usual anger program 12 months following their release from prison (Kubiak et al., 2016).

These manualized curricula were designed specifically for the primary needs of women in prison, addressing the gap in programs focused on trauma and violence prevention. They are gender- and trauma-responsive treatment programs and are not focused on underlying dynamics of antisocial behaviors to reduce recidivism. The curricula use psychoeducational practices, meditation, mindfulness, experiential therapies (e.g., guided imagery, visualization, movement) and relational and arts therapy to in improve trauma-related mental health issues associated with women's recovery and recidivism. Other pilot and experimental studies have also shown the positive impact of focusing on trauma (King, 2017; McCauley et al., 2020) and the treatment of PTSD symptomology and substance use among justice-involved women (Zlotnick et al., 2003, 2009), and mindfulness-based relapse prevention (Witkiewitz et al., 2014).

The risk principle is the principle that currently drives funding across the nation and is the underlying principle guiding who should get what type of treatment. The hypothesis driving the risk principle and the treatment recommendations state that treatment focus should be for those at the highest risk of recidivism based on the big four risk factors. Thus, treatment and assessments should follow assumptions regarding antisocial traits and behaviors (Bonta & Andrews, 2007). Multiple important points come from the studies that are summarized in this section, including findings showing that women with complex problems and histories of ACEs and violence benefited from a six-session (i.e., low intensity) intervention or a 20-session intensive intervention (across two states), among the highest risk population as defined by the RNR risk principle, culminating in the conclusion that the content of the intervention and the applicability to the needs of the population are the *essential* components for enhancing women's recovery. The appropriate content would be a focus on trauma-related mental health, relationships, histories of abuse, healing, etc.—variables previously shown to be significantly related to their offending *and* well-being.

1.2.3. The responsivity principle: Interventions must be matched to the learning styles, abilities, and characteristics of the participants (including gender)

The responsivity principle states that programs should use theoretically relevant models for individual change, specifically cognitive-behavioral and cognitive-social learning models responding to the characteristics of the participants (Andrews & Bonta, 2010; Landenberger & Lipsey, 2005). We fully support the use of theoretically relevant models of treatment; however, we assert that "relevant" is the key word to address. Theoretically relevant interventions for women would be programs grounded in theories that account for women's life realities and development. One example of acknowledging the experience of "being a woman" within a theoretical framework is Relational-Cultural Theory (Miller, 1976). Relational-Cultural Theory recognizes the different ways in which women and men develop psychologically and emphasizes the centrality of relationships and connection in women's lives (Covington & Surrey, 1997; Jordan et al., 1991).

The literature supporting Relational-Cultural Theory has shown that women engage in substance use as a self-medicating strategy to combat their depression or anxiety, to increase vigilance against IPV, to maintain their relationships with substance-using partners, or to increase sociability and attractiveness (Grayson & Nolen-Hoeksema, 2005). Moreover, situational pressures (e.g., loss of a valued relationship) play a greater role in criminal behavior for women than for men (Allen et al., 2008; Mannerfelt & Håkansson, 2018). Relational-Cultural Theory, Trauma Theory, and Addiction Theory have guided the development of gender- and trauma-responsive treatment in response to the high prevalence of trauma exposure and the relational context of substance use and violence in women's lives (Covington, 1998; Harris & Fallot, 2001).

With funding from the National Institute on Drug Abuse, Messina et al. (2010) conducted an experimental study comparing outcomes of 115 prison-based treatment participants. Women were randomized to a gender- and trauma- responsive treatment program incorporating curricula grounded in Relational-Cultural and Addiction Theory (i.e., 20-session *Helping Women Recover*, Covington, 2019, and 16-session *Beyond Trauma*, Covington, 2013, rev. 2016) or standard care (a therapeutic community model). Rehabilitation in the therapeutic community (TC) model of treatment focused on maintaining a drug-free existence upon release and developing prosocial attitudes and values. TC programs were initially tailored to treat substance-using men in the 1960s and were the standard treatment of care in California prisons at the time of the study (Wexler et al., 1990). Both programs were considered intensive treatment based on the 9–12- month program timeline and the curriculum.

The theoretically guided gender-responsive treatment group had significantly greater reductions in post-release substance use and remained in voluntary residential aftercare longer than the control group (2.6 months vs. 1.8 months, $p < .04$). The mean effect sizes were positive and in the hypothesized directions, showing more success in aftercare treatment (as measured by length of stay; $d = 0.58$, and completion; $d = 0.67$) for the experimental group. The gender- responsive treatment group was also less likely to have been re-incarcerated within 12 months after parole (31% vs. 45%, $p < .05$). Logistic regression analyses showed a 67% reduction occurred in the odds of the gender-responsive treatment group being returned to prison compared with the TC participants ($p < .05$). While both groups improved on mental health outcomes, the findings show the beneficial effects of treatment components responsive to women's needs during custody and upon release.[3]

A responsivity principle responsive to women would outline a gender-responsive theoretical framework and guidance to implement that strategy. One example is the National Institute of Correction's *Gender-Responsive Strategies Report* (Bloom et al., 2003), which outlines six guiding principles for corrections: 1) Gender: Acknowledge gender and be responsive to women's needs; 2) Environment: Create an environment of safety, respect, and dignity; 3) Relationships: Develop policies, practices, and programs that are relational, promoting healthy connections to others; 4) Services and Supervision: Address the primary needs of women through comprehensive, integrated, culturally relevant services and supervision;

5) Socioeconomic Status: Provide women with opportunities to improve their socioeconomic conditions; and 6) Community: Establish a system of community supervision and reentry with comprehensive, collaborative services. These Guiding Principles provide a blueprint for a criminal justice paradigm for women.

We further provided one example of a women-centered theory used to guide treatment development with a gender- and trauma-responsive approach (i.e., Relational-Cultural Theory); thus, questioning the sole applicability of cognitive-behavioral and cognitive-social learning theoretical models. Those who subscribe to responsivity principle need to recognize other theories of the development of women, and learning styles, characteristics, and outcomes of women that are impacted by the experience of gender and the applicability to treatment (Emerson & Ramaswamy, 2015).

2. Discussion

Past and present research has outlined gaps in knowledge and inconsistencies in the predictive validity of the RNR principles for women, calling for continued investigation into the model of rehabilitative care. If we revisit the primary questions posed regarding the applicability of the RNR principles to justice-involved women (i.e., the value of gender-neutral assessments and programs, risk vs. need, intensity vs. content of services, women-centered predictive factors, and outcome measures), a clear disconnect exists between the RNR principles and the literature presented. We do not claim that the RNR principles are wholly invalid given the demonstrated supportive research among men. We contend that the RNR principles are not inclusive of the primary needs of women and possibly other subgroups (e.g., girls, racial/ethnic groups, and gender-diverse populations).[4]

The RNR model omits the influence of context- and person-centered factors on treatment outcomes, which may be influenced by gender. The central eight risk factors do not directly account for the central recovery-related needs of women outlined in this commentary. The women's pathways perspective provides a clearer framework by which to understand the complexities in women's lives and their recovery needs. The WRNA's inclusion of gender-specific factors, particularly histories of trauma and mental health, could provide a more accurate measure of women's treatment needs and how they forecast recovery and recidivism (Salisbury et al., 2008). Assessments incorporating ACEs and other historically relevant factors are still underutilized, limiting further investigation and development (Rariden et al., 2021; Wardrop et al., 2019). Without a rehabilitation system dedicated to identifying women's critical needs, gender- and trauma-responsive services are not likely to be standardized, offered, or funded.

2.1. Women's predictive factors and outcome measures

Bloom (2000) has long questioned if the criminogenic risks as defined by the RNR principles for men similarly lead to crime for women, or if women's criminality is more a factor of the complex interconnection of race, class, gender, abuse, trauma, substance use; or a combination of all. Indeed, the literature reviewed showed that women are at a differential risk for recidivism than men. The inclusion of gender-responsive predictive factors support the rationality of a women's pathways framework, increase the reliability of predicting recidivism, and validate our contention that research findings from male populations should not be generalized to women.

Moreover, focusing on recidivism as the sole determinant of an effective model of rehabilitation is antiquated and based on research on men and goals for public safety. Return to criminal behavior does not capture the full picture of post-release challenges/successes for women (Sered, 2021). Measures of recovery should go beyond criminal activity or abstinence to include reductions in IPV, increased psychological well-being, education/employment, financial independence, housing, family support, etc. Research should assess multiple outcome measures, during confinement and post-release, to fully determine program effectiveness.

We further question if funding streams for rehabilitation efforts are satisfied with the status quo of risk management (i.e., reduced crime) or if it should incorporate services toward improved well-being. In alignment with the RNR principles, the available state and federally funded programs often require services to be provided only to those deemed to be moderate- to high-risk of committing future crime. Low-risk women and men are ineligible for treatment services upon release from custody, as the system assumes they will recover or, perhaps, “age out” on their own (Andrews & Bonta, 2010; Sampson & Laub, 2003). Continuing to implement and fund interventions based on risk factors determined for men operates under untested assumptions about high-risk women versus low-risk women. Ignoring the critical needs of women has long-term

[3] Ten years after this study, beginning in 2020, via a Governor mandate, the California Department of Corrections and Rehabilitation began to implement Helping Men Recover (Covington et al., 2011) and Helping Women Recover (Covington, rev. 2019) as part of their statewide substance use program curricula. There was no evaluation component to the mandate.

[4] Although we use the term justice-involved women throughout this commentary, it is possible that some participants in the studies identified as transgender men or gender non-conforming persons.

consequences and high costs to society given the involvement of social services and the intergenerational cycle of trauma, substance use, and criminal involvement (Huebner et al., 2009; Van Gundy & James, 2022; Wyrick & Atkinson, 2021).

2.2. Policy implications and recommendations

Covington and Bloom (1999) suggested an important shift of the field's historical question of *"what works"* to *"what is the work?"* The authors state that the work requires a theoretically based model that recognizes the psychological development of women and a treatment model that supports gender- and trauma-responsive programs and policy development. A gender- and trauma-responsive approach considers gender inequalities and the predominant factors that affect justice-involved women through comprehensive, integrated, and culturally relevant services.[5] Toolkits and manuals are readily available to guide policy development of programs, training, supervision, safety, and noncustodial alternatives for women (see Atabay, 2014; Covington & Bloom, 2018; Mahtani, 2020; Miller & Najavits, 2012). The justice system must also recognize the ways it has been disadvantageous by criminalizing sex work or punishing victims of sexual exploitation (Levine, 2017).

As the knowledgebase increases on the lifelong impacts of ACEs, criminal justice officials have a responsibility to address these issues at all levels of supervision in the community and in-custody. As Owen and Mobley (2012) stated, an opportunity always exists to do something different, to address criminal behavior in alternative ways, "breaking the dependence on incarceration". Many justice-involved women can be effectively supervised in community settings that provide services to increase their well-being (Atabay, 2014; Campbell et al., 2020; Messina et al., 2012; Prendergast et al., 2011). Community-based treatment can more efficiently prioritize positive relationships, familial connections, health care, and social support (Mahtani, 2020; Saxena et al., 2016). A person's well-being is dependent on an individual's life realities, histories, circumstances, strengths, *and* opportunities for success—including the availability of appropriate treatment, policies, and funding.

2.3. Conclusion

The RNR principles as currently followed appear to be inadequate in guiding corrections policies for women. In fact, the literature regarding justice-involved women continues to be inadequately integrated into the field of corrections and criminology (Van Gundy & James, 2022). Alternatives, gender- and trauma-responsive practices, programs, and policy guidelines exist, yet they are not typically implemented unless they are provided via extramural funding from independent interests in women's treatment and policy development. Histories of trauma are not unique to women. The prevalence, type, and impact of lifelong trauma may vary by the experience of gender, but trauma is a crucial factor that should be included in treatment opportunities for all justice-involved populations (i.e., boys, girls, men, women, and gender-diverse populations). As of yet, the RNR model has not recognized the significance of trauma as a criminogenic need or trauma-responsive services as it relates to recovery. Perhaps the positive findings regarding trauma-responsive treatment among justice-involved men (Messina & Burdon, 2021; Messina & Schepps, 2021; Wolff et al., 2015) will garner more attention from decision-makers to become a Trauma-Informed and Responsive Corrections environment (Covington & Bloom, 2018; Miller & Najavits, 2012).

[5] See the Gender Responsive Policy and Practice Assessment (GRPPA) as a process to guide the internal assessment of research-based, gender-responsive policies and practices in jails, prisons, and community corrections programs for women. https://nicic.gov/projects/gender-responsive-policy-practice-assessment.

The recommendation of the *Gender-Responsive Theoretical Framework and Guiding Principles for Corrections* (Bloom et al., 2003) as a paradigm of care for justice-involved women was essential in 2003 and remains so in 2022.

Declaration of competing interest

Dr. Messina is a research criminologist at the UCLA Integrated Substance Abuse Programs and the president of Envisioning Justice Solutions, Inc. The authors declare that there is no conflict of interest and there was no funding provided for this commentary from any person or organization.

Acknowledgments

We are grateful to those who contributed decades of scholarly works, dedication to theoretical and program development, research, dissemination of information, committee involvement, and the creation of policy guidelines for criminal-justice-involved women. These criminologists, psychologists, sociologists, LCSWs, nurses, substance use treatment professionals, corrections professionals, and relentless thinkers are cited throughout this article. We are especially grateful for the collaborations of our colleagues Dr. Barbara Bloom, Dr. Stephanie Covington, Retired Chief Deputy Warden Velda Dobson-Davis, Dr.

Christine Grella, Retired Captain Rochelle Leonard, Corrections Program Coordinator Rita Marmolejo, and Dr. Barbara Owen. We are also forever grateful to the peer facilitators who provided years of program facilitation in prison, as well as care and attention to the program participants. Finally, we acknowledge the bravery of the women with lived experience who volunteered to participate in the programs and the research and for sharing their stories over the years.

References

Akers, R. L., & Jennings, W. G. (2015). Social learning theory. In A. R. Piquero (Ed.), *The handbook of criminological theory* (pp. 230–240). https://doi.org/10.1002/9781118512449.ch12

Allen, C. T., Swan, S. C., & Raghavan, C. (2008). Gender symmetry, sexism, and intimate partner violence. *Journal of Interpersonal Violence, 24*(11), 1816–1834. https://doi.org/10.1177/0886260508325496

Andrews, D., Bonta, J., & Wormith, J. S. (2011). The risk-need-responsivity (RNR) model. *Criminal Justice and Behavior, 38*(7), 735–755. https://doi.org/10.1177/0093854811406356

Andrews, D. A. (2012). The risk-need-responsivity (RNR) model of correctional assessment and treatment. In J. A. Dvoskin, J. L. Skeem, R. W. Novaco, & K. S. Douglas (Eds.), *American psychology—Law society series. Using social science to reduce violent offending* (pp. 127–156). Oxford University Press.

Andrews, D. A., & Bonta, J. (1995). *The level of service inventory-revised.* Multi-Health Systems.

Andrews, D. A., & Bonta, J. (2010). Rehabilitating criminal justice policy and practice. *Psychology, Public Policy, and Law, 16*(1), 39–55. https://doi.org/10.1037/a0018362

Andrews, D. A., Bonta, J., & Hoge, R. D. (1990). Classification for effective rehabilitation. *Criminal Justice and Behavior, 17*(1), 19–52. https://doi.org/10.1177/0093854890017001004

Andrews, D. A., Dowden, C., & Rettinger, L. J. (2001). Special populations within corrections. In J. A. Winterdyck (Ed.), *Corrections in Canada: Social reactions to crime* (pp. 170–212). Prentice Hall.

Atabay, T. (2014). Handbook on women and imprisonment. Retrieved on 2/16/2022 from. In *United Nations rules for the treatment of women prisoners and non-custodial measures for women offenders (the Bangkok rules)* (2nd ed.) https://www.unodc.org/documents/justice-and-prison-reform/women_and_imprisonment_-_2nd_edition.pdf.

Babcock, J. C., Miller, S. A., & Siard, C. (2003). Toward a typology of abusive women: Differences between partner-only and generally violent women in the use of violence. *Psychology of Women Quarterly, 27*(2), 153–161. https://doi:10.1111/1471-6402.00095.

Balis, A. F. (2022). Female prisoners and the case for gender-specific treatment and reentry programs. In R. B. Greifinger (Ed.), *Public Health Behind Bar* (pp. 357–368). Springer. https://doi.org/10.1007/978-1-0716-1807-3_23.

Bandura, A., & McClelland, D. C. (1977). *Social learning theory* (Vol. 1). Prentice Hall.

Beck, A. (2001). *Prison and jail inmates at midyear 2000*. Bureau of Justice Statistics Bulletin. U.S. Department of Justice, Bureau of Justice Statistics.

Beck, A. J., & Stroop, J. (2017). *PREA data collection activities, 2017*. US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.

Benda, B. B. (2005). Gender differences in life-course theory of recidivism: A survival analysis. *International Journal of Offender Therapy and Comparative Criminology, 49*(3), 325–342. https://doi.org/10.1177/0306624x04271194

Blanchette, K., & Brown, S. L. (2006). The assessment and treatment of women offenders: An integrative perspective. *John Wiley & Sons Ltd.* https://doi.org/10.1002/9780470713013

Block, C., Blokland, A. A. J., van der Werff, C., van Os, R., & Nieuwbeerta, P. (2010). Long- term patterns of offending in women. *Feminist Criminology, 5*(1), 73–107. https://doi.org/10.1177/1557085109356520

Bloom, B. (2000). Beyond recidivism: Perspectives on evaluation of programs for female offenders in community corrections. In M. McMahon (Ed.), *Assessment to assistance: Programs for women in community corrections* (pp. 107–138). American Correctional Association.

Bloom, B., Owen, B., & Covington, S. (2003). Gender-responsive strategies: Research, practice, and guiding principles for women offenders. Retrieved on September 23, 2020 from https://info.nicic.gov/nicrp/system/files/018017.pdf.

Bonta, J., & Andrews, D. A. (2007). *Risk-need-responsivity model for offender assessment and rehabilitation*. Public Safety Canada.

Bonta, J., Wallace-Capretta, S., & Rooney, J. (2000). A quasi-experimental evaluation of an intensive rehabilitation supervision program. *Criminal Justice and Behavior, 27*(3), 312–329. https://doi.org/10.1177/0093854800027003003

Boppre, B. (2019). Improving correctional strategies for women at the margins: Recommendations for an intersectionally-responsive approach. *Corrections, 4*(3), 195–221. https://doi.org/10.1080/23774657.2019.1588807

Bowles, M. A., DeHart, D., & Webb, J. R. (2012). Family influences on female offenders' substance use: The role of adverse childhood events among incarcerated women. *Journal of Family Violence, 27*(7), 681–686. https://doi.org/10.1007/s10896-012-9450-4

Brennan, T., Breitenbach, M., Dieterich, W., Salisbury, E. J., & van Voorhis, P. (2012). Women's pathways to serious and habitual crime. A person-centered analysis incorporating gender responsive factors. *Criminal Justice and Behavior, 39*(11), 1481–1508. https://doi.org/10.1177/0093854812456777

Brennan, T., Dieterich, W., & Ehret, B. (2008). Evaluating the predictive validity of the COMPAS risk and needs assessment system. *Criminal Justice and Behavior, 36*(1), 21–40. https://doi.org/10.1177/0093854808326545

Breuer, E., Remond, M., Lighton, S., Passalaqua, J., Galouzis, J., Stewart, K. A., & Sullivan, E. (2021). The needs and experiences of mothers while in prison and post-release: A rapid review and thematic synthesis. *Health & Justice, 9*(1), 31. https://doi.org/10.1186/s40352-021-00153-7

Bronson, J., & Carson, E. A. (2019). *Prisoners in 2017*. U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics. https://www.bjs.gov/content/pub/pdf/p17.pdf.

Browne, A., Miller, B., & Maguin, E. (1999). Prevalence and severity of lifetime physical and sexual victimization among incarcerated women. *International Journal of Law and Psychiatry, 22*(3–4), 301–322. https://doi.org/10.1016/S0160-2527(99)00011-4

Brusman-Lovins, L., Lowenkamp, C. T., Latessa, E. J., & Smith, P. (2007). Application of the risk principle to female offenders. *Journal of Contemporary Criminal Justice, 23*(4), 383–398. https://doi.org/10.1177/1043986207309437

Campbell, C. M., Labrecque, R. M., Mohler, M. E., & Christmann, M. J. (2020). Gender and community supervision: Examining differences in violations, sanctions, and recidivism outcomes. *Crime & Delinquency, 68*(2), 284–325. https://doi.org/10.1177/0011128720981905

Carson, E. A. (2020). Prisoners 2019. Bureau of Justice Statistics. Office of Justice Programs. U.S. Department of Justice, Bureau of Justice Statistics. Retrieved on February 2, 2021 from https://www.bjs.gov/index.cfm?ty=pbdetail&iid=7106.

Chesney-Lind, M., & Pasko, L. (2004). *The female offender: Girls, women, and crime*. Sage Publications. https://doi.org/10.4135/9781452232157

Chitsabesan, P., & Bailey, S. (2006). Mental health, educational and social needs of young offenders in custody and in the community. *Current Opinion in Psychiatry, 19*(4), 355–360. https://doi.org/10.1097/01.yco.0000228753.87613.01

Cobbina, J. E. (2010). Reintegration success and failure: Factors impacting reintegration among incarcerated and formerly incarcerated women. *Journal of Offender Rehabilitation, 49*(3), 210–232. https://doi.org/10.1080/10509671003666602

Covington, S. (1998). *Women in prison: Approaches in the treatment of our most invisible population*. Haworth Press.

Covington, S. (2014). *Beyond violence: A prevention program for criminal justice-involved women*. Wiley.

Covington, S. (2016). *Beyond trauma: A healing journey for women* (2nd ed.). Hazelton.

Covington, S. (2019). *Helping women recover: A program for treating addiction* (3rd). Wiley.

Covington, S., & Bloom, B. (1999). *Gender-responsive programming and evaluation for females in the criminal justice system: A shift from what works? to what is the work? Presented at the 51st Annual Meeting of the American Society of Criminology. Toronto, Ontario, Canada, November 17–20, 1999*.

Covington, S., & Bloom, S. (2018). *Moving from trauma-informed to trauma-responsive: A training program for organizational change*. Hazelden Publishing.

Covington, S., Griffin, D., & Dauer, R. (2011). Helping men recover: A program for treating addiction. In *Wiley*.

Covington, S., & Russo, R. (2021). *Healing trauma: A brief intervention for women and gender-Diverse populations*. Hazelden.

Covington, S., & Surrey, J. (1997). The relational theory of women's psychological development: Implications for substance abuse. In S. Wilsnak, & R. Wilsnak (Eds.), *Gender and alcohol: Individual and social perspectives* (pp. 335–351). Rutgers University Press.

Daly, K. (1992). Women's pathways to felony court: Feminist theories of lawbreaking and problems of representation. *Southern California Review of Law and Women's Studies, 2*(1), 11–52. https://www.researchgate.net/publication/284292910.

Daly, K. (1994). *Gender, crime and punishment: Is justice blind or are men and women treated differently by the courts?* Yale University Press.

DeHart, D. D. (2008). Pathways to prison: Impact of victimization in the lives of incarcerated women. *Violence Against Women, 14*(12), 1362–1381. https://doi.org/10.1177/1077801208327018

Emerson, A. M., & Ramaswamy, M. (2015). Theories and assumptions that inform trauma-specific interventions for incarcerated women. *Family & Community Health, 38*(3), 240–251. https://doi.org/10.1097/FCH.0000000000000073

Ford, J. D., Chang, R., Levine, J., & Zhang, W. (2013). Randomized clinical trial comparing affect regulation and supportive group therapies for victimization-related PTSD with incarcerated women. *Behavior Therapy, 44*(2), 262–276. https://doi.org/10.1016/j.beth.2012.10.003

Gajewski-Nemes, J. A., & Messina, N. (2021). Exploring and healing invisible wounds: Perceptions of trauma-focused treatment from incarcerated men and women. *Trauma and Treatment, 10*(5), 2–8.

Gobeil, R., Blanchette, K., & Stewart, L. (2016). A meta-analytic review of correctional interventions for women offenders: Gender-neutral versus gender-informed approaches. *Criminal Justice and Behavior, 43*(3), 301–322. https://doi.org/10.1177/0093854815621100

Grayson, C. E., & Nolen-Hoeksema, S. (2005). Motives to drink as mediators between childhood sexual assault and alcohol problems in adult women. *Journal of Traumatic Stress, 18*(2), 137. https://doi.org/10.1002/jts.20021

Greenfield, S. F., Brooks, A. J., Gordon, S. M., Green, C. A., Kropp, F., McHugh, R. K., Lincoln, M., Hien, D., & Miele, G. M. (2007). Substance abuse treatment entry, retention, and outcome in women: A review of the literature. *Drug and Alcohol Dependence, 86*(1), 1–21. https://doi.org/10.1016/j.drugalcdep.2006.05.012

Greiner, L. E., Law, M. A., & Brown, S. L. (2015). Using dynamic factors to predict recidivism among women: A four-wave prospective study. *Criminal Justice and Behavior, 42*(5), 457–480. https://doi.org/10.1177/0093854814553222

Grella, C. (2008). From generic to gender-responsive treatment: Changes in social policies, treatment services, and outcomes of women in substance abuse treatment. *Journal of Psychoactive Drugs, 40*(sup5), 327–343. https://doi.org/10.1080/02791072.2008.10400661

Grella, C., & Joshi, V. (1999). Gender differences in drug treatment careers among clients in the national drug abuse treatment outcome study. *The American Journal of Drug and Alcohol Abuse, 25*(3), 385–406. https://doi.org/10.1081/ada-100101868

Grella, C., Joshi, V., & Hser, Y. I. (2000). Program variation in treatment outcomes among women in residential drug treatment. *Evaluation Review, 24*(4), 364–383. https://doi.org/10.1177/0193841x0002400402

Grella, C., Stein, J. A., & Greenwell, L. (2005). Associations among childhood trauma, adolescent problem behaviors, and adverse adult outcomes in substance-abusing women Offenders. *Psychology of Addictive Behaviors, 19*(1), 43–53. https://doi.org/10.1037/0893-164x.19.1.43

Grieger, L., & Hosser, D. (2013). Which risk factors are really predictive? An analysis of Andrews and Bonta's "Central Eight" risk factors for recidivism in German youth correctional facility inmates. *Criminal Justice and Behavior, 41*(5), 613–634. https://doi.org/10.1177/0093854813511432

Gutierrez, L., Wilson, H. A., Rugge, T., & Bonta, J. (2013). The prediction of recidivism with aboriginal offenders: A theoretically informed meta-analysis. Retrieved from *Canadian Journal of Criminology and Criminal Justice, 55*(1), 55–99 https://www.muse.jhu.edu/article/496698.

Hamilton, Z., Campagna, M., Tollefsbol, E., van Wormer, J., & Barnoski, R. (2016). A more consistent application of the RNR model. *Criminal Justice and Behavior, 44*(2), 261–292. https://doi.org/10.1177/0093854816678032

Hanson, R. K., Bourgon, G., Helmus, L., & Hodgson, S. (2009). The principles of effective correctional treatment also apply to sexual offenders. *Criminal Justice and Behavior, 36*(9), 865–891. https://doi.org/10.1177/0093854809338545

Harer, M. D., & Langan, N. P. (2001). Gender differences in predictors of prison violence: Assessing the predictive validity of a risk classification system. *Crime & Delinquency, 47*(4), 513–536. https://doi.org/10.1177/0011128701047004002

Harris, M., & Fallot, R. D. (Eds.). (2001). *New directions for mental health services*. Jossey-Bass/Wiley: Using trauma theory to design service systems.

Heilbrun, K., DeMatteo, D., Fretz, R., Erickson, J., Yasuhara, K., & Anumba, N. (2008). How "specific" are gender-specific rehabilitation needs? An empirical analysis. *Criminal Justice and Behavior, 35*(11), 1382–1397. https://doi.org/10.1177/0093854808323678

Hollin, C. R., & Palmer, E. J. (2006). Criminogenic need and women offenders: A critique of the literature. *Legal and Criminological Psychology, 11*(2), 179–195. https://doi.org/10.1348/135532505X57991

Horwitz, A. V., Widom, C. S., McLaughlin, J., & White, H. R. (2001). The impact of childhood abuse and neglect on adult mental health: A prospective study. *Journal of Health and Social Behavior, 42*(2), 184. https://doi.org/10.2307/3090177

Huebner, B. M., DeJong, C., & Cobbina, J. (2009). Women coming home: Long-term patterns of recidivism. *Justice Quarterly, 27*(2), 225–254. https://doi.org/10.1080/07418820902870486

Jordan, J., Kaplan, A., Miller, J. B., Stiver, I., & Surrey, J. (1991). *Women's growth in connection: Writings from the Stone Center*. Guilford Press.

Karlsson, M. E., & Zielinski, M. J. (2020). Sexual victimization and mental illness prevalence rates among incarcerated women: A literature review. *Trauma, Violence and Abuse, 21*(2), 326–349. https://doi.org/10.1177/1524838018767933

Kernsmith, P. (2006). Gender differences in the impact of family of origin violence on perpetrators of domestic violence. *Journal of Family Violence, 21*(2), 163–171. https://doi.org/10.1007/s10896-005-9014-y

King, E. A. (2017). Outcomes of trauma-informed interventions for incarcerated women: A review. *International Journal of Offender Therapy and Comparative Criminology, 61* (6), 667–688. https://doi.org/10.1177/0306624X15603082

Kissin, W. B., Tang, Z., Campbell, K. M., Claus, R. E., & Orwin, R. G. (2014). Gender-sensitive substance abuse treatment and arrest outcomes for women. *Journal of Substance Abuse Treatment, 46*(3), 332–339. https://doi.org/10.1016/j.jsat.2013.09.005

Kruttschnitt, C., Rosemary, G., & Ferraro, K. (2002). Women's involvement in serious interpersonal violence. *Aggression and Violent Behavior, 7*(6), 529–565. https://doi.org/10.1016/S1359-1789(01)00045-3

Kubiak, S., Fedock, G., Kim, W. J., & Bybee, D. (2016). Long-term outcomes of a RCT intervention study for women with violent crimes. *Journal of the Society for Social Work and Research, 7*(4), 661–679. https://doi.org/10.1086/689356

Kubiak, S. P., Fedock, G., Kim, W. J., & Bybee, D. (2017). Examining perpetration of physical violence by women: The influence of childhood adversity, victimization, mental illness, substance abuse, and anger. *Violence and Victims, 32*(1), 22–45. https://doi.org/10.1891/0886-6708.VV-D-15-00177

Landenberger, N. A., & Lipsey, M. W. (2005). The positive effects of cognitive–behavioral programs for offenders: A meta-analysis of factors associated with effective treatment. *Journal of Experimental Criminology, 1*(4), 451–476. https://doi.org/10.1007/s11292-005-3541-7

Leban, L., & Gibson, C. L. (2020). The role of gender in the relationship between adverse childhood experiences and delinquency and substance use in adolescence. *Journal of Criminal Justice, 66*, Article 101637. https://doi.org/10.1016/j.jcrimjus.2019.101637

Levine, J. (2017). Mental health issues in survivors of sex trafficking. *Cogent Medicine, 4* (1), 1–13. https://doi.org/10.1080/2331205X.2017.1278841

Lipsey, M. W., Chapman, G. L., & Landenberger, N. A. (2001). Cognitive-behavioral programs for offenders. *The Annals of the American Academy of Political and Social Science, 578*(1), 144–157. https://doi.org/10.1177/000271620157800109

Lowenkamp, C. T., Latessa, E. J., & Holsinger, A. M. (2006). The risk principle in action: What have we learned from 13,676 offenders and 97 correctional programs? *Crime & Delinquency, 52*(1), 77–93. https://doi.org/10.1177/0011128705281747

Lynch, S. M., DeHart, D. D., Belknap, J., Green, B. L., Dass-Brailsford, P., Johnson, K. M., & Wong, M. M. (2017). An examination of the associations among victimization, mental health, and offending in women. *Criminal Justice and Behavior, 44*(6), 796–814. https://doi.org/10.1177/0093854817704452

Mahtani, S. (2020). Toolkit on gender-responsive non-custodial measures: Prepared for the United Nations Office on Drugs and Crime. Retrieved on 2/16/2022 from https://www.unodc.org/documents/justice-and-prison-reform/20-01528_Gender_Toolkit_complete.pdf.

Mannerfelt, C., & Håkansson, A. (2018). Substance use, criminal recidivism, and mortality in criminal justice clients: A comparison between men and women. *Journal of Addiction, 2018*, 1689637. https://doi.org/10.1155/2018/1689637

McCauley, H. L., Richie, F., Hughes, S., Johnson, J. E., Zlotnick, C., Rosen, R. K., Wechsberg, W. M., & Kuo, C. C. (2020). Trauma, power, and intimate relationships among women in prison. *Violence Against Women, 26*(6–7), 659–674. https://doi.org/10.1177/1077801219842948

McClellan, D., Farabee, D., & Couch, B. (1997). Early victimization, drug use, and criminality: A comparison of male and female prisoners. *Criminal Justice and Behavior, 24*(4), 455–476. https://doi.org/10.1177/0093854897024004004

Messina, N., Bloom, B., & Covington, S. (2020a). Why gender matters: Effective gender-responsive approaches for justice-involved women. In P. Ugwudike, H. Graham, F. McNeill, P. Raynor, F. Taxman, & C. Trotter (Eds.), *Routledge companion to rehabilitative work in criminal justice* (pp. 633–650). Routledge.

Messina, N., Braithwaite, J., Calhoun, S., & Kubiak, S. (2016). Examination of a violence prevention program for serious female offenders. *Violence and Gender, 3*(3), 143–149. https://doi.org/10.1089/vio.2015.0048

Messina, N., & Burdon, W. (2021). Evaluation of a violence and trauma prevention program in secure housing units. *Journal of Community Corrections, 30*, 1–12.

Messina, N., Burdon, W., Hagopian, G., & Prendergast, M. (2006). Predictors of prison-based treatment outcomes: A comparison of men and women participants. *The American Journal of Drug and Alcohol Abuse, 32*(1), 7–28. https://doi.org/10.1080/00952990500328463

Messina, N., Calhoun, S., & Warda, U. (2012). Gender-responsive drug court treatment. *Criminal Justice and Behavior, 39*(12), 1539–1558. https://doi.org/10.1177/0093854812453913

Messina, N., & Grella, C. (2006). Childhood trauma and women's health outcomes in a California prison population. *American Journal of Public Health, 96*(10), 1842–1848. https://doi.org/10.2105/AJPH.2005.082016

Messina, N., Grella, C., Burdon, W., & Prendergast, M. (2007). Childhood adverse events and current traumatic distress. *Criminal Justice and Behavior, 34*(11), 1385–1401. https://doi.org/10.1177/0093854807305150

Messina, N., Grella, C. E., Cartier, J., & Torres, S. (2010). A randomized experimental study of gender-responsive substance abuse treatment for women in prison. *Journal of Substance Abuse Treatment, 38*(2), 97–107. https://doi.org/10.1016/j.jsat.2009.09.004

Messina, N., & Zwart, E. (2021). Breaking the silence and healing trauma for incarcerated women: Peer-facilitated delivery of a brief intervention. *MOJ Women's Health, 10*(1), 8–16. https://doi.org/10.15406/mojwh.2021.10.00280.

Messina, N., Zwart, E., & Calhoun, S. (2020b). Efficacy of a trauma intervention for women in a security housing unit. *Archives of Women Health and Care, 3*(4), 1–9. https://doi.org/10.31038/awhc.2020343.

Messina, N. P., Burdon, W. M., & Prendergast, M. L. (2003). Assessing the needs of women in institutional therapeutic communities. *Journal of Offender Rehabilitation, 37*(2), 89–106. https://doi.org/10.1300/j076v37n02_05

Messina, N. P., & Calhoun, S. (2021). An experimental study of a peer-facilitated violence prevention program for women in prison. *Journal of Interpersonal Violence*. https://doi.org/10.1177/08862605211022063, 088626052110220.

Messina, N. P., & Schepps, M. (2021). Opening the proverbial 'Can of worms' on trauma-specific treatment in prison: The association of adverse childhood experiences to treatment outcomes. *Clinical Psychology & Psychotherapy, 28*(5), 1210–1221. https://doi.org/10.1002/cpp.2568

Michalsen, V. (2019). A cell of one's own? Incarceration and other turning points in women's journeys to desistance. *International Journal of Offender Therapy and Comparative Criminology, 63*(6), 940–959. https://doi.org/10.1177/0306624X13498211

Miller, J. B. (1976). *Toward a new psychology of women.* Beacon Press.

Miller, N. A., & Najavits, L. M. (2012). Creating trauma-informed correctional care: A balance of goals and environment. *European Journal of Psychotraumatology, 3*(1), 1–8. https://doi.org/10.3402/ejpt.v3i0.17246

Miller-Perrin, C., & Wurtele, S. K. (2016). Sex trafficking and the commercial sexual exploitation of children. *Women and Therapy, 40*(1–2), 123–151. https://doi.org/10.1080/02703149.2016.1210963

Mitchell, M. B., & Davis, J. B. (2019). Formerly incarcerated black mothers matter too: Resisting social constructions of motherhood. *The Prison Journal, 99*(4), 420–436. https://doi.org/10.1177/0032885519852079

Morash, M., & Kashy, D. A. (2021). The relevance of women's economic marginalization to recidivism. In *Criminal Justice and Behavio*. https://doi.org/10.1177/00938548211039545. online August 17, 2021.

Najavits, L. M., Weiss, R. D., & Shaw, S. R. (1997). The link between substance abuse and posttraumatic stress disorder in women. *The American Journal on Addictions, 6*(4), 273–283. https://doi.org/10.1111/j.1521-0391.1997.tb00408.x

Olson, D. E., Alderden, M., & Lurigio, A. J. (2003). Men are from Mars, women are from Venus, but what role does gender play in probation recidivism? *Justice Research and Policy, 5*(2), 33–54. https://doi.org/10.3818/jrp.5.2.2003.33

Oser, C., Knudsen, H., Staton-Tindall, M., & Leukefeld, C. (2009). The adoption of wraparound services among substance abuse treatment organizations serving criminal offenders: The role of a women-specific program. *Drug and Alcohol Dependence, 103*, S82–S90. https://doi.org/10.1016/J.DRUGALCDEP.2008.12.008

Owen, B., & Mobley, A. (2012). Realignment in California: Policy and research implications. *Western Criminology Review, 13*, 46–52. Retrieved on February 18, 2022 from https://www.westerncriminology.org/documents/WCR/v13n2/Owen.pdf.

Owen, B., Wells, J., & Pollack, J. (2017). *In search of safety: Confronting inequality in women's imprisonment.* University of California Press.

Owen, B. A. (1998). In the mix: Struggle and survival in a women's prison. In *In the mix: Struggle and survival in a women's prison.* State University of New York Press.

Pearson, F. S., Lipton, D. S., Cleland, C. M., & Yee, D. S. (2002). The Effects of behavioral/cognitive-behavioral programs on recidivism. *Crime & Delinquency, 48* (3), 476–496. https://doi.org/10.1177/0011128702048003006

Pelissier, B. M., Camp, S. D., Gaes, G. G., Saylor, W. G., & Rhodes, W. (2003). Gender differences in outcomes from prison-based residential treatment. *Journal of Substance Abuse Treatment, 24*(2), 149–160. https://doi.org/10.1016/s0740-5472(02)00353-7

Prendergast, M. L., Messina, N. P., Hall, E. A., & Warda, U. S. (2011). The relative effectiveness of women-only and mixed-gender treatment for substance-abusing women. *Journal of Substance Abuse Treatment, 40*(4), 336–348. https://doi.org/10.1016/j.jsat.2010.12.001

Rariden, C., SmithBattle, L., Yoo, J. H., Cibulka, N., & Loman, D. (2021). Screening for Adverse Childhood Experiences: Literature review and practice implications. *The Journal for Nurse Practitioners, 17*(1), 98–104. https://doi.org/10.1016/j.nurpra.2020.08.002

Reed, L. A., Sharkey, J. D., & Wroblewski, A. (2021). Elevating the voices of girls in custody for improved treatment and systemic change in the juvenile justice system. *American Journal of Community Psychology, 67*(1–2), 50–63. https://doi.org/10.1002/ajcp.12484

Reisig, M. D., Holtfreter, K., & Morash, M. (2006). Assessing recidivism risk across female pathways to crime. *Justice Quarterly, 23*(3), 384–405. https://doi.org/10.1080/07418820600869152

Rettinger, L. J., & Andrews, D. A. (2009). General risk and need, gender specificity, and the recidivism of female offenders. *Criminal Justice and Behavior, 37*(1), 29–46. https://doi.org/10.1177/0093854809349438

Salisbury, E. (2016). Treating women offenders. In P. Van Voorhis, & E. Salisbury (Eds.), *Correctional counseling and rehabilitation* (9th ed.). Routledge Press.

Salisbury, E., Boppre, B., & Kelly, B. (2016). Gender-responsive risk and need assessment: Implications for justice-involved women. In F. S. Taxman (Ed.), *1. Handbook on risk and need assessment: Theory and practice.* Routledge.

Salisbury, E. J., & Van Voorhis, P. (2009). Gendered pathways: A quantitative investigation of women probationers' paths to incarceration. *Criminal Justice and Behavior, 36*(6), 541–566. https://doi.org/10.1177/0093854809334076

Salisbury, E. J., van Voorhis, P., & Spiropoulos, G. V. (2008). The predictive validity of a gender-responsive needs assessment. *Crime & Delinquency, 55*(4), 550–585. https://doi.org/10.1177/0011128707308102

SAMHSA. (2014). SAMHSA's concept of trauma and guidance for a Trauma-Informed approach|SAMHSA publications and digital products. U.S. Department of Health and Human Services. Retrieved October 21, 2021, from https://store.samhsa.gov/product/SAMHSA-s-Concept-of-Trauma-and-Guidance-for-a-Trauma-Informed-Approach/SMA14-4884.

Sampson, R. J., & Laub, J. H. (2003). In *, 41. Life-course desisters? Trajectories of crime among delinquent boys followed up to the age of 70* (pp. 555–592). https://doi.org/10.1111/j.1745-9125.2003.tb00997.x (3).

Sarteschi, C. M., & Vaughn, M. G. (2010). Double jeopardy: A review of women offenders' mental health and substance abuse characteristics. *Victims and Offenders, 5*(2), 161–182. https://doi:10.1080/15564881003640728.

Saxena, P., Grella, C. E., & Messina, N. P. (2016). Continuing care and trauma in women offenders' substance use, psychiatric status, and self-efficacy outcomes. *Women & Criminal Justice, 26*(2), 99–121. https://doi.org/10.1080/08974454.2015.1067173

Saxena, P., & Messina, N. (2021). Trajectories of women's victimization to violence. *Health and Justice, 9*(1), 1–12. https://doi.org/10.1186/s40352-021-00144-8

Saxena, P., Messina, N. P., & Grella, C. E. (2014). Who benefits from gender-responsive treatment? *Criminal Justice and Behavior, 41*(4), 417–432. https://doi.org/10.1177/0093854813514405

Scott, C. K., Grella, C. E., Dennis, M. L., & Funk, R. R. (2016). A time-varying model of risk for predicting recidivism among women offenders over 3 years following their release from jail. *Criminal Justice and Behavior, 43*(9), 1137–1158. https://doi.org/10.1177/0093854816632551

Sered, S. S. (2021). Beyond Recidivism and Desistance. *Feminist Criminology, 16*(2), 165–190. https://doi.org/10.1177/1557085120951849

Smith, P., Cullen, F. T., & Latessa, E. J. (2009). Can 14,737 women be wrong? A meta-analysis of the LSI-R and recidivism for female offenders. *Criminology & Public Policy, 8*(1), 183–208. https://doi.org/10.1111/j.1745-9133.2009.00551.x

Steffensmeier, D., & Allen, E. (1998). The nature of female offending: patterns and explanations. In R. Zaplin (Ed.), *Female Offenders: Critical Perspectives and Effective Interventions*. Aspen.

Taxman, F. S., & Caudy, M. S. (2015). Risk tells us who, but not what or how. *Criminology & Public Policy, 14*(1), 71–103. https://doi.org/10.1111/1745-9133.12116

Taxman, F. S., Thanner, M., & Weisburd, D. (2006). Risk, need, and responsivity (RNR): It all depends. *Crime & Delinquency, 52*(1), 28–51. https://doi.org/10.1177/0011128705281754

Thanner, M. H., & Taxman, F. S. (2003). Responsivity: The value of providing intensive services to high-risk offenders. *Journal of Substance Abuse Treatment, 24*(2), 137–147. https://doi.org/10.1016/s0740-5472(02)00352-5

Thompson, A. P., & McGrath, A. (2012). Subgroup differences and implications for contemporary risk-need assessment with juvenile offenders. *Law and Human Behavior, 36*(4), 345–355. https://doi.org/10.1037/h0093930

Van Dieten, M. (2008). *Women offender case management model*. National Institute of Corrections, U.S. Department of Justice.

Van Dieten, M., & MacKenna, P. (2001). *Moving on facilitator's guide*. Orbis Partners.

Van Gundy, A., & James, S. (2022). *The history, evolution, and current state of female offenders: Recommendations for advancing the field*. Routledge.

Van Horn, J. E. (2018). The predictive value of the central eight criminogenic risk factors: A multi-group comparison of dually diagnosed violent offenders with other subgroups of violent offenders. *Addiction & Addictive Disorders, 5*(1), 1–11. https://doi.org/10.24966/aad-7276/100014.

Van Voorhis, P. (2001). Classification of women offenders: A national assessment of current practices. Retrieved on February 18, 2022 from https://www.researchgate.net/publication/237531608.

Van Voorhis, P. (2012). On behalf of women offenders. *Criminology & Public Policy, 11*(2), 111–145. https://doi.org/10.1111/j.1745-9133.2012.00793.x

Van Voorhis, P., Bauman, A., Wright, E. M., & Salisbury, E. (2009). Implementing the women''s risk/needs assessment (WRNAs): Early lessons from the field. *Women, Girls, and Criminal Justice, 10*(6), 89–91. https://doi.org/10.1177/0093854809357442.

Van Voorhis, P., Salisbury, E. J., Wright, E. M., & Bauman, A. (2008). *Achieving accurate pictures of risk and identifying gender-responsive deeds: Two new assessments for women offenders*. U.S. Department of Justice, National Institute of Corrections.

Van Voorhis, P., Wright, E. M., Salisbury, E., & Bauman, A. (2010). Women's risk factors and their contributions to existing risk/needs assessment: The current status of a gender-responsive supplement. *Criminal Justice and Behavior, 37*(3), 261–288. https://doi.org/10.1177/0093854809357442

Vanwesenbeeck, I. (2017). Sex work criminalization is barking up the wrong tree. *Archives of Sexual Behavior, 46*(6), 1631–1640. https://doi.org/10.1007/s10508-017-1008-3

Walmsley, R. (2017). *World female imprisonment list*. Retrieved on February 23, 2021 from (4th ed.). King's College London, International Centre for Prison Studies http://www.prisonstudies.org/sites/default/files/resources/downloads/world_female_imprisonment_list_third_edition_0.pdf.

Ward, T., & Laws, D. R. (2011). *Desistance from sex offending: Alternatives to throwing away the keys*. Guilford Publications.

Ward, T., & Stewart, C. A. (2003). The treatment of sex offenders: Risk management and good lives. *Professional Psychology: Research and Practice, 34*(4), 353–360. https://doi.org/10.1037/0735-7028.34.4.353

Wardrop, K., Wanamaker, K. A., & Derkzen, D. (2019). Developing a risk/need assessment tool for women offenders: A gender-informed approach. *Journal of Criminological Research, Policy and Practice, 5*(4), 264–279. https://doi.org/10.1108/JCRPP-03-2019-0017

Wattanaporn, K. A., & Holtfreter, K. (2014). The impact of feminist pathways research on gender-responsive policy and practice. *Feminist Criminology, 9*(3), 191–207. https://doi.org/10.1177/1557085113519491

Wexler, H., Falkin, G., Lipton, D., & Rosenblum, A. (1990). Outcome evaluation of a prison therapeutic community for substance abuse treatment. In *Drug abuse treatment and jails* (pp. 156–175). National Institute on Drug Abuse Research Monograph Series 118. U.S.

Witkiewitz, K., Warner, K., Sully, B., Barricks, A., Stauffer, C., Thompson, B. L., & Luoma, J. B. (2014). Randomized trial comparing mindfulness-based relapse prevention with relapse prevention for women offenders at a residential addiction treatment center. *Substance Use and Misuse, 49*(5), 536–546. https://doi.org/10.3109/10826084.2013.856922

Wolff, N., Huening, J., Shi, J., Frueh, B. C., Hoover, D. R., & McHugo, G. (2015). Implementation and effectiveness of integrated trauma and addiction treatment for incarcerated men. *Journal of Anxiety Disorders, 30*, 66–80. https://doi.org/10.1016/j.janxdis.2014.10.009

Wooditch, A., Tang, L. L., & Taxman, F. S. (2014). Which criminogenic need changes are most important in promoting desistance from crime and substance use? *Criminal Justice and Behavior, 41*(3), 276–299. https://doi.org/10.1177/0093854813503543

Wright, E. M., van Voorhis, P., Salisbury, E. J., & Bauman, A. (2012). Gender-responsive lessons learned and policy implications for women in prison: A review. *Criminal Justice and Behavior, 39*(12), 1612–1632. https://doi.org/10.1177/0093854812451088

Wyrick, P., & Atkinson, K. (2021). Examining the relationship between childhood trauma and involvement in the justice system. Retrieved February 13, 2022 from nij.ojp.gov: https://nij.ojp.gov/topics/articles/examining-relationship-between-childhood-trauma-and-involvement-justice-system.

Zlotnick, C. (1997). Posttraumatic stress disorder (PTSD), PTSD comorbidity, and childhood abuse among incarcerated women. *The Journal of Nervous and Mental Disease, 185*(12), 761–763. https://doi.org/10.1097/00005053-199712000-00007

Zlotnick, C., Johnson, J., & Najavits, L. M. (2009). Randomized controlled pilot study of cognitive-behavioral therapy in a sample of incarcerated women with substance use disorder and PTSD. *Behavioral Therapy, 40*(4), 325–336. https://doi.org/10.1016/j.beth.2008.09.004

Zlotnick, C., Najavits, L. M., Rohsenow, D. J., & Johnson, D. M. (2003). A cognitive-behavioral treatment for incarcerated women with substance abuse disorder and posttraumatic stress disorder: Findings from a pilot study. *Journal of Substance Abuse Treatment, 25*(2), 99–105. https://doi.org/10.1016/s0740-5472(03)00106-5

Nena P. Messina[a,*], Patricia Esparza[b]

[a] *Envisioning Justice Solutions, Inc., UCLA Integrated Substance Abuse Programs, United States of America*

[b] *Envisioning Justice Solutions, Inc., United States of America*

[*] Corresponding author at: 2551 Galena Avenue #1774, Simi Valley, CA 93065, United States of America.

E-mail address: nmessina@ucla.edu (N.P. Messina).