Psychological Distress among Victimized Women on Probation and Parole: A Latent Class Analysis

Seana Golder,
University of Louisville

Malitta Engstrom,
University of Pennsylvania

Martin T. Hall,
University of Louisville

George Higgins, and
University of Louisville

TK Logan
University of Kentucky

Abstract

Latent class analysis was used to identify subgroups of victimized women (N=406) on probation and parole differentiated by levels of general psychological distress. The nine primary symptom dimensions from the Brief Symptom Inventory (BSI) were used individually as latent class indicators (Derogatis, 1993). Results identified three classes of women characterized by increasing levels of psychological distress; classes were further differentiated by posttraumatic stress disorder symptoms, cumulative victimization, substance use and other domains of psychosocial functioning (i.e., sociodemographic characteristics; informal social support and formal service utilization; perceived life stress; and resource loss). The present research was effective in uncovering important heterogeneity in psychological distress using a highly reliable and easily accessible measure of general psychological distress. Differentiating levels of psychological distress and associated patterns of psychosocial risk can be used to develop intervention strategies targeting the needs of different subgroups of women. Implications for treatment and future research are presented.

Women are among the fastest growing segment of the correctional population. At present, over 200,000 women are incarcerated and more than 1 million women are on probation (Ajinkya, 2012). Approximately one out of every 89 women in the U.S. is involved in the criminal justice system and over 85% are sanctioned within the community (i.e., probation, parole; Glaze & Bonczar, 2011; Greenfeld & Snell, 2000; Greenfeld & Snell, 1999; Sabol & Couture, 2008; Shilton, 2000).

Contact: Seana Golder, Kent School of Social Work, University of Louisville, Louisville, KY, 40292; seana.golder@louisville.edu..

Among justice-involved women, psychological distress, substance use and violent victimization are intersecting epidemics that present a serious threat to public health and functioning. Research has consistently documented rates of psychological distress among justice-involved women that exceed both their male-counterparts and women in the community (Green, Miranda, Daroowalla, & Siddique, 2005; Jordan, Schlenger, Fairbank, & Caddell, 1996; Lynch, DeHart, Belknap, & Green, 2013; Steadman, Osher, Robbins, Case, & Samuels, 2009; Teplin, Abram, & McClelland, 1996). In a study examining the prevalence of serious mental illness (e.g., major depressive disorder, bipolar disorder, schizophrenia spectrum disorder) among people in five jails, 31.0% of females were found to have a current serious mental illness as compared to 14.5% of the males (Steadman et al., 2009). Similarly, in a national survey of women randomly sampled from urban and rural jails, 43% and 32%, respectively, met the lifetime and 12 month criteria for a serious mental illness (Lynch, DeHart, Belknap, & Green, 2012b; Lynch et al., 2013). High levels of posttraumatic stress disorder (PTSD) are also found among females detained in jail. Estimates indicate that approximately a quarter of women in jail meet the criteria for a current PTSD diagnosis (Green, Miranda, Daroowalla, & Siddique, 2005; Teplin et al., 1996); 53% have a lifetime diagnosis of PTSD (Lynch et al., 2012b; Lynch et al., 2013).

Incarcerated women with mental health problems are three times more likely to experience addiction than those without such problems (James & Glaze, 2006). Rates of cooccurring substance use and psychological distress range from 39% to 46% among women in jail (Lynch et al., 2012b; Lynch et al., 2013). In fact, substance abuse/dependence are the most common psychiatric disorders among women in the justice system. Among women in jail, lifetime prevalence of substance use is between 70% and 83% (Jordan et al., 1996; Lynch et al., 2012a; Teplin et al., 1996); they are almost nine times more likely to experience substance abuse or dependence than a comparison group of women in the general population (Jordan et al., 1996; Teplin et al., 1996).

Compounding issues of psychological distress and substance use are histories of interpersonal victimization; up to 80% of women in the criminal justice system have experienced some form of victimization in their lifetimes (Browne, Miller, & Maguin, 1999; El-Bassel et al., 1996; Green et al., 2005; Greenfeld & Snell, 1999; Lynch et al., 2012b; Lynch, Fritch, & Heath, 2012; McClellan, Farabee, & Crouch, 1997; Owen & Bloom, 1995; Reichert, Adams, & Bostwick, 2010). For example, in a study involving jailed women with substance use histories, 25% of women reported sexual abuse as children (El-Bassel et al., 1996). Another study with incarcerated women found that 57% reported childhood victimization and 75% reported adult victimization (McClellan et al., 1997).

While current research has documented the significance of psychological distress, substance use and victimization in the lives of justice-involved women (Bloom, Owen, & Covington, 2003; Bloom, Owen, & Covington, 2004; Daly, 2002-2003; Hall, Golder, Conley, & Sawning, 2013; Salisbury & Van Voorhis, 2009), there remain significant gaps in understanding regarding the relationships among these factors and their implications for practice and policy. In particular, the emphasis on the overall prevalence of these issues obscures the heterogeneity that exists among women in the justice system. The identification of risk profiles among subgroups of justice-involved women has yet to be explored and may

illuminate various, complex elements that affect women's behavior (Reisig, Holtfreter, & Morash, 2006). Establishing risk profiles provides the opportunity to empirically classify subgroups of women based on intersecting characteristics, which can guide the development of targeted, evidence-based risk assessment/management protocols and concomitant intervention and prevention strategies (Lanza & Rhoades, 2013).

In order to address this need, this investigation applied latent class analysis (LCA) with a sample of victimized women on probation and parole. The present study sought to explore whether indicators of general psychological distress could be used to identify distinct subgroups of victimized women on probation and parole and to compare these groups across external indicators of PTSD, cumulative victimization, substance use and other domains of psychosocial functioning that are associated with engagement in high risk behaviors (Nyamathi, 1989) . Comparisons across the external indicators serves several purposes: a) validation of the identified subgroups by confirming the between-group differences; b) further elucidation of the substantive meaning of the subgroups; and c) provision of a more nuanced understanding of the intersections of psychological distress, victimization, substance use and other psychosocial domains among women on probation and parole. As an exploratory study, there were no *a priori* hypotheses regarding the number of possible subgroups or differences and similarities that might arise among the identified subgroups.

Methods

Participants and Procedures

The study sample (N=406) was drawn from women on probation and/or parole in Jefferson County, Kentucky, an urban area that includes Louisville. Participants were recruited by outreach, direct mailings to women on probation and parole in Jefferson County, flyers, word of mouth, Internet, and television and newspaper advertisements from July, 2010 to January, 2012. Eligibility criteria required a) being on probation or parole in Jefferson County; b) being at least 18 years old; c) reporting sexual involvement with men only or with both women and men; and d) reporting any lifetime experience of physical and/or sexual victimization. Eighty-one percent of the women screened were eligible to participate; the final study sample represented approximately one-fifth of all women on probation and parole in Jefferson County at the time recruitment was initiated (Kentucky Department of Corrections, Division of Probation and Parole, personal communication, November, 5, 2010.). Following provision of written informed consent, all interviews were administered in person by trained female staff using audio computer-assisted interviewing (ACASI; NOVA Research Company, 2003). This study was approved by the XX XX XX Institutional Review Board; an NIH Certificate of Confidentiality was obtained.

Data Analysis

The LCA was performed with Mplus 6.0 software; model parameters were estimated via maximum likelihood procedures (Muthen & Muthen, 1998-2007). A series of models were estimated beginning with one class and incorporating additional classes until an optimal solution was obtained. Fit indices and the substantive meaningfulness of the models were evaluated to determine the optimal solution (Muthén, 2003). Model fit was assessed using:

Bayesian information criteria (BIC), whereby a lower BIC value represents better model fit; sample-size adjusted BIC (ABIC); log likelihood value (LL); posterior probabilities; and entropy values (from zero to one for each model; Everitt, Landau, & Leese, 2001; Nylund, Asparouhov, & Muthén, 2007). The bootstrap likelihood ratio test (BLRT) was used to confirm the final number of classes (Nylund et al., 2007). Chi-square analyses examined associations between each of the classes and external variables.

Measures

Latent class indicators

The nine primary symptom dimensions (somatization/seven questions, obsessive compulsive/six questions, interpersonal sensitivity/four questions, depression/six questions, anxiety/six questions, hostility/five questions, phobic anxiety/five questions, paranoid ideation/five questions, and psychoticism/five questions) from the Brief Symptom Inventory (BSI) were used individually as latent class indicators of general psychological distress (Derogatis, 1993). Scores were calculated by computing the mean of the questions for each symptom dimension, which had a range of zero to four, reflecting how bothered/distressed a participant was by the particular symptom (not at all/0 to extremely/4). Alpha reliabilities in the present sample ranged from .80 for paranoid ideation to .91 for depression.

External Variables

Sociodemographic characteristics and correctional status—Respondents' age was provided in years. Race/ethnicity of the participants was described as: Black, non-Hispanic; White, non-Hispanic; and other (Latina, Asian/Pacific Islander, Native American, multi-racial, and other). Intimate partner status was assessed by three categories indicating whether a respondent reported being single, married or cohabitating with a sexual partner of the opposite gender, or being divorced, separated, or widowed at the time of the interview. Five categories described educational attainment: less than a high school diploma/GED; high school diploma/GED; trade/technical training; some college/college graduate; some graduate school/graduate school degree. Current employment status was operationalized as unemployed, employed full or part-time, unemployed due to disability, in school only, or "other." Finally, women were asked if they considered themselves homeless (yes=1; no=0).

Correctional status was assessed by asking women whether they were on probation, parole, or both. Questions adapted from the Addiction Severity Index were used to assess whether participants had been in a controlled environment and/or halfway house/recovery home in the past 12 months (yes=1; no=0) and, if so, the number of days that they had been in a controlled environment during that time (McLellan et al., 1992).

Posttraumatic stress symptoms—The Posttraumatic Stress Diagnostic Scale was used to operationalize four indicators of posttraumatic stress (PDS; Foa, 1995; Foa, Cashman, Jaycox, & Perry, 1997; Sullivan, Cavanaugh, Buckner, & Edmondson, 2009). The first indicator assessed whether or not any traumatic events occurred according to DSM diagnostic criterion (American Psychological Association, 2000). The second indicator measured the severity of re-experiencing, avoidance/ numbing, and arousal symptoms (i.e., sum score of the severity of 17 symptoms; possible range: 0-51; α= .94). The third indicator

reflected the number of life domains in which functioning was impacted by symptoms (possible range: 0 – 8). The PDS may be utilized as a diagnostic screening tool for PTSD; as such, a final indicator was included to assess whether or not (yes = 1; no = 0) the woman met the diagnostic criteria for PTSD.[1] Although there is conceptual and statistical overlap between this final indicator and the other variables operationalizing this domain, this variable was included to provide an understanding of the proportion of respondents who met the diagnostic criteria for PTSD and to increase the interpretability and utility of the results (Golder, Connell, & Sullivan, 2012).

Cumulative victimization—. Cumulative victimization was described by three categories of violence assessing childhood abuse and adulthood intimate and non-intimate partner victimization (IPV; NIPV). Victimization questions were adapted from the National Crime Victimization Survey and IPV literature, including the Revised Conflict Tactics Scale and Tolman's Psychological Maltreatment of Women Inventory (Straus, Hamby, Boney-McCoy, & Sugarman, 1996; Tjaden & Thoennes, 1998, 2000; Tolman, 1999; Tolman, 1989) and have been used in prior research (Golder & Logan, 2010, 2011; Golder & Logan, 2014; Logan & Leukefeld, 2000; Logan, Walker, & Leukefeld, 2001). For each of the victimization categories, three subtypes of victimization (i.e., psychological, physical, sexual) were examined, with the exception of NIPV, where only physical and sexual victimization were assessed. Two variables were used to measure each of the subtypes of victimization: 1) a dichotomous measure (yes=1; no=0), indicating whether or not this type of abuse ever occurred; and 2) a variable that assessed the average frequency with which the abuse occurred (e.g., "only once or twice ever"/1; "a few times a year"/2; "1 to 2 times per month"/3; "1 to 2 times per week"/4; " 3 to 5 times per week"/5; "almost every day"/6; "more than once a day"/7).[2] Alpha reliabilities ranged from .757 to .889 for the child abuse variables; .743 to .849 for IPV; and .673 to .810 for NIPV.

Substance use—Because even a single episode of drug use can have serious adverse implications for women on probation and parole, a dichotomous variable (yes=1; no=0) assessed self-reported use of any of the following illicit substances in the past 12 months: marijuana; cocaine; crack; heroin; opiates other than heroin; hallucinogens; sedatives/ tranquilizers/ barbiturates; methamphetamine; club drugs, and prescription drugs ("... that were not prescribed to you, in excess of what was prescribed for you, and/or for recreational purposes."). In addition, we were also interested in assessing broader patterns of women's substance use, inclusive of both drugs and alcohol, over time. For this reason, six dichotomous variables (yes=1; no=0) assessed lifetime engagement in a year or more of regular substance use (defined as an average of three times per week) for alcohol to intoxication, marijuana, crack/cocaine, opiates, and/or sedatives.

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[1]The PDS assesses Criteria A-F of the DSM-IV PTSD diagnosis; a categorical diagnosis of PTSD can be made using the PDS when a woman meets these criteria. Stated another way, the woman's responses to the PDS meet the diagnostic criteria for PTSD when she reports: "the traumatic event involves either injury or life threat; [she] felt helpless or terrified during the event, endorsement (rating of 1 or higher) of at least one re-experiencing symptom, three avoidance symptoms, and two arousal symptoms; duration of at least one month; and impairment in at least one area of functioning" (U.S. Department of Veterans Affairs, 2014).

[2]A total of 15 items assessed the various subtypes of childhood abuse (psychological/eight questions; physical/four questions; sexual/ three questions). Correspondingly, eight items assessed psychological IPV, five items assessed physical IPV/NIPV, and three items assessed sexual IPV/NIPV.

Informal social support and formal service use—Informal social support was measured by four items from the Medical Outcomes Study social support survey (Higgins, Golder, Hall, & Logan, 2012; Sherbourne & Stewart, 1991). Respondents were asked about the availability of various types of social support when needed (i.e., "to help with daily chores if you were sick"; "to turn to for suggestions about how to deal with a personal problem"; "to do something enjoyable with"; and "to love and make you feel wanted"). The sum of the four items was used to create an overall index of informal social support (range 0-16; higher scores reflect greater levels of social support; alpha reliability: .89).

Three variables were used to assess formal service utilization over the past 12 months: a dichotomous variable (yes=1; no=0) indicating whether a woman reported engaging in drug/alcohol treatment; a variable reflecting the number of domestic violence (DV)-related services received (emergency protection order, calling a hotline, seeking shelter, counseling focused on DV; 0-4 range); and a dichotomous variable (yes=1; no=0) indicating whether the participant received any services related to psychological or emotional problems.

Perceived life stress—Perceived life stress was measured by the summary of a 32-item check-list of negative events that may have occurred during the past 12 months (Turner, Loyd, & Wheaton, 1995). Participants were asked to report whether any of the events had happened to them and/or to close others (i.e., partner/spouse, children). Examples of possible events included: "a serious illness" and "lost a home due to fire, flood, or other disaster." Alpha reliability for this sample was .83; observed range: 0-27.

Resource loss—Loss of material resources was assessed using 22 items from the Conservation of Resources Evaluation which examines the extent of material loss over the last 12 months in areas such as food, clothing, money for transportation and/or children's essentials (Hobfoll & Lilly, 1993; Hobfoll, Johnson, Ennis, & Jackson, 2003). Loss is rated on a seven point scale ("no loss"/0 to "a great deal of loss"/6). Internal reliability was .93; observed range: 0 to 132.

Results

Sociodemographic Characteristics and Correctional Status

Women were on average 37 years old (SD: 10.23); 41.9% were African American, slightly more than half were White (50.5%), and the remainder fell within the other racial/ethnic category (7.6%). The majority of participants reported being single (44.6%), 16.7% reported being married or cohabitating with someone of the opposite gender, and 38.7% reported being separated, divorced or widowed. Slightly more than 27% reported less than a GED or high school diploma, 36% reported a GED or high school diploma, and about 32% reported some college or more. Approximately 29% of the women worked part- or full-time; the remaining 71% reported not working for a variety of reasons. Thirty-four percent of the women reported they were homeless.

The majority of women in the study were on probation (75.6%), while 22.7% were on parole, and a small percentage (1.7%) reported being on both probation and parole. As a

group, participants had spent approximately 47 days in a controlled environment in the past 12 months. (For a detailed description of the sample charateristics, see Golder et al., 2014.)

LCA

Models with one to five classes were analyzed (Table 1). Distal factors (i.e., external variables) were not included in the estimation of the latent class models as this was an exploratory study. Although the smallest BIC value was observed for the four-class model, the BLRT for the four-class model, while statistically significant (p < .001), failed to replicate four out of five bootstrap draws, suggesting this model was not stable. In contrast, the BLRT was both statistically significant and stable in the three-class model and had excellent classification quality, correctly classifying individuals into their respective groups 91% of the time (entropy = .91). Both the three- and four-class models were distinguished by increasing levels of general psychological distress across each of the nine indicators for the identified subgroups; the first class in each model experienced the least psychological distress and the last class experienced the highest level. However, in the four-class model, there were relatively few statistically-significant differences on the external variables between classes two and three and classes three and four. Thus, based on the convergence of statistical evidence and the substantive interpretation of the models, the three-class solution was supported (Muthén, 2003).

Class 1, identified as the Low Psychological Distress (Low Distress) group, accounted for 39.8% of the sample. Women in this group experienced relatively low levels of psychological distress compared to women in the other two subgroups. The next group (Class 2), identified as the Moderate Psychological Distress (Moderate Distress) group, comprised 34.9% of the sample. Finally, the third class, included the remaining 25.2% of the participants; this group reported the highest levels of psychological distress and was identified as the High Psychological Distress (High Distress) group (Table 2; Figure 1).

External Variables and Between-Group Comparisons

Overall, findings for the between-group comparisons on the external variables mirrored those for psychological distress such that increasing levels of risk/distress were observed across each of the three groups (Table 3). Homelessness was the only sociodemographic indicator to evidence a significant difference in the between-group analysis. Among women in the High Distress group, 48.8% reported being homeless, while slightly more than 35% of the Moderate Distress group and 24.3% of Low Distress group reported being homeless.

The Low, Moderate and High Distress groups differed significantly from one another on all the indicators of posttraumatic stress. Women in the Low Distress group experienced the lowest level of PTSD symptoms, while women in the High Distress group experienced the most extreme levels of posttraumatic stress symptoms. Approximately 24% of women in the Low Distress group met the diagnostic criteria for PTSD, while the number of women in the Moderate and High Distress groups with PTSD was more than two and three times higher (58.2% and 76.7% for the Moderate Distress and High Distress groups, respectively).

In terms of victimization, the Moderate and High Distress groups were generally statistically similar; both groups of women experienced significantly more recent and lifetime

victimization than women in the Low Distress group, with the exception of ever experiencing psychological IPV, where there were no statistically-significant differences among the three groups. Women in the High Distress group experienced a higher frequency of childhood psychological victimization and more frequent psychological and physical IPV in adulthood than women in the Moderate and Low Distress groups. In addition, a significantly higher percentage of women in the High Distress group reported experiencing sexual NIPV (76.4%) than women in either of the other two subgroups (46.0% and 63.2%, respectively, for the Low and Moderate Distress groups).

Statistically-significant differences among the subgroups were identified for drug use in the past 12 months and regular use of alcohol to intoxication, opiates and sedatives. Generally, the data trend suggested increasing levels of substance use in each group consistent with the level of psychological distress. However, the pattern of statistical significance was a bit more complex. On every substance use indicator for which there was statistical significance, women in the Low Distress group differed from women in the High Distress group, although not necessarily from women in the Moderate Distress group. Women in the High Distress group were distinguished by the highest rates of regular use of alcohol to intoxication (69.6% compared to 49.2% and 53.2%, respectively, for the Moderate and Low Distress groups) and opiates (50.2% compared to 36.0% and 27.8%, respectively, for the Moderate and Low Distress groups).

The High Distress group evidenced the least amount of informal social support (8.38 compared to 11.32 and 10.37, respectively, for the Low and Moderate Distress groups). In contrast, both the Moderate and High Distress groups evidenced statistically similar and higher levels of domestic violence service utilization. The Moderate and High Distress groups were significantly more likely to have utilized psychological services than the Low Distress group (49.0% and 60.0% for the Moderate and High Distress groups, respectively, compared to 30.1% for the Low Distress group).

Finally, in the areas of resource loss and perceived stress, the pattern of increasing risk/distress from the Low to High Distress groups was again evident with statistically-significant differences between each of the groups.

Discussion

This is the first known study to identify subgroups of victimized women on probation and parole based on indicators of general psychological distress. Indicators of general psychological distress were used to identify distinct subgroups of women because a growing body of research suggests that intersections between mental health, substance use, victimization, and trauma are related to women's involvement in the criminal justice system (Bloom, Owen, & Covington, 2003; Lynch et al., 2013; Reisig, Holtfreter, & Morash, 2006; Salisbury, & Van Voorhis, 2009). As such, there is a critical need to understand heterogeneity in women's experiences to inform practice and policy in nuanced and evidence-based ways. Examination of the group means across the latent class indicators, as well as the indicators of PTSD, indicate that the women in this sample, as a group, appear to experience a great deal of psychological distress. Raw scores on all nine of the symptom

dimensions for the entire sample far exceed clinical thresholds indicative of a mental health problem (Golder & Logan, 2010; Potter & Jenson, 2003). Comparisons of these data to published findings among incarcerated and drug-involved women indicate that raw scores for the present sample were generally higher than those previously observed (Islam-Zward, Vik, & Rawlins, 2007; Schiff, El-Bassel, Engstrom, & Gilbert, 2002; Vik, 2007). However, interpretation of these findings changes substantially when examining the subgroups. In fact, almost 40% of the women (i.e., the Low Distress group) in this study had raw scores on the latent class indicators that were well below published cut-offs indicative of mental health problems. Conversely, among women in the High Distress group, raw scores on all of the latent class indicators were equivalent to or greater than t-scores of 70, placing them in at least the 98th percentile or higher in respect to psychological distress among women community samples (Derogatis, 1993). Thus, the present research uncovered important heterogeneity in psychological distress using a highly reliable and easily accessible measure. As such, findings can be used to enhance mental health screening within probation and parole departments and other care systems that serve women involved in the justice system.

With regard to alcohol and drug use, women in the Moderate and High Distress groups evidenced a number of higher-risk behaviors. The women in the High Distress group had the highest prevalence of drug use in the last 12 months (55.8%). Lifetime history of regular drug and alcohol use tended to be higher in the Moderate and High Distress groups than in the Low Distress groups. Additionally, half of the women in the High Distress group reported a lifetime history of regular use of opiates, and 43.1% regularly used sedatives, tranquilizers or barbiturates at some point in their lives. The regular use of these drugs, especially in tandem, has the potential to place women in the High Distress group at increased risk of drug overdose (Hall et al., 2008). Prior research suggests that substance use may be motivated by self-treatment of psychological and physical distress (Boyd, McCabe, & Teter, 2006; Gilbert et al., 2000; McCabe, Boyd, & Teter, 2009) as hypothesized in the self-medication model (Chilcoat & Breslau, 1998a, 1998b; Hien, Jiang, Campbell, Hu, & Miele, 2010). This model may explain the current findings however, the inability to confirm the temporal ordering of psychological distress and substance use leaves room for alternative explanations. Notwithstanding, the current findings suggest that particularly among women experiencing a high level of distress there is a need for integrated treatment approaches that can address mental health and substance use needs, as well as trauma and other co-occurring psychosocial concerns simultaneously (for a discussion see Engstrom, El-Bassel, & Gilbert, 2012).

Prior research indicates that few individuals involved in community supervision receive needed substance use treatment or ancillary services, and that when it is received, it is of low intensity (Taxman, Perdoni, & Harrison, 2007). Findings from the present study indicate that while most of the women had *not* been in drug treatment in the last year (i.e., only 34%, 43%, and 46% of the Low, Moderate and High Distress groups, respectively, engaged in treatment), women experiencing more psychological distress and victimization were higher users of psychological and domestic violence services during this time period. Notwithstanding these comparably higher levels of utilization of specific services, there remained a considerable portion of women in the Moderate and High Distress groups who

did not access services despite complex needs. For example, 40% and 51% of women in the Moderate to High Distress groups, respectively, reported not receiving psychological services in the past 12 months. This finding suggests the importance of policies and practices that expand outreach, assessment, referral and linkage to services that address psychological distress and concomitant concerns among victimized women on probation and parole.

As with substance use, there was an increasing pattern of cumulative victimization across the three groups. Prior research has found that childhood victimization is associated with increased psychological distress in adulthood across a variety of populations, including women in the justice system (Edwards, Holden, Felitti, & Anda, 2003; Kennedy, Tripodi, & Pettus-Davis, 2013; Varese et al., 2012). Specifically, a dose-response model has been used to describe this relationship such that as the number of different types of abuse experienced increases, subsequent psychological distress also increases (Edwards, Holden, Felitti, & Anda, 2003). For example, in a random sample of 159 incarcerated women, individuals who experienced childhood physical *and* sexual abuse were 2.4 times more likely to experience current psychological distress (e.g., psychosis) than women who experienced either childhood physical or sexual abuse alone (Kennedy, Tripodi, & Pettus-Davis, 2013). Although the present research did not specifically test the dose-response model, our findings underscore this association. The dose-response model is also evident when examining the increased prevalence of PTSD across the three groups. Among the women who experienced the lowest levels of childhood victimization, the Low Distress group, less than a quarter met the diagnostic criteria for PTSD; in contrast, rising levels of childhood victimization among the Moderate and High Distress subgroups were associated with increased levels of PTSD (58.2% and 76.1%, respectively).

In regard to adult violence, the subgroups were distinguished by differences in the frequency of psychological and physical IPV and the experience of sexual NIPV, with the High Distress group reporting the greatest frequency of adult victimization. Prior research has demonstrated that women who experience IPV are disproportionately affected by psychological distress compared to women who do not experience IPV (Dutton et al., 2006; Golder et al., 2012; Golding, 1999; Jones, Hughes, & Unterstaller, 2001; Schiff, El-Bassel, Engstrom, & Gilbert, 2002). More specifically, the current findings are consistent with research that shows that increased severity and frequency of physical and psychological IPV, in particular, are associated with greater psychological distress, generally, and PTSD, specifically (Dutton et al., 2006). Finally, the pattern of cumulative victimization across the three subgroups should also be understood in the context of evidence that childhood victimization is associated with increased likelihood of experiencing IPV in adulthood (Bensley, Van Eenwyk, & Wynkoop Simmons; Desai, Arias, Thompson, & Basile, 2002; Engstrom, El-Bassel, Go, & Gilbert,2008; Whitfield, Anda, Dube, & Felitti, 2003).

Taken together the results of this study suggest that there are subgroups of victimized women on probation and parole who experience especially complex combinations of needs that require multifaceted assessment and intervention strategies. Of relevance is research that finds that integrated mental health and substance use treatment is associated with lower costs and better outcomes (e.g., reduced substance use, improved psychiatric symptoms and

functioning, reduced re-incarceration; SAMHSA, ND). Similarly, there is increasing recognition that the experiences of victimization and trauma play significant roles in women's involvement in the criminal justice system. As such, service delivery for this population should not only be integrated, but trauma informed (for further discussion of trauma-informed and trauma-specific care see The SAMHSA National GAINS Center, 2011). For example, The Boston Consortium Model: Trauma-Informed Substance Abuse Treatment for Women (Amaro et al., 2005) is a trauma-informed, integrated approach to address co-occurring issues related to substance use, mental health, and trauma. Its comprehensive model has been integrated into substance abuse treatment programs serving clients experiencing multiple stressors, including high rates of court-ordered participation, and could be adapted for use with women on probation and parole (Amaro et al., 2007).[3]

There are several limitations to this research. This study focused exclusively on women on probation and parole with experiences of victimization and was restricted to a single urban county in the southern United States. Given the prevalence of victimization among justice-involved women, the most relevant questions are not limited to identifying differences between victimized and non-victimized women. Rather, research that helps highlight clinically meaningful within group differences is necessary to inform targeted interventions for this population. Participants in this study were not randomly selected and these results are not generalizable to all women on probation and parole. Women who responded to the recruitment strategies and were subsequently enrolled as participants may differ in substantively meaningful ways from women who did not participate. Women who reported only having sex with other women were excluded from participation. The dynamics of intimate partner violence between same gender partners may be similar to and/or distinct from violence between opposite gender partners among women on probation and parole with histories of victimization; however, this question was outside the focus of the present study. Further attention to this issue is an important priority for future research. The present study is cross-sectional; inferences regarding the temporal sequencing of variables should be viewed cautiously. Finally, this research relied on self-reports of sensitive information that may have yielded underreports of some experiences and behaviors. However, the use of ACASI technology minimizes this risk; ACASI technology can enhance reporting of potentially sensitive information by increasing privacy (e.g., only the respondent can see and hear the questions being asked and the corresponding responses), particularly as compared to interviewer-administered questionnaires (Metzger et al., 2000; Schroder, Carey, & Vanable, 2003; Wolff & Shi, 2012).

This study advances knowledge regarding the heterogeneity of clusters of challenges experienced by victimized women on probation and parole and highlights intersections between psychological distress, substance use, victimization, and other psychosocial factors. This research identified distinct subgroups of women who experience particularly high levels of psychological distress and multiple, co-occurring concerns, and who, as a

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[3]The Boston Consortium Model is listed on SAMHSA's National Registry of Evidence-Based Programs and Practices, which is a searchable online registry of substance abuse and mental health interventions (http://www.samhsa.gov/nrepp). In addition, The SAMHSA National GAINS Center has published an overview of trauma-specific interventions for justice-involved individuals (The SAMHSA National GAINS Center, 2011).

consequence, may be at increased risk for negative outcomes. Identifying higher risk women and providing integrated, trauma-informed services to address their complex needs and challenges may be a pivotal step toward improved mental health and reduced substance use, re-victimization, and criminal justice involvement among women on probation and parole with histories of victimization (Engstrom, El-Bassel, Go, & Gilbert,2008; Johnson et al., 2011; The SAMHSA National GAINS Center, 2011).

Acknowledgments

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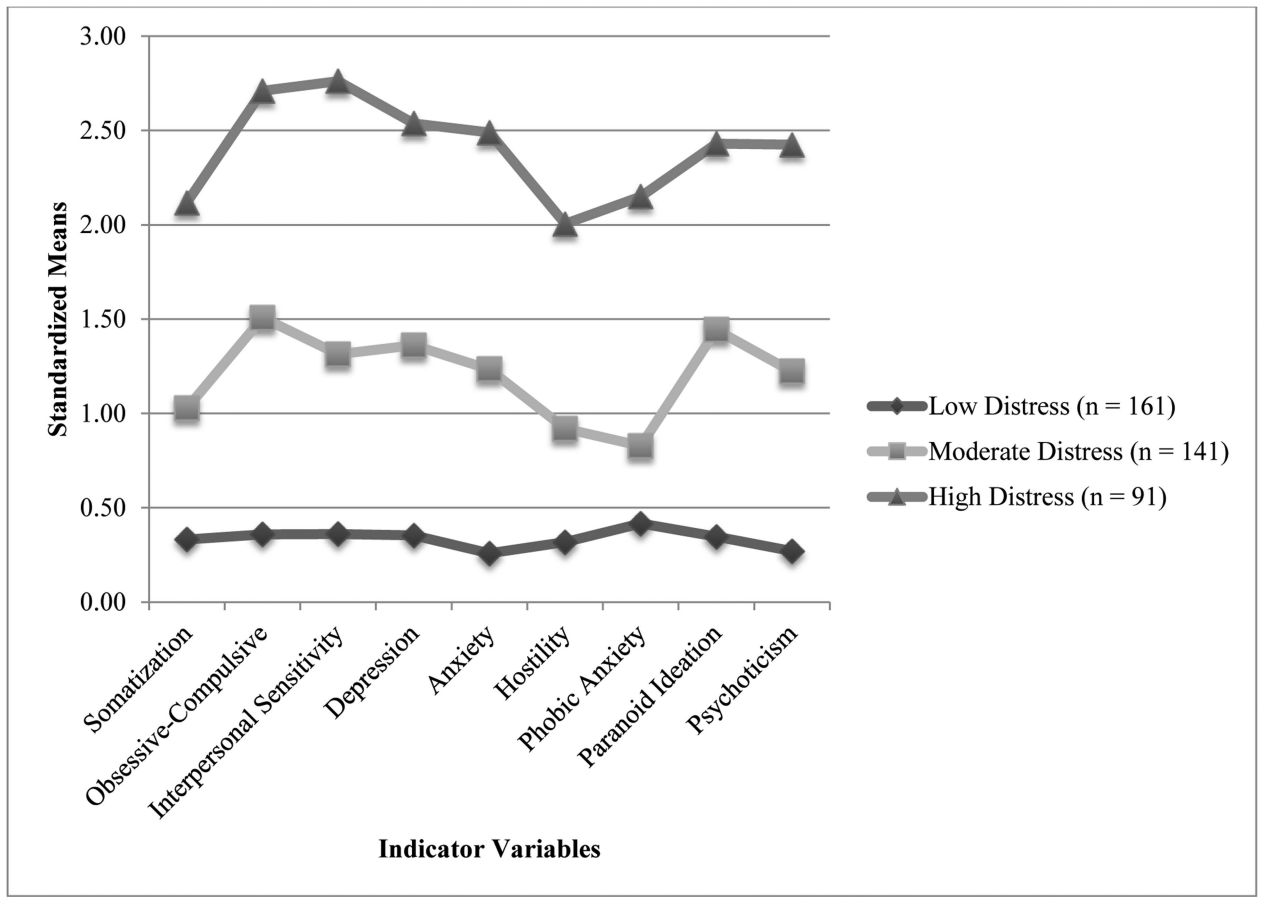
Figure 1.
Standardized mean scores of three subgroups of victimized women on probation and parole across nine latent class indicator variables.

Table 1

Statistics for Latent Class Models, One to Four Classes: BIC; ABIC; LL; and Entropy.

Model	Description	BIC	Adjusted BIC	LL	Entropy
1	One-class	10218.375	10161.259	−5055.175	---
2	Two-class	7823.845	7734.998	−3827.903	.971
3	Three-class	7282.964	7162.385	−3527.455	.912
4	Four-class	6862.851	6710.541	−3287.391	.931
5	Five-class	6794.589	6610.548	−3276.339	.910

Table 2

Means and standard deviations/standard errors for the sample and identified classes on the latent class indicators.

	Sample[1] (N= 404)		Class 1: Low Distress Group (n=161)		Class 2: Moderate Distress Group (n=141)		Class 3: High Distress Group (n=91)	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
General Psychological Distress								
Somatization	1.03	.89	0.33	0.03	1.02	0.08	2.11	0.12
Obsessive-Compulsive	1.43	1.03	0.35	0.02	1.50	0.10	2.71	0.11
Interpersonal Sensitivity	1.31	1.09	0.36	0.04	1.31	0.15	2.76	0.10
Depression	1.25	1.04	0.35	0.04	1.36	0.17	2.53	0.08
Anxiety	1.18	.99	0.25	0.02	1.23	0.10	2.48	0.12
Hostility	.94	.87	0.31	0.02	0.91	0.09	2.00	0.10
Phobic Anxiety	.91	1.00	0.41	0.05	0.82	0.08	2.15	0.16
Paranoid Ideation	1.31	.95	0.34	0.03	1.44	0.11	2.43	0.09
Psychoticism	1.17	.96	0.27	0.02	1.22	0.12	2.42	0.10

[1] All analyses for the sample conducted with SPSS; all analyses for the latent classes conducted with Mplus. Mplus data are raw data.

Table 3

Sample mean/percentages and between-group differences: PTSD, cumulative victimization, substance use and other psychosocial factors.[1]

	Sample		Low Distress Group		Moderate Distress Group		High Distress Group		Chi-Square
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
PTSD									
Criterion A	85.43%	.35	76.1%^{A}	0.03	91.2%^{B}	0.02	92.2%^{B}	0.02	16.543**
Symptom severity	18.16	14.07	10.02^A	0.85	19.50^B	1.09	28.83^C	1.37	152.188**
Count of life domains	3.26	2.82	1.47^A	0.17	3.80^B	0.22	5.31^C	0.24	184.891**
PTSD	48.88%	.50	23.5%^{A}	0.03	58.2%^{B}	0.04	76.1%^{C}	0.04	101.673**
Childhood Victimization									
Psychological (Ever)	75.25%	.43	68.3%^{A}	0.03	76.2%^{AB}	0.03	84.9%^{B}	0.03	9.994**
Psychological (Frequency)	1.38	1.46	0.97^A	0.10	1.342^B	0.12	2.07^C	0.16	32.833**
Physical (Ever)	64.11%	0.48	57.4%^{A}	0.04	61.0%^{A}	0.04	78.9%^{B}	0.04	14.282**
Physical (Frequency)	1.17	1.43	0.84^A	0.09	1.075^A	0.12	1.82^B	0.16	25.189**
Sexual (Ever)	38.86%	.48	33.2%^{A}	0.038	37.3%^{AB}	0.04	50.0%^{B}	0.05	6.760*
Sexual (Frequency)	.79	1.34	0.63^A	0.09	0.743^{AB}	0.11	1.11^B	0.16	6.310*
IPV									
Psychological (Ever)	95.54%	.20	93.5%	0.02	96.3%	0.01	97.8%	0.01	2.876
Psychological (Frequency)	1.06	1.47	0.56^A	0.09	1.11^B	0.13	1.77^C	0.18	38.253**
Physical (Ever)	89.60%	.30	84.4%^{A}	0.02	91.8%^{B}	0.02	94.8%^{B}	0.02	8.260*
Physical (Frequency)	.29	.65	0.14^A	0.03	0.29^B	0.05	0.54^C	0.10	16.654**
Sexual (Ever)	53.22%	.49	39.5^A	0.04	57.7%^{B}	0.04	68.7%^{B}	0.04	24.809**
Sexual (Frequency)	.13	.50	0.04^A	0.02	0.23^B	0.065	0.163^B	0.05	11.736*
Non-Intimate Partner Violence									
Physical (Ever)	56.68%	.49	44.1%^{A}	0.04	61.4%^{B}	0.04	70.1%^{B}	0.04	20.082**

	Sample		Low Distress Group		Moderate Distress Group		High Distress Group		Chi-Square
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Physical (Frequency)	.07	.31	0.01^A	0.01	0.10^B	0.03	0.13^B	0.04	13.589**
Sexual (Ever)	59.65%	.49	46.0%^{A}	0.04	63.2%^{B}	0.04	76.4%^{C}	0.04	27.059**
Sexual (Frequency)	.08	.42	0.01^A	0.00	0.11^B	0.03	0.16^B	0.07	10.731**
Substance Use									
Use past 12 months	46.04%	.49	38.1%^{A}	0.03	48.0%^{AB}	0.04	55.8%^{B}	0.05	8.258*
Regular Alcohol Use	55.79%	.49	53.2%^{A}	0.04	49.2%^{A}	0.04	69.6%^{B}	0.04	9.458**
Regular Marijuana Use	73.23%	.44	73.8%	0.03	72.4%	0.04	73.4%	0.04	0.063
Regular Crack/Cocaine Use	57.77%	.49	54.8%	0.04	57.7%	0.04	62.7%	0.05	1.472
Regular Opiate Use	36.22%	.48	27.8%^{A}	0.03	36.0%^{A}	0.04	50.2%^{B}	0.05	12.597**
Regular Sedative Use	31.79%	.46	22.4%^{A}	0.03	34.7%^{B}	0.04	43.1%^{B}	0.05	13.013**
Other Psychisocial Factors									
Informal Social Support	10.24	4.45	11.32^A	0.32	10.37^B	0.35	8.38^C	0.49	24.524**
Drug Treatment	40.35%	.49	34.3%	0.03	43.4%	0.04	45.7%	0.05	4.372
DV Services	1.4950	1.29	1.23^A	0.09	1.54^B	0.11	1.84^B	0.13	14.256**
Psychological Services	44.28%	.49	30.1%^{A}	0.03	49.0%^{B}	0.04	60.0%^{B}	0.04	26.583**
Resource Loss	57.35	34.55	46.26^A	2.79	56.08^B	2.68	76.65^C	3.08	51.866**
Perceived Stress	7.5025	5.04	5.55^A	0.34	7.71^B	0.43	10.29^C	0.51	61.175**
Homeless	34.24%	.47	24.3%^{A}	0.03	35.2%^{B}	0.04	48.8%^{C}	0.05	16.616**

*
p .01

**
p .05

[1]The same superscripts denote that means between the two groups for each variable are statistically equivalent (i.e., not significantly different).