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## Borderline Personality Disorder and Axis I Psychiatric and Substance Use Disorders among Women Experiencing Homelessness in Three U.S. Cities

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### Abstract

**Purpose**—In this study we report prevalence rates of Borderline Personality Disorder (BPD) and Axis I psychiatric and substance use disorders among randomly selected women who were experiencing episodes of homelessness in three U.S. cities.

**Methods**—The sample consists of 156 women, 79 from Omaha, NE, 39 from Pittsburgh, PA, and 38 from Portland, OR. It included 140 women from shelters and 16 women from meal locations. Latent class analysis was used to evaluate BPD symptoms.

**Results**—A large majority of the women (84.6%) met criteria for at least one lifetime psychiatric disorder, about three-fourths (73.1%) met criteria for a psychiatric disorder in the past year, and 39.7% met past-month criteria for a psychiatric disorder. Approximately three-fourths of the sample (73.7%) met lifetime criteria for at least two disorders, about half (53.9%) met criteria for at least three lifetime disorders, and approximately one-third (39.1%) met criteria for four or more disorders. Latent class analyses indicated that 16.7% of the women could be categorized as low self-harm BPD and 19.9% high self-harm BPD.

**Conclusions**—In shelters and in treatment settings, these women will present with complex histories of multiple serious psychiatric disorders. They are highly likely to manifest symptoms of BPD, posttraumatic stress disorder, and substance abuse disorders in addition to other psychiatric symptoms which will add to clinical complications.

## Keywords

Homeless women; psychiatric disorders; substance use disorders

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Although several studies have reported rates of DSM-IV Axis I disorders among women experiencing homelessness, fewer have reported on Axis II personality disorders [see reference #1 for an international review of diagnostic studies]. Here we report prevalence rates of selected Axis I psychiatric and substance use disorders and rates for Axis II, Borderline Personality Disorder (BPD) among randomly selected women who were experiencing an episode of homelessness in Omaha NE, Pittsburgh, PA, or Portland, OR.

## Psychiatric and Substance Use Disorders among Homeless Women

Based on the 1990 data from St. Louis ( $n = 300$ ) the rate of major depression among homeless women was about twice that in comparable population samples (24.7%). About one-third of the women met criteria for post-traumatic stress disorder (PTSD). Seventy-two percent met criteria for a least one lifetime psychiatric diagnosis [2]. Other studies have reported similar rates of psychiatric and substance use disorders. For example, Zima, Wells, and Duan [3] reported that 72% of homeless mothers met lifetime criteria for a psychiatric or substance use disorder. Bassuk and colleagues [4] found that 72.8% of their sample of homeless mothers met criteria for at least one lifetime diagnosis. North and colleagues' [5] reported growth in Axis I disorders in St. Louis between 1980 and 2000 among both men and women, largely accounted for by an increase in major depression, predominantly among women, at all three of their measurement points. Alcohol use disorders also increased substantially among women across that time, and drug use disorders increased for both men and women. In 2000, substance use disorders accounted for 69% of the disorders among the St. Louis women.

A close look at the risk factors for homelessness among women indicates significant overlap with risks for BPD. Patterns of adult and childhood emotional and physical abuse, relationships problems, and comorbid Axis I disorders are congruent with this potential diagnosis. For example, in a three-year longitudinal study of homeless and runaway youths from mid-adolescence to young adulthood, Whitbeck and colleagues [6] reported high levels of dissociative symptoms, self-mutilating behaviors, suicide attempts, and relationship problems among homeless and runaway young adult women. It is possible that BPD may be an uninvestigated contributor to homelessness among young women.

## METHOD

### Participant Recruitment

Data were collected from women in three cities (i.e., Omaha, NE, Pittsburgh, PA, and Portland, OR) as part of a pilot study designed to test a sampling design and measures for use with homeless women. We defined homelessness based on the criteria used in the Steward A. McKinney Act of 1987 [7], supplemented with the addition of individuals who were “doubling up” [8]. The women in shelters were by definition considered to be homeless. Women interviewed at meal locations self-identified as homeless and were

screened regarding meeting the McKinney act criteria. The interviews were conducted between August 2010 and May 2011 to account for the effects of seasonal changes on sampling outcomes. Prior to the interview the women were screened for mental status and sobriety before they were asked to give informed consent.

A total of 561 potential participants were selected to participate from summer 2010 through the winter of 2011. Two hundred and seven women (36.9%) were missed, either because they did not respond to the letters at shelters or because project staffers were unable to make contact in meal or outdoor locations. One hundred forty-six contacts (26%) were ineligible because they did not meet our criteria for homelessness (n = 64), gender (n = 33), age (n = 38), or having been selected at a meal or outdoor location when they had been in a shelter within the previous week (n = 11). Forty-five eligible contacts (8% of the potential participants; 21.6% of the eligible and contacted participants) refused to be interviewed. The final analytic sample consists of the 156 women who completed the diagnostic interview, including 79 from Omaha, NE, 39 from Pittsburgh, PA, and 38 from Portland, OR. The sample included 140 women from shelters and 16 women from meal locations.

## Measures

Lifetime, past-year, and past-month criteria for DSM-IV-TR (2000) Axis I disorders were assessed with the Composite International Diagnostic Interview (CIDI) [9]. Due to time constraints, only a subset of the CIDI modules was included, and standardized scoring algorithms were used to obtain diagnoses based on DSM-IV criteria. For anxiety disorders, only *Post-Traumatic Stress Disorder* was assessed. For mood disorders, we assessed the following: *Minor Depressive Disorder (with hierarchy)*, *Major Depressive Episode*, *Major Depressive Disorder (with hierarchy)*, *Dysthymia (with hierarchy)*, and *Bipolar I-II-Sub-threshold Disorders*. The hierarchy is used for all mood disorders to better align with DSM-IV-TR criteria and for comparison with nationally representative samples [9, 10]. The *Bipolar I-II-sub-threshold* variable includes women who met criteria for Bipolar I, Bipolar II, or Bipolar sub-threshold disorders, which are mutually exclusive diagnostic categories. We also assessed alcohol, substance, and nicotine use disorders. *Alcohol abuse* includes women who met criteria for alcohol abuse, with or without dependence. Similarly, *Drug Abuse* includes those who met criteria for drug abuse, with or without dependence. *Alcohol dependence*, *drug dependence*, and *nicotine dependence* also are reported separately.

We assessed *Borderline Personality Disorder* (BPD) using a standardized version of the Diagnostic Interview for DSM-IV Personality Disorders (DIPD-IV) [11], which was adapted (in collaboration with the author of the DIPD-IV for the present study to be administration by lay-interviewers. The DIPD-IV assesses past 2-year criteria for BPD. Because of the complexity of BPD, and strong arguments regarding BPD subtypes [12], we used latent profile analysis to identify categories of women who had similar patterns of BPD symptoms. As reported elsewhere [13 OMITTED FOR MASKED REVIEW, 2014], we identified two BPD subtypes consistent with those outlined by Zanarini [12]; specifically, a group characterized by high levels of all BPD symptoms but with low self-harm (low self-harm group) and a group characterized by high levels of all BPD symptoms, including self-harm (high self-harm group). In this paper we report results for the two BPD groups separately

and combined (i.e., categorized in either of the two BPD subgroups, which we refer to simply as BPD). Further details are provided by [13 OMITTED FOR MASKED REVIEW, 2014].

Only 132 women completed the DIPD-IV, as this measure was not initially included in the study. The missing responses to the DIPD-IV may be considered to be missing by design [14] which theoretically results in data that qualify as missing at random [15]. Under the condition of missing at random, multiple imputation may be used to provide reasonably unbiased parameter estimates [16]. To obtain a complete dataset for our analyses, we estimated 100 multiple imputation samples to estimate the BPD status for the 24 women who did not complete the DIPD-IV. Importantly, the percentages of women who were identified as BPD with the imputed values were within  $\pm 2\%$  of the percentages for the women who were identified as BPD in the 132 subsample. Moreover, the results of our correlation analyses (see below) did not differ substantively for the full dataset relative to the reduced dataset. We should note the use of multiple imputation to estimate diagnostic prevalence rates is common [17, 18].

## RESULTS

Sample characteristics are reported in Table 1. Lifetime, past year, and past month prevalence rates of Axis I disorders and the past two-year prevalence of BPD are reported in Table 2. Almost half of the women met lifetime criteria for PTSD, nearly one-third met past-year criteria, and approximately one-fifth met past-month criteria. The most prevalent mood disorders were Major Depressive Episode (MDE), Major Depressive Disorder (MDD), and Bipolar I-II-sub Disorders. Half of the women met lifetime criteria for MDE, slightly fewer met past-year criteria, and slightly fewer than half met past-month criteria. Nearly one-third of the women met lifetime criteria for MDD, about one-fourth met past-year criteria, and approximately one-tenth met past-month criteria. Nearly one-fourth of the women met lifetime criteria for a Bipolar I-II-sub-threshold disorder and nearly all of these women also met past-year criteria for a Bipolar I-II-sub-threshold disorder, while slightly more than one-tenth met past-month criteria. Just over half of the sample met lifetime criteria at least one mood disorder.

Nearly three-fourths of the women met lifetime criteria for a substance use disorder (SUD). More than half of the women met lifetime criteria for alcohol abuse (with or without dependence), drug abuse with or without dependence, and nicotine dependence. Slightly over two-fifths met lifetime criteria for drug dependence, slightly less than one-fifth met past-year drug dependence criteria, and slightly less than one-tenth were currently (past-month) drug dependent. The women were more likely to be drug dependent than alcohol dependent. Slightly more than one-fourth of the sample met lifetime criteria for alcohol dependence, one-tenth for past-year, and only 1.9% were currently (past-month) dependent on alcohol. Considering BPD further, 36.6% met past 2-year criteria. Nearly one-fifth (19.9%) fell into the high self-harm BPD group while 16.7% fell into the low self-harm BPD group.

The percentages of our sample with one, two, three, and four or more lifetime, past year, and past month disorders are reported at the bottom of Table 2. Note that the past-year values include BPD (low or high self-harm). Also note that nicotine dependence was not included in computing the number of diagnosed disorders. As can be seen, a large majority of the women met criteria for at least one lifetime psychiatric disorder, almost three-fourths met criteria for a psychiatric disorder in the past year, and approximately two-fifths currently (past-month) met criteria for a psychiatric disorder. Approximately three-fourths of the sample met lifetime criteria for at least two disorders, about half met criteria for three or more lifetime disorders, and approximately one-third met criteria for four or more lifetime disorders. Nearly one-fourth currently met criteria (past-month) for two or more disorders and about one-tenth currently met criteria for three or more disorders.

### Comorbidity

Co-occurring disorders by type of disorder are reported in Table 3. About one-third of the women met lifetime criteria for PTSD and a mood disorder or PTSD and a SUD. Current (past-month) comorbidity for PTSD and mood disorder was 9.6% and was 3.2% for PTSD and SUD. Nearly one-half of the women met lifetime criteria for a mood disorder and a substance use disorder, but fewer currently (past-month) met criteria for both types of disorders. About one-fourth of the women reported co-occurring past-year mood disorder and BPD, 17.3% co-occurring PTSD and BPD, and 16% co-occurring SUD and BPD.

Among those with three or more lifetime disorders, the most frequent was PTSD, and a mood disorder together with a SUD. Past-year BPD was most likely to co-occur with a mood disorder and PTSD or a mood disorder and a SUD. The rates of comorbidity were so high among the women that we went on to assess lifetime prevalence of four or more disorders. Seven percent met past-year criteria for PTSD, a mood disorder, a SUD, and BPD.

### Comparing Homeless Women and Women in the General Population

We compared the prevalence rates of psychiatric disorders among our sample of homeless women to those of women who participated in the National Comorbidity Survey Replication (NCS-R), which provides estimates for the general U.S. population [19, 20]. The prevalence of lifetime PTSD among our sample was more than four times higher than that of women in the general population, and the prevalence of past-year PTSD was more than five times higher than that of women in the general population. The rate of lifetime MDD among the homeless women was closer to that reported by the NCS-R women, but the rate of past year MDD was three times higher in our sample than women in the NCS-R sample. The prevalence of lifetime Bipolar I-II-sub disorders among our sample was more than five times that of women in the general population and the prevalence of past year Bipolar I-II-sub disorders was approximately eight times higher than women in the general population.

The differences in the prevalence of SUD were particularly striking. Rates of lifetime alcohol abuse with or without dependence were three times higher for our sample of homeless women than for NCS-R women, and past-year rates were more than eight times higher. Rates of lifetime drug abuse with and without dependence were 12 times higher for

homeless women compared to women in the general population and rates of past-year drug abuse were more than 23 times higher. Because we could not locate published reports of NCS-R prevalence of alcohol dependence and drug dependence for females only, our comparisons for these disorders are for the NCS-R total sample. The homeless women were five times more likely than men and women in the general population to meet lifetime criteria for alcohol dependence, and eight times more likely to meet past-year criteria for alcohol dependence. They were 14 times more likely to meet lifetime criteria for drug dependence than men and women in the NCS-R sample, and about 42 times more likely to meet past-year criteria for drug dependence. They were more than three times more likely to be current (past-year) smokers. We could not locate exact comparisons for the personality disorders. Our past two-year prevalence of BPD was more than twenty-six times that of lifetime prevalence reported by Lenzenweger and colleagues [21].

## Discussion and Conclusions

We found somewhat higher prevalence rates of psychiatric disorders among women experiencing episodes of homelessness than reported in previous studies. We doubt that this is a sampling artifact in that we sampled women from three different cities, one in the East, one Midwest, and one West, and at different times of the year. Prevalence rates across the cities were very similar, but where differences occurred, lifetime rates tended to be slightly lower in the Midwestern city. We used a multiple frame sampling approach that worked well for sheltered women, but was less effective in capturing women who were homeless but only frequented meal locations or who were unsheltered. This means our findings are probably conservative in that we may have missed those most likely to have severe psychiatric disorders.

The prevalence of alcohol and drug abuse and dependence was extremely high compared to women in the general population. The high rates of past-year use indicate that a substantial proportion of the women continue to abuse or are dependent on alcohol and drugs. Traumatic histories and the current trauma of homelessness [22] was manifest in rates of PTSD that were four to five times that in the general population. Past-year MDD was three times that of women in the general population. Nearly a quarter of the women met lifetime criteria for a bipolar I-II sub disorder. About one-third of the women met criteria for BPD, nearly equally distributed among the low self-harm and high self-harm subgroups. These traumatic histories, ongoing substance abuse, and severe psychiatric disorders will render these women taxing to clinicians and services providers.

The high rates of comorbidity were particularly noteworthy. Almost three-fourths of the women reported at least two lifetime disorders. This high rate led us to further breakout comorbidity rates. More than half of the women met criteria for three or more disorders, and more than one-third met lifetime criteria for four or more disorders. This suggests long and difficult psychiatric histories and current fragility in the face of the arduous daily challenges of homelessness.

## Limitations

The primary limitation of this study is sample size. Although it is a small study, the data are from multiple cities and across multiple sites within the cities which are strengths. Of the 561 potential participants we were unable to contact 207 (36.9%). We cannot be certain what biases these missed contacts introduce into our findings. An additional limitation of our sampling design is that we limited the age range to age 54 years. This means we missed women who may be suffering from age-related mental disorders such as dementia. Another limitation is that we did not assess schizophrenia.

## Conclusions

We were anticipating high rates of psychiatric and substance use disorders, but our findings exceeded our expectations and for the most part exceeded findings from previous studies. Our findings that approximately one-third of the women met past year criteria for BPD and approximately one-fifth met past year criteria for a bipolar disorder are a significant contribution to psychiatric research. In shelters and in treatment settings, homeless women likely will present with complex histories of multiple serious psychiatric disorders. They are highly likely to manifest symptoms of PTSD and SUD in addition to other psychiatric symptoms which will add to clinical complications. Clearly, this level of psychopathology will undermine the women's ability to obtain and maintain stable housing. A housing alone response that does not include effective assessment and treatment risks unsuccessful outcomes.

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Table 1

## Descriptive statistics

	Mean/%	Mode	SD	Range
Age <sup>a</sup>	38.9	40	10.22	19–54
Race/Ethnicity <sup>b</sup>				
<i>Black/African American</i>	27.2%	--	--	--
<i>Hispanic/Latino</i>	10.9%	--	--	--
<i>Native American/Alaskan Native</i>	6.1%	--	--	--
<i>White/European American</i>	42.9%	--	--	--
<i>Multi-ethnic/racial</i>	12.9%	--	--	--
Years of education completed <sup>c</sup>	12.2	12	1.99	6–18
Currently married <sup>c</sup>	21.6%	--	--	--
Currently caring for child/children <sup>b</sup>	23.8%	--	--	--
Lesbian/Bisexual <sup>c</sup>	13.5%	--	--	--
Number of nights slept outside	89.1	0	89.1	0–1575

Note:

<sup>a</sup> *n* = 145;<sup>b</sup> *n* = 147;<sup>c</sup> *n* = 148.

Table 2

Lifetime, past year, and past month prevalence rates of DSM-IV disorders

	Lifetime		Past Year		Past Month	
	%	95% CIs	%	95% CIs	%	95% CIs
<b>Axis I Anxiety Disorders</b>						
Post-traumatic Stress Disorder	41.7	[33.8, 49.5]	28.9	[21.7, 36.0]	19.9	[13.5, 26.2]
<b>Axis I Mood Disorders</b>						
Minor Depressive Disorder (with hierarchy)	00.6	[-0.1, 01.9]	00.6	[-0.1, 01.9]	00.6	[-0.1, 01.9]
Major Depressive Episode	50.0	[42.7, 57.9]	44.2	[36.4, 52.1]	44.2	[14.1, 26.9]
Major Depressive Disorder (with hierarchy)	30.8	[23.5, 38.1]	25.6	[18.7, 32.6]	10.9	[14.1, 26.9]
Dysthymia (with hierarchy)	11.5	[06.5, 16.6]	11.5	[06.5, 16.6]	03.9	[06.0, 15.8]
Bipolar I/II/Sub-threshold Disorders	23.1	[16.4, 29.8]	21.8	[15.2, 28.4]	13.5	[08.1, 18.9]
Any Mood Disorder	57.1	[49.2, 64.9]	50.6	[42.7, 58.6]	26.3	[19.3, 33.3]
<b>Axis I Substance Use Disorders</b>						
Alcohol Abuse (with or without dependence)	53.2	[45.3, 61.1]	15.4	[09.7, 21.1]	02.6	[00.1, 05.1]
Alcohol Dependence	26.3	[19.3, 33.3]	10.9	[06.0, 15.8]	01.9	[-0.1, 04.1]
Drug Abuse (with or without dependence)	57.7	[49.9, 65.5]	16.0	[10.2, 21.9]	03.9	[00.1, 06.9]
Drug Dependence	41.7	[33.8, 49.5]	16.7	[10.8, 22.6]	07.1	[03.0, 11.1]
Nicotine Dependence	55.1	[47.2, 63.0]	35.3	[27.7, 42.8]	18.6	[12.4, 24.8]
Any Substance Use Disorder <sup>a</sup>	71.8	[65.7, 78.9]	30.1	[22.9, 37.4]	10.3	[05.4, 15.1]
<b>Borderline Personality Disorder</b>						
Low Self-harm <sup>b</sup>	--	--	16.7	[10.8, 22.6]	--	--
High Self-harm <sup>b</sup>	--	--	19.9	[13.5, 26.2]	--	--
<b>Comorbidity<sup>b</sup></b>						
At Least One Disorder	84.6	[78.9, 90.3]	73.1	[66.0, 80.1]	39.7	[32.0, 47.5]
At Least Two Disorders	73.7	[66.7, 80.7]	55.1	[47.2, 63.0]	23.7	[17.0, 30.5]
At Least Three Disorders	53.9	[45.9, 61.8]	39.7	[32.0, 47.5]	09.6	[04.9, 14.3]
Four or More Disorders	39.1	[31.4, 46.9]	23.1	[16.4, 29.8]	02.6	[00.1, 05.1]

Notes: *n* = 156;<sup>a</sup>Nicotine dependence not included;

<sup>b</sup> Assessment for past two years.

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**Table 3**

Lifetime, past year, and past month prevalence rates of DSM-IV disorders

	Lifetime		Past Year		Past Month	
	%	95% CIs	%	95% CIs	%	95% CIs
<b>Two Disorders</b>						
PTSD   Mood	34.0	[26.5, 41.5]	24.4	[17.6, 31.2]	09.6	[04.9, 14.3]
PTSD   Substance Use	34.6	[27.1, 42.2]	09.6	[04.9, 14.3]	03.2	[00.1, 06.0]
PTSD   BPD	--	--	17.3 <sup>a</sup>	[11.3, 23.3]	--	--
Mood   Substance Use	44.2	[36.4, 52.1]	18.0	[11.9, 24.0]	03.2	[00.1, 06.0]
Mood   BPD	--	--	22.4 <sup>a</sup>	[15.8, 29.1]	--	--
Substance Use   BPD	--	--	16.0 <sup>a</sup>	[10.2, 21.9]	--	--
<b>Three Disorders</b>						
PTSD   Mood   Substance Use	26.9	[19.9, 34.0]	08.3	[04.0, 12.7]	01.3	[-00.1, 03.1]
PTSD   Mood   BPD	--	--	14.1 <sup>a</sup>	[08.6, 19.6]	--	--
PTSD   Substance Use   BPD	--	--	08.3 <sup>a</sup>	[04.0, 12.7]	--	--
Mood   Substance Use   BPD	--	--	12.2 <sup>a</sup>	[07.0, 17.4]	--	--
<b>Four Disorders</b>						
PTSD   Mood   Substance Use   BPD	--	--	07.1 <sup>a</sup>	[03.0, 11.1]	--	--

Notes: *n* = 156; PTSD = posttraumatic stress disorder; Mood = any mood disorder; Substance use = any substance use disorder; Borderline = borderline personality disorder; CIs = confidence intervals; <sup>a</sup>Includes past two-year borderline personality disorder (low or high self-harm).

Comparisons of prevalence rates for lifetime and past year diagnoses with NCS-R sample

**Table 4**

	Lifetime		Past Year	
	Homeless <sup>a</sup>	NCS-R <sup>b/c</sup>	Homeless <sup>a</sup>	NCS-R <sup>b/c</sup>
<b>Axis I Anxiety Disorders</b>				
Post-traumatic Stress Disorder	41.7%	9.7%	28.9%	5.2%
<b>Axis I Mood Disorders</b>				
Major Depressive Disorder (with hierarchy)	30.8%	20.2%	25.6%	8.6%
Dysthymia (with hierarchy)	11.5%	3.1%	11.5%	1.9%
Bipolar I/II/Sub-threshold Disorders	23.1%	4.5%	21.8%	2.8%
<b>Axis I Substance Use Disorders</b>				
Alcohol Abuse (with or without dependence)	23.2%	7.5%	15.4%	1.8%
Alcohol Dependence	26.3%	5.4% <sup>d</sup>	10.9%	1.3% <sup>d</sup>
Drug Abuse (with or without dependence)	57.7%	4.8%	16.0%	0.7%
Drug Dependence	41.7%	3.0% <sup>d</sup>	16.7%	0.4% <sup>d</sup>
Nicotine Dependence	55.1%	26.5%	35.3%	10.5%
<b>Borderline Personality Disorder</b>	--	1.4% <sup>d</sup>	36.6% <sup>e</sup>	--

Note:

<sup>a</sup> *n* = 156;

<sup>b</sup> *n* = 5692 or 9282;

<sup>c</sup> Includes female sample only unless otherwise noted;

<sup>d</sup> Includes both males and females;

<sup>e</sup> Assessment for past two years and includes both the low and high self-harm groups.