The habitual female offender inside: How psychopathic traits predict chronic prison violence

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Abstract

Psychopathy is considered one of the best predictors of violence and prison misconducts and is arguably an important clinical construct in the correctional setting. However, we tested whether psychopathy can be used to predict misconducts in prison environments for women as has been done for men. To date, few studies exist that examine and validate this association in female offender samples. The present study included 182 ethnically diverse female offenders. The aim was to prospectively predict violent and nonviolent misconducts over a 9-month period using official records of prior violent criminal history (e.g., homicide, manslaughter, assault), and self-report measures of psychopathy, impulsivity, and empathy. Using negative binomial regression, we found that past violent criminal history, and callous and antisocial psychopathic traits were predictors of violent misconducts, while antisocial psychopathic traits and impulsivity best predicted nonviolent misconducts. Although empathy was negatively associated with psychopathy it was not a significant predictor of violent or nonviolent misconducts. Statistical models which included impulsivity were considered the most parsimonious at predicting misconducts. Our findings demonstrate how risk-factors found to be reliable in male offender samples, such as psychopathic traits, impulsivity, and past violent criminal history, generalize to female offenders for predicting nonviolent and violent misconducts. One notable difference is the importance of callous psychopathic traits when predicting chronic violent misconducts by female offenders. In sum, there are more similarities in psychopathy and impulsivity than differences in the prediction of misconducts among men and women.

Keywords: psychopathy, impulsivity, institutional misconduct, violence, female offender.

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Rates of incarceration have been consistently higher for men than for women, but recent statistics released by the U.S. Department of Justice show a generational increase of female probation (16.5%), jail (30%), and prison (21%) populations (Glaze & Kaeble, 2014). While adult male imprisonment rates fell during 2013, for females there was a 2% increase (Carson, 2014). With the correctional population surpassing 1.5 million in the US, keeping order and safety in prisons has become an operational challenge. Prior research has suggested that incarceration was a period of criminal inactivity (Blumstein & Cohen, 1979). However, research has identified a small population who continue their habitual criminal careers behind bars (DeLisi, 2003), even when opportunities to engage in criminal behaviors are limited (King, 1999). For correctional administrators, maintaining safety is the most important priority (Cullen, Latessa, Burton, & Lombardo, 1993), hence identifying predictors of prison misconducts has become a valuable tool for correctional staff (Steiner & Wooldredge, 2014). The majority of measurement tools and empirical knowledge about predicting prison misconducts has been developed from male samples (McKeown, 2010; van der Knaap, Alberda, Oosterveld, & Born, 2012). This is in part due to the disproportion, severity, and chronicity of male offenders (Drury & DeLisi, 2010; Warren et al., 2005). Male-dominated research has yielded useful results but it still remains unclear how these commonly employed predictive factors generalize to female offenders (Davidson & Chesney-Lind, 2009; Kruttschnitt & Gartner, 2003; Pollock, 2002; Steiner & Wooldredge, 2014; Wright, Salisbury, & Van Voorhis, 2007), and whether these predictors work as well for women as for men (Andrews et al., 2012;

Wright, Van Voorhis, Salisbury, & Bauman, 2012).

Predicting Misconducts

Chronic offenders (i.e., those who continually break laws over time) make up a small proportion of the correctional population. Although small in number, these habitual offenders are responsible for the majority and the most severe forms of violent and nonviolent offenses (DeLisi & Gatling, 2003; Piquero, Farrington, & Blumstein, 2003). These individuals continue their criminal careers while in prison, making them the most difficult to manage group given the high levels of prison misconducts (DeLisi, Berg, & Hochstetler, 2004). Some of the best predictors of nonviolent and violent misconducts are age, criminal history, and personality characteristics (Cunningham & Sorensen, 2007; De Lisi, 2003; Gendreau, Goggin, & Law, 1997; Vitacco, Gonsalves, Tomony, Smith, & Lishner, 2012), including impulsivity, psychopathic and antisocial traits, and aggressiveness (L. C. Gonçalves, Gonçalves, Martins, & Dirkzwager, 2014). Although these demographic and personality characteristics are being used in prisons as part of risk-assessments for both male and female offenders, limited research studies exist to validate this potential link to violent and nonviolent misconducts committed, specifically, by female offenders (e.g., Houser, Belenko, & Brennan, 2012; Kruttschnitt & Gartner, 2005; Steiner & Wooldredge, 2009a; Steiner & Wooldredge, 2014; Wright et al., 2007). Further, it is important to include personality characteristics, demographics, and criminal history within the same study to determine which of the previously identified predictors for male offenders relate most strongly with violent or nonviolent misconducts for incarcerated women.

Psychopathy

Psychopathy is recognized as a contender for being one of the most reliable clinical constructs in the criminal justice system, both in and out of prison (Hare, 1996; Hare, Clark, Grann, & Thornton, 2000; Hemphill & Hare, 2004; Jackson, Rogers, Neumann, & Lambert, 2002). In the community, psychopaths are responsible for committing over 50% of the most violent crimes (Hare, 1993), and high levels of psychopathic traits are strong predictors of chronic offending, antisocial behavior (Baskin-Sommers, Baskin, Sommers, & Newman, 2013; Blais, Solodukhin, & Forth, 2014), and recidivistic risk (DeMatteo, Edens, & Hart, 2010; Kosson, Smith, & Newman, 1990; Serin, Peters, & Barbaree, 1990). Propensity to criminality is not curtailed while in prison. Psychopaths emerge as inmate leaders and habitual criminal offenders (Schrag, 1954), and exhibit the most aggressive types of behavior (Campbell, French, & Gendreau, 2009; McDermott, Edens, Quanbeck, Busse, & Scott, 2008). Even statistically controlling for other well-known predictors of violent and nonviolent misconducts (e.g., sentence length, previous convictions, age [Hare et al., 2000]), psychopathy remains as one of the most robust predictors (Edens, Poythress, Lilienfeld, Patrick, & Test, 2008; Guy, Edens, Anthony, & Douglas, 2005; Walters, 2003a, 2003b).

There has been a recent growing body of literature looking to support psychopathy as a risk-factor in women. Thus far, the findings have yielded mixed results. Indeed, psychopathy in women has been related to criminal behavior (Beaver, Boutwell, Barnes, Vaughn, & DeLisi, 2015; Coid et al., 2009; Geraghty & Woodhams, 2015; Rutherford, Cacciola, Alterman, & McKay, 1996; Weiler & Widom, 1996), violent and nonviolent crime (Vitale, Smith, Brinkley, & Newman, 2002), goal directed aggression (Lehmann & Ittel, 2012; Marsee & Frick, 2007), and delinquency (Beaver et al., 2015). However, in

female forensic samples, psychopathy has not been shown to correlate significantly with staff reports of violent and disruptive behavior (Salekin, Rogers, & Sewell, 1997). Further, in a sample of 132 maximum security female offenders high psychopathy scores were unrelated to institutional violence (Warren et al., 2005). Antithetical to our understanding of psychopathy in male samples, women incarcerated for murder have been shown to score significantly lower on psychopathy than those not convicted for murder (Warren et al., 2005). These mixed findings may suggest that manifestations of psychopathic traits do not always run parallel for males and females, and rather, it could be that male and female offenders differ in how psychopathic traits are expressed and how they are associated with antisocial behavior (Verona, Bresin, & Patrick, 2013; Warren et al., 2005). It may be that for female offenders, psychopathic traits, when compared to other personality characteristics, are a less robust predictor of violent and antisocial behavior (Warren et al., 2005).

There are important issues surrounding the expression of psychopathy in female offenders. Prior research has shown that psychopathy in females is less prevalent than in males (Beryl, Chou, & Völlm, 2014). This may influence comparisons if the level of psychopathy is not the same (e.g., different cutoff scores for males and females). If this is so, the expression of psychopathy may be less pronounced in the female population, which may affect how female psychopathy is perceived. It may also be that the symptoms some females show are perceived differently, or they may show traits related to different facets of psychopathy at varying levels. For example, Sprague, Javdani, Sadeh, Newman, and Verona (2012) argue that the phenotypic equivalent to psychopathy in men may be borderline personality disorder traits due to the relatively strong features of impulsivity in

females. It may be that the psychopathic traits females show are misdiagnosed as borderline personality disorder, which may explain the overdiagnosis of borderline personality disorder in women (Morey & Benson, 2015). Nevertheless, psychopathic traits have been shown to be important for assessing risk of antisocial behavior in females (Beaver et al., 2015).

Dimensional Construct of Psychopathy

Examining the dimensions of psychopathy (affective, interpersonal, and behavioral) rather than considering it as a single construct has been useful in understanding violence. The behavioral (antisocial) dimension of psychopathy has been associated with impulsivity, dishinibition, anger, and externalizing behaviors (Brinkley, Diamond, Magaletta, & Heigel, 2008; Camp, Skeem, Barchard, Lilienfeld, & Poythress, 2013; Sellbom, 2011), and is most associated with violent misconducts in male offenders (Chakhssi, Bernstein, & de Ruiter, 2014; Edens, Poythress, Lilienfeld, & Patrick, 2008; Kennealy, Skeem, Walters, & Camp, 2010; Walters & Heilbrun, 2010; Walters 2003a, 2003b). The interpersonal (egocentric) dimension is marked by social dominance and selfishness (Sellbom, 2011). Egocentric traits in women have been shown to be a reliable predictor of recidivism (Salekin, Rogers, Ustad, & Sewell, 1998), as well as the strongest of the three psychopathy dimensions to predict premeditated and goal-directed violence (Blais et al., 2014). The affective (callous) dimension of psychopathy is characterized by a callous lack of empathy, coldheartedness, and complete disregard for others (Brinkley et al., 2008; Sellbom, 2011). In male offender populations, the affective dimension has been strongly associated with past violent and nonviolent crime, and having a history of severe violence (e.g., murder, assault, kidnapping [Hall, Benning, & Patrick, 2004]).

However, the affective dimension has neither been shown to predict institutional violence in male offenders (Chakhssi et al., 2014; Edens et al., 2008; Walters & Heilbrun, 2010) nor to be associated with frequent physical fights in adulthood (Hall et al., 2004). Although psychopathy is a well-researched risk-assessment measure (Blais et al., 2014) and prior research has shown strong support for the three-factor model (White, 2014), to date no studies exist that test the predictive ability of each dimension for violent and nonviolent misconducts in female offenders. It has been suggested that psychopathy may manifest differently in women than in men (Sprague et al., 2012) and that females with psychopathic traits may not display the same emotional deficits as shown by men (Sutton, Vitale, & Newman, 2002). Therefore, it is important to consider the dimensions of psychopathy, since the callousness associated with severe male violence may not apply to females.

Impulsivity as a Predictor of Misconducts

Impulsivity is a prominent feature of psychopathy (Hare, 2003; Hart & Dempster, 1997), and is central to the antisocial dimension (Neumann, Hare, & Pardini, 2014). The link between impulsivity and antisocial behavior has been well documented in men and women (Barratt, Stanford, Kent, & Felthous, 1997; Komarovskaya et al., 2007; Moffitt, Caspi, Harrington, & Milne, 2002; White et al., 1994). Typically, males report higher levels of impulsivity than females, but prior research has suggested that violent offending committed by women is more often unplanned and impulsive (Sommers & Baskin, 1993; Warren et al., 2005). When examining motives and post-offense behavior in 182 male and female offenders, females showed more extreme emotional reactivity (self-destructive behavior and jealousy) and regret when compared to male offenders

(Häkkänen-Nyholm et al., 2009). Häkkänen-Nyholm et al. (2009) suggest that the homicides perpetrated by females result from situational contexts involving "in-the-moment" conflict. Further, experimental and self-report measures of impulsivity have been shown to differentiate violent female parolees, who score higher in impulsivity, from nonviolent female parolees (Cherek & Lane, 1998). However, prior research has found that the relation between impulsivity and antisocial behavior for females is complex, hence the mixed findings (Komarovskaya et al., 2007; Malouf et al., 2014). For instance, within the same study of females housed in maximum-custody, impulsivity predicted nonviolent and violent misconducts, but women with high levels of impulsivity did not necessarily have a record of a prior violent offense (Komarovskaya et al., 2007). Komarovskaya and colleagues (2007) propose that although impulsivity predicted violent misconducts the effect size was small (Komarovskaya et al., 2007). The inconsistencies of prior research may be explained by a failure to account for the overlap between psychopathy and impulsivity, as impulsivity is considered a cardinal feature of the antisocial dimension of psychopathy (Brinkley et al., 2008).

Empathy as a Predictor of Misconducts

Perpetrators of violent crimes are often described as being coldblooded and having a lack of empathy (Vachon, Lynam, & Johnson, 2014; Woodworth & Porter, 2002). Further, a lack of empathy is considered a hallmark of psychopathy (Decety, Lewis, & Cowell, 2015), and has been suggested to play an integral role in criminal behavior (see Farrington, 1998; Jolliffe & Farrington, 2007). That is, those with low empathy fail to consider or recognize how their actions impact other people (Decety et al., 2015). Without this awareness or concern for others, the perpetrator acts uninhibited by the

distress of others (Blackburn, 2007). Due to the strong link between low empathy and high levels of antisociality (see Feshbach, 1975; Jolliffe & Farrington, 2006; Jolliffe & Farrington, 2007; Miller & Eisenberg, 1988; Vachon et al., 2014; Vachon & Lynam, 2015; Van Langen, Wissink, Van Vugt, Van der Stouwe, & Stams, 2014), there has been substantial intervention research and programs aiming to reduce antisocial behavior and aggression by increasing the offender's empathy level (e.g., Marshall, 1999; Ross & Ross, 1995; Serin & Kuriychuk, 1994). However, in female offenders, empathy has not been shown to predict aggression, and similar nonsignificant findings were found for violent or nonviolent recidivism in young adults (Bock & Hosser, 2014). Further, a recent meta analysis by Van Langen et al. (2014) found that female offenders did not differ in empathy levels when compared to female non-offenders, but those who had committed a violent crime were lower in empathy (Bock & Hosser, 2014). We propose that one explanation for the inconsistent findings may be the close association between low empathy and psychopathy (e.g., the callous features of psychopathy). Although they are closely linked theoretically, to date, no studies have included empathy and the three dimensions of psychopathy to predict official records of misconducts in female offenders.

Violent Criminal History and Future Misconducts

Past behavior is considered one of the best predictors of future behavior (Gendreau, Goggin, & Smith, 2002; Meehl, 1954), and in the forensic setting, violent criminal history is considered a reliable predictor of violent misconducts in males (Davis, 1996; DeLisi et al., 2004; Diamond, Morris, & Barnes, 2012; Flanagan, 1983; Hanks, 1940; Nachshon & Rotenberg, 1977; Steiner & Wooldredge, 2009b; Wolfgang, 1961). Further, recent evidence suggests this may generalize to female offenders (Celinska & Sung,

2014). However, not all people who commit violent crimes are habitually violent (Cunningham & Sorenson, 2007). Habitual offending may be dependent on stable personality traits such as psychopathy (Hemphill & Hart, 2002; Neumann, Wampler, Taylor, Blonigen, & Iacono, 2011).

The Present Study

Despite the growing body of literature on female psychopathy (Verona et al., 2013), prior studies have neglected to include measures of impulsivity and empathy, which are known to closely relate to psychopathy. Indeed, these factors have been shown to independently predict violent and nonviolent prison misconducts. Therefore, by including valid and widely used self-report measures, the present study aimed to differentiate the role of empathy, impulsivity, and the three dimensions of psychopathy for predicting misconducts over time in an ethnically diverse female offender sample.

Prior research has found that antisocial traits (Wright et al., 2007) and impulsivity (Gordon & Egan, 2011; Kerley, Hochstetler, & Copes, 2009) are reliable predictors of nonviolent misconducts in men (Gonçalves et al., 2014). Therefore, we expected that when impulsivity and psychopathy were entered into separate predictive models, nonviolent misconducts would be predicted by high levels of impulsivity and antisocial psychopathic traits. However, when all predictors were included in the same model we expected that antisocial psychopathic traits would be the remaining predictor of nonviolent misconducts. This is due to the broader coverage of antisocial characteristics captured by antisocial psychopathic traits (e.g., impulsivity, anger, frustration, and externalizing behavior [Brinkley et al., 2008]), which have been shown to predict offending behavior in women (Wright et al., 2007). Further, when violent criminal

history, psychopathy, and empathy and impulsivity were entered into separate models, we expected that violent misconducts would be predicted by having a violent criminal history, high levels antisocial, egocentric, and callous psychopathic traits, and low levels of empathy. In addition, we expected that when all predictors were entered into the same model, having a prior violent criminal history, high levels of callous and antisocial psychopathic traits would predict violent misconducts. Because the age of an offender is a well-substantiated predictor of violent and nonviolent misconducts in women (Steiner & Wooldredge, 2014) we included it as a covariate.

Method

Participants

Participants (N=182, M_{age} = 38.8 years, SD = 10.3, age range: 20-72 years) were recruited from a women's correctional facility that houses maximum, medium, and minimum custody-level female offenders. Pretrial offenders and offenders receiving treatment in the mental health or medical facility were not included. Participants self-identified as Pacific Islander (52%), Caucasian (28%), Asian-American (9%), and other minority ethnicities (11% [Native American, Native Alaskan, African American, Hispanic American, Mexican, and Middle Eastern]). Participants reported their highest levels of education completed, with 59% having graduated high school, 34% leaving high school before 11th grade, and 7% completed college degrees (5% associates and 2% bachelors). Twenty-five percent of the participants had been convicted of a violent criminal offense (33% assault, 22% robbery, 20% threatening, 11% manslaughter, 11% kidnapping, 9% homicide, 2% attempted manslaughter, 2% negligent homicide, 2% sexual assault). Participants received no incentive or compensation for participation in the

study, and were informed that the questionnaires were being used for research and would not form part of the correctional institutional files. The present study was approved by the institutional review board at the University of Hawai'i.

Measures

Psychopathic traits. The Levenson Self-Report of Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) was administered to measure psychopathic traits. The LSRP captures three factors; callous, egocentric, and antisocial psychopathic traits (Brinkley et al., 2008; Sellbom, 2011). Sellbom (2011) examined three separate populations (male offenders, and male and female college students) and found that the egocentric factor showed the largest correlation with narcissistic traits. Callous was found to be the strongest predictor of cold-heartedness and low empathy, and the antisocial factor correlated most strongly with impulsivity, disinhibition, and emotional distress; in male prisoners rebelliousness and nonconformity were most strongly related (Sellbom, 2011). Validity for the three factors (egocentricity, callous, and antisocial) was shown with expected correlations with antisocial behavior, sensation-seeking, and aggression (Brinkley et al., 2008). The LSRP consists of 26 items reported in a Likert-scale self-report format, with ratings from 1 (disagree strongly) to 4 (agree strongly). In the present study, the LSRP total score (M = 51.78, SD = 12.61) had a Cronbach's alpha coefficient of .88. The egocentric dimension (M = 18.08, SD = 6.07) included 10 items (e.g., "In today's world, I feel justified in doing anything I can get away with to succeed"). The callous dimension (M = 7.18, SD = 2.74) consisted of 4 items (e.g., "I make a point of trying not to hurt others in pursuit of my goals"). The antisocial dimension (M = 11.23, SD = 3.63) was derived from 6 items (e.g., "I have been in a lot of shouting matches with

other people"). The psychopathy subscales showed low to adequate internal consistency (Cronbach's alpha = .85, .54, and .76, respectively). The average correlations ranged from .20 to .61, which were above acceptable ranges (Clark & Watson, 1995), and similar to Sellbom (2011).

Impulsivity. The Barratt Impulsiveness Scale (BIS-II; Patton, Stanford, & Barratt, 1995) was used to measure impulsivity. The BIS-II consists of 30 items reported in a Likert-scale self-report format. Ratings are on a scale from 1 (Rarely/Never) to 4 (Almost Always). Total scores integrate measures of non-planning, cognitive, and motor impulsivity (Stanford et al., 2009). The BIS-II has been used extensively in forensic research (Stanford et al., 2009), such that those with violent criminal convictions score higher than those with nonviolent criminal offenses (Smith, Waterman, & Ward, 2006). In female offenders, the BIS-II has been shown to differentiate those with psychopathy and those meeting diagnostic criteria for antisocial personality disorder (ASPD), with higher levels of impulsivity associated with ASPD, whereas lower levels of impulsivity was associated with psychopathy (Warren & South, 2006). Further, the BIS-II has been used to postdict nonviolent criminal convictions (Gordon & Egan, 2011), and is associated with poorer adaption to institutional life (Mahmood, Tripodi, Vaughn, & Bender, & Schwartz, 2012). In the present study, the BIS-II had a Cronbach's alpha coefficient of .88, suggesting a reliable self-assessment measurement, and was consistent with prior studies (see Gordon & Egan, 2011).

Empathy. The Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004) consists of 40 items, which capture social skills and cognitive and affective empathy (Thomson, Wurtzburg, & Centifanti, 2015). Items are scored from 1 (Strongly Agree) to

4 (Strongly Disagree) and are summed for a total empathy score. The EQ is considered the most comprehensible, reliable, and valid empathy scale to date. With a 12-month test-retest reliability of $r = .97$, and a Cronbach's alpha measured validity of .92, it scores well, and is ranked highly by other researchers in the field (Baron-Cohen & Wheelwright, 2004). Furthermore, the use of the Rasch model for analysis provides an excellent level of construct validity, with an item reliability of .99, and person reliability of .92 (Allison, Baron-Cohen, Wheelwright, Stone, & Muncer, 2011). The convergent validity has also been assessed and confirmed in correlation to the 'Reading the Mind in the Eyes' Test (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). In the present study, the EQ had a Cronbach's alpha coefficient of .85, suggesting a reliable self-assessment measurement, and is consistent with prior research (Thomson et al., 2015).

Violent criminal history. Institutional files were used to assess the current criminal conviction as a violent or nonviolent offense. Consistent with Baskin-Sommers and colleagues (2013), violent crimes included murder, assault, weapons possession, and kidnapping. Violent criminal history was measured as a dichotomous variable (1 = committed a violent crime, 0 = not committed a violent crime).

Misconducts. Official reports of misconducts were collected 9-months post questionnaire administration. Misconducts were coded using the Hawai'i Department of Public Safety Corrections Administration Policy and Procedures Manual. Consistent with Steiner and Wooldredge (2014), misconducts were coded as a violent misconduct if the offense included threatening, causing physical harm, or attempting to cause physical harm to an offender or staff member. Nonviolent misconducts were coded for all other offenses (Steiner & Wooldredge, 2014). The prevalence of violent ($M = .30$, $SD = .83$,

count proportion of zero = .85, range 0 to 5) and nonviolent (*M* = .48, *SD* = 1.14, count proportion of zero = .81, range 0 to 6) misconducts over the course of 9-months is consistent with prior research including male and female samples (see Edens, Kelley, Lilienfeld, Skeem, & Douglas, 2015).

Data analytic plan

First, we conducted a confirmatory factor analysis to test the three-factor model (see Brinkley et al., 2008; Sellbom, 2011) of the Levenson Self-Report Psychopathy scale (LSRP; Levenson et al., 1995). Next, to examine psychopathy as a predictor of misconducts we separately summed violent and nonviolent misconducts for the 9-month period following administration of the questionnaires. To determine which statistical technique was most suitable for the data, we compared the model fit of a negative binomial regression and Poisson regression, and selected the best fitting and parsimonious model using Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC) as suggested by Muthén and Muthén (2008-2012). Because we had a large number of zeroes for violent (count proportion of zero = .85) and nonviolent misconducts (count proportion of zero = .81) we compared the selected negative binomial regression to the zero-inflated model to test if there was an improvement in model fit, taking parsimony into account. We report unstandardized estimates and standard errors for the models. Confidence intervals were included to provide an index of effect size, with intervals farther away from zero indicating stronger effects.

Results

Confirmatory Factor Analysis on the LSRP

Since the data were ordinal, we used Mplus 7.3 (Muthen & Muthen, 2008-2012) with weighted least squares means and variance adjusted (WLSMV) estimation to perform a confirmatory factor analysis – the aim was to confirm that a three factor model fit the data. Confirmatory methods are preferable over exploratory methods, particularly when prior research directs a specific structure with specific items being associated with each factor. Thus, we tested the fit of the model identified by Brinkley et al. (2008) which included 19 items. There were no missing data in the present study, so we analyzed the full data set. To examine whether the model fit the data well, we used chi-square: A nonsignificant chi-square suggests a good fit. Yet, chi-square with sample sizes as large as that used in the present study (N = 182) is often significant with even trivial deviations from a perfect model. Hence, we used three indices of practical fit as suggested by prior research (TLI, Tucker & Lewis, 1973; CFI, Bentler, 1990; and RMSEA, Browne & Cudeck, 1993). A comparative fit index (CFI) and TLI> .90 suggests an acceptable model fit (Bentler & Bonett, 1980) and > .95 suggests a good model fit (Hu & Bentler, 1999). A root mean square error of approximation (RMSEA) < .08, suggests an acceptable fit; an RMSEA < .06 suggests a good fit (Browne & Cudeck, 1993). Although chi-square was significant, the indices of practical fit suggest that the model tested had an acceptable fit, $\chi 2$ (df = 149) =216.069, p = .0003; TLI = .95, CFI = .95, RMSEA = .051, 90% CI = .035, .065. Item 7 was the only item at .3 and all the other items were above .5, suggesting a strong relationship between items and their respective factors. The factors were correlated with each other, since they all comprise different facets of psychopathy. The strongest factor correlations were between antisocial and egocentric (r = .62, p < .001), and egocentric and callous (r = .30, p < .001), while the correlation between callous and

antisocial was low (r = .20, p < .05).

Correlations Among Main Study Variables

Table 1 shows the zero-order correlations which were provided by Mplus. Violent misconducts was positively and significantly related to antisocial psychopathic traits, having a past violent crime, and being younger in age, but was non-significant for empathy, impulsivity, egocentric or callous psychopathic traits. A greater number of nonviolent misconducts was significantly related to higher levels of antisocial psychopathic traits, and impulsivity. Empathy was not significantly related to age, but significantly and negatively related to all psychopathy dimensions and impulsivity. High impulsivity was associated with higher levels on all three dimensions of psychopathic traits.

(Table 1 about here)

Age and Violent Criminal History and Misconducts

We tested for the best fitting model to the count data. Because we had a large number of zeroes, and the standard deviation for violent (M =.30, SD = .83) and nonviolent (M = .48, SD = 1.14) misconducts was larger than the mean, which suggests overdispersion, we tested to see if we needed to include an inflation factor by comparing models. Compared to the Poisson regression model (AIC = 654.47, BIC = 673.70, -2 log-likelihood = -321.24), the negative binomial model (AIC = 533.89, BIC = 559.52, -2 log-likelihood = -258.94) was a better fitting model with the lowest AIC, BIC, and -2 log-likelihood. The negative binomial dispersion parameters for nonviolent misconducts (α = 5.32, p < .001) and violent misconducts (α = 7.34, p < .001) were significantly greater than zero, suggesting the data were overdispersed. Negative binomial regression corrects

for overdispersion, therefore producing more reliable estimates (Cameron & Trivedi 1998; Hilbe, 2011). We conducted a zero inflated negative binomial regression to compare the model fit with the negative binomial model. Compared to the zero-inflated model (AIC=513.61, BIC=558.47, -2 log likelihood= -242.81, parameters = 14), the negative binomial model had a marginally higher BIC and a lower number (8) of parameters, suggesting the negative binomial model without the inflation factor was the most parsimonious model. Further, prior research confirms that a zero-inflated model accurately estimates observed frequencies in violent count data. However, when considering model fit, parsimony, and previous research findings and theory, the negative binomial is a better model for violent count data, as it accurately estimates observed frequencies while maintaining parsimony (Swartout, Thompson, Koss, & Su, 2015).

Given that age and violent criminal history were both related to misconducts we included these as the baseline model (Model 1) to allow subsequent testing of the contribution of psychopathy factors, impulsivity, and empathy in separate models (see Table 4 for fit indices). Both age (estimate = -.06, *SE* = .03, CI = -.11, -.00) and violent criminal history (estimate = .82, *SE* = .39, CI = .05, 1.58) were significant in predicting total violent misconducts. Younger female offenders and those with a prior violent criminal history were more likely to have greater number of violent misconducts. Age and violent history did not significantly predict nonviolent misconducts.

Psychopathy and Misconducts

Model 1.1 added the three factors of psychopathy to Model 1. Comparing Model 1.1 to Model 1, the AIC and BIC for violent and nonviolent misconducts decreased. The average standardized residuals reduced only for nonviolent misconducts, while for

violent misconducts the average standardized residuals remained the same. Satora-Bentler scaled chi-square difference test for MLR was significant (x^2 (df = 6) = 68.24, p<.001). Overall, adding psychopathy to Model 1 provided a significantly better fitting model, but only explained more variance when predicting nonviolent misconducts, given the change in residual variance was higher for nonviolent misconducts. For nonviolent misconducts, egocentric (estimate = -.10, *SE* = .04, CI = -.17, -.03) and antisocial psychopathic traits (estimate = .36, *SE* = .07, CI = .22, -.49) were significant predictors. Egocentric showed a small effect size given the closeness of the confidence interval to zero, and the negative sign seems to suggest a suppression effect (see Table 2). Suppression can occur as a consequence of fitting a statistical model using multiple predictors that are highly correlated (Baguley, 2012). In the present study, the suppression effect is likely due to the close relationship between egocentric psychopathic traits and antisocial and callous psychopathic traits (see Table 1).

For violent misconducts, violent criminal history (estimate = .80, *SE* = .37, CI = .08, 1.52), callousness (estimate=.15, *SE*= .08, CI= .00, .30), and antisocial psychopathic traits (estimate = .18, *SE* = .08, CI = .02, .35) were positive predictors. In sum, a record of a violent criminal history, higher levels of callous, or antisocial psychopathic traits predicted greater number of violent misconducts, while higher levels of antisocial psychopathic traits predicted greater number of nonviolent misconducts over the 9-month period.

(Table 2 about here)

Impulsivity and Empathy and Misconducts

Model 1.2 added impulsivity and empathy to model 1. Comparing Model 1.2 to

Model 1 (see Table 4), there was a decrease in AIC, BIC, and the average standardized residuals for violent and nonviolent misconducts. Satora-Bentler scaled chi-square difference test for MLR was significant (x^2 (df = 4) = 73.09, p < .001), which suggests the model including impulsivity and empathy is a significantly better fit when compared to model 1. As with Model 1.1, this suggests that including impulsivity and empathy to the baseline model resulted in a better fitting model. The results of this model are presented in Table 3. Impulsivity (estimate = .06, *SE* = .02, CI = .03, .10) and age (estimate = -.04, *SE* = .02, CI = -.08, -.01) were significant in predicting nonviolent misconducts. Violent criminal history was a significant predictor for violent misconducts (estimate = .76, *SE* = .38, CI = .02, 1.49). Therefore, those who had a violent criminal history were more likely to commit a greater number of violent misconducts over the 9-month period. Further, being impulsive and younger in age may serve as an indicator for risk of committing violent misconducts over time.

(Table 3 about here)

Psychopathy, Empathy, and Impulsivity

Model 2 included psychopathy, impulsivity, and empathy to model 1. We compared the models using the AIC, number of free parameters, and average standardized residuals. Although the lowest AIC suggests a balance between goodness-of-fit and parsimony of the model (Symonds & Moussalli, 2011), it is important to take into account model simplicity. Based on the lowest AIC and average standardized residuals Models 1.2 and 2 were most similar. We used a log-likelihood ratio to compare Model 1.2 to Model 2, and found that the two models were not significantly different (p = .16). Therefore, including the psychopathy dimensions to the models did not add to a better fitting model.

Consequently, the simplified model with less complexity (e.g., number of free parameters) is considered the most parsimonious model. Although Model 2 has the smallest AIC there is a risk of over fitting and a lack of generalization beyond these data. As a result, model 1.2 which includes impulsivity, empathy, violent criminal history, and age can be considered the best fitting model for predicting violent and nonviolent misconducts in female offenders.

For Model 2, the best predictors for violent misconducts were violent criminal history (estimate = .80, *SE* = .37, CI = .07, 1.52), callous (estimate = .18, *SE* = .09, CI = .01, .35) and antisocial psychopathic traits (estimate = .23, *SE* = .07, CI = .10, .37). For nonviolent misconducts, impulsivity (estimate = .06, *SE* = .02, CI = .01, .10), egocentric (estimate= -.11, *SE* = .04, CI = -.18, -.04), and antisocial (estimate = .24, *SE* = .08, CI = .09, .40) psychopathic traits were significant predictors. As with Model 1.2, the negative sign for egocentric psychopathic traits seems to suggest a suppression effect as a result of the close relation with callous and antisocial psychopathic traits when predicting nonviolent misconducts (see Table 1). Overall, having a violent criminal history, or higher levels of callous or antisocial psychopathic traits was associated with more violent misconducts over the 9-month period. However, antisocial psychopathic traits and impulsivity remained the best predictors for nonviolent misconducts. Figure 1 presents the results of Model 2.

(Figure 1 about here)

Discussion

Prior research suggests that psychopathy is one of best predictors of misconduct in men (Edens et al., 2008; Guy et al., 2005; Walters, 2003a, 2003b), and our findings show

that this is generalizable to female offenders. Since there has been a rise in female incarceration rates (Carson, 2014; Glaze & Kaeble, 2014) identifying valid risk assessment measures is critical to the treatment of female offenders (McKeown, 2010; Steiner & Wooldredge, 2014). As has been found in prior research with men, psychopathy was a predictor of misconducts while women were in prison. Although there were similarities between the present study and the existing literature on male offender samples, our findings draw notable gender specific differences.

Prior research has found that the antisocial dimension of psychopathy and having a prior violent criminal history are strong predictors of institutional violence in male samples (Chakhssi et al., 2012; Diamond et al., 2012; Kennealy et al., 2010). Our findings suggest that this is is also the case for female offenders. One notable gender difference was the importance of callous psychopathic traits. Even while controlling for age, impulsivity, empathy, and a history of violent offense, callous psychopathic traits predicted violent misconducts. Of note, recent research has found that incarcerated women scoring high on the affective dimension of psychopathy (callousness) have diminished physiological responses to victim distress (Verona et al., 2013). Therefore, when perpetrating violent acts, women with high callous psychopathic traits may not emotionally respond to others' distress, which may explain why specifically in female offenders, callous psychopathic traits predicted chronic levels of violent prison misconducts.

Impulsivity is considered a cardinal feature of psychopathy (Hart & Dempster, 1997). In male offender samples, antisocial psychopathic traits and impulsivity have been shown to predict nonviolent misconducts (Edens et al., 2008; Gordan & Egan, 2011;

Poythress et al., 2010). Our findings confirm that antisocial psychopathic traits and impulsivity were both significant predictors of nonviolent misconducts. When all predictors were entered into the final model, we expected that antisocial psychopathic traits would be the best predictor. However, both impulsivity and antisocial psychopathic traits remained significant. Not only do our findings support the close association between antisocial psychopathic traits and impulsivity (Hart & Dempster, 1997), but also illustrates the independent contribution that both impulsivity and antisocial psychopathic traits have when predicting prison misconducts for female offenders. For an offender to continually perpetrate misconducts over a 9-month period in an environment where the odds of being caught are high suggests that individuals who engage in misconducts compulsively break the rules, either because they cannot regulate their behavior or because they are motivated to be antisocial.

There has been debate on the generalizability of psychopathy for men and women, with an emphasis that females may present these traits differently (see Sprague et al., 2012; Salekin et al., 1998; Sutton et al., 2002; Vitale et al., 2002). Nevertheless, research has found that psychopathy is generalizable to women as a reliable risk factor for antisocial behavior in the community (e.g., arrests, incarceration [Beaver et al., 2015]). By including the dimensional construct of psychopathy, we provide evidence that males and females show similarities in how psychopathy predicts official reports of misconduct within the prison setting. Consistent with male offender research (see Kennealy et al., 2010; Walters, 2003b), we found that female offenders with high antisocial psychopathic traits pose the greatest risk for both violent and nonviolent misconducts. In male offender samples, callous psychopathic traits has been associated with more brutal forms of

violence (Hall et al., 2004), yet callousness has been shown to not be a significant predictor of violent misconducts (Chakhssi et al., 2014; Edens et al., 2008; Walters & Heilbrun, 2010). However, our findings suggest that callousness may be important to female offenders' level of risk in the perpetration of violence over an extensive period of time. Therefore, female offenders who perpetually commit violent misconducts are not just more likely to be characteristically impulsive, disinhibited, or antisocial like male offenders, but are dominant, remorseless, and cruel. These findings demonstrate how psychopathy in men and women converge when predicting nonviolent misconducts, but may also highlight gender differences when predicting violent misconducts.

We could not confirm the link between empathy and misconducts, even when the zero-order correlations between empathy and misconducts were tested. Prior findings regarding the relation between empathy and delinquency have been mixed. Some research finds that empathy predicts antisocial behavior (see Jolliffe & Farrington, 2007) while others find no significant association (see Lee & Egan, 2013). We consider possible explanations for the divergent findings. Psychopathy has a strong link with antisocial behavior, and prior research has found that individuals with psychopathy have an intact ability to understand others' emotional states (cognitive empathy), but are deficient in being able to experience others' emotions (affective empathy [Pfabigan et al., 2015]). Therefore, people without an emotional connection with others may find it easy to continually violate the rules while in prison, yet their skill in cognitively understanding emotions may play a smaller role. Since we measured empathy as a single construct, we may have missed potentially important associations with aspects of empathy and misconducts.

Another explanation of the inconsistent findings for empathy and antisocial behavior may be that the current model of empathy is "censored and fails to capture the full range of the [empathy] construct" (Vachon et al., 2014, p.17). Traditional measures of empathy focus on how peoples' feelings resonate with other people. However, research has suggested that empathy extends beyond a person's ability to emotionally respond to others' feelings, and includes a dissonant and lack of response (e.g., callousness, unemotional, contemptuous and cynical of others [Vachon & Lynam, 2015]). Indeed, we found that female offenders with high levels of callous traits showed higher levels of continual violent misconducts over the duration of the study.

There were limitations to the present study that must be considered when interpreting the findings. We were unable to include the length of time that each offender had been incarcerated for, which is known to be a reliable predictor of misconducts for female offenders (Drury & DeLisi, 2008). Even with this limitation there are some substantial strengths. Prior research has called for studies to test alternative measures of psychopathy (besides the Psychopathy Checklist Revised [Hare, 2003]) to determine the predictive value in criminal justice outcomes (see Walters, 2012). Compared to the PCL-R, self-report measures of psychopathy are time and resource efficient (Camp et al., 2013), so the inclusion of the LSRP was a valuable addition. However, since this was for research and anonymity was assured, offenders may have felt more comfortable being truthful and forthcoming than if they had been asked to report to staff making sentencing, classification, or release decisions. In this ethnically diverse population, we were able to confirm the three-factor model of the LSRP (Brinkley et al., 2008; Sellbom, 2011). By doing so we found meaningful associations between the dimensions of psychopathy and

violent and nonviolent misconducts, which has yielded similarities and disparities with prior research including male samples.

Incarceration was once considered to be a period of criminal inactivity (Blumstein & Cohen, 1979). However, we have identified a subgroup of female offenders who, as described by DeLisi (2003), are particularly difficult to manage and who habitually offend even when behind bars. Our findings dovetail with prior research which shows that habitual nonviolent antisocial behavior is often a result of impulsivity and antisocial personality traits, whereas those who are "free of remorse, as unperturbed, and as secure in a callous equanimity" (Cleckley, 1976, p. 266) are the most chronic and violent female offenders.

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Table 1. Summary of Correlations, Means, and Standard Deviations for the Main Study Variables

Measure	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Nonviolent Count	-								
2. Violent Count	.46***	-							
3. Violent Crime	.05	.20*	-						
4. Age	-.16	-.22**	.03	-					
5. Egocentric	.00	.14	.02	-.27***	-				
6. Callous	-.05	.09	.11	-.09	.30***	-			
7. Antisocial	.29***	.23**	.02	-.37***	.62***	.20*	-		
8. Impulsivity	.35***	.15	-.08	-.30***	.57***	.30***	.66***	-	
9. Empathy	-.03	.00	.05	.08	-.37***	-.30***	-.37***	-.32***	-
M				38.83	18.08	7.18	11.23	67.87	44.58
SD				10.28	6.07	2.74	3.63	13.04	11.52

Note. Nonviolent Count = Nonviolent misconducts count; Violent Count = Violent misconducts count; Violent Crime = Violent criminal history (1=Yes).
*p<.05, **p<.01, ***p<.001

Table 2. Psychopathy Predicting Violent and Nonviolent Misconducts

	Nonviolent Misconducts			Violent Misconducts		
	Estimate	SE	CI	Estimate	SE	CI
Age	-0.00	.02	-.05,.04	-0.03	0.03	-.08,.02
Violent crime	-0.37	0.37	-1.10,.37	**0.80***	0.37	.08,1.52
Callous	0.00	0.06	-.12,.12	**0.15***	0.08	.00,.30
Antisocial	**0.35*****	0.07	.22,.49	**0.18***	0.08	.02,.35
Egocentric	**-0.10****	0.04	-.17,-.03	-0.03	0.04	-.11,.05

Note. Violent crime = Violent criminal history. *p<.05, **p<.01, ***p<.001

Table 3. Impulsivity and Empathy Predicting Violent and Nonviolent Misconducts

	Nonviolent Misconducts			Violent Misconducts		
	Estimate	SE	CI	Estimate	SE	CI
Age	**-0.04***	0.02	-.08,-.01	-0.05	0.03	-.10,.00
Violent crime	0.25	0.43	-.60,1.09	**0.76***	0.38	.02,1.49
Impulsivity	**0.06****	0.02	.03,.10	0.03	0.02	-.01,.06
Empathy	0.02	0.01	-.01,.05	0.02	0.02	-.02,.06

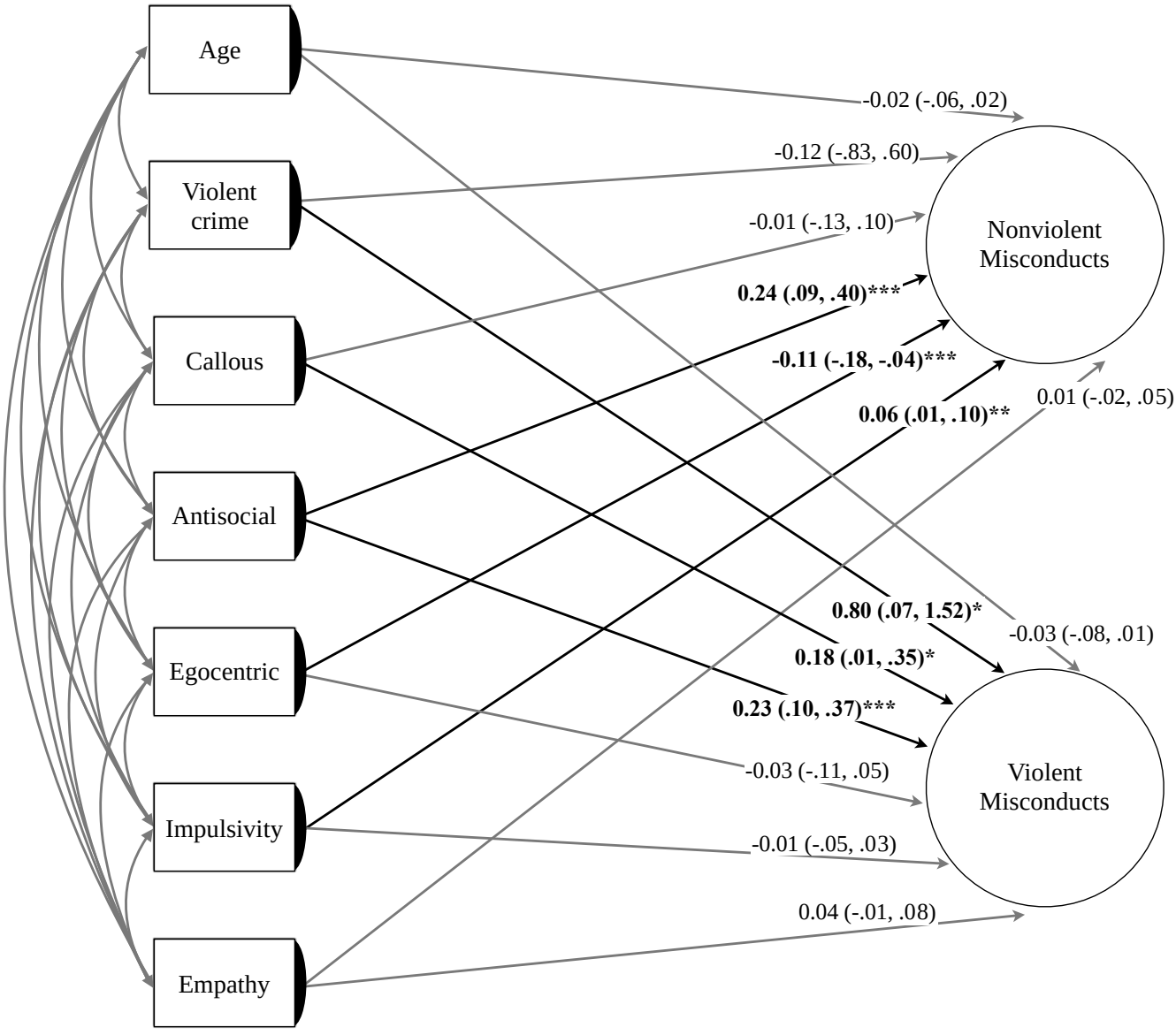
Note. Violent crime = Violent criminal history. *p<.05, **p<.001

Table 4. Comparison of Model Fit

Model	Number of free parameters	AIC	BIC	Average standardized residuals violent	Average standardized residuals nonviolent
1	8	533.89	559.52	0.42	0.72
1.1	14	506.31	550.61	0.42	0.55
1.2	12	501.53	539.51	0.39	0.50
2	18	492.20	548.85	0.42	0.40

Note. Model 1 = Violent criminal history and age; Model 1.1 = Violent criminal history, age, antisocial, callous, and egocentric psychopathic traits; Model 1.2 = Violent criminal history, age, empathy, and impulsivity; Model 2 = Violent criminal history, age, empathy, impulsivity, antisocial, callous, and egocentric psychopathic traits.

Figure 1. Predictors of violent and nonviolent misconducts



Note. Violent crime = Violent criminal history. *p<.05, **p<.01, ***p<.005