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The impact of maternal incarceration on their daughter's empathy

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Incarceration rates in the United States have seen a rapid increase over the past several decades, and although more men are incarcerated than women, incarceration rates for women have risen faster than men in recent years (Federal Bureau of Investigation, 2010; Scott, Dennis, & Lurigio, 2015). Currently, the U.S. makes up only 5% of the world population, yet the U.S. holds approximately 22% of the world's prisoners (American Psychological Association, 2014; Lee, 2015). Of which, 52–63% of U.S. prisoners are parents. While a smaller number of mothers are incarcerated (65,600) when compared to fathers (744,200), the number of children with a mother in prison has almost doubled since 1991 (up by 131%; Glaze & Maruschak, 2010, p. 2). With 1,706,600 children affected by parental incarceration (Glaze & Maruschak, 2010), there are concerns about the short-and long-term effects. Indeed, prior research has shown children of incarcerated parents display problems in school, higher levels of substance use, delinquency, home instability, social adjustment, and externalizing and internalizing behaviors (Arditti, 2012; Hagan & Foster, 2012; Murray & Farrington, 2005; Murray & Farrington, 2008a, 2008b; Murray, Farrington, & Sekol, 2012). Further, Murray and Farrington (2005) found parental incarceration was related to more adverse childhood outcomes than other types of parental separation (e.g., parental death, hospitalization, disharmony). Thus, it may be expected that parental incarceration influences a child's development, leaving long-term effects on personality traits into adulthood.

Empathy is of particular importance, as higher levels of empathy are associated with prosocial benefits such as altruism (Paciello, Fida, Cerniglia, Tramontano, & Cole, 2013), while lower levels of empathy play an integral role in criminal behavior (Jolliffe & Farrington, 2004). Given that parents play a fundamental role in the development of empathy (Farrant, Devine, Maybery, & Fletcher, 2012; Taylor, Eisenberg, Spinrad, Eggum, & Sulik, 2013), parental incarceration may have long-term effects on the offspring's levels of empathy. This may explain why offspring of incarcerated parents are more likely to engage in criminal behavior (Murray & Farrington, 2008a, 2008b).

1. Pathways into crime from parental incarceration

Offspring of incarcerated parents are more at risk of being arrested and incarcerated as adults (Farrington et al., 2006) There are four proposed pathways in which parental incarceration increases the likelihood of criminality (Murray & Farrington, 2008a, 2008b). Trauma-related theories suggest children may become fractured from their parents by the sudden and unexpected withdrawal of parental contact (van de Rakt, Murray, & Nieuwbeerta, 2011). A consequence of sudden adverse changes in life circumstances has been linked to a variety of child outcomes, including poorer peer relationships, diminished cognitive abilities, and insecure attachments (Sroufe, 1988). Future contact may be difficult because of the financial and logistical challenges faced in order to visit the parent, which typically has a greater impact on those from a lower socioeconomic background (Kaplan & Sasser, 1996; Young & Smith, 2000). Thus, parental incarceration not only causes distress to the child, but a continued lack of contact and development in a secure parental relationship may lead to greater emotional problems, including depression, anxiety, and low self-esteem (Braman, 2002; Sharp & Marcus-Mendoza, 2001). The second theory, the modeling and social learning theory, suggests parental incarceration may increase a child's involvement in crime because antisocial behavior becomes normalized or desirable (Sutherland, Cressey, & Luckenbill, 1992). The third theory, strain theory, proposes that parental incarceration often means losing financial support. Low income has been consistently linked with delinquency in children (Arditti, Lambert-Shute, & Joest, 2003; Murray & Farrington, 2008a, 2008b). Further, when a father is incarcerated the mother most often becomes the sole caregiver, whereas when the mother is incarcerated the child is cared for by relatives or placed in foster care, where financial resources are less (Mumola, 2000). Thus, it may be that having a mother incarcerated is more deleterious to the child (Dallaire, 2007; Dallaire & Wilson, 2010; Lee, Fang, & Luo, 2013).

Lastly, labeling theory suggests when parents go to prison, children often experience stigma, including bullying, and teasing (Boswell & Wedge, 2002; Braman, 2002). This may increase the chance for children

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with incarcerated parents to follow the same route as their parents. These children may avoid socializing, including skipping school, which make them less able to perform in school and engage in prosocial relationships. Thus, collectively, the four theories, which are not mutually exclusive, indicate that parental incarceration may not only increase a child's likelihood to engage in antisocial behavior into adulthood but also affect social bonding and attachment. Poor parental attachment has been related to lower levels of empathy (Panfile & Laible, 2012; van der Mark, van Ijzendoorn, & Bakermans-Kranenburg, 2002). Therefore, we can expect those having experienced parental incarceration to have lower levels of empathy (Laible, Carlo, & Roesch, 2004).

2. Empathy

Empathy is a multidimensional construct consisting of three factors; cognitive, affective, and social skills (Allison, Baron-Cohen, Wheelwright, Stone, & Muncer, 2011; Baron-Cohen, 2011). Cognitive empathy is the ability to identify another person's point of view (Baron-Cohen, 1995). Affective empathy is the drive to respond to another person's thoughts and feelings with an appropriate emotion, such as sympathy or concern. Dadds et al. (2009) distinguish cognitive empathy as knowing the 'how' and 'why' of other people's feelings, whereas affective empathy is the 'feeling' of the emotions of another person. Cognitive and affective empathy rely on different non-overlapping neurocognitive circuits (Singer, 2006). The neurodevelopment of cognitive empathy is thought to occur later than that of affective empathy (Singer, 2006). Lastly, social skills are the ability to successfully navigate and interact within social situations.

Collectively, empathy is essential for prosocial behavior and a protective factor for antisocial behavior. Indeed, children with incarcerated fathers have been found to exhibit higher externalizing behaviors (Wilbur et al., 2007). A large meta-analysis including 40 studies found children with an incarcerated parent were at higher risk of antisocial behavior (Murray et al., 2012). Further, Dallaire and Zeman (2013) found children (7–11 years) of incarcerated parents had lower levels of empathy and displayed greater levels of aggression when compared to children whose parents were not incarcerated. However, children who experienced parental incarceration who had higher levels of empathy were not at greater risk of aggression (Dallaire & Zeman, 2013). Therefore, empathy may serve as a protective factor of delinquency while parents are incarcerated. However, since empathy in part develops from a secure attachment (Grusec & Davido, 2010), the stressful separation experience of parental incarceration may impact the child's sense of security, thus disrupting the development of empathy.

On average, women have higher levels of empathy than men (Baron-Cohen & Wheelwright, 2004; Thomson, Wurtzburg, & Centifanti, 2015). Nevertheless, men and women with a history of antisocial behavior exhibit lower levels of empathy (Jolliffe & Farrington, 2007). At the dimensional level, further differences emerge. A meta-analysis found levels of affective empathy did not differ between offenders and non-offenders, but cognitive empathy was lower in the offender groups (van Langen, Wissink, van Vugt, Van der Stouwe, & Stams, 2014). While no studies have explored the association between empathy and parental incarceration in adult women, we expect differences at the dimensional level. Firstly, the heritability of affective empathy is 52–57%, whereas the heritability of cognitive is much smaller and therefore more influenced by social and environmental factors (Melchers, Montag, Reuter, Spinath, & Hahn, 2016). Further, low parental bonding is associated with deficits in cognitive empathy in women but is not associated with affective empathy (Parlar et al., 2014). Therefore, because women with incarcerated parents may not have developed a secure parental bond and are influenced by different environmental factors (e.g., placed into foster care), these women may display deficits in cognitive empathy but not affective empathy. However, offenders and non-offenders differ in empathy levels (Beven, O'Brien-Malone, & Hall, 2004), so we may expect this association to be more evident in second-generation offenders. That is, those women who are incarcerated and have experienced parental incarceration may display greater deficits in cognitive empathy when compared with incarcerated women who have not experienced parental incarceration.

3. Parental incarceration for women

The effect of parental incarceration is more harmful to girls than boys (Murray, Janson, & Farrington, 2007). For instance, parental incarceration for girls is associated with early-onset of sexual relationships and risky sexual behaviors (Smith, Leve, & Chamberlain, 2006). Further, Murray et al. (2007) found women with incarcerated parents were more at risk of offending than men. Muftic, Bouffard, and Armstrong (2016) suggest the consequences of parental incarceration may be different based on paternal and maternal incarceration. For instance, Grant (2006) found maternal incarceration was negatively associated with young girls' self-perceptions, while Murray and Farrington (2008a, 2008b) found internalizing symptoms were higher for daughters of incarcerated mothers. Thus, it may be that having a mother incarcerated, compared to a father incarcerated, has more long-term negative effects on daughters, which may be evident into adulthood. However, comparative maternal and paternal incarceration effects remain largely unexplored, especially in women and girls.

4. The current study

It has been suggested that there is an inter-generational influence of parental incarceration on children, which carries through into adulthood (Murray & Farrington, 2008a, 2008b; Will, Loper, & Jackson, 2016). However, past studies have not examined the long-term effect of parental incarceration on empathy among female offspring from both offender and non-offender samples. In order to explore the association between parental incarceration and empathy, we first tested the 3-factor model of the Empathy Quotient (EQ; Muncer & Ling, 2006), using an ethnically diverse female non-offender and offender sample. Using the 3-factor model, we tested whether the offender and non-offender samples differed on empathy and rates of parental incarceration. Based on prior research, we expected the offender sample to score lower on the total score of empathy and cognitive empathy than the non-offender sample (Jolliffe & Farrington, 2004; van Langen et al., 2014). Individuals with incarcerated parents are more likely to be involved with the criminal justice system (Huebner & Gustafson, 2007), thus, we expected the offender sample to have higher rates of parental incarceration (paternal, maternal, and both parents incarcerated). Our final aim was to test if social skills, cognitive, or affective empathy increased the likelihood of women belonging to one of the parental incarceration groups: no parental incarceration, mother-only, father-only, or both parents. In the offender sample, we hypothesized that those who scored low in cognitive empathy would be more likely to belong to the mother-only or both parents incarcerated group. In the non-offender group, we expected empathy levels to not differentiate women in any of the parental incarceration groups.

5. Method

5.1. Participants: non-offender sample

Female students ($N = 197$, $M_{age} = 20.97$ years, age range: 17–44 years) were recruited from university courses. Students ranged in year of study, 1st year (22%), 2nd year (27%), 3rd year (24%), 4th year (16%), and more than four years (11%). The ethnicity of the participants were 30% Caucasian, 23% Asian American, 21% Asian, 10% Pacific Islander/Native Hawaiian, and 16% included other ethnicities (European, Hispanic-American, African-American, Mexican, Middle Eastern, Native American/Alaskan). None of the participants had spent time in prison or a juvenile detention center. The administration took place in classes. Classes ranged in size with no less than eight students and no more than 150 participants in an administration. Each

participant was instructed to complete the EQ without the influence of their peers, and after 15 min the questionnaires were collected. For those who chose not to participate, they were asked to leave the EQ blank. Participants received no compensation for taking part.

5.2. Participants: offender sample

Participants ($N = 176$, $M_{age} = 39$ years, age range: 20–72 years) were recruited from a women's correctional facility that houses maximum, medium, and minimum custody level female offenders. Inmates receiving treatment or under assessment in the mental health or medical facility were not included. Participants self-identified as Pacific Islander/Native Hawaiian (52%), Caucasian (27%), Asian-American (9%), and other minority ethnicities (12%; Native American, Native Alaskan, African American, Hispanic American, and Mexican). Sixty-six percent of the sample completed 12th-grade education or higher. Twenty-four percent of the participants had been convicted of a violent crime, 56% convicted of a drug-related crime, 37% of property related crime, and 20% for other crimes (e.g., fraud, prostitution). Participants received no compensation or incentive for participation and were informed that their involvement was for research and not part of the correctional institutional files. The present study (using both samples) was approved by the institutional review board at the University of Hawai'i.

5.3. Measures

5.3.1. Empathy

The Empathy Quotient (EQ; Baron-Cohen & Wheelwright, 2004) consists of 40 items. 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. The EQ scores well with a 12-month test-retest reliability of $r = 0.97$ and a Cronbach's alpha measured validity of 0.92 (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 0.99, and person reliability of 0.92 (Allison et al., 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 0.85 for the non-offender sample and 0.84 in the offender sample, suggesting a reliable self-assessment measurement, and is consistent with prior research (Muncer & Ling, 2006). Research has provided evidence for a three-factor model of the EQ providing a more accurate measure of empathy subtypes (Allison et al., 2011; Muncer & Ling, 2006; Thomson et al., 2015). These three factors are cognitive empathy, affective empathy, and social skills. However, this has yet to be explored in female offender samples.

5.3.2. Parental incarceration

Participants in both samples were asked, "were any of your parents incarcerated during your childhood (0–18 years)?". Participants responded by circling, "Father", "Mother", "Mother and Father", or "None". In total, 17% ($n = 32$) of the non-offender sample and 35% ($n = 62$) of the offender sample had at least one of their parents incarcerated during childhood.

5.4. Data analytic plan

Statistical analyses were conducted using R Studio (R Core Team, 2016). First, a confirmatory factor analysis was conducted to test the three-factor model of the EQ proposed by Muncer and Ling (2006). Next, to assess if the offender and non-offender sample differed on empathy and rates of parental incarceration, independent samples *t*-test and chi-square test were used. Finally, to examine if social skills, cognitive, or affective empathy increased the likelihood of having a parent incarcerated, a series of multinomial logistic regressions (MLR) were conducted using nnet package (Venables & Ripley, 2002). Separate MLRs were conducted for each sample.

5.5. Confirmatory factor analysis on the empathy quotient

Using lavaan package (Rosseel, 2012), a confirmatory factor analysis with maximum-likelihood estimation was conducted to test that a three-factor model would fit the data. Thus, the fit of the model identified by Muncer and Ling (2006), which included 15 items was tested combining the two samples ($N = 373$). To examine whether the model fit the data well, a Chi-Square test was conducted, where a non-significant Chi-Square indicates good fit. We used three indices of practical fit (TLI, Tucker & Lewis, 1973; CFI, Bentler, 1990; and RMSEA, Browne & Cudeck, 1993). A comparative fit index (CFI) and TLI >0.90 suggests an acceptable model fit (Bentler & Bonett, 1980) and TLI >0.95 suggests a good model fit (Hu & Bentler, 1998). A root mean square error of approximation (RMSEA) <0.08, suggests an acceptable fit; an RMSEA <0.06 suggests a good fit (Browne & Cudeck, 1993). As expected, because of the large sample size, the chi-square was significant, but the indices of practical fit suggest that the model tested had an acceptable fit, $\chi^2(df = 87) = 176.53$, $p < 0.05$; TLI = 0.89, CFI = 0.90, RMSEA = 0.053, 90% CI = 0.041–0.064. Each empathy factor was correlated with each other, but the strongest factor correlations were between cognitive empathy and social skills ($r = 0.51$), while the correlations between the other factors were weaker (see Fig. 1).

5.6. Sample differences in empathy and parental incarceration

To test if the offender sample differed from the non-offender sample on age and empathy, *t*-tests were conducted. On the total score of the EQ, the offender sample ($M = 44.58$, $SD = 11.52$) did not differ to the non-offender sample ($M = 45.53$, $SD = 10.79$) ($t(372) = 0.82$, $p = 0.41$). Women in the offender sample did not significantly differ in social skills ($M = 5.39$, $SD = 2.41$; $t(372) = 1.52$, $p = 0.13$), cognitive ($M = 6.28$, $SD = 2.45$; $t(372) = -1.68$, $p = 0.09$), or affective empathy ($M = 5.80$, $SD = 2.49$; $t(372) = 1.68$, $p = 0.09$) compared to the female non-offender sample ($M = 5.77$, $SD = 2.50$; $M = 5.86$, $SD = 2.38$; $M = 6.20$, $SD = 2.07$; respectively). The women in the offender sample were significantly older ($M = 38.61$, $SD = 10.33$) than the non-offender sample ($M = 20.96$, $SD = 3.80$; $t(217) = -21.39$, $p < 0.001$), unsurprisingly because the former was a student sample. However, age has not been found to influence EQ scores in adults (Bailey, Henry, & Von Hippel, 2008). Ethnic minorities were not overly represented in the offender sample (72%) compared to the non-offender sample (69%; $x^2(1) = 0.50$, $p = 0.48$). There were significant differences for parental incarceration. Thirty-five percent of female offenders reported having a parent incarcerated during childhood, compared to 17% in the non-offender sample ($x^2(1) = 15.92$, $p < 0.000$). The offender sample (18%) reported a greater number of fathers incarcerated than the non-offender sample (8%; $x^2(1) = 8.50$, $p = 0.004$). Although the offender sample had higher rates of mothers incarcerated (10%) and both parents being incarcerated (7%) than the non-offender sample (6%; 4%), these differences were not significant ($x^2(1) = 2.66$, $p = 0.132$; $x^2(1) = 2.73$, $p = 0.098$; respectively). In sum, the women in the offender sample did not differ in levels of empathy compared to women in the non-offender sample, but reported greater rates of parental incarceration (specifically having a father incarcerated).

5.7. Parental incarceration and empathy: non-offender sample

To assess how empathy increased the likelihood of having a parent incarcerated, a series of multinomial logistic regressions were conducted. Overall, the model comparing the incarceration groups - no parental incarceration, father-only incarcerated, mother-only incarcerated, and both parents incarcerated, was significant, x^2 (15, $N = 195$) = 34.04, $p = 0.003$. The findings shown in Table 1 suggest that women

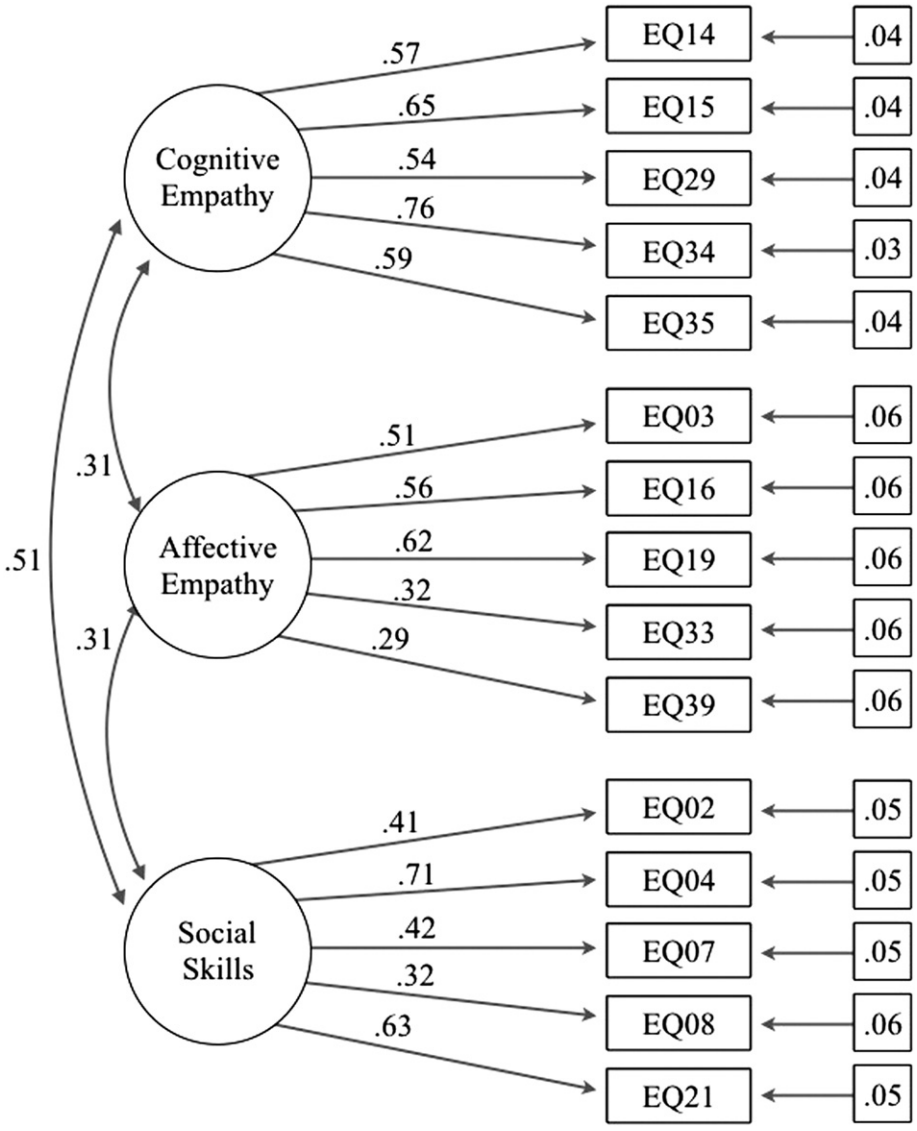

Fig. 1. Three factor model of the Empathy Quotient.

who scored lowest in cognitive empathy were more likely to be in the mother-only group or both parents incarcerated group, compared to the father-only and no parental incarceration groups. Interestingly, low cognitive empathy did not increase the likelihood of being in the mother-only group compared to the both parents incarcerated group. Based on these findings, low cognitive empathy increased the likelihood of having a mother incarcerated, and the influence of having a father incarcerated had no effect on this association. Further, social skills, cognitive or affective empathy did not increase or decrease the likelihood of being in the father-only group versus no parental incarceration group. Overall, the results indicate maternal incarceration is related to lower levels of cognitive empathy in non-offender women.

5.8. Parental incarceration and empathy: offender sample

The multinomial logistic regression comparing the incarceration groups was significant, x^2 (15, $N = 176$) = 59.42, $p = 0.000$. Table 2 shows the results which suggest women who scored lowest in cognitive empathy were more likely to be in either the mother-only group or both parents incarcerated groups, compared to the father-only and no

Table 1
Non-offender sample: parental incarceration group comparisons on empathy based on odds ratios (95% CI).

	Father vs none[a]	Mother vs none[a]	Both vs none[a]	Mother vs father[a]	Mother vs both[a]	Both vs father[a]
Age	0.96 (0.81–1.14)	0.89 (0.66–1.20)	1.02 (0.84–1.23)	0.93 (0.66–1.30)	0.87 (0.62–1.23)	1.06 (0.83–1.36)
Minority	1.45 (0.44–4.84)	0.86 (0.19–3.90)	3.12 (0.34–29.69)	0.59 (0.09–3.86)	0.27 (0.02–3.46)	2.18 (0.18–26.43)
Empathy						
Cognitive	0.97 (0.75–1.26)	0.49** (0.32–0.75)	0.54* (0.33–0.88)	0.51** (0.31–0.82)	0.92 (0.50–1.67)	0.55* (0.32–0.95)
Affective	0.82 (0.63–1.07)	0.99 (0.70–1.41)	0.84 (0.57–1.24)	1.21 (0.79–1.84)	1.18 (0.72–1.91)	1.03 (0.66–1.61)
Social skills	1.16 (0.91–1.48)	1.00 (0.71–1.41)	1.13 (0.78–1.62)	0.86 (0.57–1.30)	0.89 (0.55–1.43)	0.97 (0.64–1.48)

[a] Reference group; minority = minority ethnicity status (0 = Caucasian, 1 = ethnic minority status).
* $p < 0.05$.
** $p < 0.01$.

Table 2
Offender sample: parental incarceration group comparisons on empathy based on odds ratios (95% CI).

	Father vs none[a]	Mother vs none[a]	Both vs none[a]	Mother vs father[a]	Mother vs both[a]	Both vs father[a]
Age	0.94** (0.90–0.99)	0.98 (0.93–1.04)	0.96 (0.90–1.03)	1.04 (0.98–1.12)	1.03 (0.95–1.11)	1.02 (0.95–1.10)
Minority	1.24 (0.46–3.31)	0.70 (0.20–2.40)	2.27 (0.42–12.14)	0.56 (0.14–2.32)	0.31 (0.05–1.80)	1.83 (0.31–11.00)
Empathy						
Cognitive	0.94 (0.78–1.15)	0.57*** (0.43–0.77)	0.52*** (0.37–0.75)	0.61** (0.44–0.84)	1.10* (0.74–1.64)	0.55** (0.38–0.81)
Affective	0.88 (0.73–1.04)	0.85 (0.66–1.08)	0.71* (0.53–0.95)	0.97 (0.74–1.27)	1.20 (0.86–1.64)	0.81 (0.59–1.10)
Social skills	0.95 (0.79–1.15)	1.18 (0.90–1.55)	1.04 (0.74–1.46)	1.24 (0.92–1.68)	1.14 (0.78–1.68)	1.09 (0.76–1.56)

[a] Reference group; minority = minority ethnicity status (0 = Caucasian, 1 = ethnic minority status).
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

parental incarceration groups. Low cognitive empathy did not increase the likelihood of being in mother-only group compared to the both parents incarcerated group. This indicated that cognitive empathy is associated with maternal incarceration, regardless of whether the father was incarcerated or not. Unlike the non-offender sample, female offenders lower in affective empathy were more likely to be in the both parents incarcerated group compared to no parental incarceration group. Affective empathy or social skills did not increase the likelihood of belonging in any other groups. In sum, maternal incarceration is most associated with low cognitive empathy, while having both parents incarcerated during childhood is associated with low affective empathy.

6. Discussion

With 1.7 million children affected by parental incarceration (Glaze & Maruschak, 2010), presumably about half of those being girls, the concerns about the short-and long-term effects are a priority. Parental incarceration is a risk-factor for more adverse childhood outcomes than other types of parental separation (Murray & Farrington, 2005). However, the scope of these effects has been mostly limited to adult criminological outcomes (e.g., arrests, violent behavior; Huebner & Gustafson, 2007; Muftic et al., 2016; Will et al., 2016). The present study builds on this prior research, showing that the effects of parental incarceration during childhood are associated with empathy deficits for daughters into adulthood. In particular, parental incarceration (specifically maternal incarceration) was most strongly associated with deficits in cognitive empathy, the ability to identify another person's point of view. Muftic et al. (2016) suggest the consequences of parental incarceration may be different based on paternal and maternal incarceration. The present study supports this and shows that cognitive empathy in women is most affected by maternal incarceration, whether or not the father was incarcerated. That is, women who had lower levels of cognitive empathy were more likely to have experienced maternal incarceration or both parents incarcerated during childhood. Whereas empathy across the 3-factors did not predict women having a father incarcerated during childhood. This finding was consistent across both samples. Thus, second-generation offenders who experienced maternal incarceration displayed the same empathy deficits as non-offender women who also experienced maternal incarceration.

Based on trauma theory, a possible explanation for this finding is that childhood is a period where secure parental attachment is developed, and since empathy is thought to develop from a secure attachment with parents (Grusec & Davido, 2010; Taylor et al., 2013), the traumatic experience of parental incarceration may impact the child's security, in turn disrupting the development of empathy. The development of cognitive empathy seems to be most disrupted. Across two samples, the association between cognitive empathy and maternal incarceration was replicated. This indicates a robust association and highlights maternal incarceration has a greater impact on cognitive empathy in women. When fathers are incarcerated, their children are more likely to be cared for by the child's mother, which may be less impactful than when a mother is incarcerated (Dallaire & Wilson, 2010). When the mother is incarcerated the child is more likely to be looked after by relatives or placed in foster care (Mumola, 2000). Overall, the impact of maternal incarceration may lead to less financial resources, changes in living arrangements, and a traumatic separation (Mumola, 2000), which may impact the child's development of secure parental attachment, thus, affecting the typical development of cognitive empathy.

We confirmed the 3-factor model of the EQ using two ethnically diverse samples, which yielded meaningful results. We found that the offender and non-offender groups did not differ across the 3-factors of empathy, which supports and replicates prior research including female samples using other empathy questionnaires (Goldstein & Higgins-D'Alessandro, 2001). Thus, based on the present study, empathy as a single construct and across the 3-factor model is not associated with criminality in women, as has been shown in men. Another explanation may be that the current model of empathy does not capture the entire spectrum of empathy (Vachon, Lynam, & Johnson, 2014). Measures of empathy, including the EQ, focus on how peoples' feelings resonate with other people. However, Vachon and Lynam (2016) suggest empathy extends beyond a person's ability to respond to others' feelings, and that empathy as a construct should include a dissonant and lack of response (e.g., callousness, unemotional, contemptuous and cynical view of others). Thus, a lack of empathy may not be enough of a personality trait to encourage crime committed by women, and instead, it must be accompanied by a willingness to violate the rights of others.

Within the offender sample, affective empathy did increase the likelihood of having both parents incarcerated. This finding cannot be attributed to the greater impact that maternal incarceration has on a child, as the association was not found for mother-only (or father-only) incarceration groups. Therefore, affective empathy seems to be influenced by the combination of having both parents incarcerated during childhood. The same finding was not replicated in the non-offender sample, which suggests this association is particular to second-generation offenders. While it is difficult to draw etiological explanations from the present study, it may be that affective empathy moderates the association between parental incarceration and adult criminal behavior.

The present study has certain limitations. First, both empathy scores and parental incarceration rates were self-report. While these methods are widely used, there may be a stigma associated with self-reporting parental incarceration, even when the questionnaire is anonymous. The aim of the present study was to understand how parental incarceration affected women, thus our findings may not generalize to male samples. Also, there is evidence to suggest parental incarceration increases insecure attachment, which may affect empathy levels (Farrant et al., 2012). Thus, the present findings may offer support for this suggestion, but we are unable to assess if women who experienced parental incarceration did differ, retrospectively, in parent attachment/bonding styles. Therefore, causal associations and interpretations are limited. Next, while our two samples did not significantly differ in ethnic minority status, the offender sample had a greater percentage of Pacific Islander/Native Hawaiian participants (54%) than the student sample (10%). Therefore, our samples were not ethnically homogenous, which may make comparisons less reliable. However, our findings were replicated across the two samples.

Nevertheless, future studies may be warranted to assess if parental incarceration effects empathy differently based on ethnicity. A final limitation is that the non-offender sample included university students, and while we do not think this is a confound, future studies should seek to replicate these findings in a randomly selected community sample. Even with these limitations in mind, the present study has several strengths because of the methodology. Using self-report measure, we produced confirmatory evidence in support of a 3-factor model of the EQ in an ethnically diverse female population. Further, we found differences in empathy based on maternal incarceration across two independent female samples.

Past research has shown parental incarceration has adverse criminological outcomes that can be seen into adulthood. The present study extends this research, showing that prosocial personality traits remain affected into womanhood. However, for women, it seems that maternal incarceration has the most significant effect on cognitive empathy, and this finding is consistent across offender and non-offender samples.

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