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**Family imprisonment, maternal parenting stress
and its impact on mother-child relationship
satisfaction**

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Abstract

Parental imprisonment, and more recently other close family imprisonment, has been associated with long-term harms to children. A number of researchers have proposed that parenting stress caused by family imprisonment could impact on caregivers' ability to offer a secure parent-child relationship after a close family member is imprisoned. Such relationship problems might then mediate further harms to children. The Family Stress-Proximal Process (FSPP) model conceptualises family imprisonment as an ongoing stressor that influences relational processes in families. Using HILDA, a nationally-representative Australian survey, we test key aspects of this theoretical model for women affected by close family imprisonment. We demonstrate that recent close family imprisonment does indeed significantly increase risks of high maternal parenting stress. Women affected by this high parenting stress are also significantly more likely to report feeling less satisfied with their relationship with their child one year later. Nonetheless, only a third of women experiences high parenting stress after close family imprisonment. And, women who experience close family imprisonment without high parenting stress do not have a greater risk of subsequent relationship dissatisfaction. We conclude that the prevention or reduction of parenting stress in families affected by close family imprisonment could have a protective effect on subsequent mother-child relationships.

Keywords: parenting stress • family imprisonment • maternal bonding • parent-child relationship • prison

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An increasing number of Australian children are affected by the imprisonment of a close family member. Although there are no nationwide figures, at least 4.3% of all children and 20.1% of Indigenous children are estimated to experience the imprisonment of their father (Quilty, Levy, Howard, Barratt, & Butler, 2004). Maternal imprisonment has been found to affect 0.7% of non-Indigenous children and 18.8% of Indigenous Australian children (Dowell, Preen, & Segal, 2017).

A broad body of international scholarship has demonstrated that parental imprisonment is associated with a variety of harms to children, including antisocial and delinquent behaviour, low academic attainment, unemployment, mental illness and substance misuse (e.g., Arditti, Smock, & Parkman, 2005; Johnston & Gabel, 1995; Murray & Farrington, 2005; Wildeman, 2014). Recent research found that parental imprisonment may also cause severe stress to children's adult caregivers, increasing risks of maternal depression and marital dissolution. These impacts on caregivers are thought to be primary determinants of children's subsequent adjustment (Apel, 2016; Murray, Farrington, & Sekol, 2012; Turney, 2014a, 2015).

There are very few studies of children who are affected by the imprisonment of close relatives other than parents, such as grandparents and siblings. However, recent evidence showed that the imprisonment of parental and of non-parental household members affected a roughly equal proportion of Australian children (Besemer & Dennison, in press). An exclusive focus on parental incarceration excludes many children who live in non-nuclear family contexts. In Australia, such children are disproportionately likely to be Indigenous (Besemer & Dennison, 2018 forthcoming). A large proportion of Indigenous children live in households with three or more adults. Such multi-adult households commonly include multigenerational households with extended family members, as well as households in which two or more families cohabit and share resources (Hunter, Kennedy, & Smith, 2003). Consequently, Indigenous children often have important relationships with a variety of adults they live with, including both biological and non-biological ties (Hunter, Kennedy, & Smith, 2003).

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The imprisonment of children's siblings, fathers, uncles, aunts and grandparents have all been shown to predict their subsequent delinquent development (Farrington, Barnes, & Lambert, 1996; Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001; Slomkowski, Rende, Conger, Simons, & Conger, 2001). Qualitative research observed adverse psychological consequences in children who experienced sibling imprisonment (Meek, 2008; Meek, Lowe, & McPhillips, 2010). Drawing on qualitative findings, Comfort (2016) described the severe, on-going strain experienced by relatives who have close family members cycling through short prison sentences. Recent research found adverse mental health consequences of close family imprisonment for adult men (Besemer, van de Weijer, & Dennison, in press). The imprisonment of close family members has also been shown to result in risks to adult cardiovascular health (Lee, Wildeman, Wang, Matusko, & Jackson, 2014). Similarly, mothers confronted with the imprisonment of adult sons suffer from increased risks of psychological distress and decreased physical health (Green, Ensminger, Robertson, & Juon, 2006).

Although these studies represent a smaller body of work than the parental imprisonment literature, their results parallel those found in research focusing exclusively on parental imprisonment. For example, research has found a relationship between parental imprisonment and health problems (Lee, Fang, & Luo, 2013; Roettger & Boardman, 2012) as well as between parental imprisonment and adverse psychological outcomes (Gaston, 2016; Wildeman, Schnittker, & Turney, 2012). Given the similarities in outcomes, it is important to explore whether the imprisonment of parents and of other relatives impacts children through similar mechanisms. Theoretical models developed to understand the effect of parental imprisonment on children provide a starting point with which to understand the potential implications of the imprisonment of other family members.

As with the imprisonment of parents, the imprisonment of a non-parent close family member is likely to affect children through its consequences for children's developmental contexts, particularly through effects on their primary caregivers. It is thought that stress caused by parental imprisonment could impact on caregivers' ability to supervise children, to attend to children's needs, and more generally to reduce caregiver's ability to offer warm, consistent and

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effective parenting (Arditti, Burton, & Neeves-Botelho, 2010; Gault-Sherman, 2012; Turney, 2014a). Over time, high levels of family stress could potentially result in cumulative damage to parent–child relationships and disrupt children’s ability to develop healthy attachments (Mackintosh, Myers, & Kennon, 2006; Miller, 2006; Murray, 2005; Murray, Farrington, & Sekol, 2012; Turney, 2014a, 2014b).

Recent work by Arditti (2016) integrated these theoretical propositions into a Family Stress-Proximal Process (FSPP) model. As can be seen in Figure 1, the FSPP model conceptualises parental imprisonment as an ongoing stressor that influences psychological and relational processes for all family members, and as a consequence, children’s adjustment (Arditti, 2016). In particular, the model emphasises how caregiver stress may result in alterations in parenting, ultimately disrupting children’s ability to maintain secure, organized attached relationships with their caregivers. The ability to form secure attachments to others is thought to be of paramount importance in determining adulthood well-being and lifelong criminogenic risk (Dennison, 2011; Farrington, 2011). These findings are consistent with the broader literature in developmental psychology, in which social support has emerged as one of the integral protective influences mitigating harmful consequences of stress in adverse situations (e.g., Beeber et al., 2014; Boss, 2007; Shlafer & Poehlmann, 2010).

In Arditti’s FSPP framework (2016), parental imprisonment is hypothesized to contribute to two key types of stress: ambiguous loss and parenting stress. Ambiguous loss refers to unresolved grief after the loss of a family member (see Boss, 2007). As ambiguous loss cannot easily be operationalised quantitatively (Boss, Bryant, & Mancini, 2016) and relevant data was unavailable, this study only focuses on parenting stress as an outcome of the imprisonment of a close family member.

Parenting stress refers to reactive stress experienced in relation to the demands of parenting (Deater-Deckard, 1998). Other than resulting from any stressors associated with parenting children directly, this type of stress is also thought to be a manifestation of a variety of other proximal and distal stressors in caregivers, including economic, physical or mental health problems and stressful life events (Beeber et al., 2014; Deater-Deckard, 1998; Mash & Johnston,

1990). Negative reactions of neighbours and friends, stigmatising media exposure, residential relocation, school changes, as well as variety of other challenges that accompany parental imprisonment are also likely to influence caregiver parenting stress (Turney, 2014a). In addition, the central importance placed on parenting stress in Arditti's model (2016) is well-supported by a wider literature. This work emphasises the consequences of parenting stress and associated parenting behaviour as the single most important environmental influence on children's healthy development into adulthood, and on their continuing well-being thereafter (e.g., Stone, Mares, Otten, Engels, & Janssens, 2016).

There has, however, been very little research regarding the extent to which paternal incarceration impacts on parenting (Turney, 2014a). There is no empirical research that measures the effect of the imprisonment of other family members on caregiver well-being or parenting behaviour. We found only four studies that examined parenting stress in the context of paternal or maternal imprisonment. Three of these used data from the Fragile Families and Child Wellbeing study in the United States, a longitudinal cohort study with a sample of 4,898 unmarried parents of children born between 1998 and 2000 (Turney, 2014a; Turney & Wildeman, 2013; Wildeman, Schnittker, & Turney, 2012). Only Turney and Wildeman (2013) measured direct effects, and found that recent paternal incarceration increased maternal stress for mothers who were living with the father before incarceration, although findings were not consistent across models. The remaining two studies looked at consequences of maternal parenting stress following either paternal or maternal imprisonment. Of these, Wildeman et al. (2012) found that parenting stress in mothers was an important mediator of maternal depression following paternal imprisonment. An earlier study of 25 caregivers of children with currently incarcerated mothers found that caregivers with higher levels of parenting stress exhibited less warmth and acceptance towards the children in their care (Mackintosh et al., 2006).

The aforementioned research findings raise a number of questions. First, the majority of studies use data from the Fragile Families survey. As this survey heavily oversampled unmarried mothers, only included families in urban areas, and was only able to look at parenting stress in mothers of young children, these results may not be applicable to all other groups of families

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affected by paternal imprisonment in the United States, or to those living in other countries. Moreover, none of the studies looked at the consequences of the imprisonment of relatives other than parents. As a consequence, the extent to which parenting stress increases after any form of family imprisonment remains largely untested.

In the second stage of Arditti's (2016) FSPP model, parenting stress is hypothesised to influence proximal relational family processes, compromising family functioning (Arditti, 2016). In particular, the combined effects of parenting stress, psychological distress in the caregivers, and accompanying practical problems and disruptions are thought to be directly linked to parenting behaviour (Deater-Deckard, 1998; Geller, Garfinkel, & Western, 2011; Shlafer & Poehlmann, 2010). If such changes persist over time, these changes to parenting behaviour may eventually come to affect the quality of the parent-child relationship (Crnic, Gaze, & Hoffman, 2005; Deater-Deckard, 1998). A variety of studies has related these cumulative problems to a range of detrimental outcomes for children's development (Anthony et al., 2005; Ayoub, Vallotton, & Mastergeorge, 2011; Mackler et al., 2015; Michael, 2017; Östberg & Hagekull, 2013; Rodriguez, 2011).

The effect of paternal imprisonment on parenting (Turney, 2014a), or on children's relationship with their immediate caregiver, has rarely been measured empirically. Only two studies have directly measured children's family relationships. A study by Arditti, Lambert-Shute, and Joest (2003) looked at perceived relationship changes in a sample of 56 caregivers of children who visited an incarcerated family member or spouse in an American prison. Of those, 81.6% believed that incarceration had created problems for their family and 42.3% believed their own relationship with their children had been affected by this. A more recent study in Israel (Michael, 2017) used observations from college students who volunteered as mentors for 78 boys and 56 girls with incarcerated fathers. The mentors found that children expressed high levels of antagonism and low affection towards their mothers and siblings. These negative feelings were found to be a significant predictor of children's low pro-social behaviour. This research is important in highlighting the connection between prisoners' children's family relationships and their social and emotional functioning. However, the study was unable to determine whether the

problems in relationships and behaviour pre-dated the father's imprisonment and to what extent the imprisonment had been a cause of these problems.

The current study measured the combined direct effects of close family imprisonment and parenting stress on mother-child relationships. For the purposes of this analysis, we defined *close family imprisonment* as the imprisonment of any person the mother regards as a close family member. Using the Household, Income and Labour Dynamics in Australia (HILDA) Survey, a nationally representative panel study of Australian households, we test two key propositions underpinning Arditto's (2016) FSPP model in relation to close family imprisonment: (1) the proposition that family imprisonment increases maternal parenting stress, and (2), that mothers experiencing high parenting stress in the context of close family imprisonment are at a subsequently greater risk of experiencing dissatisfaction with their mother-child relationships.

In Australia, as in many countries, women hugely outperform men in the number of hours they spend caring for, and being with their children (Craig, 2006). For the purposes of this study, we focus only on mothers. However, future work should also consider the effects close family imprisonment may have on paternal parenting stress and on fathers' relationship with their children. We have highlighted the relevant parts of the model in Figure 1.

Using the FSPP model as a basis, we formulated two hypotheses. First, we propose that women have a greater likelihood of experiencing high parenting stress after experiencing close family imprisonment than in years with no reported close family imprisonment. Second, we propose that women who experience close family imprisonment *in combination with high parenting stress* report lower relationship satisfaction with their children in the next year than women who experience close family imprisonment without high parenting stress.

Method

Participants

Our sample comes from unit record data in the Housing, Income and Labour Dynamics in Australia (HILDA) longitudinal survey, an annual nationally representative panel study of Australian households and individuals. The original panel included 13,969 individuals aged 15

years and older. Later survey waves also included all original participants' household members who had since attained the age of 15, as well as any new household members. Response rates were above 75% for initial wave respondents and have been above 90% in each subsequent wave of the study. The current dataset now contains up to 15 years of detailed socioeconomic information about approximately 15,000 individuals (see Summerfield et al., 2016). Data are collected about each household member, though interviews are only conducted with people aged 15 years and over (Wilkins, 2015). In addition to an in-person interview, respondents also self-completed a twenty-page questionnaire with more sensitive questions. This questionnaire covers a range of items, including adults' experiences of close family imprisonment, their self-assessed parenting stress and their satisfaction with their relationship with their children (i.e., the key variables that form the basis of this current analysis). Questions about life events, including imprisonments, were only asked in the HILDA survey from wave 2 onwards, but were then included every year thereafter. The main dependent variables examined in this study were available in all annual waves of HILDA (2001–2015). Variable descriptions are provided in Table 1. [Table 1 near here](#)

Measures

Dependent variables. HILDA parenting stress measures were taken from the 'Aggravation in parenting scale' in the Child Development Supplement (CDS) of the Panel Study of Income Dynamics (PSID) in the United States (Wooden, 2003). This scale was designed to measure parenting stress in response to sudden changes in caregivers' lives (Hofferth, Davis-Kean, Davis, & Finkelstein, 1997). The scale uses an index of four questions, in which parents were asked to indicate on a 7-point scale how strongly they agreed or disagreed with a list of four statements: (i) 'Being a parent is harder than I thought it would be'; (ii) 'I often feel tired, worn out, or exhausted from meeting the needs of my children'; (iii) 'I feel trapped by my responsibilities as a parent'; and (iv) 'I find that taking care of my child/children is much more work than pleasure'. Questions were asked to anyone who indicated they had parenting responsibility for children aged 17 years or younger. For all women, these items had an alpha of 0.77, indicating an

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acceptable internal consistency. Mean parenting stress scores were 3.77 ($SD = 1.45$, min 1, max 7) across all observations in which women were affected by close family imprisonment, and 3.66 ($SD = 1.42$ min 1, max 7) across all observations in which those same women were not affected by close family imprisonment. As the distribution of parenting stress was heavily skewed, this variable was then dichotomized. For the dichotomized measure, 'high' parenting stress indicated scores in the top quartile of the full female HILDA population, including women with and without experiences of imprisonment. These top quartile scores were between 4.67 and 7, suggesting that on average, parents agreed strongly with each statement.

We obtained our measure of the self-reported quality of mothers' relationship with their children from the question: "How satisfied are you with your relationship with your children?" This question forms part of a series of questions in which respondents indicate how satisfied they are with a range of aspects of their life using an 11-point scale ranging from 0 (totally dissatisfied) to 10 (totally satisfied). The distribution of this variable was also heavily skewed; more than 60% of mothers scored their relationship with their child/children as eight or above. Relationship satisfaction was therefore dichotomized into a binary variable indicating a score in the lowest quartile of the full female HILDA population, including women with and without experiences of imprisonment. These values ranged between 1 and 8.

Independent variables. Experiences of close family member imprisonment were recorded in a self-completion questionnaire. Respondents indicated whether they had experienced one of a series of events in the past year. One of these life events was whether they had a "close family member detained in a jail / correctional facility". There were 936 women in the dataset who experienced close family imprisonment in at least one wave, representing 4.69% of all women included in the survey. Each woman affected by close family imprisonment was in the survey for an average of 10.48 annual waves (i.e., 9,818 observations). Of these 9,818 observations, 1,621 observations were in waves in which women had experienced close family imprisonment (16.52%). However, fixed effects models necessarily exclude cases where the dependent variable is the same across all measured time periods, or where there are only valid observations for a single wave. This meant that included samples of women, including the sample

of women affected by close family imprisonment, differed between models. Other descriptive statistics are presented in Table 2. [Table 2 near here](#)

Control variables. As parenting stress is known to be determined by a variety of proximal and distal sources (Mash & Johnston, 1990), we also controlled for a number of other time-varying covariates. These covariates included marital status, employment status, social support, mental health, maternal age and household income, all of which are predictors of maternal parenting stress in other study populations (Beeber et al., 2014; Deater-Deckard, 1998; Mash & Johnston, 1990; Östberg & Hagekull, 2000; Rodriguez-JenKins & Marcenko, 2014). Information about each control variable is presented in Table 1.

Data Analyses

The first analytic stage estimates the average effects of family imprisonment on women's parenting stress. The second analytic stage estimates the single and combined effects of parenting stress and family imprisonment on women's relationships with their children in the subsequent year. We test both of these relationships using fixed effects models. In fixed effects models, we make within-person comparisons, enabling us to remove bias associated with unmeasured differences between people in the population. Rather than measuring absolute differences between individuals, our fixed effects models look at variations in parenting stress within each individual across different time points. In HILDA, parenting stress is measured with reference to the current moment, using present tense, while experiences of close family imprisonment are reported with reference to the previous twelve months. We are therefore able to measure the extent to which variations in within-person differences in parenting stress can be explained by experiences of close family imprisonment in the twelve months leading up to each time point, as well as how such experiences relate to future changes in mother-child relationship satisfaction. We chose to measure these changes in mother-child relationship satisfaction in the subsequent year to ensure the temporal order of parenting stress and subsequent relationship changes.

To look at the moderating effect of parenting stress on the relationship between family imprisonment and women's relationships with their children, we introduce an interaction term into the fixed effects model. Using this interaction term, we are able to estimate the effect of imprisonment both with, and without concurrent high maternal parenting stress, and compare their effect on mother child relationships.

Results

Table 3 contains two fixed effects models that estimate the effect of close family imprisonment on women's parenting stress. The first column presents a baseline model (I), while the second column presents a full model with added controls (II). Both models show a strong, statistically significant effect of close family imprisonment on women's parenting stress. In waves in which women indicate that a close family member is imprisoned, women are more than 50% more likely to feel stressed in relation to meeting their child or children's needs than they are in other waves, even while controlling for their other characteristics, including mental health, general health and social support. We can therefore confirm our first hypothesis – close family imprisonment significantly increases the risk of high parenting stress for women.

Compared to the effect of close family imprisonment, the effects of these other covariates in the model were relatively modest. Women who were older had slightly lower odds of being highly stressed in the context of parenting, as did women with better mental and general health. Social support reduced the likelihood of high parenting stress. [Table 3 near here](#)

Although Table 3 shows that close family imprisonment substantially increases the risk of high parenting stress, it is important to note that high parenting stress only affects 29% of women in the year they experience close family imprisonment (Table 2). If parenting stress is the primary mediator of impacted mother-child relationships after close family imprisonment, we would expect poorer parent-child relationship satisfaction in mothers who experience high parenting stress than in those who do not. Table 4 shows how close family imprisonment and parenting stress interact to affect women's relationship satisfaction with their children. [Table 4 near here](#)

Model III in Table 4 represents a baseline model that shows a strong, direct effect of close family imprisonment on low relationship satisfaction with children in the same year.

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However, this effect is completely eliminated once the model controls for current parenting stress (Model IV). In Model V and VI, we look at the consequences of parenting stress and family imprisonment over a longer time period. Model V considers the effects of current parenting stress and family imprisonment in the previous year on current mother-child relationship satisfaction. Without high parenting stress, the experience of close family imprisonment was found to have no effect on mother-child relationships. However, mothers who had experienced high stress in the same year that close family imprisonment took place were more than three times likely to be less satisfied with their mother-child relationship. Although high parenting stress without close family imprisonment also had a significant effect on mothers' current relationship with their children, it was the combination of close family imprisonment and parenting stress in the previous year that produced by far the strongest effect. After adding a series of controls, these effects remained the same (Model VI).

Within-individual changes in most of the control variables in Model VI were significantly related to low relationship satisfaction. Within the model, changes of marital status to becoming single had the largest effect. This may be indicative of difficulties associated with single parenting, particularly in the context of a recent separation. Leaving the labour force was associated with higher relationship satisfaction with children. Better mental health, general health and social support networks appeared to protect against problems in women's relationship with their children. Living in a more remote area, and having more children in the home had a very small but significant negative effect on mother-child relationship satisfaction. Overall, the effects of close family imprisonment and parenting stress were far larger than that of any controls. The introduction of control variables into the model did not meaningfully affect the strength of the relationship between parenting stress in the context of close family imprisonment and subsequent mother-child relationship satisfaction.

We can therefore confirm our second hypothesis: women who experience high parenting stress after close family imprisonment experience significantly worse relationships with their children in the subsequent year, while women who experience close family imprisonment without elevated parenting stress do not.

Discussion

Our research shows that the imprisonment of a close family member substantially increases women's risk of high parenting stress, confirming parenting stress as a likely mediating factor in Arditti's FSPP framework (2016). Generally, the control variables had small effects on parenting stress, which were similar to those that have been found in other study populations (e.g., Deater-Deckard, 1998; Östberg & Hagekull, 2000; Rodriguez-JenKins & Marcenko, 2014). Better maternal health, mental health and social support were all found to reduce the odds of having high parenting stress, while the presence of additional children in the home marginally increased women's parenting stress risk. Being older was found to have a very small protective effect on parenting stress. This differs from findings in other countries which found associations between higher maternal age and parenting stress (e.g., Deater-Deckard, 1998; Östberg & Hagekull, 2000).

The key importance of parenting stress as a potential driving mechanism for long-term harms of close family imprisonment is substantiated by our finding that the presence or absence of high parenting stress determines whether close family imprisonment has any direct effect on mothers' satisfaction with their relationship with their children. Although this study is unable to directly measure changes in maternal behaviour or the effects such behavioural changes might have on children, reduced relationship satisfaction in mothers is likely to signify problems in the mother-child bond with at least one of her children. And, while we have limited information regarding the nature or seriousness of this relationship problem, the ramifications of long-term impacts to children's secure relationship with their mother could be highly damaging. A large body of research has found that children's bonds to their immediate caregivers are not only integral to their ability to develop healthy attachments to others throughout their lives, but also to their overall neurobiological and psychological development (Bretherton, 1992; Schore & Schore, 2008). Weak parent-child relationships are also associated with young people's later propensity to engage in high-risk and delinquent behaviour (Parker & Benson, 2004).

Limitations and future research

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Even though we found a significant average effect of close family imprisonment on parenting stress, there was considerable variation in outcomes. Only a minority of women experienced high parenting stress in the year of imprisonment. It is possible that because of the experiences and stressors associated with the family members' offending, a subgroup of mothers may experience close family imprisonment as a period of relative calm in their lives, particularly during longer prison sentences (Giordano, 2010; Comfort 2016). We therefore expect that, despite a strong average effect of close family imprisonment on women's parenting stress, there are likely to be important contextual factors determining the extent and nature of that association.

Further research is needed to examine the contextual circumstances and person-specific characteristics that determine heterogeneity in the effects of imprisonment on families, including the factors that protect some mothers from experiencing high levels of stress in the context of close family imprisonment. It is likely that for at least some families, this absence of stress relates to a difference in the circumstances. A study of adult children of prisoners by Giordano (2010) found that for many participants, periods in which parents were imprisoned did not stand out as exceptionally stressful in the context of a variety of other long-term problems, including persistent family dysfunction and many other crisis events. Indeed, for some families, periods of imprisonment were periods of relative stability and calm in the absence of a difficult or violent family member. Consequently, parenting stress responses to imprisonment may not stand out in family contexts characterised by pre-existing and subsequent stressful circumstances.

Variation may also be explained by differences in the mothers' relationship to the imprisoned close family member. These data do not contain information about the type of close family member that was imprisoned. All we can tell from the data is that the respondent had, in the previous year, experienced the imprisonment of a family member, and that she herself considered that person to be 'close'. Consequently, we were not able to disentangle what proportion of imprisoned family members are resident or non-resident parents of children living in the household, and what proportion represents other types of family connections. In addition, we had no information regarding the seriousness of the crime for which family members were imprisoned, whether they were awaiting trial or if they had already been sentenced. Even more

importantly, we do not know whether the close family member had already been released at the time of the survey. It is likely that the aforementioned factors may hide considerable heterogeneity in the kind of experiences women referred to when they indicated that they had experienced a close family imprisonment in the past year. This lack of contextual information means that many potential links between close family imprisonment, parenting stress and mother-child relationships remain unclear in this study. Nonetheless, given the likely degree of variation in the types of experiences included in the measure, the size of the effect of close family imprisonment on parenting stress is perhaps even more remarkable and concerning.

Due to small sample sizes, we were also unable to consider differential effects by Indigenous status. It is possible that Indigenous families may not be affected by close family imprisonment in the same way. First, in Australia there is a much higher risk of imprisonment for Indigenous Australians overall (Cunneen, 2006; Lockwood, Hart, & Stewart, 2015). It is possible that in areas where imprisonment is more common, families may feel less stigmatised, and therefore less stressed by its occurrence. Alternatively, Indigenous families may face additional stressors in the context of close family imprisonment. In communities where imprisonment rates are high, a greater burden may be placed on kinship groups to care for multiple children with a parent in prison. Indigenous families are also more likely to live at great distances from prisons, making it far more difficult for families to visit. Cultural barriers may mean that imprisoned relatives are less able to benefit from family-oriented prison programs (Dennison, Smallbone, Stewart, Freiberg, & Teague, 2014). Further research is needed to determine how these circumstances affect stress and mother-child relationships in Indigenous families affected by imprisonment.

Further research may also be able to explore the extent to which the absence of parenting stress in some families, as well as subsequently reduced risks of dissatisfaction with mother-child relationships, is a consequence of family resilience. There is a growing literature in mental health that describes some families' and individuals' greater ability to adapt to disruptive life events (Walsh, 2003). Many studies have highlighted the particular importance of social relationships in determining such resilient outcomes (e.g., Beeber et al., 2014; Boss, 2007;

Luther, 2015; Shlafer & Poehlmann, 2010). Although this study controlled for mother's own perception of the adequacy of their social support network, we did not have any more nuanced information about the nature and quality of on-going social connections within and outside affected families.

There is, likewise, some uncertainty regarding the mother-child relationship measure. We do not know whether the mother's dissatisfaction with her relationship with her child or children reflects a problem with the relationship itself or only with the mother's satisfaction with the relationship. Moreover, we do not know whether mothers' negative perceptions related to their relationship with one, or more, of the children in her care. We also had no information regarding the cause of the mother's dissatisfaction. We would, however, argue that women's own subjective perception of the way they relate to their child or children is important in its own right, as it is likely to have an on-going influence on mother-child interactions.

Finally, this paper did not investigate the effects of close family imprisonment on ambiguous loss, the second direct effect proposed in the FSP model (Arditti, 2016). Ambiguous loss is a type of grief experienced as a consequence of problems in coping with the nature of a family member's absence and in expressing the circumstances of that loss to others. Ambiguous loss is difficult to operationalise or test quantitatively, and may only be suitable as an organising concept for qualitative enquiry (Boss, Bryant, & Mancini, 2016). Nonetheless, such processes may have an important additional effect on the way close family imprisonment affects mothers' satisfaction with their relationship with their children.

In this study we found that a recent experience of close family imprisonment had a direct effect on women's parenting stress. We also found that women who experience high parenting stress after close family imprisonment reported worse relationship satisfaction with their children in the subsequent year. For the Australian context, these findings show that Arditti's (2016) FSP model may at least partially explain parenting stress and parent-child relationship outcomes in women who experience close family imprisonment. However, there is nonetheless considerable unexplained variability in outcomes. For example, only a third of women experienced high parenting stress after close family imprisonment. Further research should specifically identify the

factors and circumstances that predict parenting stress in the context of close family imprisonment. Such information would allow for further development and refinement of the FSP model. It could also inform the design of specific, evidence-based support services to reduce parenting stress in families that are found to be most vulnerable. Our findings suggest that the prevention or reduction of parenting stress in families affected by close family imprisonment could have a considerable protective effect on mother-child relationships. In addition, this study further emphasises the need to widen the family imprisonment lens and look beyond parental imprisonment alone.

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Author contributions

KLB: Conducted the data analysis and wrote the paper. SMD: Supervised manuscript development and edited draft and final manuscripts.

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Table 1
Description of key variables

Key Variables	
Parenting stress	Measure of parenting stress was constructed on the basis of four items about feelings that parenting is harder than expected, often very tiring, and more work than pleasure, and that parenting responsibilities create a sense of entrapment. Scores range from 1-7. High parenting stress denotes a score in the top quartile of parenting stress scores within all female parenting stress observations in the dataset. These scores range from 4.67-7.
Low relationship satisfaction with child(ren)	Self-reported measure in which respondents are asked how satisfied they are with their relationship with their children, using an eleven-point scale ranging from 0 (totally dissatisfied) to 10 (totally satisfied). Scores were recoded into a binary variable that indicates that mother's satisfaction with her relationship with her own children is in the lowest quartile of the HILDA population. These values range from 0-8.
Close family imprisonment	The respondent indicated that in the last twelve months, a close family member was imprisoned.
Control variables	
Age	Age was measured as the age on June 30 th in the year the survey wave commenced. Interviews mainly took place between August and December of each calendar year (Summerfield et al., 2016).
Marital status	'Marital status' is a categorical variable with four categories (i.e., married or in a de facto relationship, separated, widowed, and single). These categories indicate the respondent's marital status in each wave.
Number of children in household	Number of people aged 0-17 living in the household. If the respondent is aged 15-17, this number also includes the respondent themselves.
Household income	Household income is measured as the OECD-equivalised income, indicated by the percentage difference from the median income in each wave. Households without an income will score -100, households with an income equal to the median income will score 0, and households with an income higher than the median will have a positive score. A maximum score of 1000 was used for all households that earned ten times the median income or more.
General health	The SF-36 general health measure is a 36-item scale that measures respondents' self-reported functional health and well-being across eight different health domains (Beusterien, Steinwald, & Ware, 1996). Total scores were transposed to a continuous scale between 0 and 100, with a higher score indicating better overall health.
Mental health	Continuous mental health score derived from the five-item Mental Health Inventory (MHI-5). The MHI-5 is widely used as a validated screening instrument for depressive symptoms, mood disorders, and other mental health problems in the general population (Beusterien, Steinwald, & Ware, 1996; Rumpf, Meyer, Hapke, & John, 2001;

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	<p>Silveira et al., 2005). The instrument is composed of five items: 'How much of the time during the last month have you: 'been a very nervous person'; 'felt calm and peaceful?'; 'felt downhearted and blue?'; 'been a happy person?' and 'felt so down in the dumps that nothing could cheer you up?' Scores range from 0-100 with higher scores representing better mental health.</p>
Social support	<p>Social network mean score– based on HILDA's social network index (Wilkins & Warrens, 2012). Average score across four-item scale including: 'people don't come to visit me as often as I would like'; 'I often need help from other people but can't get it'; and 'I seem to have a lot of friends'. Each item was rated on a Likert scale ranging from 1 'strongly disagree' to 7 'strongly agree'. Negatively worded items were reverse-scored, so that higher scores represent better social support.</p>
Remoteness area	<p>Residential location, classified within the Australian Standard Geographical Classification System (i.e., major cities, inner regional, outer regional, remote, very remote). Scored 0-5, with higher scores indicating greater rurality.</p>

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Table 2
Characteristics of the analytic sample

	Observations for all women		Observations of women with close family imprisonment in past year	
<i>Key variables</i>	%		%	
Close family member imprisoned in wave	1.41		100.00	
High parenting stress	22.52		29.17	
Low relationship satisfaction with child(ren)	22.62		35.04	
<i>Marital status</i>	%		%	
Married / de facto	60.17		52.49	
Separated	10.22		15.55	
Widowed	7.86		5.43	
Single	21.75		26.53	
<i>Number of children in household (mean)</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
	3.81	3.16	4.36	3.36
<i>Labour force status</i>	%		%	
Employed	57.53		47.13	
Unemployed	3.46		8.08	
Not in labour force	39.02		44.79	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Equivalentised HH income¹</i>	17.35	87.28	-3.74	75.91
<i>Age</i>	44.51	18.80	40.23	16.57
General health (high = good health)	68.45	21.35	40.23	16.57
Mental health (high = good mental health)	73.03	17.53	66.31	20.03
Social Support (high = good support)	5.51	1.02	5.16	1.13
Remoteness area (high = more rural)	0.49	0.77	0.59	0.79
N (individuals)	15263		936	
N (observations)	114687		1621	

Note. Household income is calculated as the mean percentage above or below the median income in that year, capped at 1000. M = Mean, SD = standard deviation.

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Table 3
Fixed effects analysis (logistic) of high parenting stress (4.67 and above)

	High parenting stress (4.67 and above)			
	Model I		Model II	
	OR	SE	OR	SE
Close family member incarceration	1.41 *	0.20	1.50 **	0.23
Age			0.92 ***	0.01
<i>Marital status: (reference: married)</i>				
Separated			1.10	0.12
Widowed			1.19	0.42
Single			1.08	0.16
Number of children in household			1.01 *	0.01
<i>Labour force status (reference: employed)</i>				
Unemployed			0.94	0.11
Not in labour force			1.02	0.06
Equivalentised HH income			1.00 *	0.00
General health (high=good health)			0.99 ***	0.00
Mental health (high=good mental health)			0.98 ***	0.00
Social support (high=good support)			0.66 ***	0.02
Remoteness area			0.99	0.07
N Individuals	2,090		2,090	
N Observations	16,556		16,556	
N Cases CF incarceration	431		431	

Note. ***p<.001; **p<.01; *p<.05 (two-sided)

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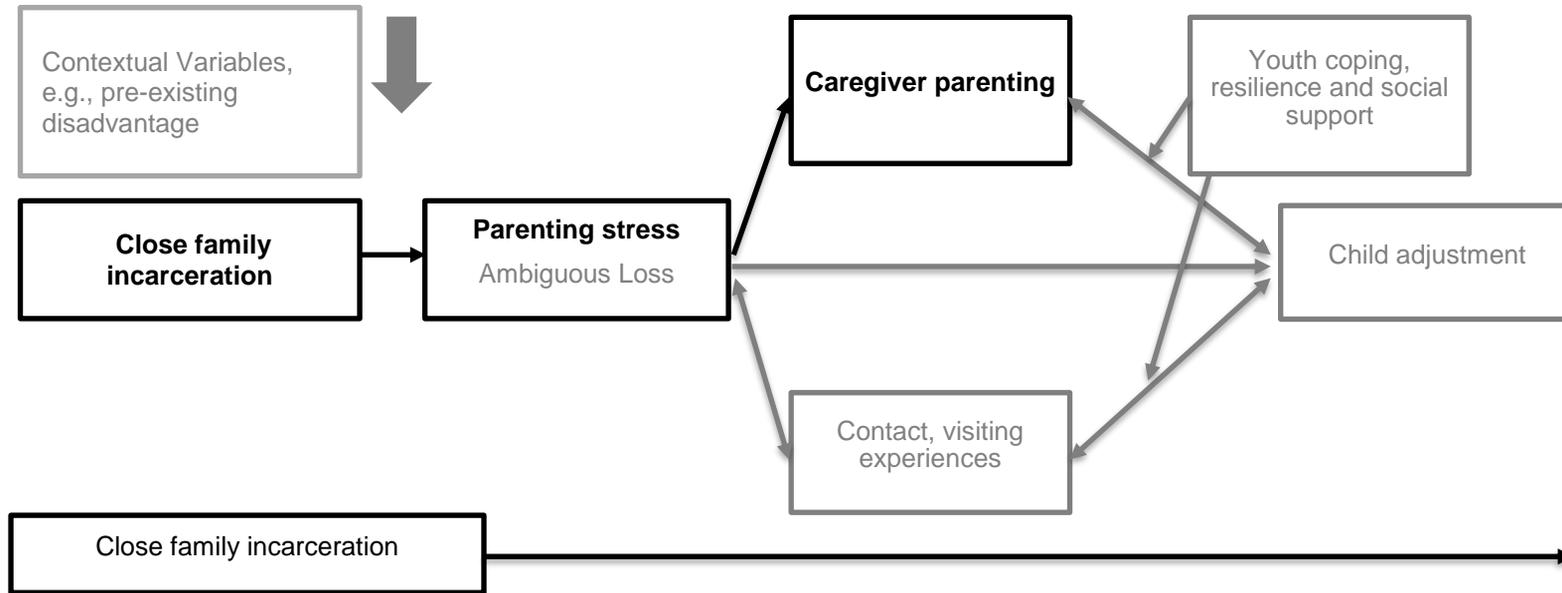
Table 4
Fixed effects analysis (logistic) of low maternal satisfaction with mother-child relationship

	Low maternal satisfaction with mother-child relationship								
	Model III		Model IV		Model V		Model VI		
	OR	SE	OR	SE	OR	SE	OR	SE	
CFI this year	1.74 ***	0.15	1.13	0.14	1.20	0.13	1.20	0.19	
High parenting stress this year			2.08 ***	0.10	2.31 ***	0.18	2.22 ***	0.13	
<i>Parenting stress and CFI in previous year</i>									
<i>(Reference: neither parenting stress nor CFI in past year)</i>									
No high parenting stress but CFI					1.08	0.19	1.11	0.20	
High parenting stress but no CFI					1.17 **	0.06	1.24 ***	0.07	
CFI and high parenting stress					3.17 *	0.96	3.11 ***	1.00	
Dissatisfied with relationship with children in previous year							1.01	0.04	
<i>Marital status: (Reference: Married)</i>									
Separated							1.22	0.14	
Widowed							0.64	0.24	
Single							1.36 *	0.21	
<i>Labour force status (Reference: Employed)</i>									
Unemployed							0.91	0.11	
Not in labour force							0.81 **	0.05	
Children in household							1.01 *	0.01	
Age							1.10 ***	0.01	
Income							1.00	0.00	
General health							0.99 ***	0.00	
Mental health							0.98 ***	0.00	
Social Support							0.73 ***	0.00	
Remoteness area							1.19 *	0.09	
N Individuals	2,077		2,077		2,077		2,077		
N Observations	16,395		16,395		16,395		16,395		
N Cases CFI	431		431		431		431		

Note. CFI denotes 'close family imprisonment'. ***p < .001; ** p < .01; p < .05 (two-sided)

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Figure 1
Family Stress Proximal Process (FSPP) model, applied to close family imprisonment



Note: Adapted from Arditto (2016). Dark lines signify parts of the model that directly informed the design of this study.