



# Do Childhood Experiences of Parental Separation Lead to Homelessness?

Julie Moschion

Melbourne Institute of Applied Economic and Social Research, University of Melbourne

Jan C. van Ours

Erasmus School of Economics, Erasmus University Rotterdam

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## NON-TECHNICAL SUMMARY

Australia is currently undergoing a well-documented housing affordability crisis. There have been a lot of discussions around the fast rise in housing prices (both for rentals and purchases), the shortage of affordable housing for low-income families and the inequalities induced by the negative gearing system to cite just a few examples. Single parents are especially under intense financial stress and at greater risk of housing insecurity and possibly homelessness.

With that context in mind, how do low-income families cope when the family breaks down and two accommodations now have to be paid for instead of one? Are some pushed down the housing ladder to the point of homelessness?

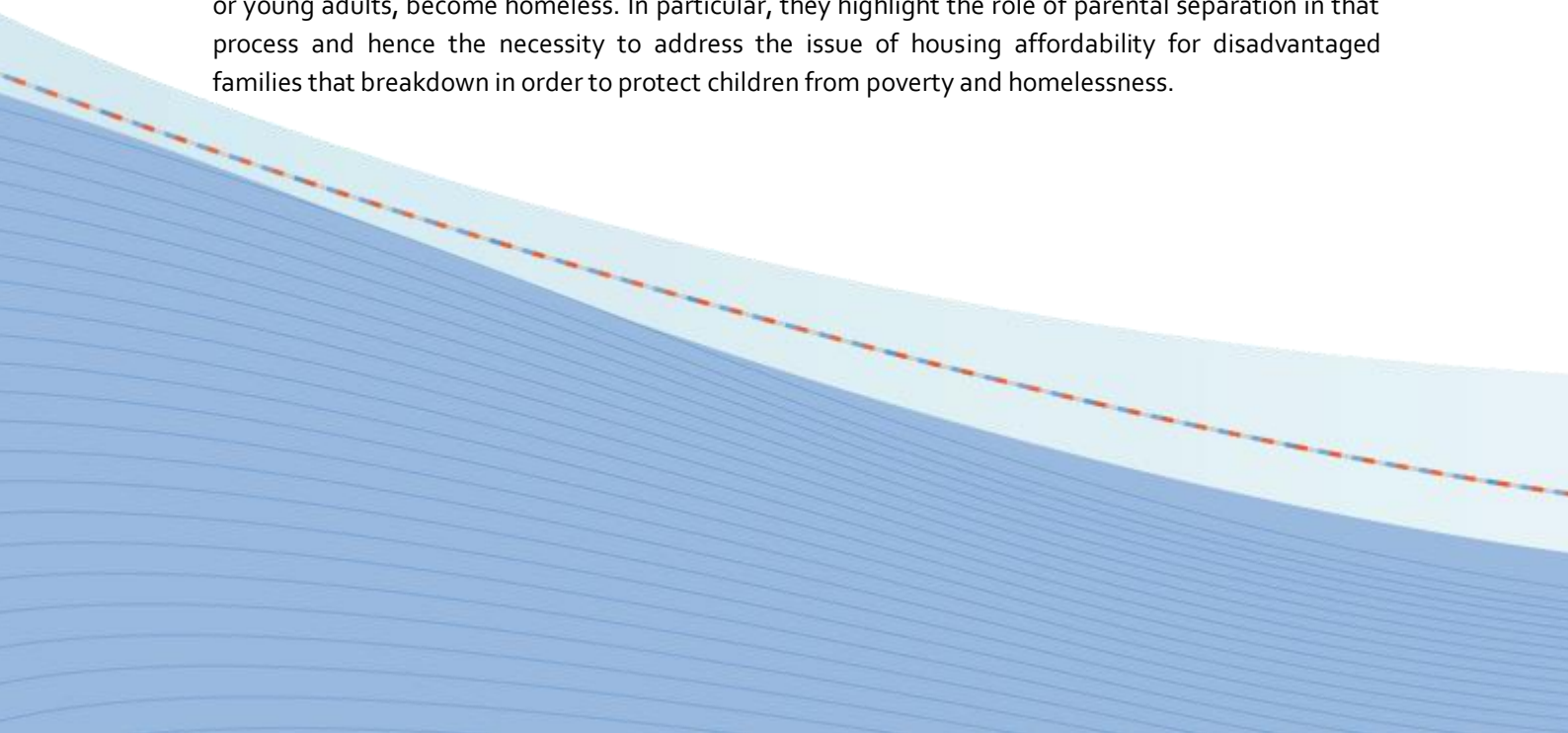
To answer this question, we use a unique dataset of disadvantaged Australians (Journeys Home, JH). Importantly, 62% of JH respondents (who have experienced homelessness) believe that family breakdown or conflict is what led them to be homeless the first time.

To determine whether respondents' parents' separation (if ever) led to their first experience of homelessness (if ever), we exploit JH's detailed information on whether and when their parents separated and whether and when they "stayed in any [...] places because [they] did not have a place to live". We then define homelessness as sleeping rough or squatting in abandoned buildings; staying with relatives or friends temporarily with no alternative; staying in a caravan park, boarding house, hotel or crisis accommodation. We use a broad definition of homelessness which seeks to identify situations in which families' housing conditions do not meet standard requirements to qualify as a decent 'home'.

We find that parental separation increases the likelihood of becoming homeless conditional on observed and unobserved (family and individual) characteristics. The effect is substantial. For boys, parental separation increases the likelihood of becoming homeless by age 30 by 10-15 percentage points. This is irrespective of the age they were when the separation occurred. For girls, only parental separation occurring before they were 12 years old increases the likelihood of homelessness before 30 by 15-20 percentage points.

The effects on homelessness are larger when the parents were formally married prior to the separation.

These results constitute a critical first step in understanding how individuals, and in particular children or young adults, become homeless. In particular, they highlight the role of parental separation in that process and hence the necessity to address the issue of housing affordability for disadvantaged families that breakdown in order to protect children from poverty and homelessness.



## ABOUT THE AUTHORS

**Julie Moschion** (Paris, 1981) is a Senior Research Fellow at the Melbourne Institute at the University of Melbourne and a Research Fellow of the Life Course Centre. She is a Research Associate at EconomiX (University of Nanterre). Julie participated in designing the Journeys Home Survey, a longitudinal study of Australians who are homeless or at-risk of homelessness. Her current research revolves around a number of issues related to disadvantage in education, housing, health, incarceration and families. Email: [moschion@unimelb.edu.au](mailto:moschion@unimelb.edu.au)

**Jan C. van Ours** (Stellendam, 1954) is Professor of Applied Economics at Erasmus School of Economics, Erasmus University Rotterdam and Professorial Fellow at the University of Melbourne. He is also a fellow of the Tinbergen Institute, IZA, CEPR and the European Association of Labour Economists. He co-authored the text-book "Economics of Imperfect Labor Markets". Jan teaches labour economics and health economics. His research is on labour market issues, health, happiness, cannabis use, sports, crime and the economics of language. Email: [vanours@ese.eur.nl](mailto:vanours@ese.eur.nl)

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**DISCLAIMER:** The content of this Working Paper does not necessarily reflect the views and opinions of the Life Course Centre. Responsibility for any information and views expressed in this Working Paper lies entirely with the author(s).



(ARC Centre of Excellence for Children and Families over the Life Course)  
Institute for Social Science Research, The University of Queensland (administration node)  
UQ Long Pocket Precinct, Indooroopilly, Qld 4068, Telephone: +61 7 334 67477  
Email: [lcc@uq.edu.au](mailto:lcc@uq.edu.au), Web: [www.lifecoursecentre.org.au](http://www.lifecoursecentre.org.au)

## **Abstract**

This paper investigates the effect of parental separation on homelessness. Using a unique dataset of disadvantaged Australians providing retrospective information on parental separation and housing circumstances, we estimate bivariate duration models to examine transitions into homelessness following parental separation. Controlling for observed as well as unobserved family and individual characteristics, and exploiting the timing of events, we find that parental separation significantly increases the likelihood of experiencing homelessness in subsequent years if the separation occurred before the respondent was 12 years old. Parental separation occurring from the age of 12 only increases boys' likelihood of becoming homeless, but not girls'.

**Keywords:** Parental separation; homelessness; Australia

# 1 Introduction

Only a minority of the population will face homelessness in their lifetime but for those who do it is one of the most difficult hardships they will ever endure. Homelessness is associated with significant financial and social deprivations, mental and physical health issues and socially undesirable behaviours such as substance abuse and crime (Philippot et al., 2007). For those experiencing homelessness at an early age, the consequences may be even more devastating, with long lasting effects on educational and health outcomes, employment and earnings potential, social integration, and financial autonomy. Understanding how individuals, in particular children or young adults, become homeless is an important first step towards developing policies that may prevent homelessness and curb the wide range of difficulties associated with homelessness, especially for those from disadvantaged backgrounds. So what leads to homelessness?

O'Flaherty (2004, 2009 & 2010) proposes a theory and presents empirical evidence of why and how shocks (i.e. unexpected changes in circumstances) can precipitate homelessness. He finds that a negative income shock often precedes homelessness. Further, he highlights the potential role for income volatility to contribute to homelessness, especially among disadvantaged groups. Parental separation, which is often sudden and implies an urgent move, can generate a financial shock analogous to an income shock and therefore lead to homelessness. In addition to this immediate effect, parental separation may also have a delayed effect on homelessness. For instance, less disadvantaged groups may be able to cope financially in the short run (by covering housing costs with their savings for example), but not in the medium run (once those savings have ran out). Such deterioration of their financial resources may lead to homelessness even years after the separation occurred. Parental

separations can also create conflict between parents and children, which may drive children out of their parent’s home and potentially into homelessness in subsequent years.

Our paper investigates the impact of parental separation on homelessness using Journeys Home (JH), a unique dataset of disadvantaged Australians. We use the retrospective information provided by respondents’ about their childhood experiences of parental separation and homelessness to estimate the immediate and delayed effect of parental separation on homelessness. In the JH sample family breakdown appears to be an important trigger for homelessness. Of those who have experienced homelessness, 62% of respondents cite family breakdown or conflict as the main reason for becoming homeless for the first time (Scutella et al., 2012).<sup>1</sup> This relationship between family breakdown and homelessness is also verified beyond the onset of homelessness. Indeed, respondents who divorce, separate or widow over the survey period face a higher risk of homelessness (Scutella et al., 2014).

Our contribution to the literature is fourfold. First, we present original evidence which is based on a large-scale, broad-based survey of disadvantaged individuals who are homeless or at risk of homelessness. Investigating the relationship between parental separation and homelessness is difficult because most datasets available are not well suited to this purpose. Disadvantaged populations (i.e. that have experienced homelessness) are underrepresented in general household surveys; and datasets which only include people who are currently homeless fail to capture other segments of the disadvantaged population who might be at risk of homelessness. In contrast, Journeys Home is unique in that it covers a broad spectrum of the disadvantaged population, not just those currently homeless. In fact, 75% of respondents

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<sup>1</sup> This is an extremely large majority given that the next most cited answer ‘Domestic and family violence or abuse’ gathers only 18% of answers. Note that “family breakdown or conflict” is broader than “parental separation” given that it might include conflicts without any separation as well as the respondent’s own separation from her partner.

were not homeless at the time of the first interview (Scutella et al., 2012).<sup>2</sup> At the same time, the high frequency of homelessness and parental separation in the sample provides enough occurrences and variation in the timing of events to address the question of a potential causal relationship between the two. Importantly, JH has detailed information on respondents' histories, including information about the respondent's age when they were homeless for the first time (if ever), and their age when their parents separated (if ever).

Second, we go further than previous studies in exploring the degree to which the association between parental separation and homelessness might be plausibly interpreted as a causal relationship. Our paper discusses the potential for reverse causality and accounts for common unobserved confounders using bivariate mixed proportional hazard models. In our duration models, parental separation and the transitions into homelessness form a fully simultaneous system. In this system, parental separation can impact homelessness, and the unobserved heterogeneity terms affecting each transition rate are potentially correlated. We exploit the timing of first episodes to identify the direction of causality linking parental separation to homelessness. This estimation strategy also deals with omitted variable bias by assuming that the unobserved heterogeneity terms determining each transition rate are jointly distributed.

Third, we distinguish between the effect of parental separation for young children (below 12 years old) and for teenagers and young adults (12 to 30 years old). There is indeed evidence that the timing of the parental separation matters. For instance, previous research indicates that the consequences of parents' separation on children's outcomes are worse when

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<sup>2</sup> Essentially, the JH sample represents Australians who are in the top percentile in terms of socio-economic disadvantage, accumulating disadvantages along all standard economic and social dimensions (education, employment, income, health, housing etc. - see section 3.1 for more details). Respondents were sampled from a population of 110,616 very disadvantaged income support recipients (Melbourne Institute, 2012), therefore representing 0.6% of the Australian population aged 15 and above in 2011 (i.e. 18 million, Australian Bureau of Statistics).

the separation happened earlier on in the life of the child (see Hope et al., 1998 for alcohol consumption; Woodward et al. 2000 for attachment to parents). The likelihood that parental separation leads to homelessness could also vary with the age of the children. On the one hand, younger children have (on average) younger parents with less financial resources to deal with a separation thereby increasing the risk of homelessness for the family. On the other hand, as the children become teenagers and young adults, their risk of becoming individually homeless increases, potentially as a result of parental separation and associated conflicts. Overall, whether the consequences of parental separation on homelessness should increase or decrease with the age of the child is an unanswered but relevant empirical question.

Fourth, we explore the sensitivity of our results to the definition of homelessness and of parental separation. Specifically, we estimate the effect of parental separation on the onset of homelessness differentiating between respondents who experienced literal homelessness and respondents who experience homelessness more broadly defined. Finally, following the previous housing literature we investigate whether the impact of a separation differs between partners that were married and those that were in a de facto relationship.

We find a causal effect of parental separation on the entry into homelessness. The effect is substantial. Conditional on family and individual characteristics, if parents separate before the child reaches age 12, boys (resp. girls) have a 10-15 (resp. 15-20) percentage point greater chance of becoming homeless by age 30. However, if the parental separation occurs from the age of 12 we the effect only persists for boys, who are at greater risk of becoming homeless. Our main findings are insensitive to using a broader or stricter definition of homelessness. The effects on homelessness are larger when the parents were formally married prior to the separation.

The remainder of our paper is structured as follows. In section 2 we review the relevant literature and in Section 3 we present our data and the results from a descriptive analysis.



Section 4 describes the set-up of our empirical analysis. In section 5 we present and discuss our baseline parameter estimates. We explore the robustness of our main findings by presenting a range of sensitivity analyses in Section 6, while Section 7 concludes.

## **2 Literature review**

Empirical evidence on the relationship between childhood experiences of parental separation and homelessness later on in life is practically non-existent and essentially descriptive in nature. Shinn (2007) points to divorce and separations as frequently cited contributors to homelessness (Firdion & Marpsat, 2007; Hladikova & Hradecky, 2007; Okamoto, 2007; Philippot et al., 2007), together with financial difficulties, domestic violence, mental health problems, substance abuse and incarceration. Unfortunately these studies only suggest a conjunction of factors that lead people to lose their homes, rather than being able to isolate the causal effect of separation on homelessness. It is therefore unclear whether parental separation alone contributes to the onset of homelessness of children and young adults.

A small housing literature has paid some attention to the housing outcomes of families that experience divorce and/or separations, but the focus is on the broader population rather than a disadvantaged population who are at-risk of homelessness. There is indeed some evidence that parental separation is often associated with a downward trend in housing quality since a separation often implies an urgent move and a decrease in resources. Specifically, a separation frequently leads the separating couple to move out of home ownership; to move out of single-family housing; to sometimes move back into their parents' home or to possibly move into some form of shared accommodation. Overall, separations decrease the quality of housing and increase housing instability (Flatau et al., 2004; Feijten, 2005; Dewilde, 2008; Feijten & van Ham, 2010).

These findings of parental separation being related to housing difficulties are likely to be spurious, however, if researchers do not account for the fact that family structure is probably correlated with other determinants of a family's housing situation. Indeed, there are good reasons why parental separation may not be a random event. The factors that caused the separation may also affect the families' housing situation through other pathways, such as a parent's addiction to drugs or financial difficulties. Further, the impact of homelessness on parental separation, although less obvious, should also not be ruled out a priori: the stress resulting from being homeless could increase the risk of a separation.<sup>3</sup> As such, the existing literature is largely correlational and may yield misleading results, due to the potential for omitted variables and reverse causality. We are unaware of any studies attempting to identify the causal impact of parental separation on homelessness of children later on in life.

There is an emerging literature attempting to identify the causes of homelessness more generally, but research is in its early stages and thus limited. For example, McVicar et al. (2015a) use within-individual variations, i.e. comparisons of outcomes before and after transitions into substance use, to estimate the effect of substance use on transitions into homelessness 6 months later. McVicar et al. (2015b) use trivariate duration modelling to investigate the impact of beginning to use cannabis daily and street drugs weekly on the onset of homelessness. Both these papers find smaller impacts of substance use on homelessness once they account for unobserved heterogeneity and reverse causality. This highlights the importance of using an identification strategy that deals effectively with these issues.

On the other side of the spectrum, the divorce literature is mainly focused on the consequences of parental separation on children's outcomes, rather than on housing outcomes (see McLanahan et al., 2013 for a review). Economists interested in identifying a causal impact of parental separation have emphasized the need to address endogeneity issues.

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<sup>3</sup> Boyle et al. (2008) find that this is likely to be the case after moving twice or more over short distances.

Typically this has involved exploiting plausibly exogenous sources of variation in family structure through natural experiments or instrumental variables methods (Lang & Zagorsky, 2001; Gruber, 2004; Finlay & Neumark, 2010) and also accounting for unobserved heterogeneity through the use of individual fixed effects (Cherlin et al., 1991), sibling fixed effects (Ermisch et al., 2004; Evenhouse & Reilly, 2004) and propensity score matching (Gertler et al., 2004). After accounting for endogeneity issues, these studies tend to find that divorce does not deteriorate children's outcomes. Only rarely do researchers interested in family and household issues explicitly address the connections between housing on the one hand, and household formation or dissolution on the other (Mulder & Lauster, 2010).

All in all, whether parental separation increases housing difficulties is unclear and whether it increases homelessness is even more obscure. Yet, establishing the extent to which associations between parental separation and homelessness are simply correlations or are reflecting a causal relationship is crucial for the development of sound policy to prevent homelessness. A positive causal effect from parental separation to homelessness suggests that interventions designed to support families in which parents separate may efficiently reduce inflows into homelessness.

Our goal is to make some progress in that direction and estimate the immediate and delayed effect of parental separation on homelessness for a population of disadvantaged Australians, separately by gender and by the age of the child at the age of separation.

### **3 Data and descriptive analysis**

#### *3.1 The JH data and variable definitions*

JH is a longitudinal dataset with information on a sample of income support recipients (i.e. welfare recipients) who are either homeless or at-risk of homelessness (Scutella et al.,

2012). Previous studies of homelessness have focused on specific homeless groups, such as those sleeping rough or those staying in emergency accommodation at a certain point in time and often in a particular geographic area (e.g. Corno, 2016). In comparison, the JH sample was drawn from a broader population of disadvantaged Australians, who are not necessarily homeless when joining the study, but are facing or have faced some form of housing instability in their life. In fact, only 25% of JH respondents were homeless at the first interview. This gives us the opportunity to study the processes leading to homelessness using a broader population of disadvantaged people who are at-risk of homelessness and housing instability.<sup>4</sup>

The JH sample was drawn from administrative data which covers all Australians aged 15 years or older in receipt of any income support payments at a certain point in time. Specifically, the base population of the study were receiving some form of assistance at any time during the 28-day period prior to 27 May 2011. Interestingly, Australia has the specificity that all income support payments (e.g. family benefits, single-parent benefits, disability benefits, rent assistance...) are administered by the same government agency (Centrelink). This facilitates the identification of disadvantaged individuals facing housing insecurity issues as most of these individuals would be eligible for some form of social support.<sup>5</sup>

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<sup>4</sup> Homelessness cannot be studied in data sources representative of the general population (e.g. Censuses, household panel datasets) because of its low prevalence. For instance, as of wave 1, 94 percent of JH respondents had been homeless at some point in their lives, compared with only 13 percent in the Australian population aged 15 years and over (Australian Bureau of Statistics, 2014).

<sup>5</sup> The administration of payments by a sole agency significantly simplifies application and payment procedures for homeless people and tracking processes for the administration. Therefore we can expect only a small loss of our target population. In fact, around 85% of users of government-funded specialist homelessness programs relied on government payments as their main source of income in 2009/10 (Australian Institute of Health and Welfare 2011).

However, not all Australians receiving social assistance are homeless or at-risk of homelessness. To identify this more specific population, we exploited: (i) flags that the Centrelink staff used from 2010 to identify customers who are homeless or at-risk of homelessness; and (ii) statistical logit models to identify other customers who, although not flagged, have characteristics similar to flagged individuals. This yielded a total survey population of 110,616 individuals, from which a stratified random sample of 2,992 individuals across 36 distinct locations was selected for interview. After removing 273 individuals determined to be out of scope prior to fieldwork commencing, almost 62 percent of the sample (n=1,682) agreed to participate in wave 1 which was conducted between September and November 2011. All wave 1 respondents were then approached to be reinterviewed a further six times at six-monthly intervals (See Wooden et al., 2012 and Melbourne Institute, 2012 for more details on the sample design).

JH respondents are amongst the most disadvantaged 1% of Australians.<sup>6</sup> Overall, not only do JH respondents face more housing difficulties than average Australians, but they fare worse along every standard economic dimension and this accumulation of disadvantage deteriorates their relative situation even further. For example, only 39% of respondents have graduated from high school compared to 71% of the Australian population and only 20% were employed at wave 1 compared to 63% of the Australian population. JH respondents are also more often from indigenous backgrounds (20% vs 3%), have more mental health conditions (e.g. 54% have been diagnosed with depression vs 12%) and substance abuse problems (e.g. 57% drink alcohol at risky level vs 20%) than the general population (See Scutella et al. 2012 for more details). In addition, JH respondents earned a median individual gross income of \$15,756 per year at wave 1 (including wages in all jobs, government

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<sup>6</sup> Indeed, JH respondents were sampled from a survey population of 110,616 very disadvantaged income support recipients (Melbourne Institute, 2012), who represented 0.6% of the Australian population aged 15 and above in 2011 (Australian Bureau of Statistics).

payments and other incomes), which is comparable to the income earned by Australians at the 28th percentile of the Australian income distribution. Comparing the distribution of income for the JH sample to the general Australian population highlights that JH respondents' incomes are concentrated on the lower part of the income distribution, while Australian incomes are more spread out, especially towards higher incomes (over AUD 35000 a year, see Figure A1).

In our analysis we use the sample of respondents who were interviewed in wave 1 (September 2011) when retrospective information on the age of onset of homelessness was collected and in wave 6 (May 2014) when retrospective information on the timing of parental separation was collected. Some respondents may make mistakes in reporting retrospective information about their childhood. However, the main parameter estimates are not very sensitive to this. What matters in particular for our estimations is not that they get the exact age right, but rather that they get the timing of events right: what happened first and with what delay. Given that parental separation and first experiences of homelessness are substantial events which happen on average 10 years apart in our sample (see Table 1), we do not expect respondents to make systematic mistakes in reporting the sequence of these two events. In support of this claim, experimental psychologists indeed found that “adults asked to recall salient factual details of their own childhoods are generally accurate, especially concerning experiences that fulfil the criteria of having been unique, consequential, and unexpected” (Brewin et al., 1993). Despite the disadvantaged nature of the JH sample, both the response rate at wave 1 (61.9%) and the retention rate in the sample at wave 6 (83% of wave 1 respondents) were high.

We transfer information on parental separation from wave 6 to the situation in wave 1 and consider both parental separation and homelessness as of wave 1.<sup>7</sup> Because the impact of

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<sup>7</sup> Only 3 respondents have parents separating for the first time between wave 1 and wave 6.

parental separation on the children's housing situation is likely to be more relevant when children still live with their parents, we focus on those events if they happen at 30 years old at the latest. In other words, we censor the parental separation and the onset of homelessness if they occur after 30. We investigate the sensitivity of our results to this censoring in the robustness section.

Parental separation can be defined in at least one of two ways: by focussing on marriages ending up in divorce only or by also considering de facto relationships ending up in separations. We define the age at parental separation by the age of the respondent when his parents (first) divorced or separated.<sup>8</sup> To compare respondents whose parents separated at different ages with respondents whose parents did not separate, we have to restrict the sample further: we drop respondents whose parents were never married or never were in a de facto relationship.

Homelessness can be defined in different ways and with different thresholds. Following Johnson and Chamberlain (2008) and the Australian Bureau of Statistics, we adopt a broad characterisation of homelessness which seeks to identify situations in which families' housing conditions do not meet standard requirements to qualify as a 'home'. This is qualitatively similar to the definition used by the Australian Bureau of Statistics; the U.S 2009 Homeless Emergency Assistance and Rapid Transition to Housing Act; and the definition used by Link et al. (1994) and Curtis et al. (2013). Homelessness is defined as sleeping rough or squatting in abandoned buildings; staying with relatives or friends temporarily with no alternative; staying in a caravan park, boarding house, hotel or crisis accommodation. Using this definition, for each respondent we construct the age at which she became homeless for the first time. If the respondent has been homeless prior to JH (i.e. if she has "stayed in any [...] places because [she] did not have a place to live"), we use the retrospective information

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<sup>8</sup> See Data Appendix for more details on the exact sequence of questions.

collected at wave 1 on “How old [she was] the first time that [she was] without a place to live”.<sup>9</sup> Because this definition of homelessness is quite broad we investigate the robustness of our findings to a stricter definition of homelessness which includes only respondents with an experience of staying in crisis accommodation, sleeping rough or squatting in abandoned buildings. In that case we estimate the effect of parental separation on the age of onset of homelessness (broadly defined) for the subset of respondents who experienced literal homelessness as of wave 1.<sup>10</sup>

Our estimating sample consists of respondents whose parents were married or in a de facto relationship and provided complete information on parental separation and the onset of homelessness, which translates to 1,231 observations, i.e. 73% of the wave 1 sample. Attrition could be non-random and therefore bias our results. However, the experience of homelessness before wave 1 (i.e. our main outcome) is unrelated to being in our sample.<sup>11</sup> We are thus confident that our estimates are not driven by sample selection.

### 3.2 *Descriptive statistics*

Table 1 shows the prevalence of parental separation and homelessness. Around 74 percent of women and 72 percent of men had experienced homelessness at wave 1 of the survey.<sup>12</sup> More than half of the respondents have separated parents. Interestingly, more women have experienced parental separation than men (65 percent vs 57 percent). This is consistent with

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<sup>9</sup> See Data Appendix for more details on the exact sequence of questions.

<sup>10</sup> Unfortunately the age of onset for literal homelessness is not available.

<sup>11</sup> When regressing a dummy variable for being in our sample (equal to 1 for the 1,231 respondents in our sample, 0 for other wave 1 respondents) on the homelessness status as of wave 1, the coefficient for homelessness is insignificant with or without any controls (Table A1).

<sup>12</sup> Given that we restrict our attention to the wave 1 and 6 respondents, one could be concerned that this somehow reflects selection into staying in the JH study. However, the rate of homelessness at 30 years old at wave 1 is identical for the full sample of wave 1 respondents.



US evidence that rates of divorce are higher in families with girls than in families with boys, although this relationship is not confirmed for Australia (Bedard & Deschenes, 2005; Leigh, 2009). On average, if parental separation and homelessness both occur it is very likely that parental separation occurred first. Parental separation occurs on average at around age seven to eight while homelessness occurs at around age 17 to 18.

**Table 1: Prevalence and onset of parental separation and homelessness up to age 30**

	Women	Men
<u>Homelessness</u>		
Ever (%)	73.9	71.7
Age onset	17.5	17.6
<u>Homelessness types (ever in %)</u>		
With relatives with no alternatives	60.3	55.6
With friends with no alternatives	59.0	61.0
In a caravan park	28.2	33.5
In a boarding house	26.2	37.8
In a hotel/motel	33.0	34.6
In crisis accommodation	33.3	32.6
Squatting in abandoned buildings	15.8	29.5
Sleeping rough	34.6	51.6
Precariously housed	73.0	70.0
Literally homeless	48.8	56.1
<u>Parental separation</u>		
Ever (%)	64.7	56.7
Age onset	7.3	8.3
N	564	667

Notes: Wave 1 and 6 respondents with information on parental separation and homelessness (1,231 observations). Only homeless spells and parental separations occurring before 30 are considered. The ages of onset are calculated conditional on homelessness occurring or parental separation occurring.

The types of homelessness do not sum up to 100% as the same respondent may have experienced several types of homelessness. Precarious housing is defined as having stayed with relatives or friends with no alternatives, having stayed in a caravan park, in a boarding house or in a hotel/motel. Literal homelessness is defined as having stayed in crisis accommodation, squatted in abandoned buildings or slept rough.

Journeys Home also provides information about the type of accommodation respondents have ever lived in before being surveyed in Journeys Home. Most respondents experienced precarious housing (73 percent of women and 70 percent of men), especially via

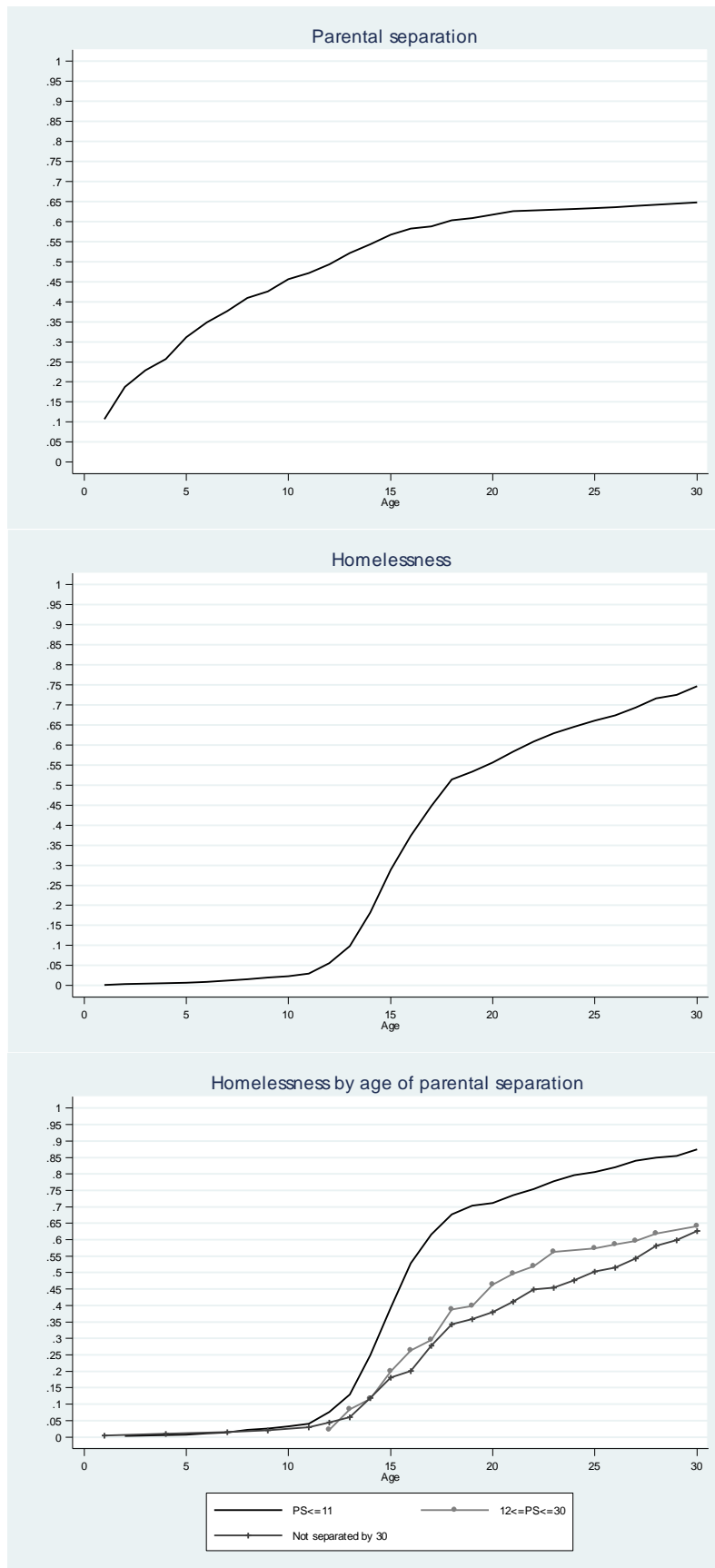
staying with relatives or friends with no alternatives. Literal homelessness is also very common in our sample, in particular via experiences of sleeping rough (35 percent of women and 52 percent of men).

Figures 1 and 2 illustrate the cumulative probability distributions for parental separation and the onset of homelessness up to age 30, separately for women and men.<sup>13</sup> The top graphs show that parental separation mostly occurs before the child reaches age 20. More precisely, parental separation sometimes occurs early with more than five percent of parents separating in the year following the birth of the child. Parental separation then increases sharply with about 50 percent of the sample experiencing parental separation by the age of 16. The middle graphs of Figures 1 and 2 show that the onset of homelessness usually occurs later on in life. The rate of homelessness stays relatively low with less than five percent of respondents experiencing homelessness before age 12. It then increases steeply between ages 12 and 16 to reach around a third of the sample. After that, the rate of homelessness continues to increase gradually. This suggests that there are probably two very different experiences of homelessness: early and late. Early experiences of homelessness occur at young ages, not very long before or after a parental separation. Therefore early homelessness experiences may be related to the separation. The late experience of homelessness occurs when the respondent is an adult. The late experience is unlikely to be related to parental separation. This descriptive evidence therefore reinforces our choice to focus on homelessness up to age 30. In addition, we will differentiate our results by the age of the child because the effect of parental separation on homelessness may have different consequences depending on whether the separation occurs in a household with young children versus teenagers and young adults.

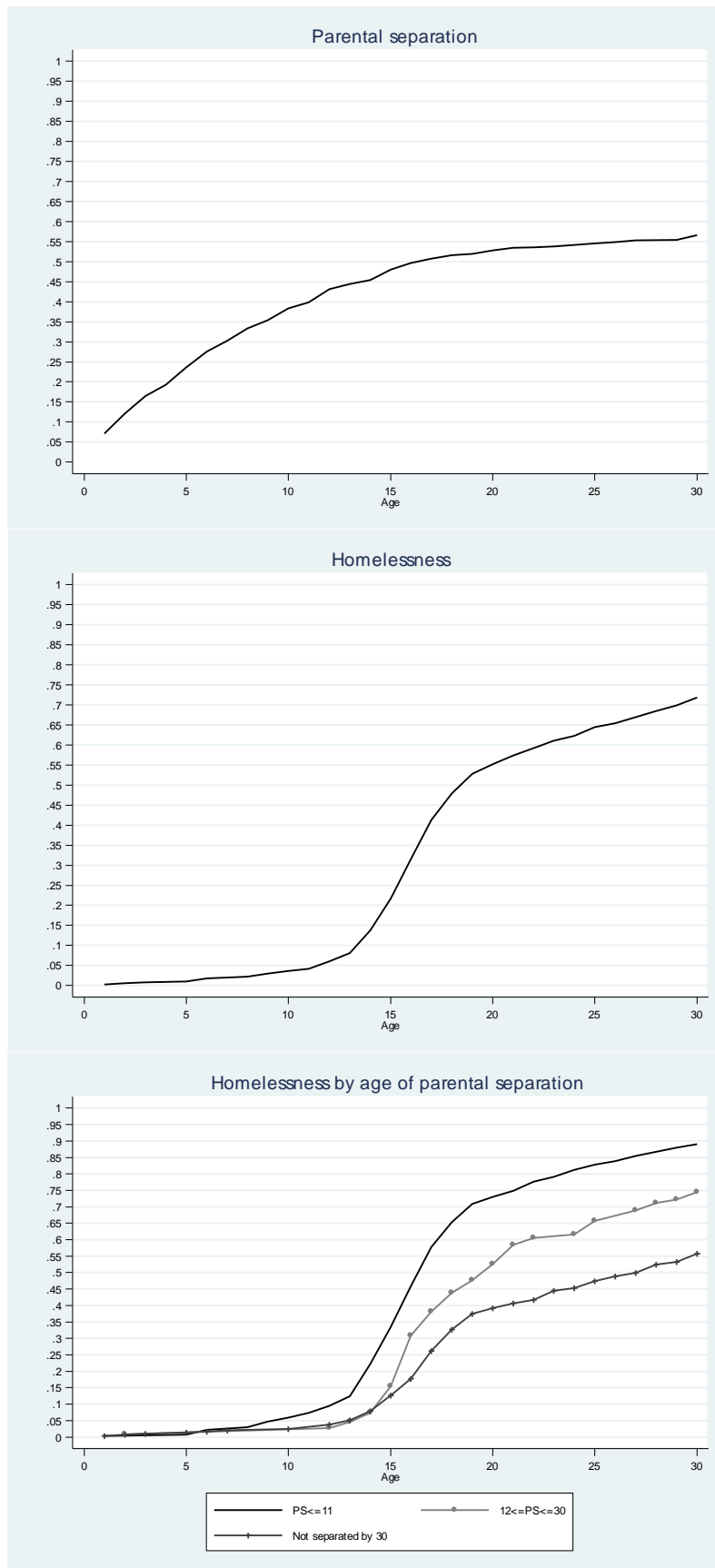
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<sup>13</sup> If individuals were older than 30 at the time of the survey, we ignore events after age 30. If individuals less than 30 years old and parental separation or homelessness had not occurred, we consider the process of becoming homeless or facing parental separation to be right-censored at that age.

**Figure 1: Cumulative starting probabilities for parental separation and the onset of homelessness, women**



**Figure 2: Cumulative starting probabilities for parental separation and the onset of homelessness, men**

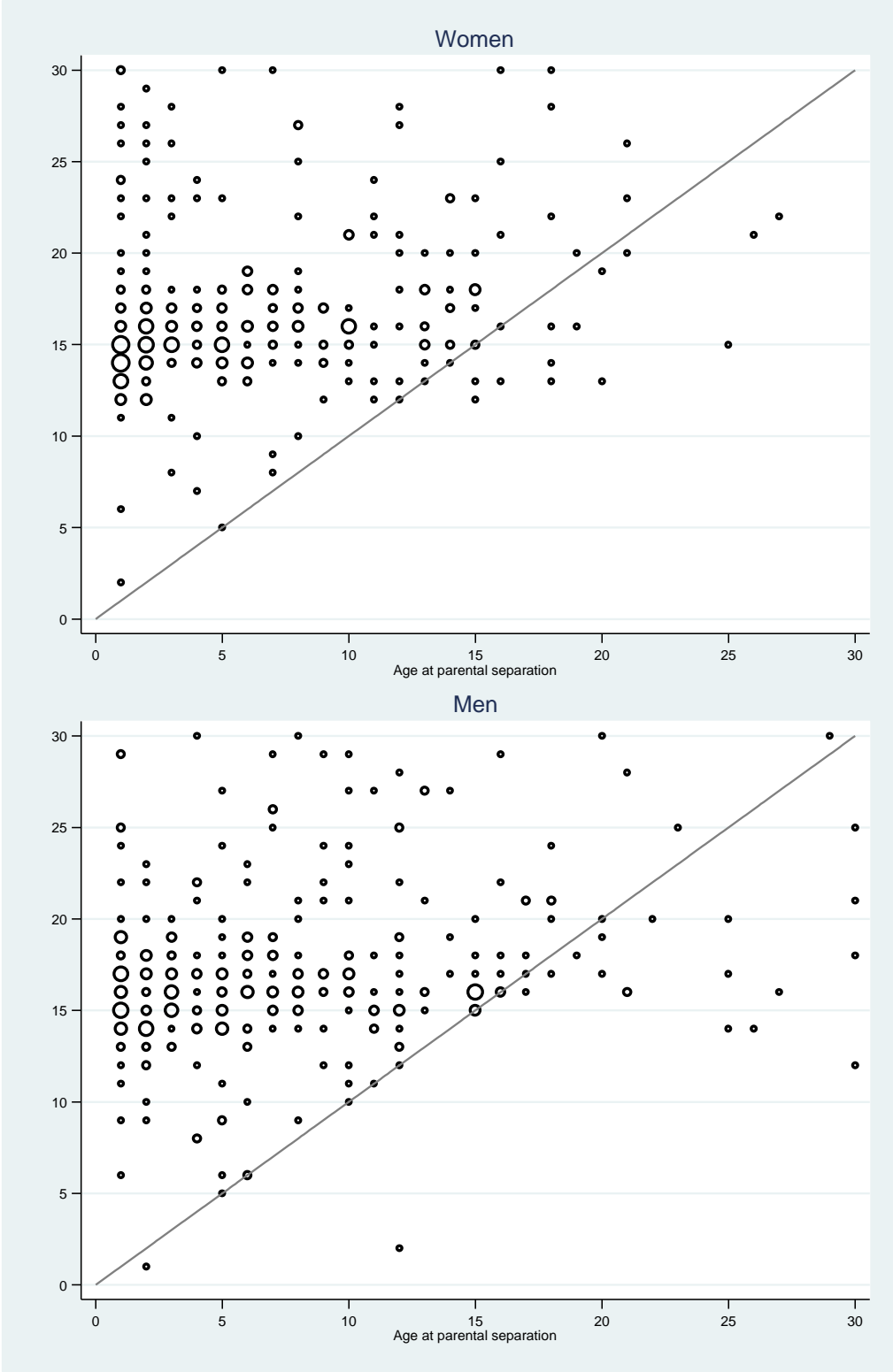


For illustrative purposes, in the bottom graphs of Figures 1 and 2 we split up the sample in three groups: parental separation occurred before age 12, parental separation occurred after age 12, no parental separation. Men whose parents separated before they were 12 became homeless earlier than those whose parents separated between 12 and 30. Those men with parental separation occurring between ages 12 and 30 became homeless earlier than those whose parents did not separate by the time they were 30 years old. For women, the likelihood of becoming homeless is also higher if the parental separation occurred before 12. However, for women, parental separations occurring after 12 do not seem to be related to the onset of homelessness.

If there is a causal relationship from parental separation to homelessness, then parental separation should, on average, precede the onset of homelessness. Figure 3 investigates this issue, representing the distribution of the possible combinations of timing of events with respect to parental separation and the onset of homelessness. For instance, 49 percent of women and 42 percent of men experienced parental separation before becoming homeless, while both happen at the same age for one percent of men (two percent of women). In contrast, two percent of women became homeless before their parents separated (three percent of men). The likelihood that parental separation occurs first is therefore very high but one cannot rule out a priori that the relationship between parental separation and homelessness is biased due to unobserved heterogeneity. In contrast, the low occurrence of parental separation after homelessness suggests that for individuals in our sample homelessness has hardly ever led to parental separation. From this, we conclude that reverse causality is not an issue. In our analysis we focus on identifying the potential causal effect of childhood experiences with parental separation on homelessness. In addition, the figures show onsets of homelessness both immediately and several years after the separation suggesting that: (i) parental separation

could have a delayed effect; (ii) other factors may contribute to the association between parental separation and homelessness.

**Figure 3: Association between the timing of parental separation and homelessness**



Notes: Wave 1 and 6 respondents with information on parental separation and homelessness (1,231 observations). Only homeless spells and parental separations occurring before 30 are considered. For women, in 47.7% of cases homelessness and/or parental separation is censored as it does not occur before 30 years old (12.4% with censored homelessness, 21.6% with censored separation, 13.7% with both censored). Respectively for men: 9.3%, 24.3% and 19% of cases are censored.

Table 2 provides summary information for our sample. The JH sample grew up in a relatively disadvantaged situation with many respondents having experienced violence during childhood: on average across the sample more than half suffered from emotional abuse (58 percent) and physical violence (56 percent of girls and 63 of boys); and a significant proportion of respondents suffered from sexual violence (37 percent of girls and 15 percent of boys). By the age of 14, 14 percent were not living with their biological parents because these were deceased or because of a conflict. When disaggregating the sample by experiences of homelessness, the rates of ‘not living with parents’ and violence are much higher among respondents who experienced homelessness before 30 compared to those who did not. This emphasises the fact that respondents experiencing early homelessness, not only experience parental separation more often and earlier, but also have other disadvantages which are also likely to be driving parental separations. In order to estimate the impact of parental separation on homelessness, it will therefore be important to control for observable differences as well as unobserved differences likely to jointly determine homelessness and parental separation.

Differences in the respondents’ male and female caregiver’s education are less striking, although both men and women who experienced homelessness before age 30 less often had caregivers with post-secondary education (e.g. 11 percent of women who experienced homelessness by age 30 had a male caregiver with a Technical College or University diploma versus 18.4 percent for women who had not experienced homelessness). This background information is missing for a significant portion of our sample and this item non-response is unlikely to be random. For instance, respondents with homeless experiences more often have missing information on their male caregiver’s education. We therefore

construct dummy variables for missing information on subsets of control variables: reason for not living with parents at 14, violence, male caregiver and female caregiver's education.

**Table 2: Sample Characteristics (%)**

	Women			Men		
	Not homeless by 30	Homeless by 30	Diff.	Not homeless by 30	Homeless by 30	Diff.
Do not live with parents because dead	4.1	6.7	2.6	4.2	8.4	4.1*
Do not live with parents because conflict	3.4	10.8	7.4***	2.1	7.5	5.4***
Emotional abuse during childhood	32.0	66.9	34.9***	42.3	65.3	22.9***
Physical violence during childhood	33.3	64.0	30.7***	48.1	68.6	20.5***
Sexual violence during childhood	27.9	40.5	12.6***	13.8	15.9	2.1
<i>Male caregiver's education</i>						
No schooling	2.7	0.2	-2.5***	2.1	1.7	-0.4
Primary school	9.5	6.0	-3.5	11.1	3.6	-7.6***
Some secondary, <=Y10	18.4	24.2	5.9	19.6	23.8	4.3
Y11 or equivalent	2.7	4.1	1.4	1.6	2.3	0.7
Y12 or equivalent	11.6	12.5	0.9	6.3	10.0	3.7
Technical College/TAFE	10.2	5.5	-4.7*	10.6	5.0	-5.6***
University	8.2	5.5	-2.6	13.8	7.3	-6.4***
Missing	36.7	42.0	5.2	34.9	46.2	11.3***
<i>Female caregiver's education</i>						
No schooling	4.1	2.2	-1.9	4.8	2.3	-2.5*
Primary school	10.9	5.3	-5.6**	10.1	3.6	-6.5***
Some secondary, <= Y10	24.5	34.8	10.3**	18.5	31.4	12.9***
Y11 or equivalent	2.7	5.0	2.3	2.6	3.1	0.5
Y12 or equivalent	14.3	13.2	-1.1	11.6	13.6	2.0
Technical College/TAFE	8.2	5.0	-3.1	6.9	3.3	-3.5**
University	6.1	5.0	-1.1	9.0	7.1	-1.9
Missing	29.3	29.5	0.2	36.5	35.6	-0.9
N	147	417		189	478	

Notes: Wave 1 and 6 respondents with information on parental separation and homelessness (1,231 observations).

Tables 3 and 4 present linear probability estimates of the effect of parental separation before age 12 on the probability of homelessness occurring respectively by the ages of 15, 20, 25 and 30 years old for women and men separately. The outcome is a dummy equal to 1 if the



respondent becomes homeless by age 15/20/25/30 and 0 if he becomes homeless later or never (this variable is missing for observations that are right-censored, i.e. respondents that we stop observing before the age of 15/20/25/30). Similarly, the parental separation variable is a dummy equal to 1 if the parental separation occurs before 12; 0 if it occurs later or never. In our sample, 44% of respondents have parents separating before the child reaches age 12.<sup>14</sup> We control for all observable characteristics described in Table 2 (which will also be included in the bivariate duration model).

We find positive and significant effects of parental separation on homelessness. The linear probability estimates suggest that parental separation before age 12 increases women's probability of becoming homeless by age 15 by 13 percentage-points, by age 20 by 25pp, by age 25 by 25pp, and by age 30 by 22pp. Results for men are essentially similar with effects increasing until their 20s and then decreasing before age 30.<sup>15</sup> The regression analysis confirms the descriptive evidence: childhood characteristics differ between respondents experiencing homelessness and those who don't, while caregivers' education level does not. For boys and girls, conflicts with parents and physical violence matter especially for experiences of homelessness before age 15, while emotional abuse matters more for homelessness onsets after 15. These results suggest that respondents who have experienced the separation of their parents by age 12 become homeless by age 30 at a higher rate than respondents who did not, even after controlling for observable factors. However, these estimates do not take account potential unobserved heterogeneity and they deal with the timing of events in an ad hoc way by dropping respondents who were homeless before the parental separation occurred and by focusing only on parental separations which occurred

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<sup>14</sup> Note that we remove from the sample respondents who became homeless before age 12 (45 observations) to ensure that parental separation occurred before homelessness.

<sup>15</sup> Probit and logit estimates are consistent in sign and magnitude (results available upon request).

before age 12. The bivariate duration modelling enables us to deal with these issues and improve upon these simple linear probability models.

**Table 3: Regression estimates of the effect of parental separation before age 12, women**

Homeless	<=15	<=20	<=25	<=30
Separation before age 12	0.133*** (0.039)	0.251*** (0.043)	0.245*** (0.039)	0.217*** (0.035)
<i>Childhood</i>				
Parents dead	0.126 (0.083)	0.073 (0.085)	0.140* (0.075)	0.106 (0.070)
Conflict parents	0.384*** (0.066)	0.190*** (0.061)	0.104* (0.060)	0.080* (0.046)
Emotional abuse	0.086 (0.055)	0.245*** (0.070)	0.200*** (0.064)	0.177*** (0.061)
Physical violence	0.124** (0.057)	0.045 (0.071)	0.048 (0.063)	0.038 (0.061)
Sexual violence	0.057 (0.045)	-0.030 (0.046)	-0.051 (0.043)	-0.025 (0.041)
<i>Male caregiver's education</i>				
Primary school	-0.003 (0.069)	-0.118 (0.215)	0.073 (0.223)	0.307 (0.231)
Some secondary, <=Y10	0.018 (0.081)	0.046 (0.214)	0.239 (0.220)	0.339 (0.226)
Y11 or equivalent	-0.097 (0.126)	-0.085 (0.244)	0.166 (0.248)	0.357 (0.239)
Y12 or equivalent	-0.004 (0.090)	0.013 (0.219)	0.217 (0.224)	0.322 (0.229)
Technical College/TAFE	-0.032 (0.099)	-0.183 (0.224)	0.026 (0.229)	0.198 (0.233)
University	-0.039 (0.090)	-0.072 (0.222)	0.075 (0.228)	0.250 (0.232)
Missing	-0.002 (0.077)	-0.022 (0.214)	0.137 (0.219)	0.288 (0.224)
<i>Female caregiver's education</i>				
Primary school	-0.044 (0.092)	-0.032 (0.133)	-0.055 (0.135)	-0.114 (0.138)
Some secondary, <=Y10	0.053 (0.092)	0.083 (0.120)	0.088 (0.118)	0.050 (0.116)
Y11 or equivalent	0.132 (0.123)	0.246* (0.136)	0.134 (0.130)	0.071 (0.123)
Y12 or equivalent	0.133 (0.101)	0.111 (0.125)	0.017 (0.122)	-0.057 (0.121)
Technical College/TAFE	-0.109 (0.110)	0.082 (0.140)	0.053 (0.139)	-0.061 (0.138)
University	0.122 (0.115)	0.117 (0.142)	-0.018 (0.142)	-0.051 (0.140)
Missing	0.065 (0.093)	0.088 (0.122)	0.017 (0.119)	-0.041 (0.118)
<i>Missing info</i>				
Reason not living with parents	0.173 (0.151)	0.231 (0.177)	0.132 (0.178)	0.280** (0.129)
Violence	0.102* (0.055)	0.003 (0.061)	-0.008 (0.059)	0.042 (0.056)
N	547	528	522	518

Notes: We remove from the sample homeless spells occurring before age 12; the number of observation decreases from one column to the next because of right censored observations due to age restrictions; robust standard errors in parentheses; \*\*\*/\*\*/\* indicates significance at a 1/5/10% -level.

**Table 4: Regression estimates of the effect of parental separation before age 12, men**

Homeless	<=15	<=20	<=25	<=30
Separation before age 12	0.115*** (0.035)	0.251*** (0.041)	0.263*** (0.036)	0.229*** (0.033)
<i>Childhood</i>				
Parents dead	0.137* (0.070)	0.201*** (0.067)	0.127* (0.066)	0.104* (0.061)
Conflict parents	0.283*** (0.088)	0.064 (0.080)	0.051 (0.074)	0.044 (0.059)
Emotional abuse	0.065 (0.041)	0.138** (0.058)	0.090* (0.055)	0.122** (0.050)
Physical violence	0.099** (0.041)	0.083 (0.058)	0.041 (0.055)	0.018 (0.050)
Sexual violence	0.001 (0.047)	-0.035 (0.055)	-0.062 (0.055)	-0.033 (0.050)
<i>Male caregiver's education</i>				
Primary school	-0.038 (0.127)	-0.072 (0.137)	-0.196 (0.152)	-0.154 (0.151)
Some secondary, <=Y10	-0.113 (0.130)	0.001 (0.126)	-0.060 (0.138)	-0.014 (0.137)
Y11 or equivalent	-0.078 (0.160)	-0.067 (0.176)	-0.065 (0.172)	-0.024 (0.164)
Y12 or equivalent	-0.037 (0.138)	0.051 (0.135)	0.004 (0.143)	0.047 (0.142)
Technical College/TAFE	-0.126 (0.134)	-0.110 (0.140)	-0.095 (0.153)	-0.101 (0.153)
University	-0.040 (0.137)	-0.096 (0.133)	-0.177 (0.144)	-0.137 (0.145)
Missing	0.004 (0.130)	0.038 (0.121)	-0.011 (0.133)	-0.022 (0.133)
<i>Female caregiver's education</i>				
Primary school	0.083 (0.082)	-0.093 (0.119)	-0.080 (0.131)	-0.044 (0.136)
Some secondary, <=Y10	0.133 (0.081)	0.240** (0.106)	0.243** (0.117)	0.197 (0.120)
Y11 or equivalent	0.128 (0.123)	0.157 (0.154)	0.234 (0.161)	0.218 (0.153)
Y12 or equivalent	0.083 (0.087)	0.176 (0.111)	0.171 (0.121)	0.159 (0.124)
Technical College/TAFE	0.055 (0.098)	0.150 (0.132)	0.034 (0.141)	-0.030 (0.145)
University	0.105 (0.097)	0.187 (0.120)	0.223* (0.128)	0.201 (0.132)
Missing	0.090 (0.081)	0.121 (0.103)	0.127 (0.116)	0.122 (0.119)
<i>Missing info</i>				
Reason not living with parents	0.191 (0.147)	-0.140 (0.149)	-0.063 (0.158)	-0.123 (0.153)
Violence	0.029 (0.063)	0.081 (0.068)	0.076 (0.062)	0.095* (0.054)
N	639	627	613	607

Notes: We remove from the sample homeless spells occurring before age 12; the number of observation decreases from one column to the next because of right censored observations due to age restrictions; robust standard errors in parentheses; \*\*\*/\*\*/\* indicates significance at a 1/5/10%-level.

## 4 Identification strategy

The aim of this paper is to investigate whether parental separation affects the onset of homelessness. To do so, we use a bivariate mixed proportional hazard framework in which the two hazards relate to the transition to parental separation and to the (first) transition into homelessness. The model uses information about the age of the individual at which the parents separated and the age of the individual at which first homelessness occurred.

In order to establish whether there exists a causal relationship running from the parental separation to homelessness, we account for the possibility that the correlation between parental separation and homelessness reflects common confounding factors. This is achieved by modelling the two transitions as a fully simultaneous system in which the unobserved heterogeneity terms entering the transition rates are correlated. To be specific, prior parental separation enters the hazard for transitions into homelessness. Our specification accounts for endogeneity arising from common unobserved confounders because the unobserved heterogeneity terms determining each transition rate are allowed to be jointly distributed. A major advantage of using this kind of approach is that, as shown by Abbring and van den Berg (2003) it is not necessary to have a valid instrument. Identification of the treatment effect does not rely on a conditional independence assumption but comes from the timing of events, i.e. the order in which parental separation and first homelessness occurs. A key assumption in this approach is no-anticipation, i.e. individuals should not know in advance exactly when an event occurs because in anticipation of that event they may change their behaviour. The no-anticipation assumption does not imply that individuals cannot have an expectation about the likelihood that future events occur. As long as they do not know in advance when exactly that event occurs, the no-anticipation assumption is not violated. In our

analysis we investigate whether parental separation has a causal effect on the onset of homelessness. The no-anticipation assumption allows for the possibility that an individual expects his or her parents to separate in the future but is violated if that individual knows exactly when that separation will occur because that individual may act on that knowledge. It is not very likely that an individual has exact knowledge about the future date of parental separation. Therefore, the no-anticipation assumption is not violated in our analysis. Identification of the effect of parental separation on the transition to first homelessness also relies on the MPH structure of the hazard rates. However, we use a very flexible specification of the hazard rates as we do not impose functional form assumptions on age dependence or on the distribution of unobserved heterogeneity for the hazard rates for parental separation and homelessness. Observable and unobservable characteristics are time-invariant.<sup>16</sup>

Bivariate duration modelling is a common empirical approach in parts of the social policy literature, e.g. on the impact of benefit sanctions on welfare exit and job entry (see for example Abbring et al., 2005 and Van den Berg et al., 2004). The bivariate duration approach has also been used in several studies of drug use impacts, most commonly to investigate various impacts of cannabis use (see Van Ours & Williams, 2015 for a review). Trivariate modelling has been used by McVicar et al. (2015b) to establish whether daily cannabis use and weekly street drugs use have a causal effect on homelessness.

In our baseline bivariate model there are two transitions. The first is to parental separation, the second is to homelessness. We model transitions up to age 30 to capture early onset of parental separation and early onset of homelessness. In modelling the start of parental separation, we assume that this can happen from the birth of the child onwards. The starting rate for parental separation at time  $t$  ( $t = 0$  at age 0) conditional on observed characteristics  $x$ , and unobserved characteristics  $u$  is specified as:

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<sup>16</sup> Unfortunately we do not have information about specific events so we cannot take shocks into account that affect both the uptake of homelessness and the uptake of drugs.

$$\theta_s(t|x, u) = \lambda_s(t) \exp(x' \beta_s + u) \quad (1)$$

where  $\lambda_s(t)$  represents individual duration dependence. Furthermore,  $\beta_s$  represents vectors of parameters to be estimated. Unobserved heterogeneity accounts for differences in families' susceptibility to parental separation. So conditional on the observed characteristics there may be time-invariant unobserved determinants of the parental separation rate such as the quality of the match between the two parents. We model duration (age) dependence in a flexible way using a step function  $\lambda_s(t) = \exp(\sum_k \lambda_{s,k} I_k(t))$ , where  $k = (1, \dots, 9)$  is a subscript for age categories and  $I_k(t)$  are time-varying dummy variables that are one in subsequent categories. We specify 9 age categories, 0-3, 4-5, 6-7, 8-9, 10-11, 12-13, 14-15, the penultimate one for ages between 16 to 20 and the last interval is for ages from 21 years onwards up to 30 years. Because we also estimate a constant term, we normalise  $\lambda_{s,1} = 0$ . All of our explanatory variables are defined in section 2.2 (see also Table 2).

The conditional density function for the completed durations until the parental separation occurs can be written as

$$f_s(t|x, u) = \theta_s(t|x, u) \exp\left(-\int_0^t \theta_s(s|x, u) ds\right) \quad (2)$$

Individuals for whom no parental separation occurred by the last age they are observed in the survey are assumed to have a right-censored duration of parental separation.

We model the onset of homelessness at time  $t$  conditional on observed characteristics  $x$ , prior parental separation at duration  $t_s$  and unobserved characteristics  $v$  as

$$\theta_h(t|x, t_s, v) = \lambda_h(t) \exp(x' \beta_h + \delta I(t_s < t) + v) \quad (3)$$

where  $I(t_s < t)$  is an indicator function equal to one if parental separation occurred prior to time period  $t$ .<sup>17</sup> Furthermore,  $\lambda_h(t)$  represents individual duration dependence which is

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<sup>17</sup> As we only know the age at which each event first occurs and not the actual date, we are unable to determine whether parental separation occurred first if both the onset of homelessness and parental separation occurred at the same age. It is for this reason that we

modelled using a step function  $\lambda_h(t) = \exp(\sum_k \lambda_{h,k} I_k(t))$  which is specified using 12 age intervals: up to age 11, 12-13, 14, 15, 16, 17, 18, 19, 20-21, 22-23, 24-26 and 27 years or older. We normalise  $\lambda_{h,1} = 0$ . The unobserved heterogeneity represents time-invariant determinants such as the ability of parents to provide a caring environment or the stability of family life. Both observed and unobserved characteristics influence the rate by which an individual becomes homeless.

The effect of previous parental separation on the onset of homelessness is measured by  $\delta$  which may cause a shift in the rate by which individuals become homeless. This is the key parameter of interest as it informs us as to whether previous parental separation increases the risk of homelessness ( $\delta > 0$ ), reduces the risk of risk of homelessness ( $\delta < 0$ ), or has no direct effect on the likelihood of experiencing homelessness ( $\delta = 0$ ). The conditional density function for the completed duration until first homelessness can be written as

$$f_h(t|x, t_s, v) = \theta_h(t|x, t_s, v) \exp\left(-\int_0^t \theta_h(h|x, t_s, v) dh\right) \quad (4)$$

Individuals who have not experienced homelessness by the age at which they are last observed in the data are assumed to have a right-censored duration until the onset of homelessness. The main assumption so far is that the effect of parental separation is exogenous to the rate by which individuals become homeless. However it could be that this is not the case. It is possible that some individuals have unobserved characteristics such that they are both more likely to have parents who are likely to separate and they themselves are more likely to become homeless. If this is the case at least part of the estimated effect of parental separation is in fact caused by correlation in unobserved heterogeneity across the two transitions. In other words if we simple compare individuals whose parents are separated with individuals whose parents did not separate we are actually comparing individuals whose

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allow parental separation to impact on initiation into homelessness if and only if it occurred at an earlier age.

parents are separated and who are themselves more likely to become homeless anyway with individuals whose parents did not separate and who themselves are less likely to become homeless. Then we would overestimate the causal effect of parental separation on the transition into homelessness. To establish the causal effect of parental separation we have to take the potential correlation of unobserved heterogeneity into account. We do this by specifying the joint density function for the duration until parental separation  $t_s$  and the duration until homelessness  $t_h$  conditional on  $x$  as

$$f(t_s, t_h|x) = \int_u \int_v f_s(t|x, u) f_h(t|x, t_s, v) dG(u, v) \quad (5)$$

$G(u, v)$  is assumed to be a flexible discrete distribution with an unknown number of points of support. We will start assuming that for every transition process unobserved heterogeneity can be specified by a discrete distribution with two points of support.<sup>18</sup> In combination this leads to four points of support:  $(u_1, v_1)$ ,  $(u_1, v_2)$ ,  $(u_2, v_1)$ ,  $(u_2, v_2)$ , reflecting the finding of two types of individuals in both hazard rates for parental separation (high family susceptibility and low family susceptibility for parental separation) and two types in the hazard rate for homelessness (high susceptibility, low susceptibility). The four mass points imply that conditional on observed characteristics there are four types of individuals. The associated probabilities are denoted as follows:

$$\begin{aligned} Pr(u = u_1, v = v_1) = p_1 & & Pr(u = u_1, v = v_2) = p_2 \\ Pr(u = u_2, v = v_1) = p_3 & & Pr(u = u_2, v = v_2) = p_4 \end{aligned} \quad (6)$$

with  $0 \leq p_c \leq 1$  for  $c = 1-4$ . These probabilities are modelled using a multinomial logit specification with  $p_j = \exp(\alpha_j) / \sum_j \exp(\alpha_j)$ , for  $j=1, \dots, 4$ , normalizing  $\alpha_4=0$ .

The parameter estimates are obtained using the method of maximum likelihood taking into account that our duration information relates to intervals rather than to exact durations. For example, an individual who indicated to have become homeless at age 16 may have

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<sup>18</sup> We also investigated whether the existence of a third mass-point in each of the processes but were not able to identify such a third mass-point.



become homeless on his 16<sup>th</sup> birthday or on the day before his 17<sup>th</sup> birthday. For this individual, we model that he had not yet become homeless at age 15, but had become homeless before turning 17.

## 5 Results

Tables 5 and 6 present parameter estimates of mixed proportional hazard models of the duration until parental separation and the duration until homelessness (with durations censored at 30), separately for women and men. The first two columns present estimates for separate models of parental separation and homelessness. The last two columns show results of the joint estimates. The main parameters of interest are the coefficients on parental separation before age 12 and the coefficient on parental separation from 12 to 30 in the equation for homelessness reported in the first two rows of the tables.

For women, parental separation before age 12 increases homelessness, but if the separation occurs after age 12, it has no effect on homelessness. The estimates indicate that for respondents whose parents separated before they were 12, the rate of entry into homelessness is more than double (i.e. a difference of  $100(\exp(0.80)-1) = 123$  percent) the rate of otherwise similar women whose parents did not separate. The distribution of unobserved heterogeneity implies that 95 percent of females belong to the Type 1 group, having a positive starting rate for homelessness. Findings with regard to the determinants of the transition into homelessness suggest that adverse childhood circumstances (not living with parents because of death or conflict and emotional abuse) increase transitions into homelessness. In contrast caregivers' education does not affect transitions into homelessness.

**Table 5: Parameter estimates mixed proportional hazards model, parental separation and homelessness, women**

	Separate				Joint			
	Parental sep.		Homelessness		Parental sep.		Homelessness	
Separation before age 12			0.80***	(6.1)			0.86***	(6.5)
Separation from age 12 to 30			0.07	(0.4)			0.14	(0.7)
<i>Childhood</i>								
Parents dead			0.50**	(2.5)			0.45**	(2.3)
Conflict parents			1.30***	(6.5)			1.30***	(6.3)
Emotional abuse	0.21	(1.0)	0.69***	(3.7)	0.21	(1.0)	0.68***	(3.7)
Physical violence	0.17	(0.8)	0.30	(1.6)	0.17	(0.8)	0.30	(1.6)
Sexual violence	0.11	(0.7)	0.05	(0.4)	0.11	(0.7)	0.05	(0.4)
<i>Missing info</i>								
Reason not living with parents			0.84*	(1.8)			0.87*	(1.8)
Violence	-0.39*	(1.9)	0.23	(1.3)	-0.38*	(1.9)	0.24	(1.4)
<i>Male caregiver's education</i>								
Primary school	-0.12	(0.1)	0.85	(0.8)	-0.10	(0.0)	0.86	(0.1)
Some secondary, <=Y10	1.09	(0.9)	1.13	(1.1)	1.09	(0.2)	1.10	(0.2)
Y11 or equivalent	1.06	(0.8)	0.86	(0.8)	1.08	(0.2)	0.85	(0.1)
Y12 or equivalent	1.32	(1.1)	1.10	(1.0)	1.32	(0.2)	1.06	(0.2)
Technical College/TAFE	0.61	(0.5)	0.36	(0.3)	0.62	(0.1)	0.34	(0.1)
University	0.14	(0.1)	0.82	(0.8)	0.15	(0.0)	0.82	(0.1)
Missing	1.58	(1.3)	0.88	(0.8)	1.58	(0.2)	0.85	(0.1)
<i>Female caregiver's education</i>								
Primary school	0.65	(1.0)	-0.31	(0.5)	0.63	(0.9)	-0.32	(0.5)
Some secondary, <=Y10	1.07*	(1.9)	0.10	(0.2)	1.06*	(1.8)	0.08	(0.1)
Y11 or equivalent	1.03	(1.6)	0.47	(0.8)	1.02	(1.5)	0.45	(0.7)
Y12 or equivalent	1.77***	(3.1)	0.08	(0.1)	1.76***	(2.9)	0.07	(0.1)
Technical College/TAFE	0.75	(1.2)	-0.23	(0.4)	0.73	(1.1)	-0.25	(0.4)
University	2.23***	(3.6)	0.13	(0.2)	2.22***	(3.5)	0.13	(0.2)
Missing	1.46***	(2.6)	-0.04	(0.1)	1.44**	(2.4)	-0.06	(0.1)
Constant	-4.78***	(3.6)	-8.17***	(7.0)	-4.77	(0.7)	-8.15	(1.4)
<i>Age (separation / homelessness)</i>								
4-5 / 12-13 years old	-0.28	(1.6)	2.48***	(8.2)	-0.28	(1.5)	2.47***	(7.9)
6-7 / 14 years old	-0.24	(1.3)	3.63***	(12.5)	-0.24	(1.2)	3.62***	(12.2)
8-9 / 15 years old	-0.31	(1.5)	4.16***	(14.7)	-0.30	(1.4)	4.14***	(14.3)
10-11 / 16 years old	-0.15	(0.7)	4.20***	(14.4)	-0.14	(0.6)	4.18***	(13.9)
12-13 / 17 years old	0.18	(0.8)	4.31***	(14.5)	0.19	(0.8)	4.28***	(14.3)
14-15 / 18 years old	0.47*	(1.8)	4.41***	(14.6)	0.48*	(1.7)	4.38***	(14.1)
16-19 / 19 years old	0.16	(0.5)	3.28***	(8.0)	0.17	(0.5)	3.25***	(7.9)
20+ / 20-21 years old	-0.53	(1.3)	3.67***	(11.2)	-0.54	(1.3)	3.63***	(10.8)
. / 22-23 years old			3.74***	(11.2)			3.70***	(10.9)
. / 24-26 years old			3.53***	(10.0)			3.48***	(9.9)
. / 27+ years old			4.11***	(12.1)			4.04***	(11.9)
Second masspoint	-∞		-∞		-∞		-∞	
α2	1.04***	(7.4)	2.91***	(8.0)	-0.98***		(6.7)	
α3					-2.91***		(7.8)	
α4					-∞			
Type 1 - high PS & high H (%)	73.9		94.8		70			
Type 2 - low PS & high H (%)					26.2			
Type 3 - high PS & low H (%)					3.8			
Type 4 - low PS & low H (%)					0			
-Loglikelihood	1,360.1		1,373.5		2,733.5			

Notes: The age dependence structure for parental separation includes eight age intervals (indicated first) and the age dependence structure for homelessness includes 11 intervals (indicated last). Based on 564 observations; absolute t-statistics in parentheses; \*\*\*/\*\*/\* indicates significance at a 1/5/10%-level.

**Table 6: Parameter estimates mixed proportional hazards model, parental separation and homelessness, men**

	Separate				Joint			
	Parental sep.		Homelessness		Parental sep.		Homelessness	
Separation before age 12			1.02***	(7.0)			0.70***	(4.0)
Separation from age 12 to 30			0.87***	(4.6)			0.83***	(3.7)
<i>Childhood</i>								
Parents dead			0.61**	(2.6)			0.56**	(2.1)
Conflict parents			1.16***	(4.6)			1.08***	(4.5)
Emotional abuse	1.08***	(4.2)	0.51***	(2.8)	1.11***	(4.2)	0.71***	(3.5)
Physical violence	-0.02	(0.1)	0.35*	(1.8)	-0.03	(0.1)	0.36*	(1.8)
Sexual violence	-0.14	(0.6)	0.13	(0.8)	-0.10	(0.4)	0.23	(1.2)
<i>Missing info</i>								
Reason not living with parents			0.22	(0.5)			0.12	(0.3)
Violence	0.49*	(1.8)	0.23	(1.0)	0.45	(1.6)	0.26	(1.1)
<i>Male caregiver's education</i>								
Primary school	-0.63	(0.8)	-1.03*	(1.9)	-0.58	(0.6)	-1.39**	(2.1)
Some secondary, <=Y10	-0.36	(0.5)	-0.36	(0.7)	-0.26	(0.3)	-0.52	(0.8)
Y11 or equivalent	0.07	(0.1)	-0.49	(0.7)	0.01	(1.0)	-0.79	(1.0)
Y12 or equivalent	-0.15	(0.2)	-0.10	(0.2)	-0.14	(0.2)	-0.42	(0.6)
Technical College/TAFE	-0.98	(1.2)	-0.83	(1.4)	-0.87	(1.0)	-1.16*	(1.7)
University	-0.74	(0.9)	-0.69	(1.2)	-0.65	(0.8)	-1.02	(1.5)
Missing	0.32	(0.4)	-0.18	(0.3)	0.37	(0.5)	-0.33	(0.5)
<i>Female caregiver's education</i>								
Primary school	0.51	(0.8)	-0.29	(0.6)	0.46	(0.7)	-0.30	(0.6)
Some secondary, <=Y10	1.35**	(2.4)	0.74*	(1.7)	1.19**	(2.0)	0.97**	(2.1)
Y11 or equivalent	1.44**	(2.0)	0.67	(1.3)	1.42*	(1.9)	0.90	(1.6)
Y12 or equivalent	0.94	(1.6)	0.37	(0.8)	0.90	(1.4)	0.65	(1.4)
Technical College/TAFE	1.05	(1.6)	0.26	(0.5)	0.90	(1.3)	0.50	(0.9)
University	0.57	(0.9)	0.53	(1.1)	0.41	(0.6)	0.62	(1.2)
Missing	0.66	(1.2)	0.53	(1.2)	0.63	(1.1)	0.89*	(1.9)
Constant	-3.65***	(4.7)	-6.80***	(11.4)	-3.55***	(4.3)	-6.83***	(10.0)
<i>Age (separation / homelessness)</i>								
4-5 / 12-13 years old	-0.07	(0.4)	1.53***	(5.3)	-0.06	(0.3)	1.59***	(5.3)
6-7 / 14 years old	0.17	(0.8)	2.78***	(11.0)	0.21	(1.0)	2.85***	(11.0)
8-9 / 15 years old	0.19	(0.8)	3.35***	(13.9)	0.24	(0.9)	3.43***	(13.7)
10-11 / 16 years old	0.36	(1.3)	3.79***	(15.8)	0.40	(1.4)	3.90***	(15.7)
12-13 / 17 years old	0.67**	(2.4)	4.13***	(16.9)	0.71**	(2.4)	4.30***	(17.0)
14-15 / 18 years old	0.60*	(1.8)	4.05***	(15.0)	0.62*	(1.7)	4.28***	(15.4)
16-19 / 19 years old	0.28	(0.8)	3.96***	(13.7)	0.28	(0.8)	4.27***	(14.1)
20+ / 20-21 years old	-0.40	(1.0)	3.41***	(11.1)	-0.40	(1.0)	3.79***	(11.4)
. / 22-23 years old			3.38***	(10.3)			3.86***	(11.2)
. / 24-26 years old			3.39***	(10.3)			3.95***	(11.0)
. / 27+ years old			3.82***	(11.6)			4.46***	(12.0)
Second masspoint	-2.72***	(8.6)	-2.37***	(6.5)	-2.62***	(8.0)	-2.76***	(8.5)
$\alpha_1$	-0.02	(0.1)	1.28***	(4.2)	0.53**		(2.5)	
$\alpha_2$					0.34		(1.4)	
$\alpha_3$					-1.27***		(2.8)	
Type 1 - high PS & high H (%)	49.6		78.2		38.8			
Type 2 - low PS & high H (%)					32.1			
Type 3 - high PS & low H (%)					6.4			
Type 4 - low PS & low H (%)					22.7			
-Loglikelihood	1,550.0		1,629.9		3,174.7			

Notes: The age dependence structure for parental separation includes eight age intervals (indicated first) and the age dependence structure for homelessness includes 11 intervals (indicated last). Based on 667 observations; absolute t-statistics in parentheses; \*\*\*/\*\*/\* indicates significance at a 1/5/10%-level.

Results for the case in which the unobserved components of the transition into parental separation and homelessness are correlated are contained in the last two columns of Table 5. There is no evidence of a correlation between the unobserved factors affecting parental separation and homelessness, i.e. the joint modelling does not improve on the separate modelling. The null hypothesis of independent unobserved heterogeneity is examined using a Likelihood Ratio test. With a test statistic of 0.3, the null hypothesis is accepted at the 1% level suggesting that the unobserved heterogeneities determining the onset of parental separation and homelessness are independent.<sup>19</sup>

For men, the results differ: parental separation that occurs before and after age 12 increases transitions into homelessness. Here, with a LR-test statistic of 10.3 between the independent and joint models, we reject the null hypothesis at the 1% level of significance and conclude that the unobserved heterogeneities determining the onset of parental separation and homelessness are not independent. For men, the joint model estimates are therefore preferred and suggest that the rate at which respondents first experience homelessness is greater (than those whose parents did not separate): by 101 percent for those whose parents separated before they were 12 ( $100(\exp(0.70)-1)$ ); and by 129 percent for those whose parents separated when they were older than 12 ( $100(\exp(0.83)-1)$ ).

The distribution of unobserved heterogeneity implies that 39% of men belong to the Type 1 group, having a high parental separation occurrence rate and a high starting rate for homelessness ( $u_1, v_1$ ); 32% belong to the Type 2 group with a low parental separation occurrence rate and a high starting rate for homelessness ( $u_2, v_1$ ); while 6% are from the Type 3 group and have a high parental separation occurrence rate and a low starting rate for homelessness ( $u_1, v_2$ ); finally, 23% (Type 4) have a low starting rate for both parental separation and homelessness ( $u_2, v_2$ ). The identification of four types suggest that controlling

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<sup>19</sup> The LR test statistic for the null hypothesis that the unobserved heterogeneity terms are independent is distributed as a chi-squared with 1 degree of freedom.

for unobserved heterogeneity and taking the timing of events into consideration with the duration modelling is important. As for women, childhood adverse circumstances are found to increase men's transition rate into homelessness.

The stark difference in results by gender is intriguing but not unseen in the literature. For instance, it has been found that parental separation tends to increase boys' behavioural problems but not girls (McLanahan et al., 2013). Also, McVicar et al. (2015b) find that taking up daily cannabis use increases the probability of transition into homelessness for young men but not for young women. These results are consistent with each other and suggest that adolescent boys might react more strongly to their parents' separation via adopting bad or risky behaviours such as substance use which could then lead to homelessness. Of course this is only one possible sequence of events and other pathways may explain the differential effect of parental separation on homelessness between boys and girls in adolescence (e.g. dropping out of high school).

On the basis of these findings, the sensitivity analysis that follows focuses on investigating the robustness of the estimated independent homelessness model for women, and of the estimated joint model for men.

## **6 Sensitivity Analysis and Extensions**

In this section, we investigate the robustness of our findings by providing a range of sensitivity analyses related to our definitions and modelling. We also distinguish between the impact of parental separation at the end of a marriage and the end of a de-facto relationship. And, we investigate the relevance of a number of possible channels explaining the impact of parental separation on homelessness. Our main parameter estimates are presented in Tables 7 and 8.

**Table 7: Parameter estimates OLS and mixed proportional hazards model, type of homelessness**

	Women		Men	
	Homelessness	Literal homelessness	Homelessness	Literal homelessness
<b>a. Linear probability model - The effect of parental separation before age 12</b>				
On literal homelessness				
<=15	0.13*** (0.04)	0.11*** (0.04)	0.11*** (0.03)	0.07** (0.03)
On literal homelessness				
<=20	0.25*** (0.04)	0.27*** (0.05)	0.25*** (0.04)	0.18*** (0.04)
On literal homelessness				
<=25	0.24*** (0.04)	0.32*** (0.05)	0.26*** (0.04)	0.25*** (0.04)
On literal homelessness				
<=30	0.22*** (0.03)	0.30*** (0.05)	0.23*** (0.03)	0.26*** (0.04)
<b>b. Mixed proportional hazards model - The effect on literal homelessness</b>				
Of separation before 12	0.80*** (0.1)	0.90*** (0.2)	0.70*** (0.2)	0.72*** (0.2)
Of separation from 12 to 30	0.07 (0.2)	-0.05 (0.3)	0.83*** (0.2)	0.66** (0.3)

Notes:

In section a (linear probability models), we remove from the sample homeless spells occurring before age 12.

In section b (mixed proportional hazards models), the age dependence structure for parental separation includes eight age intervals and the age dependence structure for homelessness includes 11 intervals (as in Tables 6 and 7).

The estimates from the 'Homelessness' columns are taken from tables 3-6. Literal homelessness is defined as having stayed in crisis accommodation, squatted in abandoned buildings or slept rough.

Based on 564 women and 667 men; robust standard errors in parentheses; \*\*\*/\*\*/\* indicates significance at a 1/5/10%-level.

Using information about the type of accommodation respondents have ever lived in before being surveyed in wave 1, we identify respondents who have ever experienced literal homelessness (i.e. staying in crisis accommodation, squatting abandoned buildings or sleeping rough). This allows us to test the robustness of our results to a more strict definition of homelessness. Table 7 shows estimates of the effect of parental separation on homelessness for respondents who experienced literal homelessness<sup>20</sup> using linear probability models (as in Tables 3 and 4) and mixed proportional hazards models (as in Tables 5 and 6). Columns 1 and 3 reproduce the main parameter estimates of Tables 3 to 6 to facilitate comparisons while columns 2 and 4 shows the related parameter estimates when we focus on a strict definition of homelessness. The results are very similar to that using the broad definition for homelessness. The linear probability model results may suggest that parental separation before age 12 progressively lead to precarious housing first and later to literal homelessness as the estimated coefficients on literal homelessness become larger than those on broad homelessness as respondents become older. The mixed proportional hazards model estimates suggest that overall parental separation before age 12 leads slightly more often to literal homeless than broad homelessness (estimate of 0.9 vs 0.8 for girls). In contrast, parental separation after age 12 leads slightly less often to literal homeless than broad homelessness for boys (estimate of 0.66 vs 0.83) and has absolutely no effect for girls.

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<sup>20</sup> Note that the age of onset is the age of onset for broad homelessness as Journeys Home does not provide the age of onset of literal homelessness.

**Table 8: Sensitivity analysis**

	Women (Separate H model)			Men (Joint model)		
	Coeff.		-Loglik.	Coeff.		-Loglik.
1. With 1 treatment effect before 30	0.64***	(4.9)	1,380.8	<b>0.73***</b>	<b>(4.5)</b>	<b>3,174.9</b>
2. With 3 treatment effects						
Separation before 12	0.80***	(6.1)	1,373.5	0.72***	(4.2)	3,174.2
Separation from 12 to 16	0.08	(0.4)		0.99***	(4.2)	
Separation from 17 to 30	0.04	(0.1)		0.51	(1.0)	
3. With 1 treatment effect before 12	<b>0.79***</b>	<b>(6.3)</b>	<b>1,373.6</b>	0.58***	(3.6)	3,179.8
4. Censoring after 25	0.85***	(6.4)	1,221.5	0.76***	(4.9)	2,950.6
5. Marriages	0.84***	(5.3)	997.9	0.80***	(4.1)	2,474.6
6. De facto relationships	0.40	(1.1)	353.1	0.37	(0.8)	629.6
7. Without control for not living with parents' because dead	0.78***	(6.2)	1,375.8	0.69***	(4.3)	3,177.8
8. Without control for not living with parents because of conflict	0.85***	(7.0)	1,392.4	0.75***	(4.2)	3,183.9
9. Without emotional abuse	0.82***	(6.5)	1,380.5	0.79***	(4.9)	3,181.5
10. With control for utilities disconnected	0.74***	(5.9)	1,371.0	0.71***	(4.3)	3,167.3
11. With control for State care	0.73***	(5.9)	1,370.3	0.61***	(3.9)	3,168.8
12. With control for female caregiver's substance abuse	0.79***	(6.1)	1,373.4	0.76***	(4.4)	3,173.2
13. With control for female caregiver's mental health issues	0.77***	(6.0)	1,371.3	0.72***	(4.4)	3,170.3
14. With control for male caregiver's substance abuse	0.77***	(6.1)	1,370.0	0.74***	(4.5)	3,173.2
15. With control for male caregiver's mental health issues	0.77***	(6.2)	1,370.1	0.74***	(4.5)	3,174.8

Notes: For panels 4 onwards, the effects estimated are for separations before age 12 for women, and before age 30 for men; absolute t-statistics in parentheses; \*\*\*/\*\*/\* indicates significance at a 1/5/10%-level.

In table 8, we first test our main model against alternative models with: (i) only one treatment effect for parental separation irrespective of the age at which this occurred; (ii) three treatment effects (one before age 12; one between 12 and 16; one between 17 and 30); (iii) only one treatment effect before age 12; and (iv) censoring at age 25 instead of age 30. For women, the preferred specification is test 3 and has only one treatment effect of parental separation occurring up to age 12, i.e. the effect of parental separation after age 12 is zero.



Specifically, a model with only one treatment effect before age 12 performs better than a model with one treatment effect (test 1) (the log likelihood of test 3, -1373.6 is significantly larger than that of test 1, -1380.8) and better than models adding one or two treatment effects after 12 (the log likelihoods of test 2 and of the separate homelessness model in Table 5 are not better than test 3). For men, the results suggest that the best specification has only one treatment effect across all ages (test 1). The test 3 model with only one treatment effect before age 12 performs worse (the log likelihood of test 3, -3179.8 is significantly smaller than that of test 1, -3174.9); and adding one or two treatment effects after 12 does not improve the performance of the model (the log likelihoods of test 2 and of the joint model in Table 6 are not better than test 1). Finally, censoring at 25 years old instead of 30 years old only slightly increases the effects of parental separation on homelessness. Given these results, we conduct all further robustness checks on the model used in test 3 for women and test 1 for men. These results suggest that parental separation increases the rate at which respondents first experience homelessness by 120 percent for women and 108 percent for men.

Second, we distinguish the effect of parental separation between the end of marriages and the end of de facto relationships. De facto relationships may characterise relationships that are less stable than marriages, i.e. in which partners rely less on their partner and protect themselves better against a potential break-up (by working or saving more for example or by not taking a long-term mortgage). As a result, the ending of the partnership may cause less of a financial shock for the partners helping them to avoid homelessness. At the same time, the ending of a marriage may provide more legal financial security to the less advantaged partner than the ending of a de facto relationship and therefore protect her better from homelessness. All in all, conceptually it is unclear whether endings of de facto relationships or marriages have larger impacts on initiation into homelessness. We divide the main sample into respondents whose parents were/are married (952 observations) and those whose parents

were/are in a de facto relationship (279 observations). We run our preferred homelessness models on both subsamples. Essentially, for both boys and girls, the ending of a marriage is worse than that of a de facto relationship. The ending of a marriage more than doubles the transition rates into homelessness and the effects are significant at the 1% level, while the ending of a de facto relationship does not significantly increase transitions into homelessness (and the magnitude of these coefficients are half those of marriages).

Third, we test some possible mechanisms through which parental separation may increase homelessness. Results from the homelessness models in Tables 5 and 6 suggest that a number of other characteristics lead to homelessness: parents' death; conflict with parents and emotional abuse. If these characteristics result from the parental separation, they could be channels through which parental separation affects homelessness, rather than potential confounding factors. To test this, we run our preferred models removing those characteristics one by one to see if this affects the estimation of the treatment effects. If they act as channels, the effects from parental separation to homelessness should be larger without those controls. We find this is mostly not the case suggesting that those variables are unlikely to be channels through which parental separation leads to homelessness. The only exception is the 'conflict with parents' variable for women: in this case we cannot rule out that the parental separation possibly led to conflicts within the household which ultimately led the youth out of their parents' home and into homelessness.

Further, we test for other possible channels potentially resulting from the parental separation: (i) financial difficulties captured by having had utilities disconnected because of unpaid bills during childhood; (ii) family conflict leading to the placement of the respondent in State care and (iii) female caregivers' difficulties in coping with the separation leading to

substance abuse and mental health issues.<sup>21</sup> Most of these variables significantly increase the respondent's transition rate into homelessness (except the female caregiver's substance abuse for girls). However, they only have very little effect on the estimated treatment effect for parental separation, suggesting these are not channels. Controlling for being placed in State care and having utilities disconnected (for girls) lead to small decreases in the effect of parental separation, but the effect of parental separation on homelessness remains large and significant in all cases. This could either be because these variables are poor proxies for the underlying mechanism or because these variables actually have an independent effect on homelessness.

Finally, to illustrate the magnitude of the effects of parental separation on the entry into homelessness we perform some simulations on the basis of our preferred parameter estimates in combination with the characteristics of a hypothetical reference person. Our preferred estimates are those presented in Table 8 test 1 for men and test 3 for women. For the hypothetical individual we set all explanatory variables in our analysis to zero. So the hypothetical individual was not confronted during childhood with emotional abuse or physical or sexual violence and had males and female caregivers with less than primary school education. The top graph of Figure 4 shows the evolution of the cumulative probability to become homeless, by age for women. The lower line gives the evolution for women whose parents did not separate. By age 20 about 10% of these hypothetical women have become homeless, increasing to a little over 20% by age 30. The top line shows the situation in which the parents separated shortly after the birth of the hypothetical girl. Initially, parental separation has a small effect in absolute terms but by age 20 the hypothetical women already has a 20% probability to have become homeless. By age 30 this is more than 40%. In other

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<sup>21</sup> Male caregiver's substance abuse and mental health issues were also investigated but those do not affect the transition rate of the respondent into homelessness. This is not surprising given that after a parental separation, most children would stay with their female caregiver rather than their male caregiver.

words, the effect of parental separation doubles the probability to have become homeless by age 30. The bottom graph of Figure 4 shows both evolutions of the cumulative probability to become homeless for a different type of hypothetical women. These women were confronted with emotional abuse during childhood and were not living with their parents at age 14 because of conflict. Their cumulative probability to become homeless is much higher. Women whose parents did not separate have a 60% probability to have experienced homelessness by age 20, which increases to 80% by age 30. With an early parental separation these numbers are substantially higher; i.e. 85% by age 20 and 95% by age 30.

**Figure 4: Simulated cumulative starting probabilities for the onset of homelessness, women**

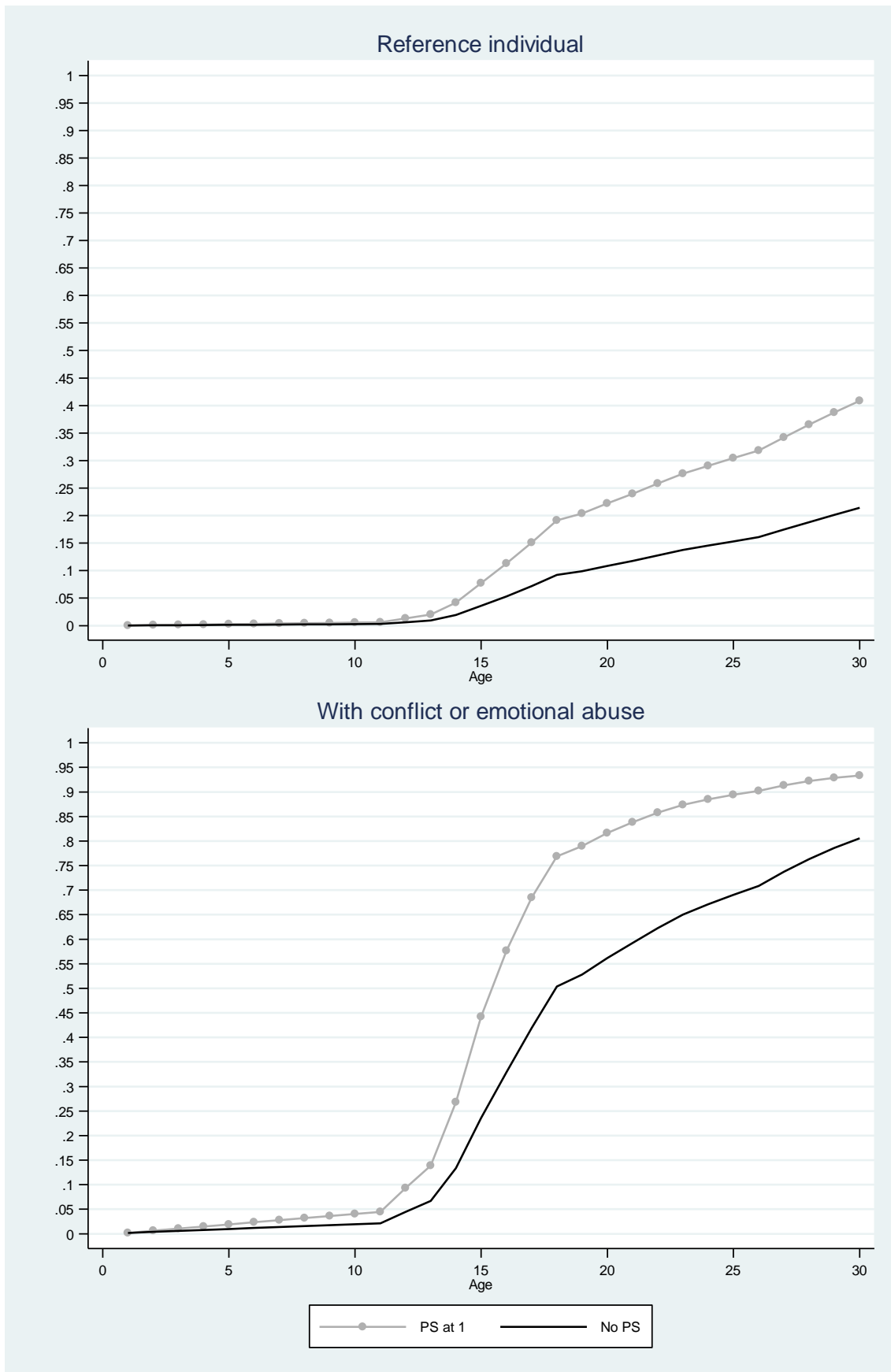
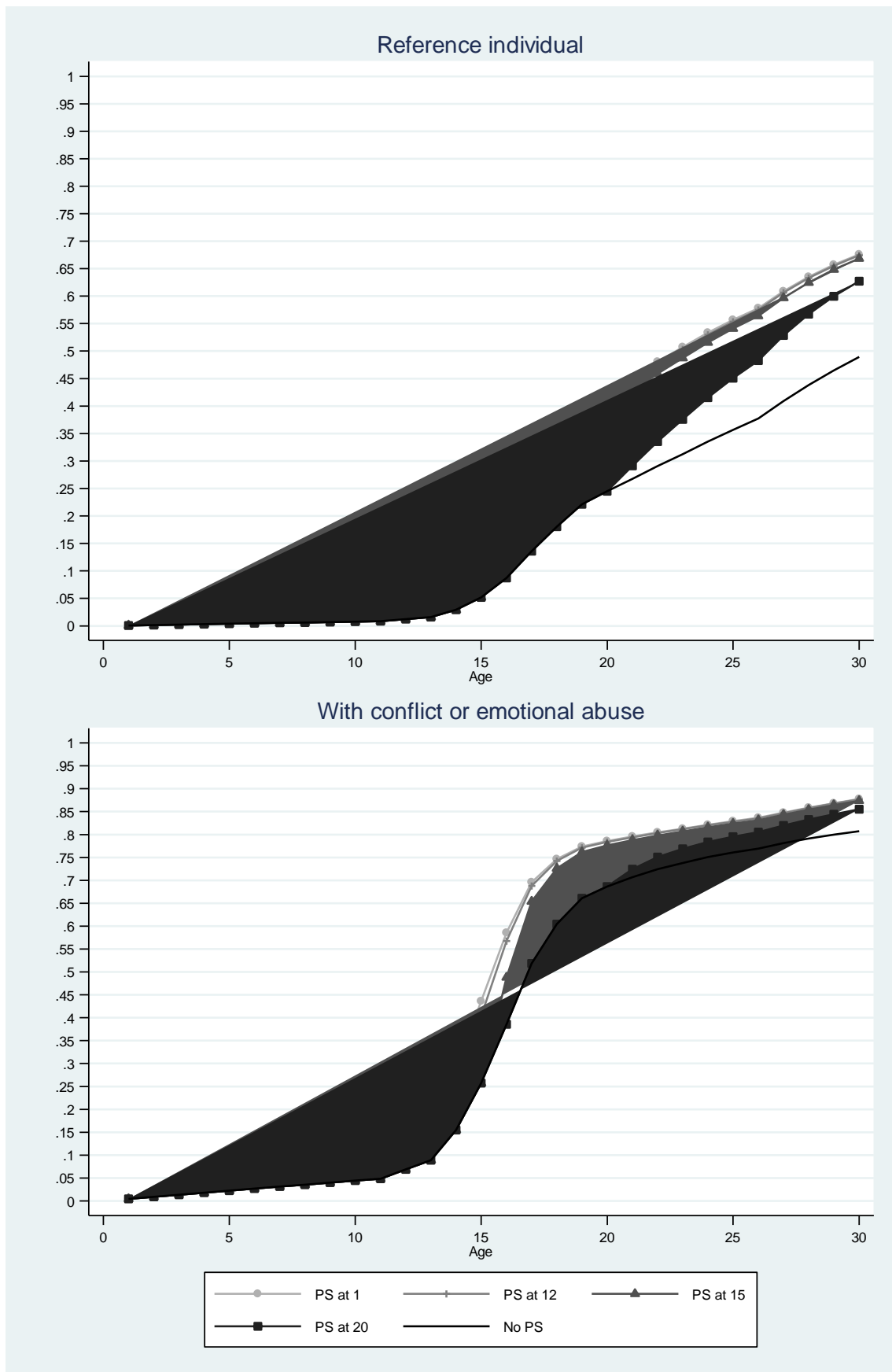


Figure 5 is similar to Figure 4 but now the hypothetical individual is a male. Since we find that for males it also matters whether their parents separated after age 12 we distinguish five potential situations: no parental separation; parental separations at age 1; 12; 15 and 20. The top graph shows that for men whose parents did not separate the cumulative probability to have experienced homelessness is about 25% by age 20 which increases to about 50% by age 30. There is not much difference between men whose parents separated when they were very young and men whose parents separated when they were 12 or 15 years old. For these groups, the cumulative probability to have become homeless at least once is 40% by age 20 and 65% by age 30. Parental separation occurring when the male is 20 years old increases the male's homelessness onset to the extent that by age 30 they are not so different from men whose parents separated at a very young age. The lower graph of Figure 5 shows similar differences for men who were confronted with emotional abuse and conflicts during their childhood. However, the differences between the different ages of the child at separation are not as large. Men whose parents did not separate have a probability of 80% to be homeless by age 30. This is about 90% in the case of a parental separation, irrespective of whether it occurred when the child was very young or much older.

**Figure 5: Simulated cumulative starting probabilities for the onset of homelessness, men**



## 7 Conclusions

Using a unique and detailed Australian dataset on homelessness experiences, we investigate the causal link between childhood experiences of parental separation and entry into homelessness in the short- and medium-run. In theory, parental separation and homelessness could be correlated through observable and unobservable family and individual characteristics. Unstable families or families which experience a negative financial shock may also be families that have children that are more likely to make a transition into homelessness. We utilize a bivariate hazard rate framework in which parental separation and entry into homelessness are allowed to be affected by observable and unobservable characteristics. This allows us to move beyond previous estimates of correlations and make an important contribution by investigating the causal link.

We find that even after controlling for potential observed and unobserved confounders there is a causal effect of parental separation on the first entry into homelessness. If parents separate, their children are more likely to become homeless. The effect is substantial. Specifically, if parents separate before the child reaches age 12 the child has a 10–20 percentage point higher probability of being homeless by age 30.

Interestingly, we find effects that are not gender neutral. For girls, if their parents separate before they reach age 12, there is a clear positive effect on their entry into homelessness. However, if their parents separate after age 12, there is no effect. For boys, the effect of parental separation on their entry into homelessness persists, whereby even if the parental separation occurs after the age of 12 there is still a positive effect on their entry into homelessness. Our results suggest adolescent girls are more robust to parental separations than adolescent boys. Further, a surprising finding is that the effects of parental separations are larger when the parents were formally married.



Taken together these results suggest that policy programs targeting the housing needs of disadvantaged one-parent households can help avoid initiation into homelessness for children living in these families and thereby contribute to breaking the intergenerational cycle of disadvantage.

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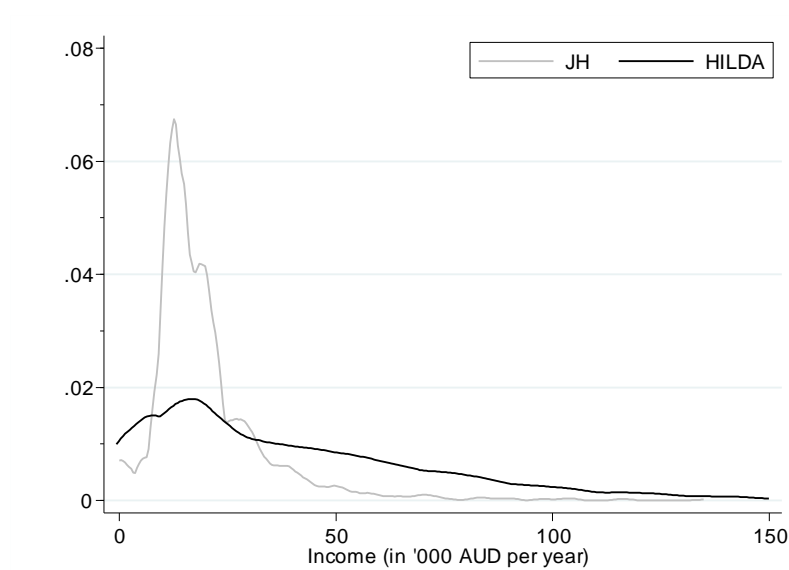
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## DATA APPENDIX

Figure A1: Distribution of individual gross yearly income for JH respondents vs the Australian population (Hilda)



Note: The distribution for JH respondents is based on their declared weekly income in all jobs and other incomes, and the government payments they received (administrative source) in wave 1 (2011). The distribution for the Australian population is calculated from Hilda 2011 using the derived 'Financial year gross regular income' variable and cross-sectional population weights.

The two sources are not exactly similar. For instance, the collection of government payments is likely to be underestimated in Hilda as it is self-reported compared to the use of administrative data in JH. This may superficially increase the number of respondents with very low income in Hilda and explain that the black line is over the grey line on the left side of the distribution.

1. Questions identifying the age of onset of homelessness (wave 1)

**H26 [hhishmls]**

Thinking about both your current and past experiences, have you ever stayed in any of the following places because you did not have a place to live? *Interviewer note: by a place to live we mean a place that the respondent either owned, was renting, or was buying. If necessary clarify: a "temporary stay" is one in which a person has stayed or intends to stay with relatives or friends for less than 3 months. Read out all categories.*

	Yes	No	Don't know	Refused	
Stayed with relatives temporarily (because you did not have a place to live) (1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis1]
Stayed at a friend's house temporarily (because you did not have a place to live) (2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis2]
Stayed in a caravan, mobile home, cabin, houseboat (because you did not have a place to live) (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis3]
Stayed at a boarding house or hostel (because you did not have a place to live) (4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis4]
Stayed in a hotel or motel (because you did not have a place to live) (5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis5]
Stayed in crisis accommodation or a refuge (6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis6]
Squatted in an abandoned building (7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis7]
Slept rough (such as sleeping in cars, tents, trains or anywhere else outdoors) (because you did not have a place to live) (8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[hhhis8]

**H28 [hfhlage]**

How old were you the first time that you were without a place to live?

[AGE]

Don't know (-1)

Refused (-2)

2. Questions identifying the age at parental separation (wave 6)

**PM1 [cgmarry]**

I am now going to ask a few questions about your parents. First, were your parents ever married to each other? *Interviewer note: If queried, by "parents" we mean either their biological OR adoptive parents.*

Yes (1)

No (0)

Don't know (-1)

Refused (-2)

**PM2 [cgdfcto]**

Did they ever live together in a relationship?

- Yes (1)
- No (0)
- Don't know (-1)
- Refused (-2)

**PM3 [cgdivorc]**

Did your parents ever get divorced?

- Yes (1)
- No (0)
- Don't know (-1)
- Refused (-2)

**PM4 [cgseprte]**

Did your parents ever separate?

- Yes (1)
- No (0)
- Don't know (-1)
- Refused (-2)

**PM6 [cgfirst]**

About how old were you at the time they first separated?

- Unborn (0)
- Less than 1 year (0)
- 1 to 80 years (insert age) \_\_\_\_\_
- Don't Know (-1)
- Refused (-2)

**Table A1 (not for publication): Regression estimates of the effect of homelessness prior to Journeys Home on the likelihood to be in our sample**

	Women	Men
<u>Homelessness before W1</u>		
No controls	-0.03 (0.04)	-0.02 (0.03)
All controls	-0.04 (0.04)	-0.02 (0.04)
N	763	917

Notes:

The outcome is a dummy equal to 1 for the 1231 respondents in our sample and 0 for other wave 1 respondents. The controls included on the second row are identical to the ones included in tables 3 to 6. Standard errors in parentheses; \*\*\*/\*\*/\* indicates significance at a 1/5/10%-level.