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# Young Adults Living with their Parents and the Influence of Peers<sup>\*</sup>

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## Abstract

This study examines the impact of peer behaviour on the living arrangements of young adults in the United States. Using data from the National Longitudinal Study of Adolescent Health (Add Health), we analyse the influence of high school friends on the nest-leaving decisions of young adults. We achieve identification by exploiting the differences in the timing of leaving the parental home among peers, the individual-specific nature of the peer groups that are based on friendship nominations, and by including school (network) and grade (cohort) fixed effects. Our results indicate that there are statistically significant peer effects on the decisions of young adults to leave the parental home. This is true even after we control for labour and housing market conditions, as well as for a comprehensive list of individual and family-of-origin characteristics that are usually unobserved by the econometrician. We discuss various mechanisms and confirm the robustness of our results through a placebo exercise. Our findings reconcile with the increasing proportion of young adults who are living with their parents in the United States, a trend that is persisting, even since the end of the Great Recession.

JEL classifications: D10, J12, J60, Z13

Keywords: peer effects, friends, living arrangements, leaving parental home

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# 1 Introduction

The decision to leave the parental home is known to have significant consequences on current and future labour market outcomes (e.g. labour force participation, unemployment, job mobility), as well as on marriage and fertility. Numerous studies based on southern Europe, where living with one’s parents during young adulthood has always been the norm, have found negative effects of prolonged stay in the parental home on labour supply (Esping-Andersen, 1999; Manacorda and Moretti, 2006), income (Billari and Tabellini, 2010), and on geographic and job mobility (Eurofound, 2006). Understanding the reasons behind the prevailing living arrangements of young adults is relevant to the debate on policies attempting to increase employment and fertility among the youth, and to discussions on the solvency of intergenerational transfer programmes.<sup>1</sup>

Living arrangements are certainly affected by outside economic conditions. Thus, it is perhaps no surprise that the proportion of young adults living with their parents increased significantly during the Great Recession in many advanced countries, starting with the United States (Dyrda, Kaplan, and Ríos-Rull, 2012; Kaplan, 2012; Lee and Painter, 2013; Bitler and Hoynes, 2015; Hotz et al., 2015; Matsudaira, 2015).<sup>2</sup> However, this trend has not reversed in recent years, despite labour market conditions having recovered significantly. In the United States, the proportion of young adults living with their parents has remained historically high, and in the age group 25–29, is increasing (see Fry (2015) and Figures 1a and 1b). In 2014, for the first time in more than 130 years, the most common arrangement among adults aged 18 to 34 was living in their parents’ homes, rather than with a spouse or partner in their own households (Fry, 2016).

The increasing proportion of young adults living with their parents has been accompanied by a decrease in homeownership by younger households (Agarwal, Hu, and Huang, 2015). This pattern, which may impact the housing market and overall consumption, is causing growing concern among policymakers, and has been explained based on local house prices and employment conditions, as well as on students’ debt reliance (Bleemer et al., 2014). While we do not rule out the importance of these factors, in this study we focus specifically

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<sup>1</sup>Some European countries that were characterized by a high proportion of young adults living with their parents have already adopted these types of policies by subsidizing young tenants. See, for example, the “Renta Basica de Emancipación” in Spain, the “Porta 65” in Portugal and “Aide Mobili-Jeune” in France.

<sup>2</sup>While Americans tend to leave the parental home relatively earlier than Europeans do, the increasing proportion of young adults who live with their parents in the United States has attracted the attention of scholars and policymakers. A similar tendency in the living arrangements of young adults has been observed also in the United Kingdom.

on the role of peer effects in the co-residence of young adults with their parents, so that a high fraction of peers living with their parents lowers each individual’s probability of leaving home. Among the potential mechanisms behind peer effects are the lower cost of a search effort (complementarities), maintenance of friendship ties, reduced stigma attached to young adults who live with their parents, or simply imitation among peers. Independent of the underlying mechanisms, in the presence of peer effects, factors that stimulate the nest-leaving decisions of young adults may be reinforced even further. The interest in assessing the relevance of peer effects is also policy driven, because through similar mechanisms, measures that affect the leaving decisions of young adults may be multiplied through social networks.<sup>3</sup>

We estimate the impact of peer behaviour on the living arrangements of young adults using a unique longitudinal data set of a representative sample of adolescents in the United States, followed until young adulthood, which contains detailed information on demographic and individual characteristics, family of origin, labour and neighbourhood housing market conditions,<sup>4</sup> and high school friends.<sup>5</sup> Thus, we are able to observe the living arrangements of the respondents and their friends (peer group) in the transition to adulthood. We achieve identification by exploiting the differences in the timing of leaving the parental home among peers, and by controlling for school (network) and grade (cohort) fixed effects. The differences in the timing of nest-leaving between the respondents and their friends mitigate the reflection problem, as we can identify who moved first and who followed her/his peers. Moreover, in our setting, peer groups are defined based on friendship nominations, and are potentially different for each respondent because nominations are not necessarily mutual. As a result, we are able to exploit variations within schools/grades/neighbourhoods. School fixed effects allow us to account for correlated effects (i.e. common factors that may have affected both the respondent and the friends).

We find that there are positive and statistically significant peer effects in the living arrangements of young adults. According to our estimates, having friends who are all still living with their parents increases the probability of an individual living with his/her parents by 6 percentage points, relatively to having no friends who are still living with their parents. The existence of positive peer effects is in line with the trend in the United States

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<sup>3</sup>See Dahl, Løken, and Mogstad (2014).

<sup>4</sup>Neighbourhood is defined by the census block group in which respondents were living. Block groups average about 1000 inhabitants.

<sup>5</sup>These adolescents were interviewed in 1994 while at high school, and then again in 2001 while in young adulthood (average age 21.5).

over the last 50 years of an increasing proportion of young adults living with their parents (see Matsudaira (2015) for a discussion of this trend). In the presence of peer effects, the increasing trend may persist, regardless of labour and housing market conditions.

Leaving the parental home is often associated with economic independence and family formation. It is well documented that there are substantial gender, race, and socioeconomic class differences in living arrangements. Women stop living with their parents earlier than men do (Goldscheider and DaVanzo, 1985; Goldscheider and Waite, 1991; Ward and Spitze, 1992; White, 1994). African Americans and Hispanics are substantially more likely to live in extended families than are non-Hispanic whites (Beck and Beck, 1989). Moreover, co-residents are more likely to come from relatively poor and less educated families than are non-co-residents (Rosenzweig and Wolpin, 1993). In our analysis, apart from gender and race, we are able to control for characteristics that are usually unobserved, such as self-esteem, and the intention of the respondents to leave the parental home when they were adolescents. With regard to the family of origin, in addition to information on family composition, financial situation, and parental education, we observe the quality of respondents' relationships with parents, and whether parents encouraged them to be independent during adolescence.<sup>6</sup> We show that the peer effect is robust to the inclusion of this comprehensive list of individual and family-of-origin characteristics.

In addition to demographic and socioeconomic characteristics, housing market conditions and access to mortgage debt affect the living arrangements of the youth significantly (Haurin, Hendershott, and Kim, 1993; Ermisch and Di Salvo, 1997; Ermisch, 1999; Martínez-Granado and Ruiz-Castillo, 2002; Martins and Villanueva, 2009; Modena and Rondinelli, 2011). Regional differences in labour market conditions are also likely to play a role (Card and Lemieux, 2000). In our data, we have information on local housing and labour market conditions of the current residence and the original residence (parental home). We find statistically significant peer effects on the living arrangements of young adults, even after controlling for these variables. We also show that peer effects are not homogeneous across different demographic and socio-economic groups. In particular, we find evidence that females tend to conform to social norm more than males do, and that peer pressure plays an important role for non-whites and for Hispanics.<sup>7</sup> However, the peer effect is not statistically

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<sup>6</sup>Accounting for family-of-origin characteristics is important, because both family and friends are likely to influence an individual's behaviour (Fernández-Villaverde, Greenwood, and Guner 2014).

<sup>7</sup>Our results are also related to the findings of Giuliano (2007), who finds that cultural norms influence the living arrangements of young adults, based on data on second-generation immigrants in the United States. Our findings complement hers, because peer pressure can be considered another dimension of culture.

significant for young adults from low-income families.

There is a growing body of literature documenting the importance of peer decisions and peer characteristics on individual behaviour, focusing mainly on educational outcomes and risky health behaviours.<sup>8</sup> Recent studies also provide evidence of peer influence on marital decisions (Adamopoulou, 2012), fertility (Hensvik and Nillson, 2010; Ciliberto et al., 2015; Yakusheva and Fletcher, 2015), and the probability of finding a job (Cingano and Rosolia, 2012; Cappellari and Tatsiramos, 2015). Although family formation, college attendance, and employment are all intermediate choices related to the nest-leaving decision, this is the first study that investigates peer group effects on the living arrangements of young adults in a unified framework. Even after controlling for these mediating outcomes, we find a significant peer effect on living arrangements.

Our analysis also sheds light on the underlying mechanisms. We find that complementarities between friends who move together to the same neighbourhood may be just a small part of the story. We also reveal that more than half of emancipated young adults still live within 15 km of their parental home. A placebo exercise, using friends who left the parental home after the respondent did, reassures us that the peer effect is not due to correlated effects. We also find that the popularity of the young adult favours emancipation, but this does not undermine the peer effect in any way. Further robustness checks consistently suggest that there is a significant positive peer effect on the living arrangements of young adults. Therefore, other mechanisms, such as the reduced stigma of living with parents during young adulthood, or simply imitation among friends, may lie behind this peer effect.

The remainder of the paper is organized as follows. The next section describes our data set. Section 3 presents the methodology and our identification strategy, and Section 4 discusses our main findings. Section 5 describes the potential mechanisms and some mediating outcomes. Section 6 presents the placebo exercise and a number of robustness checks. Lastly, Section 7 concludes the paper.

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<sup>8</sup>See, for example, Hoxby (2000), Sacerdote (2001), Calvó-Armengol, Patacchini, and Zenou (2009), Ohinata and Van Ours (2013), and Boucher et al. (2014) for peer effects in educational outcomes, and Gaviria and Raphael (2001), Powell, Tauras, and Ross (2005), Lundborg (2006), Clark and Lohéac (2007), Cohen-Cole and Fletcher (2008), Fletcher (2010, 2011), Card and Giuliano (2013), and McVicar and Polanski (2014) for peer effects on health-related behaviours.

## 2 Add Health data

The data we use in this study bring together information on high school friends and their co-residence with parents during young adulthood from the National Longitudinal Study of Adolescent Health (hereinafter, Add Health).<sup>9</sup> Add Health is a longitudinal study of a nationally representative sample of adolescents in grades 7–12 in the United States during the 1994–1995 school year. In 1994–1995, the study started with an in-school questionnaire that was administered to more than 90,000 students from 80 high schools and 52 middle schools. A sub-sample (around 20,000) were also asked to complete in-home interviews, and were followed in three subsequent waves. The respondents answered questions about their family background, school performance, health-related questions, as well as on area of residence and other co-resident members of the household. In the first wave, respondents were asked to nominate up to five best male and five best female friends. In the same wave, adolescents’ parents were interviewed about family and relationships. As a result, we obtain information on their characteristics as well. However, parents were not interviewed in the subsequent waves, so it is not possible to update this information.

In this analysis, we use the in-home interview data on adolescents and the information about their friends in 1994–1995 (Wave I), when the adolescents were aged 12–19,<sup>10</sup> and the follow-up data in 2002–2003 (Wave III), when the respondents had become young adults aged 19–26.<sup>11</sup> Given that the median age at leaving the parental home is around 21–22 for females and 22–24 for males (Iacovou, 2002), we focus on co-residence with parents when they are at this age.<sup>12</sup> We determine the co-residence with parents using the information on

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<sup>9</sup>This research uses data from Add Health, a programme project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for their assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health website (<http://www.cpc.unc.edu/addhealth>). No direct support was received from grant P01-HD31921 for this analysis.

<sup>10</sup>There were also a few outliers (around 2 per cent) aged 11, 20 or 21 years old.

<sup>11</sup>Add Health data have been used in the literature to analyse peer effects, but most studies focus on behaviours while respondents were still at school (Wave I). The only exceptions that study a more dynamic aspect of peer effects, using subsequent waves of Add Health, are Bifulco, Fletcher, and Ross (2011), Patacchini, Rainone, and Zenou (2012), Adamopoulou (2012), and Yakusheva and Fletcher (2015).

<sup>12</sup>Wave II in-home interviews were conducted in 1996, about one year after Wave I, and adolescents in grades 8–12 (aged 13–20) were interviewed. Because more than 90% of the adolescents in Wave II were still below the legal age for children to be released from parental authority, we focus rather on the living arrangements in Wave III. Then, home interviews in Wave IV were conducted in 2007–2009, almost 14 years after Wave I, when the respondents were 26–33 years old. However, it is unlikely that high school friendships are maintained this long after high school. Hence, we study the peer effects in Wave III, which took place eight years after Wave I, when friendships were more likely to still hold. There is very limited information on whether high school friends are still friends in Wave III. However, there is clearly a selection issue in the continuation of friendships after high school. Therefore, we consider all friends that the respondents nominated in Wave I.

the household roster in both waves. Young adults are defined as co-residents with parents if at least one of the household members is identified as the father, mother’s husband, mother’s partner, mother, father’s wife, or father’s partner, and non-co-resident otherwise.<sup>13</sup>

Our sample consists of respondents who completed both Wave I and Wave III in-home surveys and provided information on the household roster in both waves. We restrict our sample to respondents who were living with at least one parent in Wave I.<sup>14</sup> In Wave III, we only consider respondents who live in private accommodation (with parents, with relatives or non-relatives, or living alone) or in a dormitory. We exclude those who are homeless or who live in group quarters, because their behaviour might reflect necessity and not be a voluntary decision.<sup>15</sup> Finally, we restrict the sample to those respondents who provided usable information for at least one nominated friend.

The Add Health data also include regional-level variables from the Census that correspond to a respondent’s state, county, tract, and block of residence. We use the unemployment rate in the block of residence in Wave I as a proxy for the labour market conditions. Similarly, we use a dummy variable for urban/rural areas and for the proportion of vacant housing units in the block of residence in Wave I as proxies for the housing market conditions. The proportion of vacant housing units proxies housing costs through the demand for housing, and is negatively correlated with the median gross rent of renter-occupied housing units, which is available for a very small part of our sample.<sup>16</sup>

Information on friendships comes from Wave I (in-school or in-home questionnaires). In the analysis, we use the in-home friendship nominations. As mentioned above, in Wave I, data collectors assigned an identification number to each student, and provided a list of all students to the respondents in order to identify up to five male friends and up to five female friends.<sup>17</sup> We did not require that nominations were mutual when constructing the reference peer group for each respondent. Those people that the respondent nominated as friends are likely to influence him/her, even if they, in turn, did not nominate him/her as a friend. As long as nominated friends were also interviewed (i.e. they were part of the

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<sup>13</sup>Here, mother and/or father can be biological, step, adoptive, or foster.

<sup>14</sup>More than 94 per cent of the adolescents in Wave I were living with at least one parent (14,247 of 15,088 valid cases).

<sup>15</sup>We also perform an estimation on the subsample that excludes young adults who live in dormitories. Our results continue to hold if we exclude students who stay in dormitories, whose classification as living with parents is less straightforward.

<sup>16</sup>The data include unique identifiers for the census block, tract, county, and state of residence in each wave. However, these are all anonymous, so we cannot merge regional-level variables from external sources.

<sup>17</sup>Respondents were also asked to nominate romantic partners from the school roster. In the case that a friendship coincided with a romantic partnership, this friendship was excluded from the friends’ list.



random subsample who completed the in-home survey), we can construct a set of friends for each respondent with detailed Add Health information. Given that the data represent a sub-sample of students within schools, not all nominated friends are interviewed and, as a result, the measures of friends’ characteristics would be imperfect. However, this is less of a concern because the sampling scheme for the in-home interview was random.

Our data set contains 4,045 respondents with non-missing co-residence information who have at least one friend with non-missing co-residence information as well. Our sample is reduced to 3,094 after excluding individuals with missing information on key demographic, individual, family-of-origin, labour, or housing market variables. On average, each respondent has 3.4 nominated friends for whom we also have available information. Table 1 shows the descriptive statistics for young adults who still live with their parents and for non-co-residents.<sup>18</sup> See Table A.1 in the Appendix for a description of the variables.

In line with the findings of earlier studies, Table 1 shows that there are substantial gender, racial, and ethnic differences in living arrangements, with males, non-whites, and Hispanics being more likely to live with their parents than are females and non-Hispanic whites. Parental characteristics also make a difference in the living arrangements of young adults; co-residents are more likely to come from financially constrained families, and to have less educated mothers than in the case of non-co-residents. However, young adults from one-parent families are less likely to live with the parent. Lastly, compared with non-co-residents, co-residents are more likely to live with their families in urban areas, and to have had a good relationship with their parents during adolescence.

### 3 Empirical strategy

Identifying peer effects is a challenging task (See Blume et al. (2011) and Angrist (2014) for a detailed discussion). Peer effects refer to individual behaviour (in our case, nest-leaving) being causally influenced by the peer group behaviour. However, the individual and the peer group may behave in the same way because they are both subject to similar environments (correlated effects) or because of endogenous friendship formation (homophily or sorting). In our setting, both the individual and her/his friends attend the same school, and may have been affected by the same unobserved shock. Moreover, friendship creation is usually

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<sup>18</sup>The category of co-residents includes those who might have changed their place of residence together with their parents, and continued living with them in the new place of residence, as well as those who might have moved out of the parental home between Wave I and Wave III, but returned home and co-reside with their parents in Wave III.

characterized by homophily (i.e. people tend to choose friends similar to themselves). We employ a dynamic framework and achieve identification as in Adamopoulou (2012), Cingano and Rosolia (2012), and Cappellari and Tatsiramos (2015).<sup>19</sup> Our identification strategy exploits some unique characteristics of the Add Health data, the richness of the information available, and the timing of friendship formation. To determine the peer group effects on young adults' co-residence with parents, our full specification is as follows:

$$\begin{aligned}
l_{igst} = & \underbrace{\gamma(\bar{l}_j)_{igst-}}_{\text{peer effects}} + \underbrace{\sum_{m=1}^M \beta_m x_{igst0}^m}_{\text{demo \& family}} + \underbrace{\sum_{n=1}^N \beta_n f_{igst0}^n}_{\text{other indiv. char.}} + \underbrace{\sum_{k=1}^K \beta_k b_{igst0}^k}_{\text{block char.}} + \underbrace{\sum_{m=1}^M \theta_m (\bar{x}_j)_{igst0}^m}_{\text{average peer demo \& family}} \\
& + \underbrace{\alpha_s}_{\text{network (school) fe}} + \underbrace{\delta_g}_{\text{cohort (grade) fe}} + \varepsilon_{igst}, \tag{1}
\end{aligned}$$

where  $l_{igst}$  is a binary variable denoting the co-residence status of young adult  $i$  at time  $t$  (Wave III) who attended high school  $s$  in grade  $g$ . The variable  $l_{igst}$  takes the value 0 if a young adult who was living with at least one parent when she/he was an adolescent is no longer living with the parents, and the value 1 if she/he continues living with at least one parent. The variable  $(\bar{l}_j)_{igst-}$  is the percentage of peers ( $j$ 's nominated friends, denoted by  $j$ ) who live with their parents during young adulthood. This percentage is computed after taking into account the differences in the timing of nest-leaving between individual  $i$  and her/his peers.<sup>20</sup> More specifically, we compare the dates of the moves of the individuals and their friends, and treat as emancipated only those friends who moved out of the parental home no later than the respondent. Therefore, peers who left the parental home after individual  $i$  are counted as co-residents with parents (we denote this adjustment with the subscript  $t_-$ ).<sup>21</sup> Given that the peer group is composed of nominated friends, the number

<sup>19</sup>Solutions that have been proposed to identify peer effects use instrumental variables techniques or panel data (see Bramoullé, Djebbari, and Fortin, 2009; Yang, Lien, and Chou, 2014; Boucher et al., 2014). Examples of identification strategies with instrumental variables in a static framework include Ciliberto et al. (2015), who use the fertility of a colleague's siblings as an instrument for the fertility of one's colleagues, and Fletcher (2011), who uses the alcohol consumption of the classmates' parents as an instrument for the alcohol consumption of a respondent's classmates. Morrison and Lin-Lawell (2016) use average group demographic variables as instrumental variables for the commute-mode choice decisions of workplace peers. De Giorgi, Pellizzari, and Redaelli (2010), and Patacchini, Rainone, and Zenou (2012) exploit information on the overall network of friendships, and instrument the behaviour of the respondent's friends using the characteristics of friends of friends who are not linked directly to the respondent.

<sup>20</sup>Given that in our setting peer groups are individual-specific (the set of friends nominated by each respondent), there is no concern that the definition of the peer group according to the date of leaving the parental home is correlated among respondents.

<sup>21</sup>In order to obtain unbiased estimates, we need to assume that the individuals are not forward looking. In other words, they are affected only by the past actions of their friends. A placebo exercise presented in Section 6 supports this assumption.

and the identity of its members are individual specific. The parameter  $\gamma$  is the coefficient of interest (i.e. the peer effect that we are trying to estimate).

Our full specification includes a comprehensive list of predetermined controls (measured in Wave I, which we denote with the subscript  $t_0$ ).<sup>22</sup> The set of demographic and family-of-origin variables that might affect the co-residence behaviour of young adults is denoted by  $\sum_{m=1}^M x_{igst_0}^m$ . The demographic variables include the gender and race of the respondents, since there exist gender and racial differences in living arrangements (Goldscheider and DaVanzo, 1985; Ward and Spitze, 1992; Chiuri and Del Boca, 2010; Beck and Beck, 1989).<sup>23</sup> The family-of-origin variables include a dummy on whether parents were financially constrained, maternal education, a dummy for one-parent families, and the number of siblings. As shown in the literature, these variables influence the co-residence behaviour of young adults (Rosenzweig and Wolpin, 1993; Goldscheider and Waite, 1991; White, 1994).

In addition to these standard demographic and family-of-origin variables, we include another set of individual characteristics,  $\sum_{n=1}^N f_{igst_0}^n$ . These are usually unobserved, and refer to the relationship of the respondents with their parents during adolescence. The variables that we include are the amount of housework that the respondents used to do in Wave I, the quality of the relationship with parents, whether the mother encouraged the respondent to be independent, and a measure of the respondents' self-esteem during adolescence. Our prediction is that if the young adult had a bad relationship with her/his parents, used to do many household chores when she/he was young, had a mother that used to foster independence, or had high self-esteem, this would make her/him less likely to continue living with the parents during young adulthood.

The respondents and their peers may be subject to similar environments. It is likely that they live in the same neighbourhood and that, in general, they face similar local conditions that could affect their nest-leaving behaviour. Therefore, we augment our specification with  $\sum_{k=1}^K b_{igst_0}^k$ , which contains labour and housing market variables in the block of the parental home. Note that, unlike the destinations that emancipated young adults choose to move to, the block of the parental home is not a choice made by the youth. Hence, the labour and the housing market conditions in the block of the original residence are considered to be exogenous variables. These variables include the unemployment rate that corresponds to the

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<sup>22</sup>For a detailed description of variables, see Table A.1 in the Appendix.

<sup>23</sup>In some specifications, we include the age of young adults instead of the grade dummies. However our full specification includes grade fixed effects, which allows us to account for cohort fixed effects.

block of residence in Wave I (Census block level), a dummy for urban/rural areas, and the proportion of housing units that were vacant in the block as a proxy of the housing cost. High housing costs (Haurin, Hendershott, and Kim, 1993; Ermisch and Di Salvo, 1997; Ermisch, 1999; Martínez-Granado and Ruiz-Castillo, 2002; and Martins and Villanueva, 2009) and high unemployment rates (Card and Lemieux, 2000) are likely to discourage young adults' emancipation, while the proportion of vacant housing units proxies the housing cost through the demand for housing, and is negatively correlated with the median gross rent.

The set of parameters  $\theta_m$  captures the influence of the average peer demographics and average peer family characteristics on the young adult's co-residence status, while  $\alpha_s$  and  $\delta_g$  are school and grade dummies, respectively. School dummies may capture unobserved shocks that affected all students in each school (e.g. a new college nearby) or a piece of information that was shared among all members of the network (e.g. a new mobility-promoting programme). Note that networks are larger than the set of nominated friends because they include friends of friends, the friends of friends of friends, and so on.<sup>24</sup> In many cases, the entire network of each student coincides with the school. Therefore, school dummies are a reasonable way to account for network fixed effects. Lastly, in the full specification, we include grade dummies instead of the age of young adults. This allows us to account also for cohort fixed effects.

Conditional on all right-hand side variables, the residual in the regression equation needs to be independent of the lagged decisions of the peers in order to guarantee identification of the peer effect. Still, one could argue that as adolescents grow up and become young adults, they make new friends, and if they move out of the parental home, they are more likely to meet and choose friends who have also moved out of the parental home (homophily). In the current analysis, the timing of friendship formation is crucial, because we consider friends since high school and study the living arrangements of the respondents 7–8 years later. This alleviates the concern of endogenous friendship formation in later years, and provides us with a lower bound for the peer effect. Moreover, we are able to control for an extensive list of characteristics of the respondents that are usually unobserved, such as self-esteem and the intention to leave the parental home during adolescence, that may have influenced the selection of friends during high school. A similar concern can be raised with respect to sorting. In particular, if specific types of parents choose a specific type of school, adolescents would sort into schools according to parental characteristics, which

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<sup>24</sup>See Jackson (2008) for further details.

could affect living arrangements. In the analysis, we control for household income, maternal education, as well as for characteristics that are closely related to nest-leaving and are usually unobserved (amount of housework done by the adolescent, how good the relationship of the adolescent was with the parents, and whether the mother encouraged independence). Therefore, sorting is less of a concern in our study.

Our dynamic framework also mitigates the so-called ‘reflection problem’ (Manski, 1993). Peer group behaviour is, by definition, the aggregation of individuals’ behaviour and, as such, any causal interpretation is difficult. The problem arises because peers are likely to affect the respondent and, at the same time, the respondent is likely to affect her/his peers. In our setting, we are able to exploit the differences in the timing of leaving the parental home among the individuals and their peers in order to overcome this problem. In Wave III, when the respondents are young adults, there is information on the date (month and year) of the move to the current address.<sup>25</sup> For those respondents who are not living with their parents in Wave III, we assume that the date they first moved out of the parental home coincides with the date of the move to the current address. In other words, if a respondent changed residence before moving to the current address, we assume that she/he did so together with the parents, and only the last move to the current address corresponds to individuals’ moving out of the parental home (see Figure 2). In fact, 72 per cent of the respondents moved to the current address in the last three years (i.e. between 1999 and 2001), when they were, on average, 21 years old. This coincides with the median age at which young adults leave the parental home in the United States (Iacovou, 2002). Hence, our assumption is likely to hold.

Another feature that helps us overcome the reflection problem is the individual-specific nature of the peer groups in our setting. Peers are usually defined based on some measure of proximity (neighbours, classmates, co-workers, etc.), and the individual’s behaviour is regressed on the behaviour of everybody other than the respondent. In our case, peers are nominated friends. As a result, the peer group is likely to differ among respondents from the same school/grade/neighbourhood. This generates more variation among people within the same school/grade/neighbourhood.

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<sup>25</sup>In Wave III, the respondents were also asked to fill in a calendar of geographical mobility, including all states they had lived in and the month and year of the move. Therefore, this calendar contains information about all states the respondent has lived in during his/her life, as well as the year and month of the move to each state. However, there is no information on other household members (parents, partners, or friends), so we cannot tell whether the respondent moved together with the parents.

## 4 Results

The first specification we estimate is a linear probability model, controlling only for demographics and the characteristics of the family of origin, and including simple state fixed effects (Table 2, column 1). There is a large, positive, and statistically significant peer effect. The size of the peer effect decreases as soon as we include the school dummies (Table 2, column 2). This shows that accounting for network fixed effects is crucial. The peer effect is robust to the inclusion of other individual characteristics that refer to the respondents' relationships with their parents during adolescence (Table 2, column 3) and to labour and housing market characteristics (Table 2, column 4). In our preferred specification (Table 2, column 5), we also include grade (cohort) fixed effects instead of age. In this case, the estimated coefficient of the peer effect is statistically significant and equal to 0.059.<sup>26</sup> According to our estimates, an increase of one standard deviation in the percentage of friends who still live with their parents (0.44) will increase the probability of an individual living with her/his parents by 2.64 percentage points, which implies that the influence of peers on young adults' living arrangements is not negligible. Finally, when we include friends' characteristics, the peer effect is robust and increases slightly in size (Table 2, column 6).

Who are the individuals who are influenced by their peers? Is there a group of individuals that is totally unaffected? In order to answer these questions, we analyse different groups of individuals separately with respect to gender, household income, and race. Table 3, columns 1 and 2, present the estimates of the model (preferred specification) by gender. Although the magnitude of the peer effect is similar, its coefficient is statistically significant for females only. This finding may indicate that females tend to conform to social norms (i.e. peer behaviour) more than males do.

The results are more clear-cut in the case of household income and race/ethnicity. We run the model separately for young adults from relatively wealthy families (household income above the median) and for young adults from relatively poor families (household income below the median). There is a large peer effect for young adults from relatively wealthy families only (Table 3, column 3). In contrast, the living arrangements of young adults from relatively poor families are completely unaffected by peers (Table 3, column 4). This result might reflect the fact that one can move out of the parental home only if financial resources allow. We repeat the exercise for non-Hispanic whites and for non-whites or Hispanics

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<sup>26</sup>See Table A.2 in the Appendix for the results of the full specification.

(African, Native, Asian, or Hispanic Americans), and the results are striking (see Table 3, columns 5 and 6). The peer effect is statistically significant only in the case of non-whites or Hispanics and is large in magnitude. This implies that peer pressure plays a more important role for minorities than it does for non-Hispanic whites.<sup>27</sup>

## 5 Mechanisms and mediating outcomes

The empirical analysis reveals a robust, positive, and statistically significant peer effect on the living arrangements of young adults. In this section, we examine whether complementarities or the maintenance of friendship ties can be underlying mechanisms of this effect, and treat couple formation, college attendance, and employment as mediating outcomes. In this way, we can gain a better understanding of the nest-leaving behaviour, and sort through a series of potential explanations.

### 5.1 Complementarities

Complementarities offer one possible mechanism through which friends may enhance nest-leaving. Sharing a house with a friend may reduce the cost of living for a young adult. Moreover, moving to a new neighbourhood with a friend may facilitate the process of adapting to the new environment. We investigate whether this is the case using detailed information on the block of residence of the young adults in Wave III. Our data contain unique identifiers for each block of residence. As such, we are able to compare the respondents' blocks of residence with those of their friends. If a respondent does not live with her/his parents in Wave III, and shares the same block of residence with at least one friend, we can infer that the respondent either shares the house with this friend or at least lives close by so as to benefit from complementarities. We find that fewer than 7 per cent of young adults who do not live with their parents live in the same block as at least one of their friends. Excluding these individuals from the regression sample produces estimates (available upon request) very similar to the benchmark. Therefore, complementarities do not seem to be the main channel through which peer effects arise.

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<sup>27</sup>The observed heterogeneity in the peer effect among various groups may also reflect differences in the attachment of each group to their high school friends.

## 5.2 Maintenance of friendship ties

The maintenance of friendship ties is another possible channel for the peer effect. If a young adult moves away from the parental home, the distance may destroy the ties with her/his high school friends. Therefore, if most of a young adult's friends remain living with their parents, the young adult may decide to do so as well in order to maintain the friendship ties. Belot and Ermisch (2009) use the British Household Panel Survey (BHPS) for individuals in the age group 18–50 to investigate the role of friendship ties in residential mobility, and find that the more friends an individual has, the less geographically mobile she/he is. Following their work, we include the number of friends the respondent nominated in the school (out-degree) as an extra regressor in our preferred specification to examine whether the maintenance of friendship ties is a likely mechanism for the peer effect. Note that the out-degree is based on the complete list of in-school nominations (i.e. it includes friends who did not participate in the in-home survey).<sup>28</sup> Table 4 presents the results. There is no statistically significant effect of the number of friends on the probability of living with parents during adulthood, while the coefficient of the peer effect is almost unaffected.

The reason why the maintenance of friendship ties is not the main mechanism behind the peer effect lies in the geographical distance between friends after nest-leaving. A young adult who leaves the parental home may move somewhere close by and, therefore, live a short distance from her/his peers. In that case, the destruction of friendship ties would not be a concern. Our rich data allow us to study this possibility as well, because we have information on the distance (in kilometres) between the Wave I and Wave III locations. In fact, more than half the respondents who do not live with their parents in Wave III live less than 15 km from their place of residence in Wave I. Therefore friendship ties may be maintained after nest-leaving, both when the respondent and his/her friends leave the parental home (each will be, on average, 15 km from their original location) and when only the respondent leaves and his/her friends continue living with their parents. This is informative because it reveals that more than half the emancipated young adults do not change their city of residence after moving out of their parents' homes.

It seems that neither complementarities nor the maintenance of friendship ties is the

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<sup>28</sup>In the in-school survey, the respondents could nominate friends among all students in the schools (around 90,000). However, only around 15,000 participated in the in-home survey in Wave III. In the analysis thus far, we have considered only those friends who participated in the in-home surveys, because we needed to observe their behaviour (living arrangements) in order to compute the peer effect. The out-degree considers all friends, including those whose behaviour is unobserved.



main channel through which the peer effect in living arrangements operates. Therefore, other mechanisms, such as the reduced stigma of living with parents during young adulthood or imitation among friends, may lie behind the peer effect.

### 5.3 College attendance, couple formation, and employment

So far, we have analysed the decisions of young adults to leave the parental home without distinguishing between possible destinations. Youth emancipation often coincides with college attendance or couple formation. Moreover, the employment status of young adults is likely to play a role. We do have information on these variables, but we chose not to include them in the main regressions because they are clearly endogenous. Restricting the sample to respondents who are single or who go to college would bias our results, because peers are known to influence marital decisions (Adamopoulou, 2012) and educational choices (Bifulco, Fletcher, and Ross, 2011; Patacchini, Rainone, and Zenou, 2012).

Here, we follow Matsudaira (2015) and control for these endogenous variables in order to examine whether the peer influence on living arrangements takes place only through these intermediate outcomes. In the data, youth emancipation is correlated both with the college and with the marital decision, though not perfectly. More than 14 per cent of cohabiting and married young adults, and around 40 per cent of college graduates or students in our sample still live with their parents. Table 5 presents the results of the living arrangements regression, controlling for the endogenous variables observed in Wave III, namely, a dummy for single individuals, a dummy for college graduates/students, and a dummy for employed individuals. The coefficients of these variables have the expected signs, although the coefficient of employed is not statistically significant. Most importantly, the peer effect on living arrangements is robust to the inclusion of these variables. Therefore, it seems there is a direct peer effect on the decision to live with parents, even after controlling for potential mediating mechanisms.

Another concern related to college attendance is classifying respondents who live in dormitories as emancipated, as we do. If students who live in dormitories still rely heavily on their parents, their ‘emancipation’ may be a rather loose notion. To check robustness to this, we perform an estimation on the sub-sample that excludes young adults who live in dormitories. Our results continue to hold if we exclude students, whose classification as living with their parents is less straightforward (see Table 6). One might also worry about

the non-random timing of events that coincide with nest-leaving. For example, in the case of college enrolment, young adults might leave the parental home at the same time as their peers just because they all finish high school and go to college in the same year. However, this is less of a concern, because in our full specification, we control for cohort fixed effects.

## 6 Placebo and further robustness checks

One of the most important features of our identification strategy is the difference in the timing of leaving the parental home between the respondents and their friends. In all regressions, we only treat friends who left the parental home no later than the respondent as being emancipated. Note that friendship nominations are not necessarily bilateral. Friends who left the parental home after the respondent enter the regressions as co-residents with their parents. The rationale behind our strategy is that the respondents need to be able to observe their friends' behaviour in order to imitate it later. Friends who left the parental home after the respondent can be used in a placebo exercise. Throughout the analysis, we have included school (network) fixed effects, which should account for correlated effects. However, there may still be unobserved common factors that drive the behaviour of both the respondents and their peers. The placebo exercise enables us to examine this possibility. In our placebo specification, we keep all friends who live with their parents, discard those who left the parental home no later than the respondent, and treat as emancipated those friends who left the parental home after the respondent. This placebo peer group is ideal, because it consists of nominated friends who shared many characteristics with the respondents and were subject to similar environments, but who left the parental home after them. We expect to find no statistically significant peer effect on the respondents' living arrangements because their peers' choices of living arrangements were realized after those of the respondents. The results are reported in Table 7, column 1. The coefficient of the peer effect in this placebo exercise is six times smaller than that in the benchmark case, and is not statistically significant. Note that if we do not include school dummies in the placebo exercise, the coefficient of the placebo peer effect becomes positive and statistically significant (Table 7, column 2). These exercises demonstrate that, throughout the analysis, the inclusion of school dummies successfully accounts for correlated effects.

The richness of our data has allowed us to control for a long list of variables that typically are unobserved by the econometrician. Nevertheless, we run a further series of regressions

that include the following additional variables: the physical appearance of respondents (assessed by the interviewer), which may be related to couple formation; the IQ (Peabody Picture Vocabulary Test) and the GPA of respondents, which may affect their college and employment decisions; the ratio of siblings who are the same gender as the respondent; and whether the respondents were the youngest of their siblings, all of which allow us to capture the structure of the family of origin in a more refined way. These variables, like the other controls, are predetermined, because they are measured in Wave I. The peer effect survived the inclusion of all these extra regressors (Table 8, columns 1–4). Respondents who are more physically attractive or who have a higher GPA are less likely to live with their parents. The coefficients of IQ and of the variables related to siblings are not statistically significant from zero.

One last concern is that high school friendships may reflect non-cognitive skills of the individuals, which could affect their living arrangements during young adulthood. One of these is popularity. In order to test this, we proxy popularity using the in-degree (i.e. the number of times the respondent has been nominated by other students in the school) and re-estimate our preferred specification including this proxy.<sup>29</sup> The peer effect remains statistically significant and is similar in size after controlling for popularity (Table 8, column 5). The coefficient of popularity is negative and statistically significant, suggesting that individuals who were popular at high school are less likely to live with their parents when they become young adults. If we assume that young adults who are more successful are less likely to live with their parents, because they go to college, our findings support those of Conti et al. (2013), who find that popularity at school translates into higher earnings during adulthood. We also estimate a probit model, and the marginal effects are very much in line with those of the OLS estimates.<sup>30</sup>

Finally, some respondents were asked to nominate only their best male and best female friend, instead of five male and five female friends. Repeating the analysis considering the best male and best female friend of all respondents<sup>31</sup> does not affect our results in any way (see Table 9).

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<sup>29</sup>The in-degree is a measure similar to the out-degree, and considers all friends, including those whose behaviour is unobserved.

<sup>30</sup>The marginal effect of the probit model associated with the peer effects is 0.066\*\*.

<sup>31</sup>The order of friendship nominations is not random, because respondents nominated their male/female friends in a decreasing order, starting with their closest friends. As a result, the first nominated male/female friend corresponds to the best male/female friend.

## 7 Conclusions

In this study, we use data from Add Health and analyse the influence of high school friends on the nest-leaving decisions of young adults. We achieve identification by exploiting the differences in the timing of leaving the parental home among peers, the individual-specific nature of the peer groups, which are based on friendship nominations, and by including school (network) and grade (cohort) fixed effects.

Our results indicate that there are statistically significant peer effects on the decision of young adults to leave parental home. This is true even after we control for labour and housing market conditions, as well as for a comprehensive list of individual and family-of-origin characteristics, which are usually unobserved by the econometrician. Based on our estimates, having friends who are all still living with their parents will increase the probability of an individual living with her/his parents by 6 percentage points, relative to having no friends who are still living with their parents. We find evidence that females tend to conform to the social norm more than males do, and that peer pressure plays an important role for non-white and Hispanic young adults. However, the peer effect is not statistically significant for young adults from low-income families.

The existence of positive peer effects is in line with the increasing trend in the United States in the proportion of young adults living with their parents. In the presence of peer effects, the increasing trend may persist, regardless of labour and housing market conditions. We confirm the validity of our results using a placebo exercise and a series of robustness checks.

Our results have important policy implications because an increase in the proportion of young adults living with their parents translates into reduced geographical mobility. This reduced mobility among the youth can have severe consequences on unemployment and growth, because vacant positions may not be filled, and search frictions in the labour market may be exacerbated (OECD, 2005). Moreover, in the presence of peer effects, policies that target a specific group of people may have a snowball effect on other groups (Dahl, Løken, and Mogstad, 2014). Therefore, policymakers should consider the peer effect in living arrangements when evaluating policies intended to boost youth emancipation or mobility.

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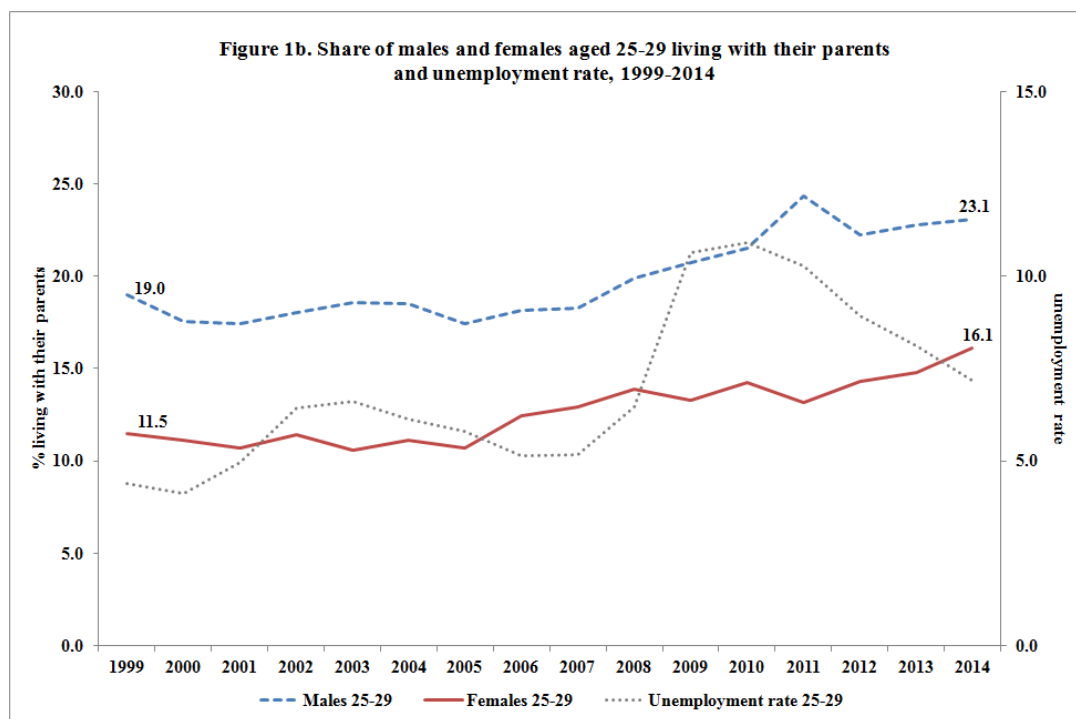
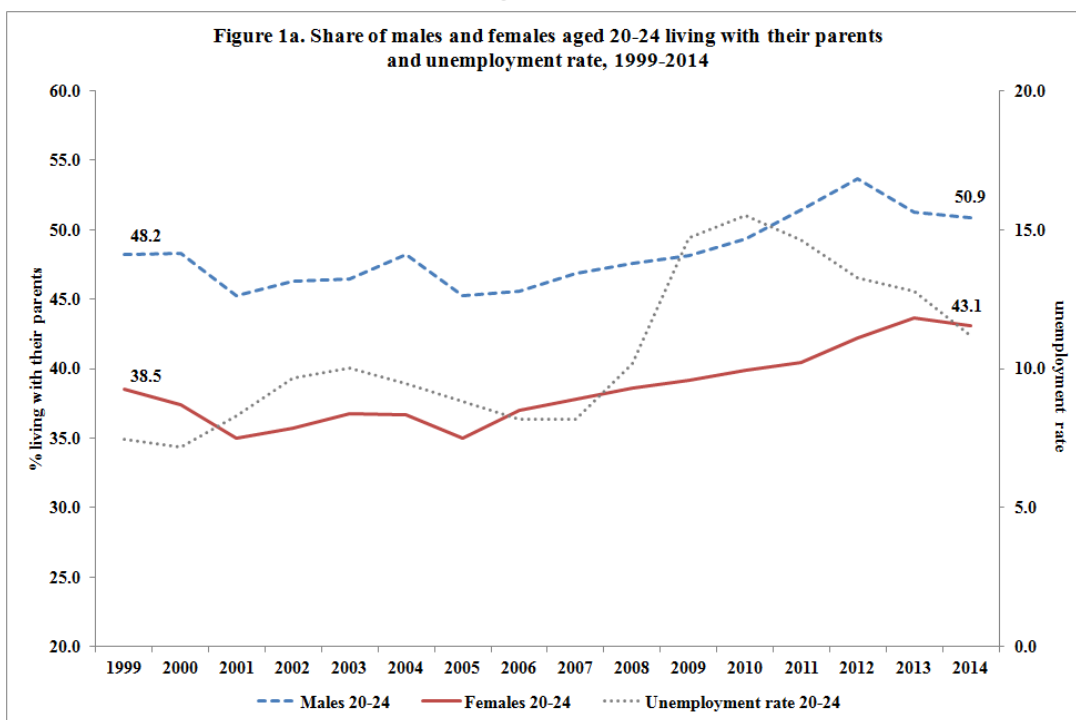


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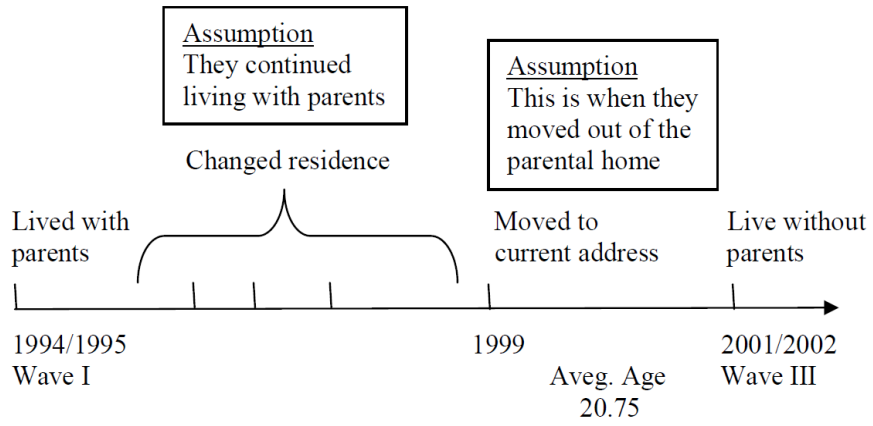
# Figures

**Figure 1.** Living arrangements and unemployment rate.



Source: Current Population Survey Data on Families and Living Conditions and Labour Force Statistics.

**Figure 2.** Assumption on the timing of leaving the parental home.



# Tables

**Table 1.** Descriptive statistics by co-residence with parents

Characteristic	Non-co-residents	Co-residents	All
% females	55.53	47.31	52.19
% Non-Hispanic White	81.84	73.26	78.35
% African	9.74	12.08	10.69
% Hispanic	6.22	10.23	7.85
% Other (Asian or Native)	2.19	4.44	3.11
% financially constrained families	14.54	15.53	14.94
Average maternal education	1.78	1.67	1.74
(four-scale category)	(0.98)	(0.99)	(0.99)
Average number of siblings	1.42	1.49	1.45
	(1.07)	(1.13)	(1.10)
% one-parent families	17.33	14.41	16.14
% good relationship with parents	79.72	85.10	81.91
Average amount of housework	2.14	2.03	2.10
(four-scale category)	(0.84)	(0.88)	(0.86)
Average self-esteem	4.02	3.90	3.97
(six-scale category)	(1.06)	(1.04)	(1.05)
Average maternal encouragement of independence	1.83	1.77	1.81
(five-scale category)	(0.86)	(0.87)	(0.86)
Average intention to leave	2.15	1.93	2.06
(five-scale category)	(1.18)	(1.19)	(1.19)
Average unemployment rate	0.07	0.07	0.07
% vacant houses	0.09	0.07	0.08
% urban	34.70	42.74	37.97
%	59.35	40.65	100.00
Number of obs.	1,788	1,306	3,094

Notes: Standard errors are shown in parentheses. The sample includes young adults who were living with at least one parent in Wave I, with non-missing own and high school friends' co-residence information.

Corrected for the design effects of the Add Health sampling process.

**Table 2.** Determinants of living arrangements in young adulthood; benchmark case

Definition of emancipated peers	Nominated friends who left the parental home no later than the respondent					
	(1)	(2)	(3)	(4)	(5)	(6)
% peers living with parents	0.084*** (0.027)	0.059** (0.028)	0.063** (0.029)	0.062** (0.028)	0.059** (0.028)	0.068** (0.031)
Demographic characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Family-of-origin characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Other individual characteristics	No	No	Yes	Yes	Yes	Yes
Labour and housing market characteristics	No	No	No	Yes	Yes	Yes
Friends' characteristics	No	No	No	No	No	Yes
Wave I State fixed effects	Yes	No	No	No	No	No
School (network) fixed effects	No	Yes	Yes	Yes	Yes	Yes
Grade (cohort) fixed effects	No	No	No	No	Yes	Yes
No of observations	3,094	3,094	3,094	3,094	3,094	2,813
R <sup>2</sup>	0.12	0.19	0.20	0.20	0.20	0.21

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

Controls: Demographic characteristics: age, gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, the quality of the relationship with parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant at the block of residence during adolescence, urban area. Friends' characteristics: average demographic and family-of-origin characteristics of friends. Columns (5) and (6) include grade fixed effects instead of age. The sample is restricted to respondents who lived with at least one parent during adolescence. Adolescence refers to Wave I, young adulthood refers to Wave III.

**Table 3.** Determinants of living arrangements in young adulthood; heterogeneous effects

Definition of emancipated peers	Nominated friends who left parental home no later than the respondent					
	(1)	(2)	(3)	(4)	(5)	(6)
	Females	Males	Low income families	High income families	Non-Hispanic whites	Non-whites or Hispanic
% peers living with parents	0.054* (0.032)	0.042 (0.051)	-0.009 (0.042)	0.072* (0.042)	0.035 (0.034)	0.150*** (0.055)
Demographic characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Family-of-origin characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Other individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Labour and housing market characteristics	Yes	Yes	Yes	Yes	Yes	Yes
School (network) fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Grade (cohort) fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No of observations	1,655	1,439	1,216	1,495	1,893	1,201
R <sup>2</sup>	0.25	0.28	0.32	0.30	0.22	0.28

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

Controls: Demographic characteristics: gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, how good was the relationship with the parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant in the block of residence during adolescence, urban area. Poor/rich families in columns (3) and (4) are defined as below/above the median household income. Non-whites or Hispanics in column (6) are African, Native, Asian, or Hispanic Americans. The sample is restricted to respondents who lived with at least one parent during adolescence. Adolescence refers to Wave I, young adulthood refers to Wave III.

**Table 4.** Determinants of living arrangements in young adulthood; mechanisms

Definition of emancipated peers	Nominated friends who left parental home no later than the respondent
	(1)
% peers living with parents	0.069* (0.040)
Out-degree	-0.002 (0.005)
Demographic characteristics	Yes
Family-of-origin characteristics	Yes
Other individual characteristics	Yes
Labour and housing market characteristics	Yes
School (network) fixed effects	Yes
Grade (cohort) fixed effects	Yes
No of observations	2,206
R <sup>2</sup>	0.23

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

Out-degree: number of friends the respondent nominated.

Controls: Demographic characteristics: gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, how good was the relationship with the parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant at the block of residence during adolescence, urban area. The sample is restricted to respondents who lived with at least one parent during adolescence and completed the in-school survey. Adolescence refers to Wave I, young adulthood refers to Wave III.



**Table 5.** Determinants of living arrangements in young adulthood; Wave III controls

Definition of emancipated peers	Nominated friends who left parental home no later than the respondent
	(1)
% peers living with parents	0.060** (0.027)
Single	0.360*** (0.028)
Employed	0.007 (0.027)
College	-0.066** (0.026)
Demographic characteristics	Yes
Family-of-origin characteristics	Yes
Other individual characteristics	Yes
Labour and housing market characteristics	Yes
School (network) fixed effects	Yes
Grade (cohort) fixed effects	Yes
No of observations	2,940
R <sup>2</sup>	0.29

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

Controls: Demographic characteristics: gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, how good was the relationship with the parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant at the block of residence during adolescence, urban area. The sample is restricted to respondents who lived with at least one parent during adolescence. Adolescence refers to Wave I, young adulthood refers to Wave III.

**Table 6.** Determinants of living arrangements in young adulthood, excluding those living in dormitories in Wave III

Definition of emancipated peers	Nominated friends who left parental home no later than the respondent
	(1)
% peers living with parents	0.050* (0.029)
Demographic characteristics	Yes
Family-of-origin characteristics	Yes
Other individual characteristics	Yes
Labour and housing market characteristics	Yes
School (network) fixed effects	Yes
Grade (cohort) fixed effects	Yes
No of observations	2,848
R <sup>2</sup>	0.23

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

Controls: Demographic characteristics: gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, how good was the relationship with the parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant at the block of residence during adolescence, urban area. The sample is restricted to respondents who lived with at least one parent during adolescence. Adolescence refers to Wave I, young adulthood refers to Wave III.

**Table 7.** Determinants of living arrangements in young adulthood; placebo

Definition of emancipated peers	Nominated friends who left parental home after the respondent	
	(1)	(2)
% peers living with parents	0.010 (0.030)	0.069** (0.028)
Demographic characteristics	Yes	Yes
Family-of-origin characteristics	Yes	Yes
Other individual characteristics	Yes	Yes
Labour and housing market characteristics	Yes	Yes
School (network) fixed effects	Yes	No
Grade (cohort) fixed effects	Yes	Yes
No of observations	2,468	2,468
R <sup>2</sup>	0.24	0.11

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

Controls: Demographic characteristics: gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, how good was the relationship with the parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant at the block of residence during adolescence, urban area. The sample is restricted to respondents who lived with at least one parent during adolescence. Adolescence refers to Wave I, young adulthood refers to Wave III.

**Table 8.** Determinants of living arrangements in young adulthood; robustness

Definition of emancipated peers	Nominated friends who left parental home no later than the respondent				
	(1)	(2)	(3)	(4)	(5)
% peers living with parents	0.056** (0.028)	0.059** (0.028)	0.054* (0.030)	0.059** (0.028)	0.069* (0.040)
Physical appearance	-0.025* (0.013)				
GPA		-0.032* (0.019)			
IQ			-0.044 (0.058)		
Youngest among siblings				0.009 (0.026)	
Ratio of same gender siblings				0.006 (0.024)	
In-degree					-0.008*** (0.003)
Demographic characteristics	Yes	Yes	Yes	Yes	Yes
Family-of-origin characteristics	Yes	Yes	Yes	Yes	Yes
Other individual characteristics	Yes	Yes	Yes	Yes	Yes
Labour and housing market characteristics	Yes	Yes	Yes	Yes	Yes
School (network) fixed effects	Yes	Yes	Yes	Yes	Yes
Grade (cohort) fixed effects	Yes	Yes	Yes	Yes	Yes
No of observations	3,081	3,075	2,907	3,094	2,206
R <sup>2</sup>	0.21	0.21	0.21	0.20	0.23

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

In-degree: number of times the respondent has been nominated. Controls: Demographic characteristics: gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, how good was the relationship with the parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant at the block of residence during adolescence, urban area. The sample is restricted to respondents who lived with at least one parent during adolescence and completed the in-school survey. Adolescence refers to Wave I, young adulthood refers to Wave III.

**Table 9.** Determinants of living arrangements in young adulthood; best friends only

Definition of emancipated peers	Nominated best friends who left parental home no later than the respondent
	(1)
% peers living with parents	0.060** (0.030)
Demographic characteristics	Yes
Family-of-origin characteristics	Yes
Other individual characteristics	Yes
Labour and housing market characteristics	Yes
School (network) fixed effects	No
Grade (cohort) fixed effects	Yes
No of observations	2,393
R <sup>2</sup>	0.24

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (robust s.e. clustered at school level), cross-sectional weight used.

Controls: Demographic characteristics: gender, race. Family-of-origin characteristics: maternal education, whether the parents were financially constrained, number of siblings, one-parent family. Individual characteristics: amount of housework used to do while an adolescent, how good was the relationship with the parents while an adolescent, how much the mother encouraged independence, intention to leave parental home while an adolescent, self-esteem. Labour and housing market characteristics: unemployment rate and proportion of housing units that were vacant at the block of residence during adolescence, urban area. The sample is restricted to respondents who lived with at least one parent during adolescence. Adolescence refers to Wave I, young adulthood refers to Wave III.

## Appendix

**Table A1.** Definition of variables

Variable	Type	Values
Gender	binary	$\left\{ \begin{array}{l} 0 \text{ if male} \\ 1 \text{ if female} \end{array} \right.$
Hispanic	binary	$\left\{ \begin{array}{l} 0 \text{ if not Hispanic} \\ 1 \text{ if Hispanic} \end{array} \right.$
African American	binary	$\left\{ \begin{array}{l} 0 \text{ if not African American} \\ 1 \text{ if African American} \end{array} \right.$
Other	binary	$\left\{ \begin{array}{l} 0 \text{ if not Asian or Native American} \\ 1 \text{ if Asian or Native American} \end{array} \right.$
Number of siblings	continuous	$[0, 12]$
One-parent family	binary	$\left\{ \begin{array}{l} 0 \text{ if co-resident with both parents} \\ 1 \text{ if co-resident with only one parent} \end{array} \right.$
Maternal education	ordinal	$\left\{ \begin{array}{l} 0 \text{ less than high school} \\ 1 \text{ high school or similar} \\ 2 \text{ more than high school} \\ 3 \text{ college or more} \end{array} \right.$
Financially constrained family	binary	$\left\{ \begin{array}{l} 0 \text{ otherwise} \\ 1 \text{ if parents had difficulty to pay the bills} \end{array} \right.$
Quality of the relationship with parents	binary	$\left\{ \begin{array}{l} 0 \text{ if bad relationship with both parents} \\ 1 \text{ if good relationship with at least one parent} \end{array} \right.$

Amount of housework	ordinal	$\left\{ \begin{array}{l} 0 \text{ not at all} \\ 1 \text{ or 2 times per week} \\ 3 \text{ or 4 times per week} \\ 5 \text{ or more times per week} \end{array} \right.$
Self-esteem	ordinal	<p>The respondent considers her/his intelligence:</p> $\left\{ \begin{array}{l} 1 \text{ moderately below average} \\ 2 \text{ slightly below average} \\ 3 \text{ about average} \\ 4 \text{ slightly above average} \\ 5 \text{ moderately above average} \\ 6 \text{ extremely above average} \end{array} \right.$
Mother encouraged independence	ordinal	$\left\{ \begin{array}{l} 1 \text{ strongly agree} \\ 2 \text{ agree} \\ 3 \text{ neither agree nor disagree} \\ 4 \text{ disagree} \\ 5 \text{ strongly disagree} \end{array} \right.$
Intention to leave parental home	ordinal	$\left\{ \begin{array}{l} 1 \text{ not at all} \\ 2 \text{ very little} \\ 3 \text{ somewhat} \\ 4 \text{ quite a bit} \\ 5 \text{ very much} \end{array} \right.$
Unemployment rate (census block)	continuous	$[0, 0.47]$
Proportion of vacant houses (census block)	continuous	$[0, 0.94]$
Urban	binary	$\left\{ \begin{array}{l} 0 \text{ if parental home is not in urban area} \\ 1 \text{ if parental home is in urban area} \end{array} \right.$

**Table A2.** Full specification

% peers living with parents	0.059**	(0.028)
Female	-0.061**	(0.029)
African American	0.047	(0.050)
Hispanic American	-0.003	(0.050)
Other (Asian or Native)	0.089	(0.065)
Number of siblings	-0.010	(0.011)
One-parent family	-0.082**	(0.041)
Maternal education	-0.001	(0.012)
Financially constrained family	0.000	(0.038)
Amount of housework	-0.046***	(0.014)
Quality of the relationship with parents	0.022	(0.037)
Self-esteem	-0.014	(0.012)
Mother encouraged independence	-0.014	(0.013)
Intention to leave parental home	0.003	(0.014)
Unemployment rate (census block)	-0.044	(0.427)
Proportion of vacant houses (census block)	-0.354*	(0.212)
Urban	0.078	(0.057)
School (network) fixed effects	Yes	
Grade (cohort) fixed effects	Yes	
No of observations	3,094	
R <sup>2</sup>	0.20	

\*\*\* p<0.001, \*\*p<0.05, \*p<0.10 (robust s.e. clustered at school level),

cross-sectional weights used.