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Young Adults Living with their Parents and the Influence of Peers*

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Abstract:

This paper focuses on young adults living with their parents in the U.S. and studies the role of peers. Using data from the National Longitudinal Study of Adolescent Health (Add Health) we analyze the influence of high school friends on the coresidence of young adults with their parents. We address the challenges in the identification of peer effects in a static framework and employ an instrumental variable technique and control for state fixed effects in order to mitigate them. We then move to a dynamic framework and exploit differences in the timing of leaving the parental home among peers. Our results indicate that there are statistically significant peer effects on the nest-leaving behavior of young adults.

JEL classifications: D1, J1, J6, Z13
Keywords: peer effects, friends, living arrangements, leaving parental home

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1 Introduction

There is a growing literature that documents the importance of peer decisions and peer characteristics on individual behavior, mainly focusing on educational outcomes and health decisions. Peer group effects have been shown to be important in academic achievement (Hoxby, 2000; Sacerdote, 2001; Calvó-Armengol, Patacchini and Zenou, 2009; Boucher, Bramoullé, Djebbari, and Fortin, 2010). There is evidence that peers influence individual health decisions such as the use of drugs (Gaviria and Raphael, 2001; Card and Giuliano, 2011), smoking habits (Gaviria and Rafael, 2001; Powell, Tauras and Ross, 2005; Lundborg, 2006; Fletcher, 2010; Card and Giuliano, 2011), alcohol consumption (Lundborg, 2006; Clark and Lohéac, 2007; Fletcher, 2011) and sex initiation (Fletcher 2007, Fernández-Villaverde, Greenwood and Guner 2010; Card and Giuliano, 2011). Recent studies also provide evidence on peer influence on marital decisions (Adamopoulou, 2012), fertility (Kuziemko, 2006; Ciliberto, Miller, Nielsen, and Simonsen, 2010; Hensvik and Nillson, 2010) and the probability of finding a job (Calvó-Armengol and Jackson, 2004; Cappellari and Tatsiramos, 2011). In this paper, we study the influence of high school friends on young adults' living arrangements in the US both in a static and in a dynamic framework. Living arrangements refer to coresidence with parents, i.e., whether the young adult still coresides with at least one parent or no. There is no other study, to our knowledge, that investigates peer group effects on living arrangements of young adults. This study fills this gap in the peer group effects literature.

Leaving the parental home is the first step in the transition to adulthood and it is often associated with economic independence and family formation. As the living arrangements of young adults are closely related to fertility, mobility and labor market outcomes, they have received a lot of attention in the economic literature. Many studies emphasize the importance of leaving the parental home in the life course path and point out socioeconomic circumstances as determinants of the living arrangements of young adults.[1] Other studies examine the strong heterogeneity across countries regarding the explanatory factors and the timing of leaving the parental home.[2] What emerges in cross country comparisons is that

[1] See Eurofond (2006) for the consequences of late emancipation of young adults on future geographic and job mobility; Esping-Andersen (1999), Manacorda and Moretti (2006), Giuliano (2007), Chiuri and Del Boca (2010) for the possible consequences of the late emancipation of young adults in Southern Europe on the labor force participation, unemployment and fertility rate.

[2] See Kiernan (1986) for an international comparison of young adults' living arrangements in Denmark, Great Britain and the United States; Yi, Coale, Choe, Zhiwu and Li (1994) for a comparision of year age-specific net rates of leaving home for men and women in China, Japan, South Korea, the United States, Sweden and France; Iacovou (2002) for living arrangements of young adults in Europe and the United States.

young adults in the U.S. tend to leave parental home relatively earlier than their European counterparts (Yi et al., 1994; Iacovou, 2002). Given that there is a lot of heterogeneity in living arrangements, peer effects may act as a reinforcement mechanism. Our findings add to the literature that focuses on the determinants of the living arrangements of young adults. It is well documented that there are substantial gender, race and socioeconomic class differentials in living arrangements.[3] Women stop living with their parents earlier than men. This is due to differences in the age at marriage but also due to gender differences in the relationship between the parents and the child (Goldscheider and DaVanzo, 1985). Since daughters are commonly monitored by parents more than sons (Ward and Spitze, 1992) and they are expected to do more housework (White, 1994), living with parents after age 18 may be less beneficial for daughters than sons (Goldscheider and Waite, 1991). In terms of racial or ethnical differences, African Americans and Hispanics are substantially more likely than non-Hispanic whites to live in extended families (Beck and Beck, 1984). Moreover, non coresidents are more likely to come from relatively richer and more educated families than coresidents (Rosenzweig and Wolpin,1993). Besides the demographic and socioeconomic characteristics, Ermisch (1999) and Martínez-Granado and Ruiz-Castillo (2002) show that housing market conditions significantly affect the living arrangements of the young in the UK and Spain respectively. Martins and Villanueva (2009) show that limited access to mortgage debt can explain why many young adults in Portugal live with their parents. Peer influence is another issue that remains unexplored. When young adults decide whether to continue living with their parents or move out of the parental home, the nest leaving behavior of their friends might play a role. We add to this strand of the literature, by documenting that also peer behavior has a strong impact on the living arrangements of young adults when demographic, socioeconomic and state level characteristics are accounted for.

One recent paper in the literature that is related to ours is Belot and Ermisch (2009) that study whether friendship ties affect geographical mobility. They develop a model of investment in friendship formation and argue that mobility can destroy friendship ties due to distance, which is costly. Using data from the British Household Panel Survey on singles aged 18-50, they show that people with more close friends are less likely to move. By contrast, we focus on young adults aged 19-29 and their coresidence with parents. Our results are also related to the findings of Giuliano (2007) who studies whether cultural

[3]See White (1994) for a review of studies on young adults' coresidence with their parents and their nest-leaving behavior.

norms matter for the living arrangements of young adults in Western Europe. Using data on the country of origin of second-generation immigrants in the U.S., she finds that in both 1970 and 2000, the living arrangements of second-generation immigrants in the U.S. are similar to the living arrangements of their respective counterparts in the country of origin. We complement her findings by showing that peers also have an impact on living arrangements of the youth. Peer effects is a different dimension of culture than the country of origin. In our analysis, which is not limited to immigrants, we control for parental and racial characteristics and we investigate this further dimension of culture based on peer interactions.

Moreover, in recent years, there has been an increase in the proportion of young adults who are living with their parents (Figure 1).[4] Dyrda, Kaplan, and Ríos-Rull (2012) attribute this increase to the recent crisis that resulted in many young people being unemployed. Unemployed young adults may seek for insurance at their parental home either by not leaving it or by returning to it. In fact, Kaplan (2012) builds a structural model and shows that moving back to the parental home acts as insurance against labor market shocks. We do not try to explain this trend through peer effects. Nevertheless, if there are significant peer effects on the decision of young adults' living arrangements, we expect to observe a further increase in the proportion of young adults living with their parents.

[Figure 1 around here]

We use data from the National Longitudinal Study of Adolescent Health in order to investigate the influence of high school friends on the living arrangements of young adults aged 18-28 in the U.S. To overcome the challenges in identifying peer effects, we first analyze them in a static framework employing instrumental variables techniques. In particular, we use friends' characteristics as instruments for their living arrangements. In the static setting, we consider high school friends and their living arrangements when they are young adults. We estimate cross-sectional regressions in order to quantify the impact of friends since high school on the individual's probability of living with parents during young adulthood. Hence, we regress the percentage of high school friends who live with their parents during young adulthood on the individual's probability to live with his/her parents as a young adult. Then we move to a dynamic framework, where we exploit the differences in the timing of moving

[4] The increase in the percentage of young adults living with their parents was combined with a decrease in geographical mobility of both young females and young males in the U.S., with the decrease being more pronounced for young adults in the age group 18-29. See Figures A1 and A2 in the Appendix.

out of the parental home for young adults and their friends in order to achieve identification. Our results consistently suggest that there is a significant positive peer effect on the living arrangements of young adults. In particular, an increase of one standard deviation in the percentage of friends that still live with their parents will increase the individual probability of living with the parents by 3.3 percentage points.

The remainder of the paper is organized as follows. The next section describes the data set used. Section III puts forth the empirical strategy and the main estimation issues. Section IV presents the estimated peer effects on the living arrangements of young adults both in the static and in the dynamic setting, and discusses a number of robustness checks and heterogeneous effects. The final section concludes.

2 Add Health Data

The data we use in this paper brings together information on high school friends and their coresidence with parents during young adulthood from the National Longitudinal Study of Adolescent Health (hereinafter Add Health).[5] Add Health is a longitudinal study of a nationally representative sample of adolescents in grades 7-12 in the United States during the 1994-95 school year. In 1994-95 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 subsample of them (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, tobacco and alcohol consumption, criminal activities as well as area of residence and other coresident 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 also interviewed about family and relationships, and as a result, we can 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 11-21 and the

[5] This research uses data from Add Health, a program 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 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.

follow-up data in 2002-2003 (Wave III) when the respondents have become young adults aged 18-28.[6] Given that the median age at leaving parental home is around 21-22 for females and 22-24 for males (Iacovou, 2002) we focus on coresidence with parents when they are at this age.[7] We determine the coresidence with parents using the information on the household roster in both waves. Young adults are defined as coresidents with parents, if at least one of the household members is identified as either father, mother's husband, mother's partner, mother, father's wife or father's partner and non-coresident otherwise.[8]

Our sample consists of respondents who completed both Wave I and Wave III in home-surveys and provided information on household roster in both waves. We restrict our sample to respondents who were living at least with one parent in Wave I.[9] In Wave III, we only consider the respondents that live in a private accommodation (with parents, with relatives or non-relatives or living alone) or in a dormitory and we exclude those that are homeless or live in group quarters, whose behavior might reflect necessity and not a voluntary decision. Finally, we restrict the sample to those who provided usable information for at least one nominated friend.

Information on friendships comes from Wave I (either from the in-home or the in-school questionnaire). As mentioned before, 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. On average, each respondent has nominated 5.9 friends. We do not have information on out-of-school friends because of the Add Health sampling frame. However, the number of out-of-school friends was quite small (less than 1 friend, 0.8 per respondent). We did not require that nominations were mutual when constructing the peer group of reference for each respondent. Those that the respondent nominated as friends are likely to influence him/her even if they, in turn,

[6] Add Health data have been used in the literature in order to analyze peer effects but most studies focus only on behaviors while at school (Wave I). The only exceptions that study a more dynamic aspect of peer effects using subsequent waves of Add Health are Bifulco, Fletscher and Ross (2011), Pattachini, Rainone and Zenou (2012), and Adamopoulou (2012).

[7] Wave II in-home interviews were conducted in 1996, about one year after Wave I and adolescents in grades 8-12 (aged 11-23) were interviewed. Since in Wave II more than 90% of the adolescents were still below the legal age for children to be released from parental authority, we rather focus on the living arrangements in Wave III. On the other hand, Wave IV in home interviews were conducted in 2007-2009, almost 14 years after Wave I, and the respondents were 24-34 years old. However, it is unlikely that high school friendships are maintained for so many years after high school. Hence, we study peer effects in Wave III, only 8 years after Wave I, when friendships are 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 regarding the continuation of friendships after high school. Therefore, we consider all friends that the respondents nominated in Wave I.

[8] Mother and/or father can be biological, step, adoptive or foster.

[9] More than 94 percent of the adolescents in Wave I were living with at least one parent (14,247 of 15,088 valid cases).

did not nominate him/her as a friend. As long as nominated friends were also interviewed (i.e. they were part of the random subsample who completed the in-home survey), one can construct for each respondent a set of friends with detailed Add Health information. Given that the data represent a subsample of students within schools, not all nominated friends are interviewed and as a result, the measures of friends' characteristics will be imperfect. However, since the sampling scheme for the in-home interview was random, the measures should be on average correct. On average, each respondent has 2.2 nominated friends who were also part of the survey.

Our final sample consists of 3,949 respondents with non missing coresidence information that have at least one friend with non missing coresidence information as well. Table 1 shows the descriptive statistics for those still coresiding with their parents when they are young adults and for non-coresidents.[10] The category of coresidents includes also those that might have changed place of residence together with their parents and continued living with them in the new place of residence and the ones who might have moved out from parental home between Wave I and Wave III but have returned back home and co-reside with their parents in Wave III.

[Table 1 around here]

In line with findings from earlier studies Table 1 shows that, compared to non coresidents, coresidents are mostly men, single, and younger. Moreover, coresidents are more likely to be Hispanic or African American, without college education, and not employed. Parental characteristics also make a difference in living arrangements of young adults; non coresidents are more likely to come from relatively richer and more educated families than coresidents. Lastly, the relationship of the respondents with their parents during adolescence differs for coresidents and non-coresidents.[11]

3 Identification Issues

Our outcome of interest is the coresidence of young adults with their parents. To determine the peer group effects on young adults' coresidence with parents, our benchmark regression is as follows:

[10] For the description of variables see Table A.2 in the Appendix.

[11] The descriptive statistics of the individuals in our final sample are similar to the ones of all the individuals interviewed in Wave III, ensuring that the final sample is still representative. See Table A1 for a comparison with the descriptive statistics of the full sample in Wave III.

$$l_{is} = \overbrace{\gamma \bar{l}_{-is}}^{\text{endogenous effects}} + \underbrace{\sum_{m=1}^{M} \beta_m x_{is}^m}_{\text{individual char.}} + \underbrace{\frac{1}{g_i} \sum_{m=1}^{M} \sum_{j=1}^{n} \theta_m g_{ij} x_{js}^m}_{\substack{\text{average peer char.} \\ \text{(gender, age, etc)}}} + \alpha_s + \varepsilon_{is}, \quad (1)$$

where l_{is} is the binary variable for the coresidence status of young adult i living in state s. l_{is} takes the value 0 if a young adult who was living with at least one parent when she/he was adolescent is not living with the parents anymore, and the value 1 if she/he continues living with at least one parent. $\bar{l}_{-is}$ is the percentage of peers (nominated friends, or same grade students from the same block in Wave I) that live with their parents during young adulthood, excluding individual i, and γ is the coefficient of interest, i.e. the peer effect that we are trying to estimate. x_{it}^m is a vector of family and individual characteristics with parameter vector β_m that might act as determinants of young adults' coresidence behavior as we discuss in the next subsection. The parameter vector, θ_m captures contextual effects, i.e. the influence of the average peer characteristics on young adult's coresidence status. For this purpose, we define g_{ij} as the indicator function that reflects the direct connection of two individuals in a friends' network g with $N = \{1, ..., n\}$ members. Hence, two individuals i and j are directly connected if and only if $g_{ij} = 1$. We set $g_{ii} = 0$ since an individual cannot be a friend of herself. Finally g_i is defined as $g_i = \sum_{j=1}^{n} g_{ij}$,which is the size of the direct connections of individual i. The set of direct connections of individual i is $N_i(g) = \{j \neq i \mid g_{ij} = 1\}$, which is of size g_i and unless the network is complete and everybody is a friend of everybody, the size of the direct connections are individual specific $(N_i(g) \neq N_j(g))$.[12] Finally α_s are state dummies that capture the state specific fixed effects that may influence the living arrangements of young adults.

3.1 Individual characteristics

Our vector of individual characteristics, x_{it}^m includes several types of covariates. These variables include gender, age, and race of the respondents as there are many gender and racial differences in living arrangements (Goldscheider and DaVanzo, 1985; Ward and Spitze, 1992; Chiuri and Del Boca, 2010; and Beck and Beck, 1984). In line with the findings of these studies, we expect males to be more likely to live with their parents than females, younger individuals to co-reside with their parents more than older ones, and Hispanics or

[12] See Jackson (2008) for further details.

African Americans to be more likely to co-reside with their parents than White Americans. In addition to these standard demographic variables, we include four more set of variables in the x_{it}^m vector.

The first set of these additional variables includes parental income and parental education. As shown in the literature these variables are influential in the coresidence behavior of young adults (Rosenzweig and Wolpin, 1993; Goldscheider and Waite, 1991; and White, 1994). Rosenzweig and Wolpin (1993) show that non coresidents come from relatively richer and more educated families than coresidents. Hence, we expect the probability of coresiding with parents to increase with the parental education and parental income. Due to the survey design of the AddHealth, this set of variables comes from Wave I because the parents were interviewed only then.

Another set of additional variables that we control for tries to capture the relationship of the young adult with her/his parents when she/he was an adolescent. Our prediction is that if the young adult had a bad relation with the parents or used to do many household chores when she/he was young, this would make her/him less likely to continue living with the parents during young adulthood. The variables that we include are the amount of housework that the respondents used to do in Wave I, and how good the respondents were considering their relationship with the parents by then.

Furthermore, earlier literature documents that family formation and (un)employment are key determinants of living arrangements (Iacovou, 2002; Kaplan, 2012). Our last set of variables tries to capture the effects of these current socioeconomic status of the young adult, namely the marital status, employment status, and college attainment (completed or ongoing).[13] We expect that the probability of living with parents will be higher for single, unemployed and young adults with no college attainment.

Finally, we also include state dummies, α_s that, among others, capture the characteristics of local housing markets that affect the living arrangements of young adults (Ermisch, 1999; Martínez-Granado and Ruiz-Castillo, 2002; and Martins and Villanueva, 2009).

3.2 Identifying the Peer Group Effects on Living with the Parents

Individual behavior may move conjointly with average peer group behavior for three different reasons. i) Endogenous effects; the behavior of the individual is causally influenced

[13] For the detailed description of variables see Table A.2 in the Appendix.

by the behavior of the group. This is the peer group effect that we are interested in. ii) Contextual effects; the behavior of the individual is influenced by the characteristics of the group. iii) Correlated effects; the individual and the group behave in the same way due to similar environments that are unobserved or due to endogenous friendship formation/sorting. This arises either from the fact that both the individual and her friends are subject to common unobserved shocks, due to institutional environments or because the individual selects friends who are similar to her.

Manski (1993) shows that identifying the endogenous and the contextual effects separately in a reduced form linear model is not possible. This is called the reflection problem and it is due to the fact that by definition group behavior is the aggregation of individual behavior. Solutions that have been proposed in order to solve the reflection problem consist of using instrumental variables techniques, or using panel data (see Bramoullé, Djebbari, and Fortin, 2009; Boucher et al., 2010). Instruments are used in order to generate variation in peer behavior that is independent from individual behavior. Examples of identification strategies with instrumental variables include Ciliberto et al. (2010) that use the fertility of the siblings of one's colleagues as an instrument for the fertility of one's colleagues, and Fletscher (2011) that uses the alcohol consumption of the parents of one's classmates as an instrument for the alcohol consumption of one's classmates. The basic idea is that siblings or parents of peers affect the behavior of the peers but have no independent effect on the respondent's behavior. De Giorgi, Pellizzari, and Redaelli (2010), and Pattachini and Zenou (2012) exploit the information about the whole network of friendships and instrument the behavior of the respondent's friends with the characteristics of friends of friends who are not directly linked with the respondent.

In our static model, we instrument the percentage of peers living with parents using the contextual variables which is a common procedure in the literature (e.g. Gaviria and Raphael, 2001; Powell et al., 2005). We hence assume that there is no direct effect of friends' characteristics on respondents' decisions ($\theta_m = 0$) and use friends' characteristics as instruments for their living arrangements.[14] Then we move to a dynamic framework and exploit differences in the timing of the move in order to achieve identification and check

[14] In our setting, information on friends of friends is very limited as we need information for both the respondents and their friends in Wave III. Hence, it is necessary that they have all completed in-home interviews. As Figure A3 shows in the Appendix, when using in-home nominations, nominated friends who did not complete in-home interviews were not able to nominate anyone. This is not the case when we use in-school nominations (Figure A4). However, this information on friends of friends is irrelevant given that the behavior of friends that we would like to instrument is still missing.

the robustness of our results. In this framework the living arrangements of the friends are already determined at the time that we observe the behavior of the respondent, and the reflection problem is mitigated without the use of instruments. In order to obtain unbiased estimates we need to assume that the individuals are not forward looking. They are affected only by the past actions of their friends.

What about correlated effects? One might worry that people make new friends as they get older. Hence, it is normal for people who live without their parents to make new friends who are also similarly behaved. In this case endogeneity would be a serious problem in identifying the peer effect. In the current analysis we consider friends since high school. This solves part of the endogenous friendship formation in later years. Moreover, it is not very likely that adolescents selected friends in high school according to characteristics that determined their living arrangements afterwards.[15] On the other hand, we also control for Wave I state-level fixed effects in order to overcome the endogeneity of the state of residence in Wave I. In this way we also control for unobserved state-level characteristics, e.g. welfare policies, mobility promoting programs, availability of college etc, that could jointly affect the living arrangements of the respondents and their peers.[16]

4 Results

4.1 Static models

4.1.1 Wave I In-Home Nominations[17]

We first examine the determinants of living arrangements of young adults aged 18-28 using the high school friend nominations. Here, we assume that friendships have lasted after high school (i.e. from Wave I to Wave III for 7-8 years). As explained in the previous section, our dependent variable takes the value 0 if a young adult who was living with at

[15] The respondents in Wave I were asked whether they wanted to leave parental home. This could reflect either a preference for independence or the fact that the neighborhood was not good. By using information on whether the parent wanted to change neighborhood we define as independent children those who wanted to leave parental home although their parent did not want to change neighborhood. We do so also for their friends and we then compute the correlation between each child's preference for independence and peer preference for independence (homophily in terms of independence). The correlation coefficient is 0.10. This is much smaller than homophily in terms of gender (0.35) or parental income (0.53).

[16] Since the nominated friends are not necessarily living in the same block, tract or county, we control for state fixed effects to overcome the problem that may arise due to correlated effects.

[17] The respondents were asked to nominate their best friends both in the in-school and in the in-home interview. We present the results using the in-home nominations given that the presence of other students in the school might have influenced the in-school nominations of the respondent. Nevertheless, we also estimated all the specifications using the in-school nominations and the results were very similar.

least one parent when she/he was adolescent is not living with the parents anymore, and the value 1 if she/he continues living with at least one parent. The variable of interest is the ratio of each individual's friends that live with their parents. We include as regressors the characteristics of the individuals, such as age, gender, race, marital status, employment status, college attainment, amount of housework used to do in Wave I, how good was the relationship with the parents, maternal income and education as discussed in Section 3.1.

We start with a simple linear probability model (Table 2, column 1) and we find a statistically significant peer effect.[18] However, the results of a simple OLS without fixed effects might suffer from the identification problems that we discussed above. We therefore perform 2SLS in a linear probability model using the contextual variables as instruments and including Wave I state fixed effects (Table 2, column 2).[19] We assume that the contextual variables do not have any direct effect on individual behavior, i.e. $\theta_m = 0$ and we exclude them from the regression.[20] Instead, we use these contextual variables as an instrument for the percentage of peers who live with their parents in Wave III. We omit the contextual variables that are very correlated with individual characteristics, i.e., those related to race, age and gender. We hence use as instruments the proportion of peers that had a good relationship with their parents, average housework, parental education and parental income of peers measured at Wave I as well as the proportion of peers that are single, employed, and completed or attend college in Wave III. Under the assumption that contextual effects are non-existent, there should be no direct relationship between individual i's behavior and the average background characteristics of individual i's peers. Hence, we expect that the relationship of individual i's peers with their parents when they were adolescents, as well as the education and income of their parents affect the coresidence behavior of individual i's peers but not the decision of individual i to coreside with his/her parents. Moreover, college attainment/attendance and the marital and employment status of the peers of individual i should determine the decision of the peers to coreside with their parents but not the decision of individual i directly.

[Table 2 around here]

The F statistic of the excluded instruments in the 1st stage is larger than 10 indicating

[18] We also calculated marginal effects for a logit estimation as a consistency check. Both the magnitude and significance of the coefficients remained unchanged.

[19] See Table A4 in the Appendix for the results of the full specification.

[20] Indeed, when we included contextual variables in the OLS regression none of them was statistically significant.

that the instruments are not weak.[21] The Hansen J statistic does not reject the hypothesis of the validity of the instruments. There is a statistically significant positive peer effect.

4.1.2 Same grade students living in the same block in Wave I

In this section, as a robustness check, we define an alternative group of peers. Given that we study mobility decisions, defining the peer group of reference using the residential proximity in Wave I can also be of relevance. Hence, instead of using the friends that the respondents nominated in Wave I we define the peer group of reference for each respondent as the students who were enrolled in the same grade (but potentially in different schools) and lived in the same block as the respondent in Wave I. This peer group of reference is a combination of neighbors-grademates and it is particularly relevant in this setting. Furthermore, defining the peer group of reference in this way allows us to overcome possible concerns regarding selection and endogenous friendship formation. We perform 2SLS using the contextual characteristics as an instrument (Table 3, column 1). The results of this estimation are comparable with the results presented in Table 2, column 1.

[Table 3 around here]

As Table 3 shows, the peer effect is again positive and significant. In the last specification we also add grade fixed effects on top of state fixed effects in order to capture unobserved cohort shocks (Table 3, column 2).[22] The results are robust.

4.1.3 Discussion of the IV estimates

As we mentioned above, OLS suffer from the reflection problem. We thus use an instrumental variable approach in order to correct the upward bias in OLS estimates. However, our 2SLS estimates are larger than the OLS estimates. One explanation could be that peer-group behaviour was measured with error and instrumenting for peer behaviour also helped reducing the downward bias due to those measurement errors. However, since we constructed the peer group average using the household roster for each peer there is no reason to believe that there is measurement error in the instrumented variable. Another explanation lies on the nature of our instruments. Other studies that use contextual variables in order to instrument peer group behavior also find larger estimates in the 2SLS

[21] Table A3 in the Appendix displays the results of the 1st stage regression.

[22] See Tables A5 and A6 in the Appendix for the results of the 1st stage regression and the results of the full specification.

specification (Gaviria and Rafael,2001; Lundborg,2006; Fletscher, 2011). It is not clear that the contextual characteristics are legitimate instrumental variables for peer behavior, even if they have no independent causal effect on individual behavior. This is why we move to a dynamic specification where we mitigate the reflection problem using the time dimension instead of instrumental variables.

4.2 Some dynamics

In Wave III the respondents were also asked to fill in a calendar of geographical mobility with all the states they have lived in and the month and year of the move. This calendar contains information about all the states that the respondent has lived in during his life, the year and month of the move to each state and to the current address. However, there is no information on other coresiding members (parents, partners or friends) so as to know whether the respondent moved together with the parents or no. In order to make use of the dynamic component of the data we assume for those respondents who were not living with the parents in Wave III that the date they moved out of the parental home for the first time coincides with the date of the move to the current address. In other words, we assume for the respondents who changed residence between Wave II and the date of the move to the current address that parents were also moving with them. Only the last move to the current address corresponds to individuals moving out alone. Actually, 71.51% of the respondents moved to the current address in the last 3 years, i.e. between 1999 and 2001, when they were on average 20.75 years old. This is very similar to the age by which 50% of young adults have left parental home in the U.S. (Iacovou, 2002). Hence, our assumption is likely to hold.[23]

In this framework we can exploit differences in the timing of the move in order to achieve identification. In particular, using information on the month and year that people moved to the current address, we treat as non-coresidents only the friends that moved out of the parental home before the respondent. We thus treat the friends that left the parental home after the respondent as coresidents with their parents. The fact that these friends left the parental home after the respondent suggests that they were still living with the parents at the time the respondent moved out of the parental home. Hence friends can be either coresidents (never moved out of the parental home or did so after the respondent) or non coresidents (moved out of the parental home before the respondent). In this way, the living

[23] Figure A5 in the Appendix depicts the details of our assumption.

arrangements of the friends are already determined at the time that we observe the behavior of the respondent, and the reflection problem is mitigated without the use of instruments.

Table 4, column 1 presents the results of the OLS regression of this dynamic model, which are also in line with the estimates of the static model.[24,25] In particular, the estimated coefficient of the peer effect is statistically significant and equal to 0.076. How large is the estimated effect? In our sample the mean of the variable of interest (% of friends that still live with their parents) is 0.65 with a standard deviation of 0.44. According to our estimates an increase of one standard deviation in the percentage of friends that still live with their parents will increase the individual probability of living with the parents by 3.3 percentage points. This increase in peer behavior represents an increase in individual behavior of about 6.8 percent of its standard deviation (which is 0.49). This effect is not negligible.

[Table 4 around here]

4.2.1 Heterogeneous effects

But who are the ones who are influenced by their peers? Is there a group of individuals that is totally unaffected? In order to answer this question we analyze separately different groups of individuals with respect to gender and parental income. Table 5 presents the results of the dynamic model by gender. The peer effect on girls is large and statistically significant. The peer effect on boys, although similar in magnitude to the one on girls, is not statistically significant. This is probably due to the splitting of the sample. Therefore, there is no strong evidence that peers influence the living arrangements of girls more than the living arrangements of boys or vice versa. The picture is much more clear in the case of parental income though. We run the dynamic model separately for young adults coming from relatively wealthy families (parental income above the median) and for young adults coming from relatively poor families (parental income below the median). There is a very large peer effect only on young adults that come from relatively wealthy families (Table 6). By contrast, the living arrangements of young adults coming from relatively poor families are completely unaffected by peers. This result might reflect the fact that one can actually move out of the parental home only if there are enough financial resources.

[24] See Table A7 in the Appendix for the results of the full specification.

[25] We also estimated the dynamic model including school fixed effects and the peer effect remained significant at 10% percent level but decreased a bit in magnitude (0.051).

5 Conclusion

Decreased geographical mobility of young adults can have several consequences on unemployment and growth. We study the recent increase in the percentage of young adults living with their parents in the U.S. which might be associated with the decrease in their mobility. We use data on high school friends and we make use of instruments and state fixed effects in order to mitigate the problems of identification. We find that peers play an important role in determining the living arrangements of young adults in the U.S. In particular, an increase of one standard deviation in the percentage of friends that still live with their parents will lead to an increase of 3.3 percentage points in the individual probability of living with the parents. Policy makers should take this peer effect into account when evaluating policies that are intended to boost youth emancipation or mobility.

References

[1] Adamopoulou, E. (2012). "Peer Effects in Young Adults' Marital Decisions," *Economics Working Paper 1228, Universidad Carlos III.*

[2] Beck, R. W., and S. H. Beck (1989). "The Incidence of Extended Households Among Middle-Aged Black and White Women," *Journal of Family Issues*, Vol. 10, 147-168.

[3] Belot, M., and J. Ermisch (2009). "Friendship Ties and Geographical Mobility: Evidence from Great Britain," *Journal of the Royal Statistical Society*, Vol. 172, 427-442.

[4] Bifulco, R., J. Fletscher, and S. Ross (2011). "The Effect of Classmate Characteristics on Post-Secondary Outcomes: Evidence from the Add Health," *American Economic Journal: Economic Policy, Vol. 3, 25-53.*

[5] Blume, L., W. Brock, S. Durlauf, and Y. Ioannides (2011). "Identification of Social Interactions," *Handbook of Social Economics*, Vol. 1B, 853-964.

[6] Boucher, V., Y. Bramoullé, H. Djebbari, and B. Fortin (2010). "Do Peers Affect Student Achievement? Evidence from Canada Using Group Size Variation," *IZA Discussion Paper.*

[7] Bramoullé, Y., H. Djebbari, and B. Fortin. (2009). "Indentification of Peer Effects Through Social Networks," *Journal of Econometrics*, Vol. 150, 41–55.

[8] Calvó-Armengol, A., and Jackson M.O. (2004). "The Effects of Social Networks on Employment and Inequality," *American Economic Review*, Vol. 94, 426–454.

[9] Calvó-Armengol, A., E. Patacchini, and Y. Zenou. (2009). "Peer Effects and Social Networks in Education," *Review of Economic Studies* , Vol. 76, 1239–1267.

[10] Cappellari, L., and K. Tatsiramos (2011). "Friends' Networks and Job Finding Rates," *Mimeo.*

[11] Card, D., and L. Giuliano (2011). "Peer Effects and Multiple Equilibria in the Risky Behavior of Friends," *NBER Working Paper No 17088.*

[12] Chiuri, M., and D. Del Boca (2010). "Home-leaving Decisions of Daughters and Sons," *Review of Economics of the Household*, Vol. 8, 393-408.

[13] Ciliberto, F., A. Miller, H. Nielsen, and M. Simonsen (2010). "Playing the Fertility Game at Work," Mimeo.

[14] Clark, A., and Y. Lohéac (2007). "It Wasn't Me, It Was Them! Social Influence in Risky Behavior by Adolescents," *Journal of Health Economics*, Vol. 26, 763-784.

[15] Cohen-Cole, E., and J. Fletcher (2008). "Is Obesity Contagious? Social Networks vs. Environmental Factors in the Obesity Epidemic," *Journal of Health Economics*, Vol. 27, 1382-1387.

[16] De Giorgi, G., M. Pellizzari, and S. Redaelli (2010). "Identification of Social Interactions through Partially Overlapping Peer Groups," *American Economic Journal: Applied Economics*, Vol. 2, 241-275.

[17] Dyrda, S., G., Kaplan, and V. Ríos-Rull (2012). "Business Cycles and Household Formation: The Micro vs the Macro Labor Elasticity," *NBER Working Paper*.

[18] Ermisch, J. (1999). "Prices, Parents, and Young People's Household Formation," *Journal of Urban Economics*, Vol. 45, 47-71.

[19] Esping-Andersen G., (1999). "Social Foundations of Postindustrial Economies," Oxford University Press, Oxford.

[20] Eurofound (2006). "Mobility in Europe – Analysis of the 2005 Eurobarometer Survey on Geographical and Labour Market Mobility," European Foundation for the Improvement of Living and Working Conditions, Dublin.

[21] Falk, A., and A. Ichino (2006). "Clean Evidence on Peer Effects," *Journal of Labor Economics*, Vol. 24, 39-58.

[22] Fernández-Villaverde J., J. Greenwood and N. Guner (2012). "From Shame to Game in One Hundred Years: An Macroeconomic Model of the Rise in Premarital Sex and its De-Stigmatization, " *Economie d'Avant Garde Research Report* No. 16.

[23] Fletcher, J. (2007). "Social Multipliers in the Sexual Initiation Decisions among U.S. High School Students," *Demography*, Vol 44 (2): 373-388.

[24] Fletcher, J. (2010). "Social Interactions and Smoking: Evidence Using Multiple Student Cohorts, Instrumental Variables, and School Fixed Effects," *Health Economics*, Vol. 19, 466-484.

[25] Fletcher, J. (2011). "Peer Influences on Adolescent Alcohol Consumption: Evidence Using an Instrumental Variables/Fixed Effect Approach," *Journal of Population Economics*, forthcoming.

[26] Gaviria, A., and S. Raphael (2001). "School-Based Peer Effects and Juvenile Behavior," *Review of Economics and Statistics*, Vol. 83, 257-268.

[27] Giuliano, P. (2007). "Living Arrangements in Western Europe: Does Cultural Origin Matter?," *Journal of the European Economic Association,* Vol. 5, 927-952.

[28] Glaeser, E., B. Sacerdote, and J. Scheinkman (1996). "Crime and Social Interactions," *Quarterly Journal of Economics*, Vol. 111, 507-548.

[29] Goldscheider, F. K., and J. Da Vanzo (1985). "Living Arrangements and the Transition to Adulthood," *Demography,* Vol. 22, 545-63.

[30] Goldscheider, F. K., and L. Waite (1991). New Families, No Families? The Transformation of the American Home. Berkeley: University California Press.

[31] Hensvik L., and P. Nillson (2010). "Businesses, Buddies, and Babies: Social Ties and Fertility at Work," *IFAU Working Paper.*

[32] Hoxby, C. (2000). "Peer Effects in the Classroom: Learning from Gender and Race Variation," *NBER Working Paper* No 7867.

[33] Iacovou, M. (2002). "Regional Differences in the Transition to Adulthood," *Annals of the American Association of Political and Social Science*, No. 580, 40-69.

[34] Kaplan, G. (2012). "Moving Back Home: Insurance Against Labor Market Risk," *Journal of Political Economy,* forthcoming.

[35] Kiernan, K (1986) "Leaving home: living arrangements of young people in six West-European countries," *European Journal of Population,* Vol. 2, pp. 177-184.

[36] Kuziemko I. (2006). "Is Having Babies Contagious? Estimating Fertility Peer Effects Between Siblings," *Mimeo,* Harvard University.

[37] Lee, B. A., R. S. Oropesa and J. W. Kanan (1994). "Neighborhood Context and Residential Mobility," *Demography,* Vol 31, 249-270.

[38] Lundborg, P. (2006). Having the Wrong Friends? Peer Effects in Adolescents Substance Use, *Journal of Health Economics*, Vol. 2, 214-233.

[39] Manacorda, M., and E. Moretti (2006). "Why Do Most Italian Youths Live With Their Parents? Intergenerational Transfers and Household Structure," *Journal of the European Economic Association,* Vol. 4, 800-829.

[40] Manski, C. F. (1993). "Identification of Endogenous Effects: The Reflection Problem," *Review of Economic Studies*, Vol. 60, 531-542.

[41] Martínez-Granado, M., and J. Ruiz-Castillo (2002). "The Decisions of Spanish Youth: A Cross-Section Study," *Journal of Population Economics*, Vol. 15, 305-330.

[42] Martins, N., and E. Villanueva (2009). "Does High Cost of Mortgage Debt Explain Why Young Adults Live with Their Parents?," *Journal of the European Economic Association*, Vol. 7, 974-1010.

[43] Jencks, C., and S. Mayer (1990). "The Social Consequences of Growing up in a Poor Neighborhood. In L. Lynn and M. McGeary (eds.), Inner-City Poverty in the United States (pp. 111-186). Washington, D.C.: National Academy Press.

[44] OECD (2005). *Employment Outlook*, Paris, OECD.

[45] Patacchini E., E. Rainone, and Y. Zenou (2012). "Student Networks and Long-Run Educational Outcomes: The Strength of Strong Ties," *CEPR working Paper.*

[46] Patacchini E., and Y. Zenou (2012). "Juvenile Delinquency and Conformism," *Journal of Law, Economics, and Organization*, forthcoming.

[47] Powell L., J. Tauras, and H. Ross (2005). "The Importance of Peer Effects, Cigarette Prices and Tobacco Control Policies for Youth Smoking Behavior," *Journal of Health Economics*, Vol. 24, 950-968.

[48] Rosenzweig, M. and K. Wolpin (1993). "Intergenerational Support and the Life-Cycle Incomes of Young Men and Their Parents: Human Capital Investments, Coresidence, and Intergenerational Financial Transfers," *Journal of Labor Economics*, Vol. 11, 84-112.

[49] Sacerdote, B. (2001). "Peer Effects with Random Assignment," *Quarterly Journal of Economics*, Vol. 116, 681-704.

[50] Ward, R. A. and G. Spitze (1992). "Consequences of Parent-Adult Child Coresidence: A Review and Research Agenda," *Journal of Family Issues*, Vol.13, 553-72.

[51] Yi, Z., A. Coale, M. Kim Choe, L. Zhiwu, and L. Li. (1994). "Leaving the Parental Home: Census-Based Estimates for China, Japan, South Korea, United States, France, and Sweden," *Population Studies*, Vol. 48, 65-80.

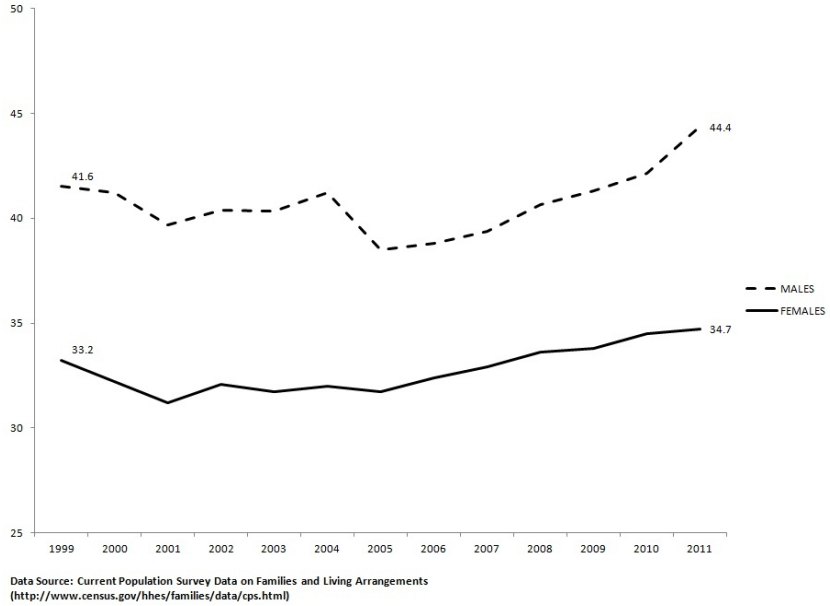

Figure 1. Percentage of males and females aged 18-29 that live with their parents, 1999-2011

Table 1. Descriptive Statistics by Coresidence with Parents

Characteristic	Non Coresidents	Coresidents	All
% females	55.24	47.92	52.24
% White	79.19	70.88	75.79
% African-American	10.85	12.33	11.46
% Hispanic	6.97	10.89	11.94
Wave III variables			
Mean Age	21.86	21.03	21.52
	(1.78)	(1.72)	(1.80)
% single	56.32	89.53	69.93
% with college education	68.03	64.04	66.39
% employed	74.18	73.58	73.94
Wave I variables			
% good relationship with a parent in Wave I	79.07	84.62	81.35
Mean amount of housework in Wave I	2.14	2.02	2.09
(4-scale category)	(0.85)	(0.88)	(0.86)
Mean parental income in Wave I	52.26	47.05	50.10
(thousand dollars)	(51.76)	(35.05)	(45.65)
Mean parental education	1.77	1.65	1.72
(4-scale category)	(0.99)	(0.99)	(0.99)
%	59.02	40.98	100.00
Number of obs.	2,266	1,683	3,949

Notes: Standard errors in parenthesis. The sample includes young adults who were living with at least one parent in Wave I, with non missing own and high school friends' coresidence information.

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

Table 2. Determinants of living arrangements in Wave III, static model

Definition of Peers	Nominated friends	Nominated friends
	(1)	(2)
Specification	OLS	2SLS
% peers living with parents	0.062**	0.152*
	(0.029)	(0.084)
Individual char.	Yes	Yes
Parental char.	Yes	Yes
Contextual char.	No	Used as instruments
Wave I State fixed eff.	No	Yes
No of observations	2,792	2,358
R^2	0.229	0.161
F-statistic 1st stage	-	37.95
J statistic p-value	-	0.284

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

Control variables: age, gender, race, marital status, employment status, college attainment, amount of housework used to do in Wave I, how good was the relationship with the parents in Wave I, maternal income and education

Table 3. Determinants of living arrangements in Wave III, different peer group

Definition of Peers	Students from the same grade who lived at the same block in Wave I	
	(1)	(2)
Specification	2SLS	2SLS
% peers living with parents	0.184*	0.204**
	(0.097)	(0.102)
Individual char.	Yes	Yes
Parental char.	Yes	Yes
Contextual char.	Used as instruments	Used as instruments
Wave I State fixed eff.	Yes	Yes
Wave I Grade fixed eff.	No	Yes
No of observations	2,960	2,960
R^2	0.210	0.178
F-statistic 1st stage	27.17	24.11
J statistic p-value	0.343	0.439

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

Control variables: age, gender, race, marital status, employment status, college attainment, amount of housework used to do in Wave I, how good was the relationship with the parents in Wave I, maternal income and education

Table 4. Determinants of living arrangements in Wave III, dynamic model

Definition of Peers	Nominated friends
	(1)
Specification	OLS
% peers living with parents	0.076***
	(0.026)
Individual char.	Yes
Parental char.	Yes
Contextual char.	No
Wave I State fixed eff.	Yes
No of observations	2,792
R^2	0.236

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

Control variables: age, gender, race, marital status, employment status, college attainment, amount of housework used to do in Wave I, how good was the relationship with the parents in Wave I, maternal income and education

Table 5. Determinants of living arrangements in Wave III, dynamic model by gender

Definition of Peers	Nominated friends	Nominated friends
	(1)	(2)
	Females	Males
Specification	OLS	OLS
% peers living with parents	0.076**	0.064
	(0.030)	(0.042)
Individual char.	Yes	Yes
Parental char.	Yes	Yes
Contextual char.	No	No
Wave I State fixed eff.	Yes	Yes
No of observations	1,474	1,318
R^2	0.247	0.260

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

Control variables: age, gender, race, marital status, employment status, college attainment, amount of housework used to do in Wave I, how good was the relationship with the parents in Wave I, maternal income and education

Table 6. Determinants of living arrangements in Wave III, dynamic model by parental income

Definition of Peers	Nominated friends	Nominated friends
	(1)	(2)
	Wealthy parents	Poor parents
Specification	OLS	OLS
% peers living with parents	0.126***	0.014
	(0.036)	(0.038)
Individual char.	Yes	Yes
Parental char.	Yes	Yes
Contextual char.	No	No
Wave I State fixed eff.	Yes	Yes
No of observations	1,392	1,400
R^2	0.241	0.301

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

Control variables: age, gender, race, marital status, employment status, college attainment, amount of housework used to do in Wave I, how good was the relationship with the parents in Wave I, maternal income and education

6 Appendix

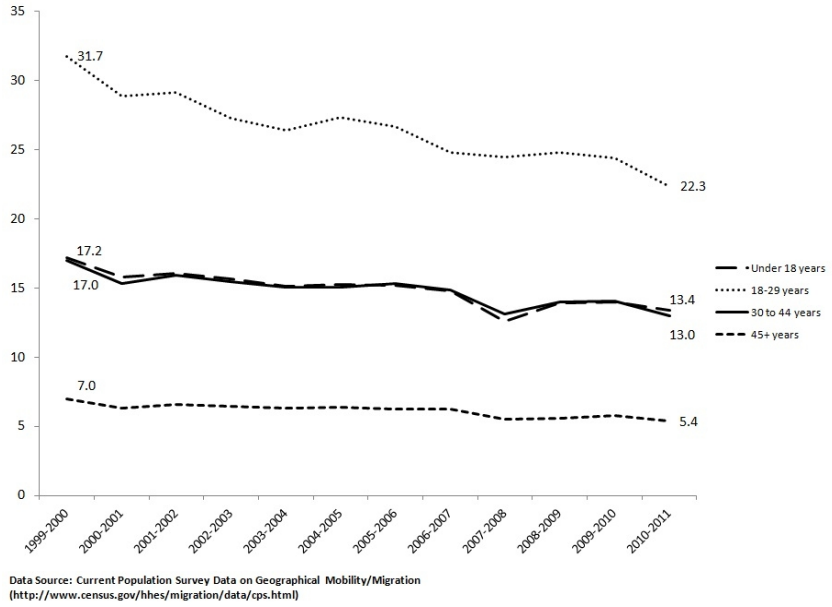

Figure A1. Percentage of movers[26] by age group, 1999-2011

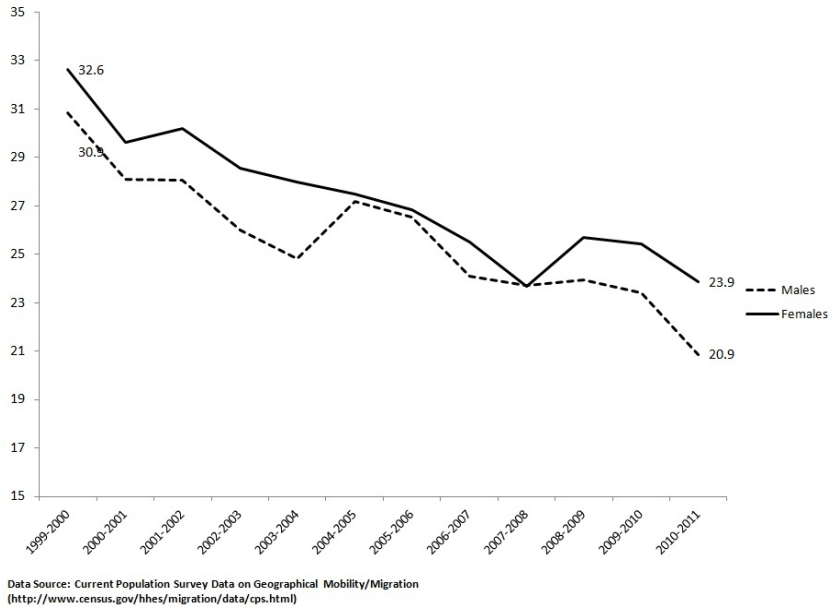

Figure A2. Percentage of movers aged 18-29, by gender, 1999-2011

[26] The population is classified according to mobility status by the U.S. Census Bureau on the basis of a comparison between the place of residence of each individual to the time of the March survey and the place of residence one year earlier. All people who were living in a different house at the end of the period rather than at the beginning are classified as movers.

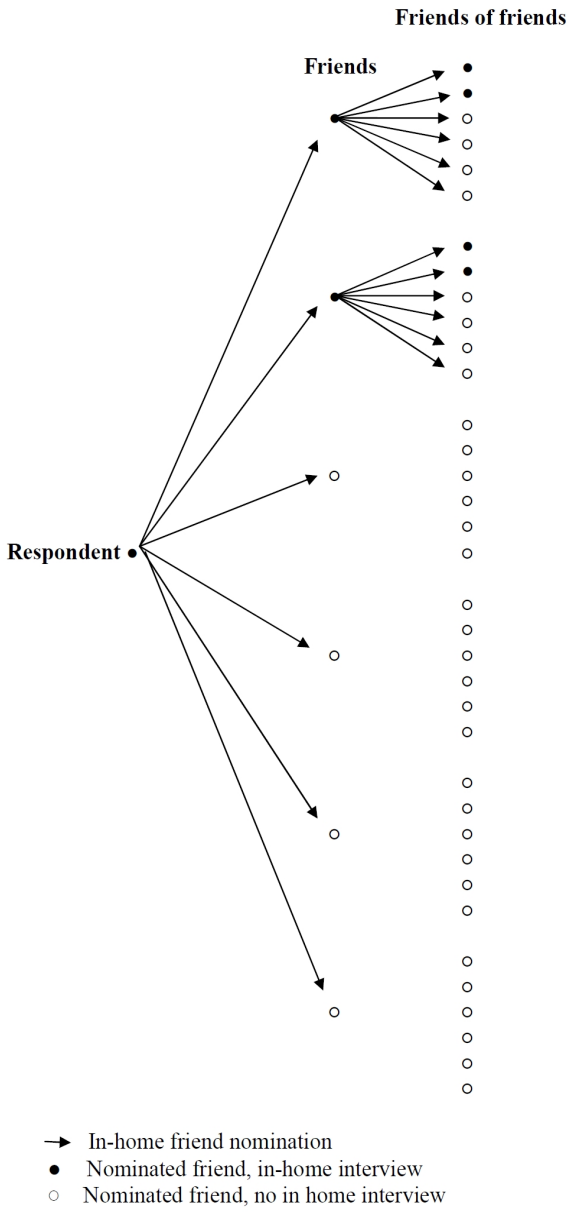

Figure A3. In-home nominations and in-home interviews

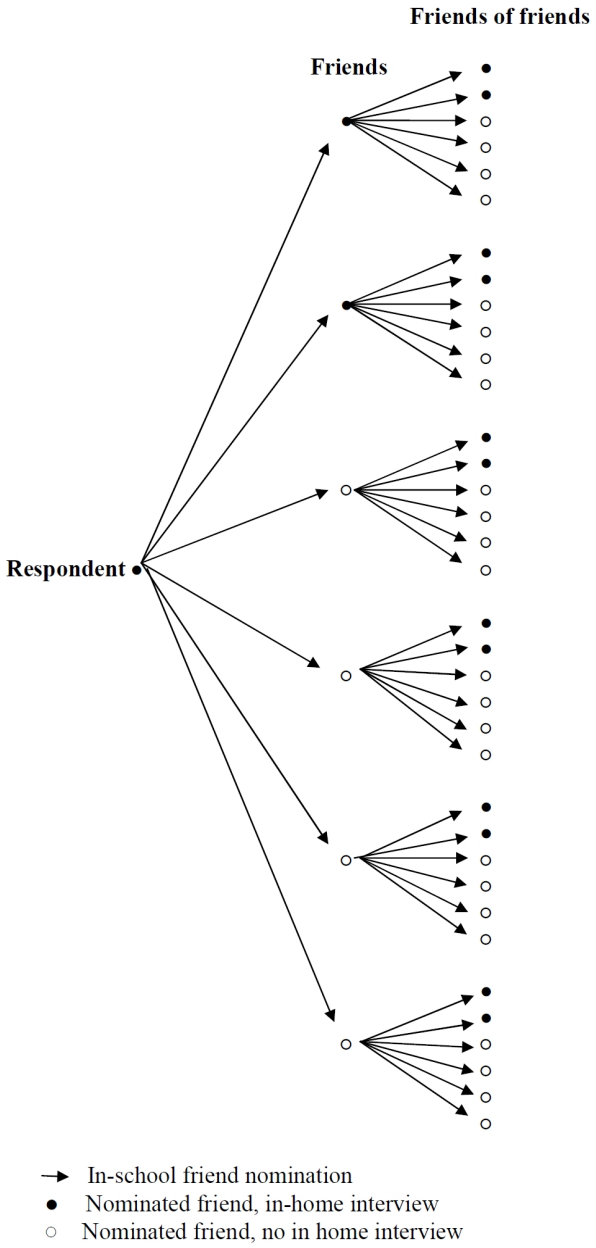

Figure A4. In-school nominations and in-home interviews

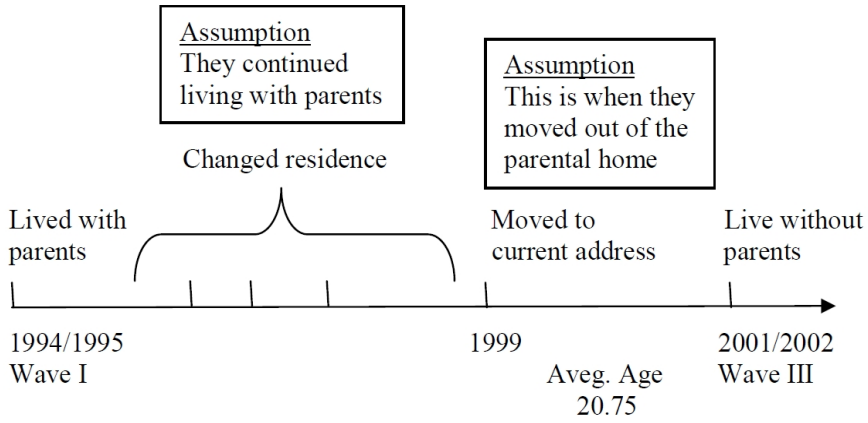

Figure A5. Assumption for the dynamic model

Table A.1. Descriptive Statistics, Full Sample

Characteristic	All
% females	49.21
% White	68.01
% African-American	15.88
% Hispanic	11.94
Wave III variables	
Mean Age	21.82
	(1.87)
% single	66.76
% with college education	57.35
% employed	74.36
Wave I variables	
% good relationship with a parent in Wave I	80.16
Mean amount of housework in Wave I	2.04
(4-scale category)	(0.89)
Mean parental income in Wave I	45.74
(thousand dollars)	(45.17)
Mean parental education	1.58
(4-scale category)	(1.01)
%	
Number of obs.	14322

Notes: Standard errors in paranthesis. Sample based on Wave III of Add Health. Corrected for the design effects of the Add Health sampling process. The target population for this sample is comprised of young adults in 2001, who were enrolled in US schools during the 1994-1995 academic year for the specified grades.

Table A2. Definition of Variables

Variable	Type	Values
Gender	binary	0 if male 1 if female
Age	continuous	[18, 28]
Hispanic	binary	0 if not Hispanic 1 if Hispanic
African American	binary	0 if not African American 1 if African American
Single	binary	0 if married or cohabiting 1 if single
College	binary	0 if no college 1 if completed college or currently in college
Employed	binary	0 if not employed 1 if employed
Well with parent in Wave I	binary	0 if bad relationship with both parents in wave I 1 if good relationship with one parent in wave I
Housework in Wave I	ordinal	0 not at all 1 1 or 2 times per week 2 2 or 3 times per week 3 5 or more times per week
Total household income in Wave I	continuous	in thousand $

Parental education	ordinal	0 Less than highschool 1 Highschool or similar 2 More than highschool 3 College or more

Table A3. IV-Auxilliary Equation-Nominated friends

Instrumented: % peers living with parents		
	Coefficient	Std. Error
Gender	0.011	(0.021)
Age	-0.037***	(0.007)
African American	0.023	(0.059)
Hispanic	0.054	(0.052)
Other race	0.135*	(0.078)
Single	-0.015	(0.050)
Employed	0.022	(0.041)
Single*employed	0.009	(0.056)
College	-0.019	(0.027)
Housework	-0.001	(0.012)
Well with parent	0.019	(0.027)
Parental Education	-0.026*	(0.014)
Parental Income	0.0001	(0.0002)
% single peers	0.396***	(0.028)
% employed peers	0.100***	(0.035)
% peers with college education	-0.123***	(0.037)
% peers well with their parent	0.044	(0.040)
average housework of peers	-0.024	(0.018)
average parental education of peers	-0.016	(0.015)
average parental income of peers	-0.0004	(0.0004)
No of observations	2,358	
R^2	0.199	

*** p<0.001, **p<0.05, *p<0.10, rob s.e. clustered at school level

Cross sectional weights used

F test of excluded instruments: F(7,128)=37.95, Prob>F=0.000

Table A4. Full Specification (2nd Stage)-Nominated friends

	Coefficient	Std. Error
% peers living with parents	0.152*	(0.084)
Gender	-0.005	(0.029)
Age	-0.029**	(0.011)
African American	-0.009	(0.059)
Hispanic	0.040	(0.035)
Other race	0.139**	(0.058)
Single	0.222***	(0.057)
Employed	-0.118**	(0.054)
Single*employed	0.170***	(0.062)
College	-0.086***	(0.029)
Housework	-0.042**	(0.016)
Well with parent	0.048	(0.029)
Parental Education	-0.014	(0.014)
Parental Income	-0.0003	(0.0003)
No of observations	2,358	
R^2	0.161	

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

Cross sectional weights used

Table A5. IV-Auxilliary Equation-Different peer group

Instrumented: % peers living with parents		
	Coefficient	Std. Error
Gender	0.005	(0.010)
Age	-0.007	(0.007)
African American	-0.023	(0.031)
Hispanic	-0.021	(0.028)
Other race	-0.023	(0.039)
Single	0.010	(0.022)
Employed	0.003	(0.018)
Single*employed	0.012	(0.024)
College	-0.008	(0.011)
Housework	0.003	(0.006)
Well with parent	-0.019*	(0.011)
Parental Education	-0.001	(0.005)
Parental Income	-0.000	(0.000)
% single peers	0.472***	(0.044)
% employed peers	0.068	(0.047)
% peers with college education	-0.077	(0.050)
% peers well with their parent	-0.015	(0.045)
average housework of peers	-0.022	(0.024)
average parental education of peers	-0.049***	(0.020)
average parental income of peers	-0.000	(0.000)
No of observations	2,960	
R^2	0.175	

*** p<0.001, **p<0.05, *p<0.10, rob s.e. clustered at school level

Cross sectional weights used

F test of excluded instruments: F(7,95)=24.11, Prob>F=0.000

Table A6. Full Specification (2nd Stage)-Different peer group

	Coefficient	Std. Error
% peers living with parents	0.204**	(0.101)
Gender	-0.027	(0.034)
Age	-0.063***	(0.021)
African American	0.035	(0.046)
Hispanic	0.032	(0.044)
Other race	0.020	(0.068)
Single	0.278***	(0.054)
Employed	-0.128**	(0.055)
Single*employed	0.190***	(0.063)
College	-0.082***	(0.024)
Housework	-0.036***	(0.013)
Well with parent	0.009	(0.037)
Parental Education	-0.037***	(0.012)
Parental Income	-0.0004**	(0.0002)
No of observations	2,960	
R^2	0.178	

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

Cross sectional weights used

Table A7. Full Specification (Dynamic model)-Nominated friends

	Coefficient	Std. Error
% peers living with parents	0.076***	(0.026)
Gender	-0.024	(0.029)
Age	-0.040***	(0.009)
African American	0.031	(0.055)
Hispanic	0.043	(0.037)
Other race	0.141***	(0.053)
Single	0.240***	(0.057)
Employed	-0.012**	(0.051)
Single*employed	0.152**	(0.063)
College	-0.083***	(0.025)
Housework	-0.042***	(0.015)
Well with parent	0.047*	(0.027)
Parental Education	-0.020	(0.012)
Parental Income	-0.0004*	(0.0002)
No of observations	2,792	
R^2	0.231	

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

Cross sectional weights used