Examining the Relationship Between Child Well-Being and Transitions in the Presence of Parents or a Parent's Cohabiting Partner

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Abstract

Past research has linked family structure transitions to negative child outcomes, but studying the relationship between these topics has been complicated by selection and endogeneity issues. For example, poverty has been linked to both increased family instability and reduced child well-being. This study uses data from the 2018 Survey of Income and Program Participation to 1) address selection into family instability by estimating the propensity of children to experience a change in parental presence; and 2) analyze the relationship between parental transitions and child well-being. We study several child well-being outcomes: school engagement, participation in types of extracurricular activities, and health status. We identify a negative relationship between experiencing a transition in parental presence and participation in extracurricular activities. We also note contrasting effects of propensity score weights on our findings, indicating the relevance of incorporating them into future research of this sort.

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[2] This paper is released to inform interested parties of research and evaluation and to encourage discussion. The views expressed on statistical, measurement, or methodological issues are those of the authors and not necessarily those of the U.S. Census Bureau. All estimates in the paper are derived from public-use datasets.

Motivation

In prior research, family structure transitions have been linked to children experiencing behavior problems and decreased achievement (Magnuson and Berger 2009, Lee and McLanahan 2015). Family instability has also been tied to lower cognitive development (Lee and McLanahan 2015) and poorer health (Bzostek and Beck 2011). Indeed, the changes in resources, stress levels, roles, parenting behaviors, and familial relationships that accompany a change in household membership all affect children (Beck et al. 2010, Dunn 2004). However, the precise role of family instability in determining child well-being remains a subject of debate in the literature, with some studies failing to identify a clear link between the two (Waldfogel et al. 2010).

Research on family structure transitions and their effect on child outcomes is affected by selection, an issue that has been addressed directly in prior research (Lee and McLanahan 2015; Perkins 2019). Families have both measurable and non-measurable characteristics that may make them more likely to experience changes in household membership. For example, financial struggles due to poverty may lead to a couple splitting up, resulting in a child transitioning from living with two parents to living with one parent. So, poverty could be considered a selecting factor into family transitions. However, some factors that trigger transitions, such as poverty, may also trigger negative child outcomes, such as decreased school engagement, participation in fewer extracurricular activities, or poorer health. For this reason, it can be difficult to establish a causal relationship between a child experiencing a transition and suffering a given negative outcome. While the actual transition in living arrangements may negatively affect the child's school engagement, limited family financial resources and parental conflict may also cause the child to be less engaged in school. Therefore, it is difficult to identify the specific effect of

transitions in children's living arrangements on their well-being using observational data, as the role of selection into transitions and the direction of the causal relationship can be difficult to identify.

While a relatively small proportion of children experience a change in the presence of parent(s) or a parent's partner in a given year (Scherer and Mayol-García 2020), prior research has shown that, by age 17, over one-third of children in the U.S. will have experienced a transition in parental presence (Perkins 2019). This research suggests that, while changes in parental presence may be relatively rare over short periods, a large segment of the child population is at risk of experiencing this type of change before turning 18. Compared to other developed countries, the United States has some of the highest rates of union formation and dissolution (by marriage, divorce, or cohabitation), which in turn leads to high levels of household instability among U.S. children (Cherlin 2009). Consequently, many studies focus on household instability among children in the United States. An analysis that uses the propensity to experience a transition rather than just observed transitions allows for the consideration of outcomes for all children, including children who have yet to experience a transition but are likely to do so, as well as children who have not and will not experience a transition but are similar in their characteristics to children who will. Propensity score analysis, a method developed several decades ago that is increasingly being used in family research, helps account for selection into instability and can offer a clearer picture of the effect that transitions have on children's well-being.

In this paper, we use data from the 2018 Survey of Income and Program Participation (SIPP) to examine the relationship between transitions in the presence of parent(s) or a parent's cohabiting partner and various child well-being outcomes. Building on our past work (Scherer

and Mayol-García 2020), we first generate propensity scores to measure children's likelihood of experiencing a transition. Then, we adjust for confounding by calculating propensity score weights of experiencing a transition from the propensity scores of each child. Having successfully assessed the propensity score weights for balance (see the "Background on Methods" section below), we then model the association between transitions and child well-being, applying the propensity score weights and controlling for other sociodemographic factors. We focus on the following measures of child well-being available in the SIPP in our analysis: 1) school engagement; 2) participation in types of extracurricular activities; and 3) health status.

Data

The SIPP is a nationally representative panel survey administered by the U.S. Census Bureau that collects information on a variety of socioeconomic characteristics of the civilian, non-institutionalized population of the United States living in households. Since 2014, each SIPP panel includes about 45,000 households and follows individuals over four years, collecting monthly data for the previous calendar year that can be used to measure changes in household and family composition and economic circumstances over time. This study uses 2018 SIPP public use data, for which the reference period is calendar year 2017.[3] Although past research has historically used several years of data, we intentionally use only one year of the SIPP data to evaluate the usefulness of month-level information in the reference period to study transitions and their connection to child well-being outcomes.

[3] Statistics from surveys are subject to sampling and nonsampling error. For further information on the source of the data and accuracy of the estimates, including standard errors and confidence intervals, see < http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements.html>.

Data regarding transitions

The SIPP is a particularly powerful data source for studying relationships and household membership. The SIPP collects a variety of household relationship information, including a) the relationship of each household member to a reference person (typically the first person listed as the owner or renter of the housing unit) at the time of interview; b) parent identifiers at interview month, as well as the type of relationship between each child and any parent(s), whether biological, step, or adoptive; c) cohabiting partner identifiers; d) monthly residence history; and e) fertility history. This information is used to generate a matrix of how each household member is related to every other person present in the household at every month of the reference period. We use this information to develop indicators for the presence and type of coresident parents at each month, as well as the presence or absence of a parent's cohabiting partner.

For this paper, we generate a dichotomous variable indicating whether a child experienced at least one transition in the presence or absence of parent(s) or a parent's partner during the reference year, following the approach used in our earlier work (Scherer and Mayol-García 2020). We define a transition as: 1) a change in the number of coresident parent(s) between consecutive months – for example, children live with their biological mother in September, and then with their biological mother and stepfather in October; 2) a change in the identity of the parent(s) between consecutive months -- for example, children live with their biological mother in May, and then with their biological father in June; or 3) a change in the presence of a parent's cohabiting partner who is not directly identified as the child's parent between consecutive months -- for example, children live with their biological mother in November, and then with their biological mother and her boyfriend in December. Although a parent's cohabiting boyfriend or girlfriend could be considered an additional parental figure,

their entry or departure as household members has been linked to increased family instability and poorer outcomes for children (Brown 2006; Raley and Wildsmith 2004).

The unweighted sample of children experiencing transitions used in our analysis is relatively small, in part because our research does not directly consider changes in the presence of household members other than parent(s) or parent's partners (such as grandparents, nonrelatives, etc.) that have been included in other research on this topic (Perkins 2017; Perkins 2019). Nonetheless, we benefit from the fact that the SIPP publishes nationally representative information regarding children's living arrangements at the monthly level, as described above, meaning that we are able to account for changes at a more granular level than in previous research. Additionally, the SIPP collects information regarding 'Type 2' individuals – people who were present for some months of the reference period, but were not present in the household at the time of the interview. When these individuals are parents of school-age children or cohabiting partners of children's parents, transitions in their presence between months are also captured in our analysis.

Sample

The population of interest in this study is children between the ages of 0-17 years old, who make up an unweighted total of 14,211 children in SIPP 2018 data. However, universe differences lead to variation in the totals included for the analysis of child well-being outcomes. For health status, we include all individuals less than 18 years old at the time of interview. Meanwhile, for school engagement and extracurricular activities, the main analysis group is individuals ages 6 to 17 at the time of interview. A small number of individuals (253 cases) are out of universe for these two topics because they turned age six between the reference month of

December in the SIPP and the time of interview. An additional 67 individuals not enrolled in school are excluded from the school engagement analyses.

Data regarding child well-being

The SIPP collects data from a 'reference parent'[4] regarding a variety of well-being measures for children, which we use to create indicators for the outcomes of interest for our analysis. We include our chosen outcomes of interest (school engagement, participation in extracurricular activities, and health status) because they deal with topics that are commonly studied when evaluating children's circumstances. While other well-being outcomes, such as low academic performance, would be worthy topics of study and could be linked to transitions in parental presence, these data are not collected in the SIPP in such a way that they would only reflect children's current performance (i.e., their performance following a transition), meaning that they cannot be included in our analysis, which relies on one year of data.

Regarding school engagement, we generate a sum of responses to the following questions. 1) "Does the child care about school?" 2) "Does the child only do schoolwork when forced?" 3) "Does the child do just enough to get by in school?" and 4) "Does the child do homework?" Each of these questions has answer choices of 1) all of the time; 2) most of the time; 3) some of the time; or 4) none of the time. We reverse the order of the answer categories where appropriate to construct the index so that higher values indicate higher school engagement and lower values correspond to lower school engagement. The index ranges from 0 to 12. A score of 0 indicates that a child cares about school none of the time, does homework none of the

[4] The reference parent is usually the mother of the child. When the child does not live with a mother, then the father receives these questions regarding the child. When neither parent coresides with the child, the householder is the reference parent.

time, does just enough to get by all of the time, and does schoolwork only when forced all of the time. Meanwhile, a score of 12 indicates that a child cares about school all of the time, does homework all of the time, does just enough to get by none of the time, and does schoolwork only when forced none of the time.

Turning to level of participation by types of extracurricular activities, we generate a count using responses to the following yes/no questions. 1) "Does the child play on a sports team in or out of school?" 2) "Does the child take lessons after school (music, dance, language, etc.)? " 3) "Does the child participate in any clubs or organizations after school or on the weekends?" The count ranges from 0 to 3 to indicate how many of these three questions received responses of 'yes.' Children may participate in multiple activities within a specified extracurricular category but will only be counted once for that given category. For example, a child may play soccer and baseball but will be classified as only participating in one type of activity: sports.

Finally, for health status, we generate a binary indicator based on whether the child's health is reported as 1) excellent, very good, or good; or 2) fair or poor.[5] For individuals ages 0 to 14, parents report on children's health; while for teenagers ages 15 to 17, health status may be self-reported or determined via a proxy response from someone else in the household.

Other Data

We include a variety of child-level, householder-level and household-level covariates in the models used in different stages of our analysis. These are detailed in the model descriptions in the subsequent sections.

[5] This classification follows OECD 2020 health statistics guidelines: OECD. (2020). OECD Health Statistics 2020 Definitions, Sources and Methods: Perceived health status by age and gender. Available at https://stats.oecd.org/fileview2.aspx?IDFile=b5ada8c0-1093-4e1a-a9b7-09ad357dd7bf

Background on Methods

Complex topics such as family instability cannot be easily modelled to predict child well-being because other factors, such as financial instability, may be associated with both family instability and child well-being (Lee and McLanahan 2015; Perkins 2019). Rosenbaum and Rubin (1983) proposed propensity scores as a tool for addressing bias due to observed covariates. In other words, they describe a methodology to account for selection and endogeneity when confounding factors may cause both the treatment and the outcome. Simply put, propensity scores allow researchers to predict outcomes among people with similar characteristics, even if they did not go through the same treatment, event, or experience. These people are considered a control group, whereas individuals who actually experienced the event are the treatment group.

Lanza, Moore, and Butera (2013) identify the steps needed to use propensity scores in social science research, which we mention here briefly. Propensity scores are the result of a logistic or probit regression model estimating the probability of experiencing a specific event or situation (treatment) after considering several covariates. Propensity score models typically include covariates that predict both the treatment (transitions) and outcome (child well-being measures), as well as variables specifically connected to the treatment (transitions) in order to most effectively control for selection. The propensity scores are then transformed via one of the following methods: weighting, matching, or subclassification (categories). Lanza et al. (2013) call this step "adjusting for confounders" because the use of propensity scores, in any of the three ways mentioned above, includes the effect of confounder variables, like poverty, that cause both the treatment and the outcome. The next step, assessing balance, is key to ensuring high-quality propensity scores are used in the ensuing analyses. The specific way to assess balance depends on the adjustment method selected, as noted above. In general, assessing balance involves

conducting different types of sensitivity analyses that help evaluate the quality of the transformed propensity scores. If balance is not achieved, then the preceding steps (the original regression model estimating propensity scores and/or the adjustment) may need to be repeated with modifications. Finally, after balance is achieved, researchers may estimate and analyze the effect of the propensity score-adjusted treatment on the outcomes of interest.

Applying propensity score techniques remains relatively new in family instability research. Some researchers have applied this methodology to study the connections between parental dissolution and adolescent educational outcomes (Frisco, Muller, and Frank 2007) or parental migration and obesity among Mexican-origin children (Van Hook, Baker, Altman, and Frisco 2012).

Analytic Approach

This section details the steps we take to answer our main research questions: 1) how are transitions in the presence of parent(s) or a parent's partner associated with child well-being after accounting for selection; and 2) does propensity score analysis provide advantages for conducting this type of research? We accomplish this by estimating the probabilities all children have of experiencing a transition in the presence of parent(s) or a parent's partner by relying on information from a "treatment group" (children with at least one transition) and a "control group" (children with no transitions). Data manipulation and modeling rely on SAS software and procedures.

First, we identify how many children have experienced a transition in the presence of their parent(s) or a parent's cohabiting partner during calendar year 2017 by relying on the SIPP monthly relationship data (see explanation above).

Second, we calculate propensity scores. In other words, we estimate the probability that each child experienced a transition via a logistic regression, considering similarities across child, household, and householder characteristics. We include child-, householder-, and household-level variables in the propensity model based on previous research on household instability (Lee and McLanahan 2015; Perkins 2019). Child-level characteristics include sex and whether the householder is the child's parent. Householder-level characteristics include age, sex, race and Hispanic origin (non-Hispanic White alone, non-Hispanic Black alone, non-Hispanic Other race, and Hispanic), nativity, educational attainment (no high school diploma or GED equivalent, high school graduate, some college, and bachelor's degree or higher), work status (no hours worked, worked part-time, worked full-time), and marital status (married spouse present, never married, other). Household-level characteristics include region in the U.S. (Northeast, Midwest, South, West), tenure (owned, rented, or other), poverty status (in poverty, near poverty, not in poverty), and household size. Poverty status is calculated by comparing the household's monthly income and against the federal poverty level, as determined based on household size -- those with a ratio under 1.0 are considered 'in poverty', while those with a ratio between 1.0 and 1.25 are considered 'near poverty,' and those with a ratio greater than 1.25 are considered 'not in poverty.' To leverage the monthly data available in the SIPP, some of the characteristics mentioned above (householder characteristics: age, work status, and marital status; household characteristics: region, tenure, poverty, and household size) correspond to the earliest month that the person is present in the sample (i.e., prior to the child experiencing a transition) in order to capture their role in shaping children's selection into experiencing a transition.

By including covariates of transitions in parental presence and child well-being, the propensity scores help reduce bias due to selection and endogeneity. The result is overlapping

distributions of propensity score estimates between treatment groups. For example, there are some children who did not experience a transition but will have a high transition propensity score, and there will also be some children who did experience a transition but have a low propensity score. The estimation of propensity scores includes survey weights and replicate weights to adjust the standard errors for clustering and sampling.

Third, we use the propensity scores to adjust for confounding. We make use of propensity score (inverse probability) weighting, since this option allows us to retain the full sample of children for the subsequent analyses (Lanza, Moore, and Butera 2013; Rosenbaum and Rubin 1984). We use average treatment effect (ATE) weights generated from the propensity scores, rather than average treatment among the treated (ATT) weights, due to our interest in determining what difference in child well-being outcome would be observed if all children in our study had a transition, compared to if none of them had transitions. In other words, the ATE is "the population-level average effect of the treatment on the outcome" (Lanza, Moore, and Butera 2013:3). The calculation of the ATE weight follows: if the child had a transition, then the ATE = 1 / (probability of a transition); if the child had no transitions, then the ATE = 1 / (1 – probability of a transition). We explored using propensity score categories, but were unable to achieve balance across variables and therefore did not move forward with this method. Because matching, the third method of adjustment identified in the literature, involves dropping unmatched cases from further analyses, we do not employ this method to avoid reducing our sample size.

Next, we assess the propensities and resulting weights for balance (or quality) by conducting additional tests. In the context of inverse probability of treatment weighting (IPTW), these tests involve ensuring that the standardized mean difference for each variable between the

treatment and control groups following the application of the propensity score model is less than 0.2 (Lanza, Moore, and Butera 2013).

Finally, we apply the propensity weights, along with select covariates used in prior research (Lanza, Moore, and Butera 2013; Van Hook, Baker, Altman, and Frisco 2012), to estimate child well-being outcomes and analyze the modeling results. We use different types of regression modeling depending on the outcome of interest. For the binary outcome (health status), logistic regression is appropriate. Outcomes that are counts, like the number of types of extracurricular activities in which children participated, are modelled via a Poisson regression. School engagement, measured as an index, is modelled using an OLS regression.

Our analyses across models focus on the independent variable of interest -- experiencing a transition in parental presence. Additionally, we offer comparisons between 1) models including ATE weighting and a basic set of covariates (child's sex, age, and race and Hispanic origin; householder's educational attainment; and household poverty status); 2) models excluding ATE weighting and using the more limited set of covariates included in the ATE weighted model; and 3) models excluding ATE weighting but incorporating a more comprehensive set of covariates, including those that would otherwise have been used in generating the propensity scores.[6] This approach allows us to assess the added effect of including propensity score weighting as part of the modeling.

[6] The specific variables included in Model 3 are: child characteristics (transitions, age at the time of interview, sex, race and Hispanic origin, whether the householder is child's parent), householder characteristics (age, sex, foreign-born, educational attainment, work status, marital status), and household characteristics (region, tenure, poverty status, and household size).

Results

Descriptive Statistics

Table 1 presents descriptive statistics for children ages 0 to 17 in the 2018 SIPP sample. Roughly 2.9 percent of children experienced a transition during the prior calendar year. Turning to the various child well-being outcomes of interest, 97.6 percent of children ages 0 to 17 have excellent, very good, or good health. On the scale outlined in the section on child well-being data, children's average level of school engagement is 9.4. Figure 1 shows the percent distribution of children across the school engagement measure, which highlights that a high proportion (34.3 percent) of children have very high school engagement. Children participate in an average of 1.0 type of extracurricular activities, with 39.9 percent participating in zero extracurricular activities, 32.0 percent participating in one type of extracurricular activity, 19.2 percent in two types of extracurricular activities and 8.9 percent participating in all three types of extracurricular activities collected in the SIPP (Figure 2). Overall, 40.0 percent of children practice sports, 30.3 percent take lessons and 26.9 percent participate in clubs (Appendix A).

Looking at other key sociodemographic indicators, 55.0 percent of children live in a household with a White, non-Hispanic householder, while 13.4 percent live with a Black, non-Hispanic householder, 8.7 percent live with a non-Hispanic householder of some other race, and 22.8 percent live with a Hispanic householder (of any race). Turning to educational attainment, 12.7 percent of children live with a householder without a high school diploma or GED equivalent. Roughly 23.3 percent of children live with a householder who is a high school graduate, while 28.2 percent have attended some college or have an associate degree, and 35.8 percent have a bachelor's degree or higher. Regarding poverty, which is linked to transitions as well as child well-being (Laughlin 2014), about three-quarters (76.6 percent) of children live in

households that are not in poverty, about five percent live in near poverty (income-to-poverty ratios between 1.0 and 1.25, as defined above), and 18.4 percent live in poverty. All comparative statements in this study have undergone statistical testing, and, unless otherwise noted, all comparisons are statistically significant at the five percent significance level.

Propensity Score Model Results

Table 2 displays the results of the logistic regression used to model the propensity to experience a transition among all children, which incorporates a variety of covariates relevant to family instability and child well-being.[7]

The results identify a number of indicators that are significantly related to the propensity to experience a transition. Children of the householder have an odds of experiencing a transition in parental presence that is 54 percent lower than children in other types of living arrangements. The marital status of the householder is also relevant -- children living with divorced, separated, or widowed householders have an odds of experiencing a transition that is about 2.8 times higher than children of married, spouse present householders. Living in poverty is another key indicator. The odds of experiencing a transition is about 2.4 times higher among children in households that are poor at the first month they are present in the sample than children not living in poverty at their first month in the sample. Living in larger households is also associated with a 20 percent lower odds of experiencing a transition.[8]

[7] While we initially considered including a binary indicator of whether a child lived with a Type 2 person as an independent variable in this model, we do not include this variable in the final propensity score model due to overspecification. All 2018 SIPP interviews were Wave 1 interviews. As a result, for children who lived with at least one parent during the reference period and did not live with that parent(s) at the time of interview, that non-interviewed parent(s) would by definition be a Type 2 parent. As a result, the definition of a Type 2 person and the definition of a transition overlap too heavily for the presence of a Type 2 person to be included separately in the modeling. Furthermore, Type 2 people are already included in the transitions and household size measures.

[8] While this last finding may sound a bit counterintuitive, there are multiple possible explanations. First, when the respondent does not know with whom else the person being reported on lived, the SIPP editing procedure assigns

Assessing Balance

Using the ATE weights derived from the above modeling in the final child well-being models requires "the achievement of balance" (Lanza, Moore, and Butera 2013) between the treated (children with transitions) and non-treated (children without transitions) groups. As discussed above, this is best evaluated by ensuring that the standardized mean differences between the two groups do not exceed an absolute value of 0.2. The results of this evaluation are presented in Table 3. In the unweighted data, a number of variables, including but not limited to nativity, tenure, and household size, have standardized mean differences greater than or equal to 0.2. These variables are the ones for which it is most critical to control when estimating propensity scores in the logistic model presented above. However, after applying the ATE weights derived from the propensity score modeling, there are no standardized mean differences between the treatment and control groups that exceed 0.2. Given these findings, we can conclude that the weighting is effective in addressing the differences between the treatment and control groups, and that balance has been achieved.

Child Well-Being Models

Table 4 presents modeled estimates for each of the outcomes of interest – school engagement, health status, and participation in types of extracurricular activities. As explained above, three models are presented for each outcome – a model using the ATE weights and a basic set of covariates (child's sex, age, and race and Hispanic origin; householder's educational attainment; and household poverty status), a model without ATE weights using the same basic

people as living alone during the early months of the reference period ; therefore, there could be a slight bias in early months toward smaller household size. Second, few children in large households (households with 8 or more people) experienced a transition.

set of covariates, and a model without ATE weights using a more comprehensive set of covariates, incorporating those included in the initial propensity score model. To simplify the table for readability, only the coefficients for the transition variable are presented in Table 4.[9] Full model output including coefficients for all covariates included in each model can be found in Appendix B and Appendix C. Due to the inclusion of the CLASS statement in OLS and Poisson modeling in SAS, the coefficients shown for school engagement and extracurricular activities are estimates of the reference group -- children who did not experience a transition. However, we discuss the model results from the perspective of children with transitions.

The first outcome of interest is school engagement. For this outcome, although the size of the transitions estimate varies across models, none of the three models identifies a statistically significant relationship between experiencing a transition and levels of school engagement. Additional analyses (not included in this paper) indicate that the distribution of school engagement index scores does not vary substantially between those children who experienced a transition and those who did not.

The next outcome of interest is health status. As was the case with school engagement, for health status, none of the three model specifications identifies a statistically significant relationship between experiencing a transition and health status. Additionally, the coefficients vary across models.

The final outcome of interest is participation in type of extracurricular activities. For this outcome, results differed across the three models. While the non-ATE-weighted model with the full set of variables (Model 3) does not identify a significant relationship between experiencing a

[9] None of the coefficients shown in Table 4 statistically differ from each other across Models 1, 2 and 3 at the 95 percent level for the corresponding child well-being outcomes.

transition and child well-being, the non-ATE weighted model involving the more limited set of variables (Model 2) and the ATE-weighted model (Model 1) both identify a significant relationship. Models 1 and 2 indicate that not experiencing a transition in parental presence is linked to increased participation in extracurriculars. After accounting for selection into transitions (Model 1), experiencing a transition is associated with children participating in about 0.2 fewer types of extracurricular activities than children with no transitions. Furthermore, Model 1 has a p-value less than 0.001, while Model 2 has a p-value of 0.048. In other words, accounting for selection into experiencing a transition increases our confidence that transitions indeed are important in shaping children's participation in extracurricular activities.

Discussion

The findings highlighted in the results above have a number of notable implications. We find significant relationships between experiencing a transition and participation in extracurricular activities. Children who experienced a transition in the presence of parent(s) or a parent's partner were less likely to participate in a variety of extracurricular activities than their counterparts who did not experience a transition, as expected. Although participating in few extracurricular activities overall is not necessarily a negative outcome, i.e. children may be completely happy just playing sports, our results show that if children had not experienced transitions they would have likely participated in more types of extracurricular activities. These findings align with prior research indicating that family instability has an impact on child well-being outcomes (Magnuson and Berger 2009; Laughlin 2014; Lee and McLanahan 2015). Specifically, family structure transitions have been linked to less participation in sports and lessons among older children, suggesting that age may be an important factor to explore further (Laughlin 2014).

Multiple factors might explain the lack of a significant relationship between experiencing a transition and children's health. First, about 98 percent of children were in 'excellent,' 'very good,' or 'good' health. This lack of variability in the outcome variable (in addition to the relatively small number of children experiencing a transition) could explain the lack of significance we observe. Additionally, past research has used the health of parent(s) as a predictor when conducting analyses of children's health (Bzostek and Beck 2011; Van Hook, Baker, Altman, and Frisco 2012). In this paper, we included the same control variables across all child well-being models for consistency across models.

Insignificant results for school engagement also contrast with prior research, which has found associations between changes in household structure and educational outcomes among children (Perkins 2019). It is possible that the time between experiencing a transition and answering questions about school engagement (one calendar year) is too short to identify a significant difference for this particular outcome.

Notably, many prior studies have used year-on-year changes in parental presence when conducting their analyses (Beck et al. 2010; Dunn 2004). By contrast, we observe some significant relationships to child well-being using just one year of month-to-month changes in the SIPP data. This result underscores the usefulness of the monthly data available in the SIPP for studying household structure and child outcomes. Many more children will experience a transition at some point during their childhoods, thereby reinforcing the significance of these relationships.

Finally, the disparate findings across models for a given outcome are notable, and indicate the value of applying propensity score methodology to social science analyses of this sort. The ATE weights increased our certainty of the relationship between experiencing a

transition and participation in extracurricular activities. Given the varied impact of the ATE weights on the coefficients of interest, it appears that, as expected, selection is important; that is, factors that trigger transitions may also trigger negative child outcomes such as participating in fewer types of extracurricular activities. Based on these findings, we can surmise that we are doing a better job of controlling for these other factors and identifying a more accurate relationship between experiencing a transition and these outcomes of interest by incorporating propensity score weights into our analysis.

Limitations/Next Steps

While our research raises notable findings, a number of limitations restrict the scope of the conclusions that we are able to draw from our analyses. First, our definition of a transition solely focuses on changes in the presence of parent(s) or a parent's partner. However, any change in household structure can shape children's well-being outcomes (Lee and McLanahan 2015; Perkins 2019). For example, Perkins (2019) notes differential effects on children's educational attainment when considering separately changes in the presence of parents only, changes in the presence of nonparents only, and changes including both parents and nonparents. Additionally, household structure and the types of changes children experience vary greatly by race and Hispanic origin. For example, changes in the presence of nonparent relatives are more common among Black and Hispanic children (Raley, Weiss, Reynolds, et al. 2019).

Furthermore, we are limited by the fact that our measurement of transitions is based on self-reporting at a monthly level. As a result, it is likely that some changes in parental presence experienced by children in our sample may not be captured by our analysis or in the SIPP data. Children who regularly change their living arrangements with their parents (such as children who split defined increments of time between their mother's house and their father's house) may be

particularly unlikely to be captured by our measure but could still be vulnerable to some of the same child well-being outcomes. Similarly, our definition of a transition does not encapsulate changes in residence in which children continued to live with the same parent(s). Another type of transition that has been linked with child well-being outcomes is changes in parental employment. Transitions in parental presence may also overlap with changes in residence or changes in parental work status that shape children's life experiences in significant ways (Laughlin 2014), but they are not included in our analysis. Additionally, transitions that occurred prior to 2017 are not captured in this study, yet these experiences may be shaping children's well-being in the current study.

A number of additional steps would allow us to better understand the nature of the causal mechanism at play in these relationships. Regarding the existing models, further refinement, such as using a multinomial logistic regression for predicting health status or adjusting the way in which responses for this variable are grouped, could reveal a relationship not identified by our model. Regarding selection more broadly, it is possible that the selection issue centers on the parents involved, rather than whether the children experience a transition in parental presence. In other words, parents who move in and out of living with their children may also be more likely to, for example, raise children with poorer health. Reverse causality may also be a factor that could be explored further. Child well-being may cause transitions in parental presence, for example a child with poor health may motivate cohabiting partners to move in together. Including multiple years of data on these children, once available, will allow us to better evaluate causal impacts, since the twelve-month time frame may be too short for the effects of transitions to fully manifest themselves. This may also permit the analysis of other types of outcomes like low academic performance (i.e. whether a child has ever been expelled, been suspended, or

repeated a grade). Also, exploration of propensity score matching as a method of analysis may yield important results, particularly when using additional years of data. Finally, future research could explore transitions experienced by children involving individuals other than parent(s) or a parent's partner.

Conclusion

Overall, our findings indicate that experiencing a transition in parental presence during childhood matters and has a negative effect on a child's well-being. Specifically, participation in extracurricular activities is related to transitions in parental presence, even when using one year of monthly SIPP data. Furthermore, our research demonstrates that making use of propensity scores does have an impact on analyses of family instability and child well-being by accounting for selection issues. For these reasons, in addition to our specific findings and their implications, the analytic approach modeled in this paper merits consideration for future social science research, particularly for analyses involving family instability and child well-being.

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Table 1. Descriptive statistics for children, householders and households, SIPP 2018

Characteristic	Percent	Standard error
Child characteristics		
Female	48.8	0.10
Age (mean in years)	8.8	0.03
White alone, non-Hispanic	50.7	0.79
Black alone, non-Hispanic	13.4	0.17
Other race, non-Hispanic	10.7	0.19
Hispanic (of any race)	25.2	0.62
Householder is child's parent	87.7	0.40
Experienced a transition	2.9	0.28
Health status	97.6	0.15
School engagement level (mean) [4]	9.4	0.03
Participation in extracurricular activities (mean) [3]	1.0	0.01
Householder characteristics		
Female	55.7	0.68
Age (mean in years) [1]	40.2	0.13
White alone, non-Hispanic	55.0	0.80
Black alone, non-Hispanic	13.4	0.22
Other race, non-Hispanic	8.7	0.28
Hispanic (of any race)	22.8	0.62
Foreign-born	24.1	0.70
Less than high school	12.7	0.43
High school graduate	23.3	0.54
Some college	28.2	0.67
Bachelor's degree or higher	35.8	0.66
No hours worked [1]	24.7	0.60
Worked part-time [1]	12.4	0.44
Worked full-time [1]	62.8	0.70
Married [1]	65.7	0.64
Never married [1]	15.4	0.45
Other marital status [1]	18.9	0.49
Household characteristics [1]		
Northeast region	15.7	0.48
Midwest region	21.2	0.26
South region	38.8	0.32
West region	24.3	0.16
Household owned	59.0	0.87
Household rented or other	40.9	0.75
In poverty [2]	18.4	0.77
Near poverty [2]	5.0	0.31
Not in poverty [2]	76.6	0.80
Household size (mean)	4.5	0.02
Total (Unweighted frequency)	14,211	

Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, public use data.
1 At first month of the reference period
2 Poverty status was calculated from the monthly household income-to-poverty ratio: in poverty – ratio less than 1.0, near poverty – ratio between 1 and 1.25, not in poverty – ratio is greater than 1.25.
3 Unweighted frequency for this item is 9,694 in-universe children between the ages of 6-17, includes not enrolled in school.
4 Unweighted frequency for this item is 9,627 in-universe children between the ages of 6-17, excludes not enrolled in school.

Table 2. Logistic regression model results predicting propensity scores of children experiencing a transition

Characteristic	Unstandardized regression coefficients	Standard errors	Odds Ratio
Intercept	-1.60	0.56 **	
Child characteristics			
Female (Ref. Male)	0.06	0.10	1.06
Householder is child's parent (Ref. Householder is not child's parent)	-0.79	0.22 ***	0.46
Householder characteristics			
Female (Ref. Male)	-0.08	0.16	0.92
Black alone, non-Hispanic (Ref. White alone, non-Hispanic)	-0.27	0.25	0.76
Other race, non Hispanic	0.32	0.31	1.38
Hispanic (of any race)	-0.25	0.27	0.78
Age [1]	-0.02	0.01 *	0.98
Foreign-born (Ref. Native-born)	-0.44	0.26	0.64
Less than high school (Ref. Bachelor's degree or higher)	-0.63	0.32 *	0.53
High school graduate	-0.16	0.26	0.86
Some college	0.01	0.22	1.01
No hours worked (Ref. Worked full-time) [1]	0.09	0.21	1.10
Worked part-time [1]	-0.02	0.26	0.98
Never married (Ref. Married) [1]	0.43	0.25	1.54
Other marital status [1]	1.02	0.22 ***	2.77
Household characteristics			
Northeast region (Ref. South) [1]	-0.02	0.24	0.98
Midwest region [1]	-0.16	0.20	0.85
West region [1]	-0.22	0.20	0.80
Rented or other (Ref. Owned) [1]	0.14	0.21	1.15
In poverty (Ref. Not in poverty) [1,2]	0.87	0.22 ***	2.38
Near poverty [1,2]	0.67	0.30 *	1.96
Household size [1,2]	-0.23	0.07 ***	0.80
Observations (Unweighted)	14,211		
-2 Log L	17,492,462		

Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, public use data.

Note: Statistical significance *p < .05; **p < .01; ***p < .001

1 At first month of the reference period.

2 Poverty status was calculated from the monthly household income-to-poverty ratio: in poverty – ratio less than 1.0, near poverty – ratio between 1 and 1.25, not in poverty – ratio is greater than 1.25.

Table 3. Distributions by transitions and standardized mean differences

Characteristic	No transition		Transition		Standardized mean difference	Standardized mean difference (with ATE weight)
	Mean	Standard Deviation	Mean	Standard Deviation		
Child characteristics						
Female	0.49	0.50	0.50	0.50	0.03	-0.00
Householder is child's parent	0.87	0.33	0.78	0.41	-0.22 [a]	-0.01
Householder characteristics						
Female	0.56	0.50	0.63	0.48	0.16	0.04
White alone, non-Hispanic	0.54	0.50	0.55	0.50	0.03	-0.00
Black alone, non-Hispanic	0.12	0.33	0.16	0.37	0.11	0.02
Other race, non-Hispanic	0.08	0.28	0.10	0.30	0.04	-0.04
Hispanic (of any race)	0.25	0.43	0.19	0.39	-0.16	-0.00
Age [1]	40.21	10.51	39.49	12.12	-0.06	-0.00
Foreign-born	0.25	0.43	0.15	0.35	-0.30 [a]	-0.03
Less than high school	0.14	0.35	0.11	0.31	-0.11	0.02
High school graduate	0.24	0.43	0.28	0.45	0.10	-0.01
Some college	0.28	0.45	0.35	0.48	0.15	0.00
Bachelor's degree or higher	0.34	0.47	0.26	0.44	-0.18	-0.01
No hours worked [1]	0.25	0.43	0.34	0.47	0.19	0.00
Worked part-time [1]	0.13	0.33	0.13	0.34	0.01	0.02
Worked full-time [1]	0.62	0.48	0.53	0.50	-0.19	-0.02
Never married [1]	0.15	0.36	0.23	0.42	0.19	0.01
Married [1]	0.66	0.47	0.36	0.48	-0.61 [a]	-0.01
Other marital status [1]	0.19	0.39	0.40	0.49	0.44 [a]	0.00
Household characteristics						
Northeast region [1]	0.14	0.35	0.15	0.35	0.00	0.01
Midwest region [1]	0.21	0.40	0.20	0.40	-0.01	-0.03
South region [1]	0.39	0.49	0.46	0.50	0.13	0.02
West region [1]	0.26	0.44	0.20	0.40	-0.16	-0.00
Owned [1]	0.60	0.49	0.46	0.50	-0.28 [a]	-0.02
Rented or other [1]	0.40	0.49	0.53	0.50	0.26 [a]	0.01
In poverty [1,2]	0.19	0.39	0.38	0.48	0.38 [a]	-0.00
Near poverty [1,2]	0.05	0.22	0.08	0.27	0.09	-0.00
Not in poverty [1,2]	0.76	0.43	0.55	0.50	-0.42 [a]	0.01
Household size [1]	4.62	1.58	4.03	1.66	-0.36 [a]	0.02
Frequency	13,785		426		14,211	14,211

Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, public use data.

Note: Unweighted means and frequencies.

a standardized mean differences are larger than +/-0.2.

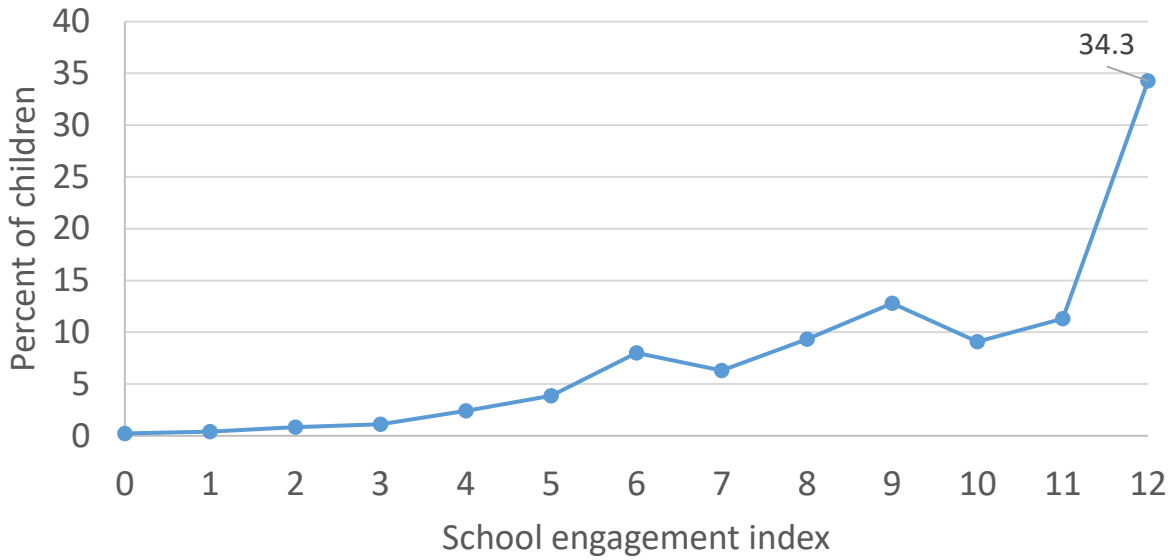
1 At first month of the reference period.

2 Poverty status was calculated from the monthly household income-to-poverty ratio: in poverty – ratio less than 1.0, near poverty – ratio between 1 and 1.25, not in poverty – ratio is greater than 1.25.

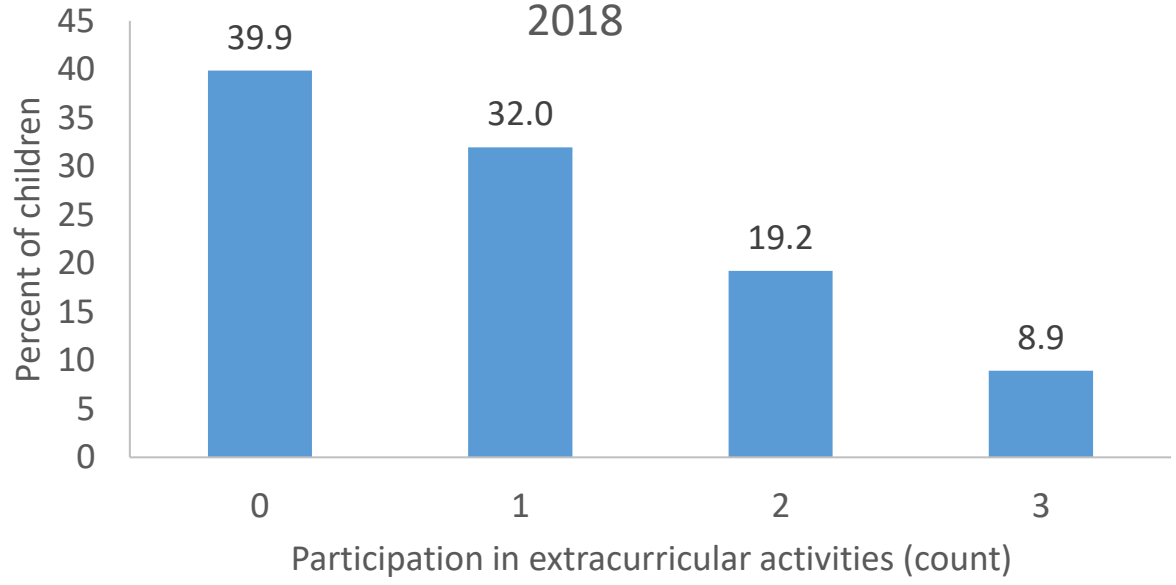
Table 4. Child well-being regression models and results for transitions in parental presence

Child well-being outcome	Frequency (Unweighted)	Estimate	Standard error		Odds Ratio
School engagement (OLS regression)					
1-with ATE weight and with basic variables	9,627	0.41	0.21		
2-no ATE weight with basic variables	9,627	0.12	0.16		
3-no ATE weight with full variables	9,627	0.04	0.17		
Good health (Logistic regression)					
1-with ATE weight and with basic variables	14,211	-0.52	0.36		0.59
2-no ATE weight with basic variables	14,211	-0.02	0.32		0.98
3-no ATE weight with full variables	14,211	0.02	0.32		1.02
Extracurricular activities (Poisson regression)					
1-with ATE weight and with basic variables	9,694	0.17	0.02	***	
2-no ATE weight with basic variables	9,694	0.13	0.07	*	
3-no ATE weight with full variables	9,694	0.10	0.07		

Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, public use data.
Notes: Statistical significance *p < .05; **p < .01; ***p < .001
Basic variables include transitions, child's age at the time of interview, child's sex, child's race and Hispanic origin, householder's educational attainment, and household poverty status.
Full variables include child characteristics (transitions, age at the time of interview, sex, race and Hispanic origin, householder is child's parent), householder characteristics (age, sex, foreign-born, educational attainment, work status, marital status) and household characteristics (region, tenure, poverty status, and household size).



Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, public use data.



Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, public use data.

Appendix A. Child well-being outcome input descriptive statistics, SIPP 2018

School engagement (6-17 years old) [1]	All of the time	Most of the time	Some of the time	None of the time
Only does schoolwork when forced	12.4	11.5	23.0	53.2
Standard error	0.41	0.40	0.49	0.64
Does enough to get by	12.3	11.1	21.0	55.6
Standard error	0.48	0.40	0.54	0.68
Cares about school	61.9	26.0	10.5	1.6
Standard error	0.61	0.53	0.34	0.14
Does homework	71.0	19.2	7.2	2.6
Standard error	0.54	0.52	0.30	0.20

Extracurricular activities (6-17 years old) [2]	Percent	Standard error
Sport	40.0	0.66
Lessons	30.3	0.59
Club	26.9	0.63

Health status (0-17 years old) [3]	Percent	Standard error
Excellent	62.5	0.59
Very good	24.1	0.49
Good	11.1	0.36
Fair	1.9	0.14
Poor	0.5	0.06

Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, public use data.

1 Unweighted total is 9,627 in-universe children between the ages of 6-17, excludes not enrolled in school.

2 Unweighted total is 9,694 in-universe children between the ages of 6-17, includes not enrolled in school.

3 Unweighted total is 14,211 children between the ages of 0-17.

Appendix B. Logistic regression model results predicting child well-being outcomes: Health status

Child well-being outcome	Health status					
Model	1-ATE weight, basic variables		2-No ATE, basic variables		3- No ATE, full variables	
Characteristic	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	4.53	0.77 ***	4.26	0.18 ***	5.25	0.45 ***
Child characteristics						
Transitions	-0.52	0.36	-0.02	0.32	0.02	0.32
Age	-0.09	0.06	-0.04	0.01 ***	-0.04	0.01 ***
Female (Ref. Male)	0.72	0.43	0.48	0.11 ***	0.48	0.11 ***
Black alone, non-Hispanic (Ref. White alone, non-Hispanic)	-0.49	0.62	-0.24	0.17	-0.09	0.17
Other race, non Hispanic	0.74	0.41	0.43	0.24	0.41	0.25
Hispanic (of any race)	-0.54	0.40	0.08	0.14	0.00	0.17
Householder is child's parent (Ref. Householder is not child's parent)					-0.10	0.19
Householder characteristics						
Female (Ref. Male)					0.15	0.13
Age [1]					-0.00	0.01
Foreign-born (Ref. Native-born)					0.24	0.16
Less than high school (Ref. Bachelor's degree or higher)	-1.47	0.57 **	-0.62	0.19 **	-0.37	0.20
High school graduate	0.54	0.54	-0.27	0.17	-0.01	0.17
Some college	0.22	0.59	-0.40	0.16 *	-0.18	0.16
No hours worked (Ref. Worked full-time) [1]					-0.46	0.14 **
Worked part-time [1]					-0.28	0.18
Never married (Ref. Married) [1]					-0.49	0.17 **
Other marital status [1]					-0.32	0.15 *
Household characteristics						
Northeast region (Ref. South) [1]					-0.20	0.17
Midwest region [1]					-0.33	0.15 *
West region [1]					-0.14	0.15
Rented or other (Ref. Owned) [1]					-0.50	0.13 ***
In poverty (Ref. Not in poverty) [1,2]	0.93	0.42 *	-0.40	0.14 **	-0.02	0.15
Near poverty [1,2]	1.23	0.81	0.05	0.26	0.23	0.26
Household size [1,2]					-0.08	0.03 *
Observations (Unweighted)	14,211		14,211		14,211	
-2 Log L	7,831		3,102		3,052	

Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, Public Use data.

Note: Statistical significance *p < .05; **p < .01; ***p < .001

1 At first month of the reference period.

2 Poverty status was calculated from the monthly household income-to-poverty ratio: in poverty – ratio less than 1.0, near poverty – ratio between 1 and 1.25, not in poverty – ratio is greater than 1.25.

Appendix C. OLS and Poisson regression models results predicting child well-being outcomes: School engagement and participation in extracurricular activities 3

Child well-being outcome	School engagement level (OLS regression)						Participation in extracurricular activities (Poisson)					
Model	1		2		3		1		2		3	
Characteristic	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Intercept	7.44	0.77 ***	8.60	0.27 ***	8.49	0.36 ***	-2.75	0.07 ***	-2.41	0.12 ***	-1.52	0.15 ***
Child characteristics												
Transitions	0.41	0.21	0.12	0.16	0.04	0.17	0.17	0.02 ***	0.13	0.07 *	0.10	0.07
Age	0.02	0.03	0.00	0.01	-0.00	0.01	0.02	0.00 ***	0.01	0.00 **	0.01	0.00 *
Female (Ref. Male)	-0.99	0.23 ***	-0.80	0.05 ***	-0.81	0.05 ***	-0.02	0.02	-0.07	0.02 ***	-0.07	0.02 **
Black alone, non-Hispanic												
(Ref. White alone, non-Hispanic)	0.65	0.34	-0.14	0.09	-0.22	0.09 *	0.53	0.03 ***	0.20	0.04 ***	0.06	0.04
Other race, non Hispanic	0.84	0.30 **	0.01	0.09	0.11	0.10	0.20	0.03 ***	0.12	0.04 ***	0.05	0.04
Hispanic (of any race)	0.03	0.29	-0.31	0.07 ***	-0.23	0.08 **	0.13	0.02 ***	0.21	0.03 ***	0.13	0.03 ***
Householder is child's parent												
(Ref. Householder is not child's parent)					-0.15	0.11					-0.12	0.05 **
Householder characteristics												
Female (Ref. Male)					0.21	0.06 ***					-0.06	0.02 **
Age [1]					-0.00	0.00					-0.00	0.00
Foreign-born (Ref. Native-born)					-0.30	0.07 ***					0.07	0.03 *
Less than high school												
(Ref. Bachelor's degree or higher)	0.94	0.48 *	0.55	0.09 ***	0.53	0.10 ***	0.91	0.03 ***	0.75	0.04 ***	0.59	0.05 ***
High school graduate	0.28	0.27	0.51	0.07 ***	0.42	0.08 ***	0.44	0.02 ***	0.58	0.03 ***	0.48	0.03 ***
Some college	0.17	0.30	0.44	0.07 ***	0.33	0.07 ***	0.16	0.02 ***	0.25	0.03 ***	0.20	0.03 ***
No hours worked (Ref. Worked full-time) [1]					-0.04	0.07					-0.00	0.03
Worked part-time [1]					0.10	0.09					-0.02	0.03
Never married (Ref. Married) [1]					0.19	0.09 *					0.26	0.04 ***
Other marital status [1]					0.13	0.08					0.20	0.03 ***
Household characteristics												
Northeast region (Ref. South) [1]					-0.01	0.08					-0.10	0.03 **
Midwest region [1]					0.22	0.07 **					-0.16	0.03 ***
West region [1]					0.14	0.07 *					-0.08	0.03 **
Rented or other (Ref. Owned) [1]					0.23	0.06 ***					0.17	0.03 ***
In poverty (Ref. Not in poverty) [1,2]	-0.49	0.24 *	0.09	0.07	-0.03	0.08	0.15	0.02 ***	0.25	0.03 ***	0.16	0.04 ***
Near poverty [1,2]	-0.18	0.40	0.24	0.12	0.18	0.12	0.15	0.04 ***	0.21	0.06 ***	0.14	0.06 *
Household size [1,2]					-0.02	0.02					-0.07	0.01 ***
Observations (Unweighted)	9,627		9,627		9,627		9,694		9,694		9,694	
R-square	0.07		0.03		0.04							
Root MSE	2.65		2.59		2.58							
Log Likelihood							-19,442		-9,109		-8,987	

Source: U.S. Census Bureau, 2018 Survey of Income and Program Participation, Public Use data.

Note: Statistical significance *p < .05; **p < .01; ***p < .001

1 At first month of the reference period.

2 Poverty status was calculated from the monthly household income-to-poverty ratio: in poverty – ratio less than 1.0, near poverty – ratio between 1 and 1.25, not in poverty – ratio is greater than 1.25.

3 Note that results in this table are for the reference group due to SAS output procedures for OLS and Poisson modeling.