Cross-national variation in poverty by family structure

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Our goal in this paper is to extend cross-national comparative research on the relationship between family structure and child poverty by addressing the following three research questions: (1) To what extent do cross-national differences in child poverty rates reflect differences in family composition? (2) To what extent is the relatively high level of child poverty in the U.S. due to children’s longer cumulative exposure to unpartnered-mother family structure? (3) To what extent is the relatively high level of child poverty in the U.S. due to the concentration of unpartnered-mother families (and family instability) among the least-educated mothers? These questions are motivated by evidence of high rates of child poverty and socioeconomic inequality in the U.S. (OECD 2014), prior research and our own work documenting the relatively long childhood exposure to unpartnered-mother families in the U.S. (Andersson 2002; Carlson et al. 2014), and life course theories about the importance of cumulative exposure for later-life outcomes (Elder 1994).

To this end, we use comparable survey data from 13 industrialized countries and employ standardization techniques to compare observed levels of child poverty rates with counterfactual levels constructed by using the family structure composition and relationships between family structure and poverty in the U.S. as the standard. In this extended abstract, we first provide a brief background, summarizing the research that motivates this study. We then describe our data and analytic methods.

**Background**

Levels of child poverty vary substantially across developed countries. Among OECD countries the proportion of children living in households below the relative poverty line (50% of median household income) range from 4% in Denmark to 29% in Israel (OECD 2014). The U.S. figure of 21% is well above the OECD average of 13%. Childhood poverty is the focus of extensive
research and is a high-profile policy target. Countless studies have linked child poverty, especially persistent poverty, to lower levels of well-being and attainment in adolescence and adulthood (Edin and Kissane 2010, Brooks-Gunn and Duncan 1997). Variation in levels of child poverty across countries has been linked to differences in policy, (especially those related to income redistribution), differences in labor markets, (especially those related to income inequality and unemployment), and demographic factors (especially those related to family structure). Scholars focusing on family structure emphasize differences in the prevalence of single-parent families and the relatively high level of poverty among single-parent families (especially single-mother families) in some countries. Because poverty is relatively high among single-mother families across industrialized countries (Misra, Moller and Budig 2007), it is posited that cross-national differences in the prevalence of single-parent families should explain some of the observed country differences in levels of child poverty. However, previous studies consistently find that the role of family structure is limited.

For example, Gornick and Jäntti (2012) used data from the Luxembourg Income Study to decompose child poverty rates in 20 high- and medium-income countries into the contribution of family structure distributions and the levels of poverty associated with different family structures. They found that family structure plays only a modest role in explaining cross-national differences in child poverty. Similarly, Heuveline and Weinshenker (2008) find that, although children in single-mother households in the U.S. are more likely to be poor than in other countries, demographic characteristics explain only a small proportion of the high poverty rates in the U.S., and they conclude that differences in the labor market and welfare policies are more important. Other studies have come to similar conclusions (e.g., Bradbury and Jäntti 1999; Chen and Corak 2008; Rainwater and Smeeding 2003).
In this paper, we extend these earlier comparative studies in two ways: (a) by moving beyond point-in-time measures of family structure to construct childhood histories of exposure to unpartnered-parent households, and (b) by focusing on cross-national differences in the degree to which unpartnered-parent households are concentrated at the lower end of the educational distribution. The first extension is an important contribution in that it recognizes the importance of cumulative exposure to disadvantage and family instability. Comparisons of family structure at a single point in time (i.e., concurrent with the measurement of household income/poverty) obscure the pathway taken into that family structure. For example, consider two societies in which the cross-sectional prevalence of unpartnered-mother families is the same but the duration of residence in unpartnered-mother families in longer in one than in the other. In this case, we would expect the association between unpartnered-family structure and poverty to be stronger in the former society, while family structure per se would explain none of the difference in poverty (by definition). Evidence that children in the U.S. are more likely than their counterparts in other wealthy countries to spend more time living with an unpartnered mother (Andersson 2002; Carlson et al. 2014; Heuveline, Timberlake, and Furstenberg 2003) suggests that cumulative exposure may play a role in explaining the relatively high levels of child poverty in the U.S.

The second extension is an important contribution in that it recognizes cross-national differences in the socioeconomic composition of unpartnered-mother families. Again, consider two societies in which the cross-sectional prevalence of unpartnered-mother families is the same and thus cannot explain any of the observed differences in child-poverty. If unpartnered-mother families are equally common across the educational distribution in one country but heavily concentrated among the least educated in the other, we would expect that this compositional difference would explain part of the stronger association between unpartnered-mother families
and poverty in the latter society. Single parenthood is associated with lower education in all industrialized countries (McLanahan 2004), but this relationship is particularly pronounced in the U.S. (Ellwood and Jencks 2004), suggesting that it may contribute to the relatively high levels of child poverty in the U.S.

Data

We use data from thirteen industrialized countries: Australia, Austria, Belgium, Bulgaria, Estonia, France, Hungary, Japan, Lithuania, Poland, Romania, Russia, and the U.S. For the majority of these countries, data come from the first round of the UN Generations and Gender Surveys (GGS) conducted between 2003 and 2005. Data for Japan come from the 2011, 2012, and 2014 rounds of the National Survey of Households with Children, and data from the U.S. come from the 2006-2008 rounds of the National Survey of Family Growth. Each of the surveys we use contains information on the number and age of children in the household, household income and total household size, parents’ union history, and parents’ educational attainment. From these data, we are able to construct measures of household structure and household poverty status at the time of the survey and measures of children’s cumulative exposure to a single-parent household.

We begin by limiting our focus to respondents with at least one coresident child under the age of 18 and construct a measure of family structure at the time of the survey, distinguishing unpartnered-mother families from two-biological parent families, and mother-stepfather families. We then construct a measure of relative household poverty for each respondent, defining poverty as equivalent household income (total household income divided by the square root of household size) that falls below one-half of the within-sample median. While not precisely a measure of poverty, this use of within-sample relative income allows us to measure economic disadvantage
consistently across surveys characterized by different sampling frames and different methods of ascertaining information about household income. After expanding the data by creating one record for each coresident child under the age of 18 reported by the respondent, we use information on the respondent’s union history to calculate the proportion of years that each child lived in each of the three family structures. This is the same procedure used by Carlson et al. (2014) in their comparative analysis of children’s family structure histories. These measures, along with mother’s educational attainment, allow us evaluate the extent to which cross-national differences in childhood poverty reflect composition (i.e., current family structure, cumulative exposure to different family structures, and number of family structure transitions) and family structure-specific levels of poverty. We conduct these analyses in two stages.

**Method**

In the first stage, we use conventional standardization techniques to compare observed country-specific child poverty rates with counterfactual rates constructed using the U.S. as the standard. This allows us to ask how much of the gap between child poverty rates in the U.S. and other industrialized societies is due to differences in family structure (measured concurrently with poverty at the time of the survey as in previous research) and how much is due to differences in family structure-specific levels of poverty. The equation for this exercise can be written as:

\[
\frac{P_j}{N_j} = \frac{P_{uj} + P_{bj} + P_{sj}}{N_j} = \left[ \frac{P_{uj} N_{uj}}{N_j} \right] + \left[ \frac{P_{bj} N_{bj}}{N_j} \right] + \left[ \frac{P_{sj} N_{sj}}{N_j} \right]
\]

(1)

where \( P_j \) is the number of children in poverty in country \( j \), \( N_j \) is the total number of children in sample for country \( j \), and \( P(N)_{xj} (x = u, b, s) \) are the corresponding numbers for children living with unpartnered mothers, two-biological parents, and mother and stepfather, respectively.

By replacing the values of \( \frac{P_{sj}}{N_{sj}} \) for each country with the corresponding values for the U.S., we can see what the child-specific poverty rates in each country would be if all countries had the
same family structure-specific poverty rates as the U.S. Similarly, by replacing the values of $\frac{N_{xj}}{N_j}$ for each country with the corresponding values for the U.S., we can see what the child-specific poverty rates in each country would be if all countries had the same family structure distribution as the U.S. This exercise provides an initial descriptive view of the relative importance of family composition and group-specific poverty rates in explaining the relatively high level of child poverty in the U.S. Based on the results of Heuveline and Weinshenker (2008) and Gornick and Jäntti (2012), we expect the latter to be more important than the former.

In the second stage, we use regression standardization techniques to conduct similar counterfactual analyses that incorporate information on both the cumulative exposure to different family structures and the number of family structure transitions experienced. These analyses are based on country-specific logistic regression models for the probability that a given child is in poverty at the time of the survey. The basic equation is specified as follows:

$$
\ln \left( \frac{p_{ij}}{1-p_{ij}} \right) = \alpha + \beta_{1i}U_i + \beta_{2i}S_i + \beta_{3i}U^*_i + \beta_{4i}S^*_i + \beta_{5i}Z_i
$$

(2)

where $p_{ij}$ is the probability that child $i$ in country $j$ is in poverty, $U$ and $S$ are dichotomous indicators of residence in an unpartnered-mother family and step-family at the time of the survey (two-biological parent family is the reference family structure), $U^*$ and $S^*$ are the cumulative proportion of childhood spent in an unpartnered-mother family and a step-family, and $Z$ is a vector of other characteristics including child’s age, mother’s age, and mother’s educational attainment.

Because these regression models are country-specific, it is straightforward to calculate counterfactual values for each country by sequentially replacing mean values of current living arrangements, cumulative family structure exposure, and number of family transitions with the corresponding values observed in the U.S. data. These counterfactual child-poverty probabilities
allow for an assessment of the importance of both current and cumulative compositional differences. Similarly, calculating counterfactual probabilities of poverty by replacing values of $\beta_k$ ($k = 1-4$) with corresponding values from the U.S. model allows for an assessment of the importance of cross-country differences in the relationship between family structure and poverty.

The ability to evaluate the role of differences in cumulative family exposure is a significant extension of existing cross-national research on the link between family structure and poverty. Our working hypothesis is that greater family instability and longer exposure to unpartnered-mother families will partially explain the relatively high child poverty rate in the U.S. We also expect that the relatively high U.S. child poverty rate is partially due to the concentration of family instability and unpartnered-mother families among the least-educated mothers. We assess this possibility by re-estimating equation 2 with interactions between mother’s educational attainment and the five measures of family structure ($U$, $S$, $U^*$, and $S^*$) and conducting the same regression standardization exercise to evaluate the role of both composition and the association between family structure (by educational attainment) and poverty.

To our knowledge, these analyses will be the first to consider the role of cumulative exposure to unpartnered-mother families in shaping cross-national differences in child poverty. They will also be the first to consider the potential role of differences in the socioeconomic composition of unpartnered-mother families. It is clear that family structure per se does not explain much of the observed differences in child poverty, but this will be the first effort to evaluate the extent to which cross-national differences in the composition of unpartnered-mother families contribute to differences in the association between family structure and poverty (differences that have typically been attributed to variation in policy or labor market circumstances).
Preliminary Results

For illustrative purposes, we present results based on data from two of the thirteen countries that we will examine. Descriptive data for the U.S. and Japan in Table 1 show that the proportion of children living in the bottom quartile of the within-sample income distribution is higher in the U.S. (.20) than in Japan (.12). While these are not actually measures of poverty (given the nature of the sampling frames), these numbers are very similar to the childhood poverty rates provided by OECD. We also see that the prevalence of unpartnered mother families is much higher in the U.S. (.29) than in Japan (.09), that the proportion of childhood spent in an unpartnered mother family is higher in the U.S. (.31 vs. .11), and that mothers’ education is much lower in the U.S. (.22 vs. .05 mothers have less than a high school education).

Table 2 summarizes the results of four standardization models. The first model is the simple standardization exercise represented by equation (1) above in which we ask what proportion of Japanese children would be in the lowest income quartile if Japan had the same family structure distribution (at the time of the survey) as the U.S. The standardized proportion poor in Japan is .18, indicating that nearly all of the observed difference in childhood poverty across the two countries is due to the much higher prevalence of unpartnered mother families in the U.S. This is perhaps not surprising given that single-mother households in Japan have a very high poverty rate (Shirahase and Raymo 2014) but are far less prevalent than in the U.S. This result is replicated in the first regression standardization model (represented by equation (2) above). Subsequent regression standardization (lines 3 and 4) do not differ from the first (line 2), indicating that differences in childhood exposure to different family structures and the concentration of lower educational attainment among unpartnered mothers in the U.S. do not contribute to the observed differences in childhood poverty across the two countries. Subsequent
analyses will indicate whether these factors are more relevant for understanding the high level of childhood poverty in the U.S. relative to the Western and Eastern European countries we examine.
References


### Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>U.S.</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion poor at time of survey</td>
<td>0.20</td>
<td>0.12</td>
</tr>
<tr>
<td>Family structure at time of survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-parent family</td>
<td>0.61</td>
<td>0.87</td>
</tr>
<tr>
<td>Unpartnered mother family</td>
<td>0.29</td>
<td>0.09</td>
</tr>
<tr>
<td>Step-family</td>
<td>0.10</td>
<td>0.04</td>
</tr>
<tr>
<td>Proportion of childhood in each family structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-parent family</td>
<td>0.62</td>
<td>0.85</td>
</tr>
<tr>
<td>Unpartnered mother family</td>
<td>0.31</td>
<td>0.11</td>
</tr>
<tr>
<td>Step-family</td>
<td>0.07</td>
<td>0.04</td>
</tr>
<tr>
<td>Mothers' educational attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>0.22</td>
<td>0.05</td>
</tr>
<tr>
<td>High school/some college</td>
<td>0.52</td>
<td>0.53</td>
</tr>
<tr>
<td>College or more</td>
<td>0.26</td>
<td>0.43</td>
</tr>
</tbody>
</table>

### Table 2: Observed and standardized proportion of children poor in Japan (U.S. as standard)

<table>
<thead>
<tr>
<th>Standardization procedure</th>
<th>U.S.</th>
<th>Japan</th>
<th>Ratio (U/J)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed proportion poor</td>
<td>0.20</td>
<td>0.12</td>
<td>1.67</td>
</tr>
<tr>
<td>1: Standardized proportion poor (U.S. family structure)</td>
<td>0.20</td>
<td>0.18</td>
<td>1.11</td>
</tr>
<tr>
<td>2: Regression standardization (U.S. family structure)</td>
<td>0.20</td>
<td>0.18</td>
<td>1.11</td>
</tr>
<tr>
<td>3: Regression standardization (U.S. family structure &amp; family history)</td>
<td>0.21</td>
<td>0.18</td>
<td>1.17</td>
</tr>
<tr>
<td>4: Regression standardization (U.S. family structure, U.S. family history, and U.S. maternal education)</td>
<td>0.21</td>
<td>0.18</td>
<td>1.17</td>
</tr>
</tbody>
</table>