The Effects of Unilateral Divorce Laws on Noncognitive Skills

Iryna Hayduk
Kristin J. Kleinjans

September 2022
The Long-Term Effects of Unilateral Divorce Laws on Noncognitive Skills

Iryna Hayduk
College of Business
Clayton State University
Morrow, GA, 30260-0285, United States
ihayduk@clayton.edu

Kristin J. Kleinjans *
Department of Economics, College of Business and Economics
California State University, Fullerton
Fullerton, CA, 92834-6843, United States
kkleinjans@fullerton.edu; https://orcid.org/0000-0003-0255-8246

Abstract: This paper provides the first causal evidence on the effect of a change in divorce laws on noncognitive skills in adulthood. We exploit state-cohort variation in the adoption of unilateral divorce laws in the U.S. to assess whether children exposed to this law have different noncognitive skills in adulthood compared to those never exposed or exposed as adults. Using data from the National Survey of Midlife Development in the U.S. (MIDUS) and employing the staggered difference-in-differences identification strategy developed by Callaway and Sant’Anna, we show that divorce reform had a detrimental long-term effect on the conscientiousness of those who were exposed as children. For women but not for men the negative effects are partially driven by changes in monetary and non-monetary parental inputs.

Keywords: noncognitive skills; unilateral divorce laws; conscientiousness; parenting style; MIDUS

JEL Classifications: J12, J13, J24, K36

This study uses the restricted data available from the Institute on Aging at the University of Wisconsin-Madison.

Acknowledgments

We are grateful to Pedro Sant’Anna and Fernando Rios-Avila for helping us implement their estimator, and to Daniel Hamermesh and Justin Wolfers for helpful comments on an earlier version of this paper.

* Corresponding author.
1 Introduction

Noncognitive skills are important determinants of economic outcomes (Lindqvist and Vestman 2011). Children’s skill development is affected by their family environment (e.g., Akee et al. 2018; Peter and Spiess 2016), but much less is known about the long-term persistence of these effects.¹ To fill this gap, we use the exogenous change in the probability and difficulty of divorce resulting from the adoption of unilateral (no-fault) divorce laws in U.S. states to identify the causal effect of a change in family environment on noncognitive skills in adulthood. Unilateral divorce laws enable people to leave the marriage without the consent of their spouse (Reinhold, Kneip, and Bauer 2013). As many as thirty states have shifted to this divorce regime over the last decades, with the overwhelming majority of changes implemented in the 1970s (Gruber 2004).

The switch to unilateral divorce laws may have affected children’s noncognitive skills by initially increasing divorce rates and by reducing marriage-specific investments (Wolfers 2006; Stevenson 2007). Especially likely to be impacted by these laws are those noncognitive skills whose formation is most dependent on parental attention and resources. In this study, we focus on the noncognitive skill of conscientiousness, which is likely to be affected by the quantity and quality of parental inputs and the stability of the home environment (Eisenberg et al. 2014). It is also an important predictor of economic outcomes. Higher levels of conscientiousness have been linked to higher income, higher job status, and higher job satisfaction (Judge et al. 1999), as well as better health (see, e.g., Roberts et al. 2011).

¹ Recent work by Schurer and coauthors is the exception. Fletcher and Schurer (2017) show that parental maltreatment and neglect are associated with lower noncognitive skills at age 30. Elkins and Schurer (2020) find that fathers’ but not mothers’ engagement positively affects their children’s locus of control in adulthood.
To estimate the causal effect of the childhood exposure to unilateral divorce laws on conscientiousness in adulthood, we utilize data from the National Survey of Midlife Development in the U.S. (MIDUS) and employ the novel staggered differences-in-differences methodology developed by Callaway and Sant’Anna (2021) that in contrast to the conventional difference-in-differences approach exploits only the relevant variation in treatment timing. We find evidence of adverse long-term effects of divorce reform on the conscientiousness of women and men who were children after unilateral divorce became legal.

2 Divorce Laws and Noncognitive Skills

There are two possible pathways by which the noncognitive skills of adults who were exposed to unilateral divorce laws as children could have been affected.

First, permitting divorce without the need for both partners to consent may have increased the likelihood of parental divorce during childhood and adolescence. There is evidence for such an effect, at least initially (Kneip et al. 2014; Wolfers 2006), though its size is sensitive to model specification (Lee and Solon 2011). Children with divorced parents have lower social and emotional well-being (Amato 2005), which could be the result of the divorce itself or because of its correlation with unobserved family characteristics. Social and emotional well-being is closely related to noncognitive skills, which might explain why the adverse effects of divorce reach into adulthood (Gruber 2004).

Divorced fathers spend significantly less time with their children, even in recent cohorts (Hamermesh 2021). Spending time with fathers is important for children’s cognitive skill acquisition (Amato 2005; Del Boca et al. 2014), and likely noncognitive skill formation as well. For example, father absence lowers educational achievement and increases children’s behavioral
problems (McLanahan et al. 2013). Moreover, divorce reduces financial resources, resulting in increased likelihood of childhood disadvantage (Amato 2005). Economic and social disadvantage act as an early-life stressor while income transfers positively affect the emotional health and noncognitive skills of children and teenagers (Akee et al. 2018). And, lastly, divorced mothers work more, spend less time in home production, and are more stressed and less satisfied with their lives (Hamermesh 2021). This reduces the quality of maternal inputs and may partially explain their less effective parenting (Amato 2005).

Second, the switch to unilateral divorce laws may have changed intra-family behavior and selection into marriage. For example, these laws have reduced marriage-specific investments and increased mothers’ labor force participation (e. g., Stevenson 2007). They may have also decreased the quantity and quality of parental investment as a response to the decreased probability of marriage persistence (see also Reinhold et al. 2013), and thus negatively affected children’s noncognitive skill development. Unilateral divorce laws also shift intra-family bargaining. For example, Stevenson and Wolfers (2006) show that such laws reduce physical abuse in families. And, lastly, previous research suggests that the match quality of spouses increased in response to laws making it easier to divorce, at least in Europe (Kneip et al. 2014).

Due to data limitations, we are not able to explore whether the divorce reform increased actual divorces, and can thus not separately identify the effects of parental divorce and changed parental behaviors on conscientiousness. Understanding the impact of divorce laws on affected offspring is, however, an important first step in the assessment of the impact of these laws and the resulting changes in family environment on children’s noncognitive outcomes.
3 Data

We draw survey data from the restricted version of the 1995 MIDUS, a nationally representative survey of the adult population aged 25 to 75, and data on unilateral divorce law adoption from Gruber (2004). The key advantage of MIDUS is that it contains noncognitive outcomes of a large number of cohorts covering a lengthy period of time as well as information on monetary and non-monetary parental inputs. These features of the data allow us to estimate the long-term impact of the divorce reform and assess the channels of this impact.

To construct a dataset linking the outcome in year $t$ to the law adoption information, we reshaped the data, generating repeated observations by individual across calendar years. Then, for each year between 1960 and 1980, we kept the respondents below age 18 who were potentially affected by the law. The sample span is dictated by the timing of laws and the number of available observations in each year. The resulting sample is composed of 8,238 repeated observations of men and 8,658 observations of women, with 16.9% of observations in the years following the divorce reform.

This sample transformation method enables the dataset to include the time variable that can be aligned with the policy variable, and therefore, fulfills the data requirement for the staggered difference-in-difference methodology. It also ensures that we compare the outcomes of respondents of the same ages both before and after the reform.

The dependent variable Conscientiousness combines such traits as being organized, responsible, and hardworking, and is constructed by utilizing factor analysis. Because noncognitive skills evolve in adulthood, we use an age-adjusted measure derived by regressing conscientiousness on the second-order age polynomial and its interactions with gender for the
control group before our study period, 1938-1960, and then use the predicted residuals from this regression to detrend, standardize, and center this measure. The resulting variable has a mean of zero and a variance of one.

To investigate potential mechanisms, we construct three parental input measures, coded as dummies. Raised in a Poor Family is equal to one if the family was on welfare and/ or had a below-average income. Maternal (Paternal) love and time is equal to one if the respondent received some or a lot of love from the mother (father) and/ or spent a lot or some time with the mother (father). The summary statistics for all variables are displayed in Table 1.

4 Empirical Approach

To assess the impact of unilateral divorce laws on conscientiousness, we exploit cross-state differences in the timing of the law adoption and the differential exposure across cohorts (see, e.g., Gruber 2004; Hoehn-Velasco and Silverio-Murillo 2020). We employ the staggered difference-in-differences methodology (Callaway and Sant’Anna 2021; Sant’Anna and Zhao 2020), which accounts for time variation in law adoption and allows for heterogenous effects by treatment period.2 We refrain from using the conventional difference-in-differences because it only distinguishes between treatment and control states and produces biased estimates when treatment occurs over multiple time periods (Borusyak, Jaravel, and Spiess 2022; Sun and Abraham 2021). Our estimation approach relies on the assumption that adopting and non-adopting states would follow the same trend in the outcomes in the absence of the reform.

---

2 We use the csdid command in Stata (Rios-Avila, Sant’Anna, and Callaway 2022).
We estimate the following model linking the *Conscientiousness* $C$ of individual $i$ from group $g$ (set of states that adopted the law in the same year) to the divorce reform:

$$C_{ig} = \alpha + \mu_t + \pi_g + \beta \text{Unilateral Divorce Law}_g + \theta X_{igt} + \epsilon_{igt}, \quad (1)$$

where *Unilateral Divorce Law*$_g$ is a time-invariant policy variable that denotes the year of the policy shift for adopting states and equals zero for non-adopting ones. The treatment is considered started when the calendar year in the time variable, $\mu_t$, matches the year of the reform in the *Unilateral Divorce Law*$_g$ variable. The year fixed-effects, $\mu$, control for the aggregate unobserved influences on personality that vary over time, and the group fixed-effects, $\pi_g$, capture the time-invariant unobserved group characteristics that might affect selection into treatment. Our coefficient of interest, $\beta$, measures the long-run effect of growing up in a state that legalized the unilateral divorce law. The vector of controls, $X_{igt}$, includes dummies for children’s age in year $t$ and sibling sex composition, which is an important determinant of noncognitive skills (Hayduk and Toussaint-Comeau 2022). We split the sample by gender because boys and girls respond differently to changes in family environment (Gill and Kleinjans 2020).

5 Results

Table 2 presents our main results for men (column 1) and women (column 3). Both men and women who were exposed to unilateral divorce laws in childhood report lower levels of conscientiousness in adulthood. The results are statistically and economically significant at -0.226 standard deviations for men and -0.165 standard deviations for women.\footnote{As shown in Table A.1, these results are robust to excluding the African-American respondents who tend to have a lower socio-economic status. They also are roughly consistent with the downward-biased conventional difference-in-differences estimates (see Table A.2).} As comparison,
the difference in conscientiousness in our sample between married and unmarried respondents is 0.113.

Figures 1 and 2 show the disaggregated pre- and post-reform effects for men and women, indicating that there are no differential trends in outcomes between adopting and non-adopting states in the pre-reform period. This supports the interpretation of our results that it was indeed the law change that caused the reduction in conscientiousness. While standard errors increase after the onset of the reform because of our sample composition, the overall trend is towards increasing effects with later exposure. This aligns with the interpretation that couples’ (married and unmarried) responses to the law change increased over time.

Columns (2) and (4) in Table 2 show the results when we control for parental inputs in childhood. Note that these controls take out the effect of the introduction of divorce laws on these three variables, including the fact that children whose parents divorced are more likely to grow up poor. It is nevertheless informative because it shows the effects on conscientiousness resulting from factors other than the effect of the law changes on these inputs. For these results, we find stronger gender differences. Adding parental inputs reduces the effect for both men and women, but only the women’s estimate becomes statistically insignificant. The effect on women’s conscientiousness is thus driven in big part by a higher probability of being poor after the law changes and/ or lower love and time from their parents. For men, we find only a small decrease in the coefficient of interest.

To investigate this further, we estimated the effects of the change in divorce laws on the probability of being raised in a poor family, maternal love and time, and paternal love and time, using otherwise the same empirical model. These results are shown in Table 3. For men (shown in Panel A), the exposure to unilateral divorce laws reduced their probability of growing up poor
by almost 11%-points. This is an intriguing finding given that parental divorce increases child poverty. It is possible that this is because fathers of boys in families at risk of being poor after a divorce (successfully) adapt their behavior to reduce the divorce risk. We are not able to explore this further due to data limitations, but it would be in line with findings that parents of boys are less likely to divorce, although this effect has not been consistently found and is the opposite in the Netherlands (see Kabátek and Ribar 2021). We further find that the policy shift increased paternal love and time. Again, it is possible that fathers’ behavior changed in response to a greater divorce risk. It is also possible that divorced fathers spend more time with their sons in order to compensate for the negative effect of growing up with divorced parents. This could be a response to sons’ greater vulnerability to family disadvantage (Lei and Lundberg 2020).

The results for women differ (see Table 3, Panel B). Women are 5.3%-points more likely to have grown up poor (19.3% change over baseline) and report lower love and time in childhood from both parents. Recall that the introduction of unilateral divorce laws increased female labor force participation (Stevenson 2007) and that divorced mothers work more and are more stressed and less satisfied with their lives (Hamermesh 2021). Hamermesh also finds that divorced mothers spend almost one hour less every day with their children compared to married mothers. It seems thus that, contrary to men, women experienced lower parental investments after divorce laws were changed, and that this contributed significantly to their lower conscientiousness reported in adulthood.

This leaves the question of why exposed men show lower levels of conscientiousness if this is not driven by reduced parental investments. Boys are more vulnerable to disadvantage (Lei and Lundberg 2020) and more affected by nontraditional family structures than girls

4 The literature on this is not in agreement, see Cheadle et al. (2010) for an overview.
(Bertrand and Pan 2013). It is thus well possible that while parental investment is counteracting some of the effects, it is not sufficient.

6 Conclusions

This paper uses the exogenous adoption of unilateral divorce laws to examine the causal link between family environment and noncognitive skills in adulthood. We use the staggered differences-in-difference design pioneered by Callaway and Sant’Anna (2021) that addresses the potential bias in results obtained from traditional difference-in-differences estimations. We find that being exposed to unilateral divorce laws in childhood results in lower levels of conscientiousness in adulthood. For women, a significant part of the effect can be explained by a higher probability of having grown up poor and reduced maternal and paternal inputs. In contrast, men’s stronger response is counteracted by increased resources and paternal inputs. Since noncognitive skills are predictive of an array of social and economic outcomes our results help explain why adverse effects of parental divorce persist into adulthood.

References


**TABLES**

**Table 1: Summary Statistics**

<table>
<thead>
<tr>
<th>Variables</th>
<th>All men Mean</th>
<th>All women Mean</th>
<th>Men Pre-reform Mean</th>
<th>Men Post-reform Mean</th>
<th>Women Pre-reform Mean</th>
<th>Women Post-reform Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conscientiousness</td>
<td>0.133</td>
<td>-0.127</td>
<td>0.114</td>
<td>0.227</td>
<td>-0.118</td>
<td>-0.169</td>
</tr>
<tr>
<td>Raised in a poor family</td>
<td>0.247</td>
<td>0.275</td>
<td>0.237</td>
<td>0.249</td>
<td>0.271</td>
<td>0.294</td>
</tr>
<tr>
<td>Maternal love and time</td>
<td>0.922</td>
<td>0.844</td>
<td>0.920</td>
<td>0.923</td>
<td>0.847</td>
<td>0.831</td>
</tr>
<tr>
<td>Paternal love and time</td>
<td>0.687</td>
<td>0.686</td>
<td>0.698</td>
<td>0.685</td>
<td>0.690</td>
<td>0.666</td>
</tr>
<tr>
<td>Has same-sex sibling</td>
<td>0.758</td>
<td>0.764</td>
<td>0.764</td>
<td>0.730</td>
<td>0.764</td>
<td>0.766</td>
</tr>
</tbody>
</table>

*Notes: Data refers to all MIDUS respondents who were 0-17 years old between 1960 and 1980.*
Table 2: The Effects of Unilateral Divorce Laws on Conscientiousness

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th></th>
<th>Women</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>+ Parental</td>
<td>Baseline</td>
<td>+ Parental</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>inputs</td>
<td>(2)</td>
<td>inputs</td>
</tr>
<tr>
<td>Unilateral divorce law</td>
<td>-0.226***</td>
<td>-0.186***</td>
<td>-0.165***</td>
<td>-0.089</td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
<td>(0.064)</td>
<td>(0.059)</td>
<td>(0.068)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>8,238</td>
<td>8,238</td>
<td>8,658</td>
<td>8,658</td>
</tr>
</tbody>
</table>

Notes: The estimated coefficients on the policy variable Unilateral divorce law are obtained using the staggered difference-in-differences methodology and interpreted as a standard-deviation change in conscientiousness. The baseline models (1) and (3) include year and group fixed effects as well as age dummies and an indicator for having same-sex siblings. In addition to these controls, columns (2) and (4) also account for poverty status in childhood, maternal love and time, and paternal love and time. Standard errors clustered at the state level are shown in parentheses. *** p < 0.01; ** p < 0.05; *p < 0.1.
Table 3: The Effects of Unilateral Divorce Laws on Parental Inputs

<table>
<thead>
<tr>
<th></th>
<th>Raised in Poor Family (1)</th>
<th>Maternal Love and Time (2)</th>
<th>Paternal Love and Time (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A: Men</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral divorce law</td>
<td>-0.107***</td>
<td>-0.023</td>
<td>0.056**</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td>(0.017)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>8,238</td>
<td>8,238</td>
<td>8,238</td>
</tr>
<tr>
<td>Sample mean</td>
<td>0.247</td>
<td>0.922</td>
<td>0.687</td>
</tr>
<tr>
<td><strong>Panel B: Women</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral divorce law</td>
<td>0.053**</td>
<td>-0.056***</td>
<td>-0.089***</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td>(0.021)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>8,658</td>
<td>8,658</td>
<td>8,658</td>
</tr>
<tr>
<td>Sample mean</td>
<td>0.274</td>
<td>0.844</td>
<td>0.686</td>
</tr>
</tbody>
</table>

Notes: The estimated coefficients on the policy variable Unilateral divorce law are obtained using the staggered difference-in-differences methodology and interpreted as a change in parental inputs. Each model includes year and group fixed effects as well as age dummies and an indicator for having same-sex siblings. Standard errors clustered at the state level are shown in parentheses. *** p < 0.01; ** p < 0.05; *p < 0.1.
Figure 1: Effect of Unilateral Divorce Laws on Conscientiousness by Time to Exposure, Men

Notes: The plotted coefficients were estimated using the staggered difference-in-differences identification strategy. The dependent variable is conscientiousness, and the model includes year and group fixed effects as well as age dummies and an indicator for having same-sex siblings. Standard errors are clustered at the state level.
Figure 2: Effect of Unilateral Divorce Laws on Conscientiousness by Time to Exposure, Women

Notes: The plotted coefficients were estimated using the staggered difference-in-differences identification strategy. The dependent variable is conscientiousness, and the model includes year and group fixed effects as well as age dummies and an indicator for having same-sex siblings. Standard errors are clustered at the state level.
Appendix

Table A.1: Robustness Check: The Effects of Unilateral Divorce Laws on Conscientiousness, Excluding African-American Respondents

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Unilateral divorce law</td>
<td>-0.193***</td>
<td>-0.148**</td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.070)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>7,778</td>
<td>7,725</td>
</tr>
</tbody>
</table>

Notes: The estimated coefficients on the policy variable Unilateral divorce law are obtained using the standard difference-in-differences methodology and interpreted as a standard-deviation change in conscientiousness. The models include year and group fixed effects as well as age dummies and an indicator for having same-sex siblings. Standard errors clustered at the state level are shown in parentheses. *** p < 0.01; ** p < 0.05; * p < 0.1.
Table A.2: The Effects of Unilateral Divorce Laws on Conscientiousness, Using Conventional Difference-in-Differences Methodology

<table>
<thead>
<tr>
<th></th>
<th>Men (1)</th>
<th>Women (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unilateral divorce law</strong></td>
<td>-0.121***</td>
<td>-0.112***</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.020)</td>
</tr>
<tr>
<td><strong>Number of observations</strong></td>
<td>8,238</td>
<td>8,658</td>
</tr>
</tbody>
</table>

**Notes:** The estimated coefficients on the policy variable Unilateral divorce law are obtained using the standard difference-in-differences methodology and interpreted as a standard-deviation change in conscientiousness. The models include year and group fixed effects as well as age dummies and an indicator for having same-sex siblings. Standard errors clustered at the state level are shown in parentheses. *** p < 0.01; ** p < 0.05; * p < 0.1.