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ORIGINAL RESEARCH

Does Ethnicity Moderate the Union Dissolution Penalty for Women? A Register-based Analysis of Changes in Income Components

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Abstract
Union dissolution has severe consequences for women's economic well-being. Theoretical work links these consequences to ethnic inequality. Ethnic groups vary in terms of separation rates, female employment, repartnering trajectories, kin support, and reliance on welfare benefits. The current study examines whether ethnicity moderates the dissolution penalty. To do so, the authors draw on register data, covering women from five major ethnic groups in the Netherlands: Dutch, Antillean, Surinamese, Moroccan, and Turkish. The authors describe women's income trajectories from 1 year before to 5 years after union dissolution. Using decomposition techniques, changes in household income are decomposed into changes in six underlying income sources (i.e., earnings, benefits, alimony, partner income, and coresident family income). The results show that ethnicity moderates the dissolution penalty and, especially, the contribution of the various income sources when recovering from dissolution.

Keywords Union dissolution · Ethnicity · Inequality · Income · Decomposition analysis · Longitudinal data

1 Introduction

Separation and divorce have serious consequences for women's economic well-being. Declines in household income range from 7 to 44% (Andreß et al., 2006; Bonnet et al., 2021; Holden & Smock, 1991), and as a result, many women fall

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below the poverty line (Thielemans & Mortelmans, 2022). Moreover, these declines typically last several years and are difficult to overcome without additional employment or a new partner (Jansen et al., 2009). Women's income declines contrast with men's, whose situation changes little or even improves somewhat after union dissolution (Leopold, 2018).

A growing literature links union dissolution to racial and ethnic inequality (Avellar & Smock, 2005; Burton et al., 2010; Conwell & Doren, 2021; McLanahan & Percheski, 2008; Wolfe & Thomeer, 2021). A central question in this literature concerns the opposition between cumulative disadvantage and resilience. On the one hand, dissolution may cause women with a disadvantaged background to fall further behind. Disadvantaged women face more employment precarity, unstable partner trajectories, and a social network with fewer financial resources (Blossfeld et al., 2005; Sharp et al., 2020; Song, 2022). On the other hand, exposure to disadvantage may foster structures of resilience. Disadvantaged women espouse more positive norms toward female breadwinning, are more firmly embedded in kinship networks that provide support, and can often fall back on welfare transfers (Bolzendahl & Myers, 2004; Brady & Burroway, 2012; Swartz, 2009).

Empirical evidence on the moderating role of race/ethnicity is limited. One longitudinal study of cohabitation breakups in the US found that Black women experienced smaller income declines than White women and that Hispanic women experienced larger income declines (Avellar & Smock, 2005). A cross-sectional study of recently separated mothers in the US found that Black mothers perceived their financial situation more positively than White mothers (McKelvey & McKenry, 2000). More research has been conducted on children. This research has found that parental separation has smaller effects on children in racial/ethnic minority groups than on children in the majority group (Amato & Keith, 1991; Brand et al., 2019; Cross, 2020; Dunifon & Kowaleski-Jones, 2002; Erman & Härkönen, 2017; Heard, 2007; Kalmijn, 2010; McLanahan & Bumpass, 1988; but see Sun & Li, 2007). In Europe, differences have also been found within the diverse minority population. Parental separation is less consequential for children of Caribbean, Latin American, and Sub-Saharan African ethnicity, where separation is more common, than for children of Middle Eastern or South Asian ethnicity, where separation is uncommon (Erman & Härkönen, 2017; Kalmijn, 2017).

The current study examines whether ethnicity moderates the economic consequences of union dissolution for women. To do so, we used longitudinal data from the Dutch registers. These data provide monthly information about women's pre-dissolution and post-dissolution income situations. Unique in the data is that detailed information is available about the sources of income, including employment, social security, alimony, new partners, coresident family members, and household members. By analyzing changes in these income components after separation in this paper, we obtain novel evidence on how differences between ethnic groups play a role in differential effects on women's income decline and recovery after separation. Our data comprised a random sample of women who separated from a heterosexual union, covering women from the majority population (Dutch ethnicity) and native-born women from the four largest migrant groups in the Netherlands (Antillean, Surinamese, Moroccan and Turkish). As is common in

the Netherlands, ethnicity was assessed using the parental country of birth since no self-reported ethnicity measures are available (Statistics Netherlands, 2021). Each of the four groups is characterized by its own cultural norms and structural position (Khoudja & Fleischmann, 2017; Kleinepier et al., 2018), allowing us to study the consequences of union dissolution across various degrees of disadvantage.

2 Background

Table 1 presents a stylized summary of the key differences between the five ethnic groups. The Antillean and Surinamese groups originate from the Caribbean region. Both the former Netherlands Antilles and Surinam used to be colonies of the Netherlands, with large migration flows to the Netherlands before and after gaining independence from the Netherlands. The Turkish and Moroccan groups were recruited to the Netherlands as labor migrants, especially during the 1970s. An important characteristic of these groups is that they practice Islam, with 94% of Moroccans and 86% of Turks self-identifying as Muslim (De Graaf et al., 2010). In the remainder of the text, we also use the terms Caribbean groups (Antilleans and Surinamese) and Muslim groups (Moroccan and Turkish).

The first and perhaps most interesting contrast between the groups lies in union dissolution itself. Dissolution and single parenthood are far more common in the Caribbean groups than in the majority group and the two Muslim groups (Kalmijn, 2018; Statistics Netherlands, 2018; see also Hannemann et al., 2020). Following the notion of institutionalization, the consequences of union dissolution should be less severe in contexts where dissolution is more common (Dronkers & Härkönen, 2008). The rationale is that, in such contexts, dissolution is less stigmatized, people can more easily rely on existing behavioral patterns to solve the social and practical problems connected to dissolution, and policy arrangements and care systems will become more adapted to the problems a dissolution poses (Lacey et al., 2012). Hence, we expect that the overall economic consequences of union dissolution are most severe in the two Muslim groups, intermediate in the Dutch group, and least severe in the two Caribbean groups (H1).

Another contrast lies in gender roles. Female labor force participation is highest in the two Caribbean groups and lowest in the Muslim groups. The Dutch group is in between, with the peculiarity that most Dutch women work part-time (Khoudja & Fleischmann, 2015). Labor force behavior appears to go in tandem with breadwinning norms. Men and women in the two Muslim groups have more traditional attitudes compared to the other groups, stemming from more orthodox religious beliefs (Kalmijn & Kraaykamp, 2018), and both women's own and their partner's traditional attitudes are negatively related to labor force participation (Khoudja & Fleischmann, 2017). However, parenting norms are similar across ethnic groups: women nearly always become the prime residential parent after a dissolution with children (Hogendoorn, 2023).

There are ethnic differences among men as well. Men in all ethnic minority groups, and especially those in the Muslim groups, are economically disadvantaged: they have higher unemployment rates, earn less, and enjoy a lower occupational

Table 1 Stylized overview of ethnic groups in the Netherlands

	Dutch	Antillean	Surinamese	Moroccan	Turkish
Union trajectories	Sequenced singlehood, cohabitation, marriage. Low dissolution rates	Unstable trajectories. Cohabitation dominant. High exogamy	Unstable trajectories, cohabitation dominant. High intermarriage with Dutch	Brief singlehood, marriage compulsory. Low dissolution rates. High endogamy	Brief singlehood, marriage compulsory. Low dissolution rates. High endogamy
Employment	One-and-a-half breadwinner model	Dual-earner model, but high unemployment	Dual-earner model, but high unemployment	One-and-a-half breadwinner, but high unemployment	One-and-a-half breadwinner, but high unemployment
Education	Men and women highly educated	Men and women highly educated, but high male drop-out	Men intermediately, women highly educated	Men less, women intermediately educated	Men and women intermediately educated
Family solidarity	Weak norms and proximity, intermediate functional solidarity	Weak norms and proximity, intermediate functional solidarity	Intermediate norms and proximity, intermediate functional solidarity	Strong norms and proximity, intermediate functional solidarity	Strong norms and proximity, intermediate functional solidarity
Attitudes	Secularized, gender egalitarian	Secularized, matrifocal orientation	Religiously diverse, matrifocal orientation	Strong religious identification and practice, gender traditional	Strong religious identification but not practice, gender traditional
Racial/ethnic characteristics	White majority group, Protestant heritage	Mixed-race, Catholic heritage, Dutch taught in school, Dutch citizenship	Mostly Black race, ethnically diverse, religiously diverse, Dutch as first or second language	Mediterranean, mostly Muslim, Arabic or Berber language and ethnicity	Mediterranean, mostly Muslim, high perceived discrimination, Turkish language
Parental migration history	Native group	Continuous migration within a post-colonial confederation (1986-now)	First wave upon decolonization (1975), second wave following political instability (1980–1989)	Low-skilled labor recruited through 'guest worker' programs (1964–1973)	Low-skilled labor recruited through 'guest worker' programs (1945–1973)

Sources: Arends-Tóth and Van de Vijver (2009a), Huijnk et al. (2012), Khoudja and Fleischmann (2015), Kleinepier and De Valk (2016), Merz et al. (2009), Schans and Komter (2010), Statistics Netherlands (2018, 2022b), Van de Vijver and Arends-Tóth (2009), Wachter and Costa (2023), and Zorlu and Mulder (2011)

status (Statistics Netherlands, 2022b; Zorlu, 2013). Taken together, we expect that the relative loss of partner income following union dissolution is larger for women in the Dutch group than for women in the minority groups (H2). We do not have concrete expectations about increases in women's personal earnings following dissolution, because of the complex interplay between differential amounts of working experience, differential possibilities to increase working hours, and differential rewards per hour worked.

Yet another ethnic contrast concerns repartnering. Although not necessarily intended as such, repartnering is an effective way to improve economic well-being after union dissolution, as it allows women to again share in the income of a partner and to benefit from economies of scale (Jansen et al., 2009). Due to assortative mating, new partners tend to contribute incomes similar to those of the ex-partners (Dewilde & Uunk, 2008). Studies of ethnic differences have found that, at least among women with children, repartnering occurs more frequently for women of European and Caribbean origins than for women of Middle Eastern origins (Kalmijn, 2017). These differences could be related to the stricter marital norms held by Muslim groups in the Netherlands (Arends-Tóth & van de Vijver, 2009) or because they tend to have more children which reduces the chances of repartnering (Ivanova et al., 2013). Hence, we expect increases in new partner income to be larger for women in the Dutch and the two Caribbean groups than for women in the two Muslim groups (H3).

Pooling resources is another way to recover from the economic setback after union dissolution and the potential for resource pooling differs by ethnicity. To some extent, this may be done by transfers from family or friends, but this is relatively uncommon in the Netherlands (Dimova & Wolff, 2011). A more common way of pooling resources is by 'doubling up.' After dissolution, a substantial minority of women return to the parental home, some move in with other family members, and a few temporarily share a household with non-kin (Albertini et al., 2018; Harvey et al., 2021). Because of mutual assistance, family coresidence enables income pooling, economies of scale, and easier access to employment (Aragao & Villanueva, 2021). Normative obligations to support family members are stronger among ethnic minorities in the Netherlands, especially among Muslim groups (Merz et al., 2009; Schans & Komter, 2010). Hence, we expect that increases in income from coresident family members are largest for women in the two Muslim groups, intermediate for women in the two Caribbean groups, and smallest for women in the Dutch group (H4).

A final ethnic difference concerns the receipt of social security payments. Women whose household income drops below a certain threshold can receive social assistance. Dutch social assistance is a universal income scheme available to all long-term residents. It is relatively generous, is a major source of income for poorer households, and is more redistributive than similar schemes in other European countries (Avram et al., 2014). Previous work from the Netherlands has shown that social security payments are the main route to recovery for women who separate from a low-income union and women with little education (Hogendoorn, 2022). Women in the minority groups, and especially the Muslim groups, have lower household incomes and less education than women in the

majority group (Statistics Netherlands, 2022b). A smaller decline in income may push women below the social assistance threshold (Ananat & Michaels, 2008; Hogendoorn et al., 2020). Hence, we expect that increases in social security payments are largest for women in the two Muslim groups, intermediate for women in the two Caribbean groups, and smallest for women in the Dutch group (H5).

3 Data

We used longitudinal data from the Dutch administrative registers. These data cover all former and current residents of the Netherlands and include information from the population register, education register, social insurance bank, and tax records. This gave us the unique opportunity to draw a random sample of women who experienced union dissolution (see below). This register sample included women from various ethnic minority groups, which are often difficult to reach in surveys (Kappelhof, 2014).

The main register-based datasets were the union file and the income file. The union file covered marital and cohabiting unions from 1995 to 2020. Unions were (retroactively) identified as two people who live together and who meet one of the following criteria: they are married, are in a civil union, have children, are fiscal partners, are partners in a pension fund, have received healthcare or housing benefits as a couple, own a home together, or have made a joint residential move. The income file covered incomes from 2011 to 2020. Nearly all types of income were included, since most income in the Netherlands is taxed or registered otherwise: income from employment, business, freelancing, dividends, interest, renting, social insurance, social benefits, large private gifts, and spousal alimony. Unfortunately, the data did not cover child support paid between ex-partners, but it has been estimated that these contribute only 3% to the net incomes of separated women with children (Van den Brakel & Arts, 2017) and offer little poverty relief (Hogendoorn et al., 2020). Small private transfers are also not covered, but these play a minor role in the Netherlands (Dimova & Wolff, 2011).

Our population of interest comprised women born in the Netherlands who were in a heterosexual union that dissolved between 2012 and 2020. From this population, we drew a random sample stratified by ethnicity ($N=5{,}000$). We restricted the sample to observations during the ages of 21 to 60, since younger individuals were entitled to parental financial support and older individuals could go into early retirement ($N=4779$). We excluded episodes in institutional households or abroad, since then incomes could not be observed ($N=4772$). We also excluded women whose predissolution average income was negative, zero, or missing, since positive incomes were necessary to construct the outcome ($N=4721$). The remaining women were followed from 1 year before dissolution to 4 years after dissolution or the last available date of the income file, whichever came first. In case of multiple dissolutions, the first dissolving union was selected as the focal union. This yielded an analytic sample of 224,400 person-months nested in 4721 persons. After list-wise

deletion of missing observations, the analytic sample comprised 223,959 person-months nested in 4721 persons.

4 Measures

Ethnicity was measured as Dutch, Antillean, Surinamese, Moroccan, or Turkish. It was defined by ancestry: women with two Dutch-born parents were assigned Dutch ethnicity, women with one foreign-born parent were assigned that parent's birth country, and women with two foreign-born parents were assigned their mother's birth country. This classification is used by Statistics Netherlands (2022a) and resembles the way other continental European countries define ethnic groups in the absence of self-identification (Statistics Netherlands, 2021). All women in this study were themselves born in the Netherlands.

Union dissolution was measured as the termination of a coresidential union, occurring when one partner moved to another dwelling or when both partners moved into different dwellings. Unions that ended by dual emigration were not included, because it could not be established whether the union was dissolved or continued abroad. Unions that ended by the death of one or both partners were also not included, because we were interested in the consequences of relationship dissolution rather than bereavement. In case a couple interrupted their union for less than 2 months, neither partner formed a union with another person, and the couple moved back together, we considered this a registration error and joined the union episodes together. Living-apart-together relationships were not observed in the registers and living-together-apart situations could not be distinguished from coresidential unions. We did not distinguish between cohabitation and marriage or between separation and divorce. Unmarried cohabitation is less common among couples with Turkish and Moroccan origins, but we believe that marital differentials are not theoretically informative for explaining the income consequences of union dissolution. *Time since union dissolution* was measured in months.

Household disposable income was measured as net monthly post-tax and post-transfer household income, expressed in 2020 EUR. The construction of this measure took several extra steps, because income was registered annually as taxes are filed once per year. First, we obtained women's annual incomes as well as their monthly economic activity status. We assigned activity-specific components to their corresponding months (e.g., earnings from employment to all months in employment) and non-specific components equally to all months (e.g., child benefits), assigned non-specific social security contributions proportionally to the monthly incomes thus far (e.g., life insurance), and assigned all household-level components equally to all months (e.g., housing benefits, investment income, tax payments, etc.). Next, we looked for all individuals who in a given year had been a household member of the focal woman, and repeated the previous step. Then, we joined the monthly incomes of all household members, re-assigned monthly investment income equally to all adults, re-assigned the annual sum of household-level social security contributions and tax payments across all person-months proportionally to each person-month's income, and re-assigned monthly

household-level benefits equally to all adults. This procedure resembled the Dutch tax system as closely as possible. Finally, we inflated all incomes to their 2020 values using the Statistics Netherlands consumer price index.

Household disposable income was disaggregated according to six sources. *Personal earnings* included the focal woman's earnings from employment, her business income, and her share in other market income (including dividend, rental income, imputed owner-occupant rents, and paid and received interests, all of which were negligible). *Personal benefits* included the focal woman's social security income and her share in household-level benefits. *Personal alimony* included the focal woman's sum of paid and received spousal maintenance from any ex-partners. *Partner income* included all income of the focal ex-partner and new partners. *Coresident family income* included all income of coresident adult children, siblings, parents, uncles, aunts, and grandparents. *Other member income* included all income of non-partner and non-family adult household members. We did not adjust incomes for needs ('equivalization'). Doing so would entangle changes in nominal income and needs, while our prime interest concerned income-related behavior rather than the extent to which incomes were adequate for meeting needs.

The analysis included several control variables. *Period of dissolution* was measured as the calendar year in which the union dissolved. *Age at dissolution* was measured in years. *Urbanity before dissolution* was measured as the predissolution average municipal dwelling density, from scores (1) 'low density' to (5) 'high density'. *Family availability before dissolution* was measured as the predissolution average number of living children, siblings, parents, uncles, aunts, or grandparents in non-institutional households in the Netherlands, with the number top-coded at twenty. *Parental nativity* was measured as 'both parents Dutch-born' (Dutch ethnics only), 'one parent Dutch-born, one parent foreign-born' and 'both parents foreign-born' (ethnic minorities only). These variables could be differentially distributed across ethnic groups and be associated with incomes while being relatively exogenous to the union dissolution process.

The analysis was adjusted for these control variables using entropy balancing (Hainmueller, 2012). Entropy balancing is a weighting procedure akin to propensity score matching. Its main benefits are that weights are directly estimated without the intermediate step of modeling propensities, that full covariate balance is always achieved, that the weights are more efficient, and that the weights are more robust against misspecification (Zhao & Percival, 2017). We weighted the five ethnic groups to the grand sample means of the control variables (parental nativity was only weighted for the ethnic minorities).

To avoid that the weights would net out ethnic variation of interest, we ensured that the ethnicity-specific means of important other variables were conserved. This is comparable to a regression adjustment, in which incomes are predicted at the grand means of the control variables but at the observed values of these 'auxiliary' variables. These auxiliary variables were the following. *Educational attainment before dissolution* was measured as 'upper secondary education or less' versus 'post-secondary education or more'. *Working hours before dissolution* were measured as the predissolution average full-time equivalent in paid work. *Children before dissolution* were measured as the predissolution average number

of resident biological, step, and foster children, top-coded at four. *Marital status before dissolution* was measured as 'cohabiting' versus 'married or in civil union'. *Ethnic composition* measured the endogamy/exogamy of the focal union using the categories 'partner Dutch ethnicity', 'partner same non-Dutch ethnicity' (ethnic minorities only), and 'partner other ethnicity'.

Table 2 shows descriptive statistics. Dutch women were on average older upon dissolution and lived in a less urban locality than ethnic-minority women. Antillean women typically had less living family members in the country than the other ethnic groups and, like Surinamese women, were unlikely to be legally married. Moroccan and Turkish women were often legally married, and their unions were the most endogamous in terms of their partner's ethnicity. Finally, Dutch women enjoyed substantially higher household incomes than Antillean and Surinamese and especially Moroccan and Turkish women, both in absolute terms and when adjusted for needs.

Table 2 Descriptive statistics at separation (unweighted)

	Overall		Dutch	Antillean	Surinamese	Moroccan	Turkish
	M	SD	*M*	*M*	*M*	*M*	*M*
Control variables							
Period	2010.26	5.23	2008.03	2010.88	2011.04	2011.22	2010.00
Age	32.46	7.31	36.02	31.87	32.12	30.99	31.49
Urbanity	4.13	1.07	3.38	4.18	4.35	4.42	4.30
Family availability	8.84	4.24	9.52	7.04	9.24	10.13	8.26
Parental nativity							
both parents Dutch	0.19		1.00				
one Dutch, one foreign	0.22			0.57	0.30	0.10	0.11
both parents foreign	0.59			0.43	0.70	0.90	0.89
Auxiliary variables							
Highly educated	0.58		0.61	0.60	0.60	0.59	0.51
Working hours (fte)	0.51	0.39	0.61	0.54	0.52	0.44	0.44
Children	1.09	1.06	1.04	0.99	1.08	1.21	1.14
Married or civil union	0.45		0.40	0.28	0.27	0.63	0.67
Ethnic composition							
partner Dutch	0.21		0.85	0.47	0.35	0.11	0.12
partner same non-Dutch	0.60			0.21	0.43	0.74	0.78
partner other ethnicity	0.19		0.15	0.32	0.22	0.14	0.10
Dependent variables							
Household disposable income	3658.52	2595.66	4465.78	3670.25	3593.17	3311.28	3299.01
Needs-adjusted income	2143.39	1441.34	2639.11	2178.00	2101.15	1929.94	1898.27
N persons	4,721		906	939	951	961	964
N person-years	223,959		43,839	43,963	46,762	44,606	44,789

5 Analytic Strategy

The analysis aimed to describe women's relative income trajectories. Hence, we defined relative household disposable income as the percentage of income compared to the situation between 1 year and half a year before dissolution. This time window was chosen because it was close to the moment of dissolution yet prior to substantial anticipatory behavior (Thielemans & Mortelmans, 2019). Relative incomes could be disaggregated into six sources:

$$
\begin{aligned}
D_{ei} &= H_{ei,-12} + H_{ei,-11} + H_{ei,-10} + H_{ei,-9} + H_{ei,-8} + H_{ei,-7} \\
H_{eit} &= S_{eit}^{k=1} + S_{eit}^{k=2} + \cdots + S_{eit}^{k=6} \\
Y_{eit} &= 100 * \frac{H_{eit}}{D_{ei}} \\
&= 100 * \frac{S_{eit}^{k=1}}{D_{ei}} + 100 * \frac{S_{eit}^{k=2}}{D_{ei}} + \cdots + 100 * \frac{S_{eit}^{k=6}}{D_{ei}}
\end{aligned}
$$

Here D was the denominator by which incomes were scaled, H absolute household disposable income, S income from various sources k, and Y relative household disposable income. Subscripts e, i and t indicated variation at the ethnicity, individual, and time level, respectively.

Relative incomes and their consistent incomes sources could, in turn, be decomposed. We decomposed them into 'proportions' and 'effects'. The proportion of an income source equaled the share of the women for whom that income source was present (e.g., the share in employment). The effect of an income source equaled the average relative income that women gained from that income source, if the source was present (e.g., the earnings from employment). The proportion multiplied by the effect yielded the expected size of each income source:

$$
E\left[100 * \frac{S^k}{D}\right] = p\left(S_{eit}^k \neq 0\right) * E\left[100 * \frac{S^k}{D} \middle| s_{eit}^k \neq 0\right]
$$

Here p was the proportion and E the expected value. Hence, we were able to disaggregate relative household disposable income into the average size of its income sources, and then to decompose those average sizes into proportions and effects.

In the Results section, Figure 1 shows women's (overall) income trajectories before, upon, and after union dissolution. Figure 2 shows the demographic states that women experienced: employment, benefits receipt, alimony receipt, repartnering, family coresidence and coresidence with other adults. Figure 3 shows the financial gain of experiencing those states: personal earnings, personal benefits, personal alimony, coresident family income, other household member income. Table 3 provides the product of this, that is, the decomposition into income sources. An example can illustrate the interpretation of these numbers (Figs. 2 and 3 and Appendix 1). Among Antillean women, 15% received income from coresident family members, the amount of that income was 71.5, yielding an

amount for everyone of 0.15 * 71.5 = 10.6. The 'amounts' are relative to the total income before dissolution.

To examine ethnic differences, we linearly regressed each income source's contribution on the dissolution moments (before, upon, half a year after, 4 years after) and their interactions with ethnicity (Dutch, Antillean, Surinamese, Moroccan, Turkish), with standard errors clustered at the individual level. We tested whether the pairwise differences between ethnic groups were statistically significant, applying the Šidák-Holm correction to avoid inflation of the family-wise error rate. We applied the entropy-balancing weights to all steps of the analysis. The analyses were conducted in Stata 16.1. The code is publicly available on the Open Science Framework (https://osf.io/cujvz/).

6 Results

6.1 Income Trajectories

We start by describing women's disposable (unadjusted) household income. Figure 1 displays women's relative income trajectories by ethnicity. The figure shows that the incomes in all ethnic groups declined considerably after union dissolution, although

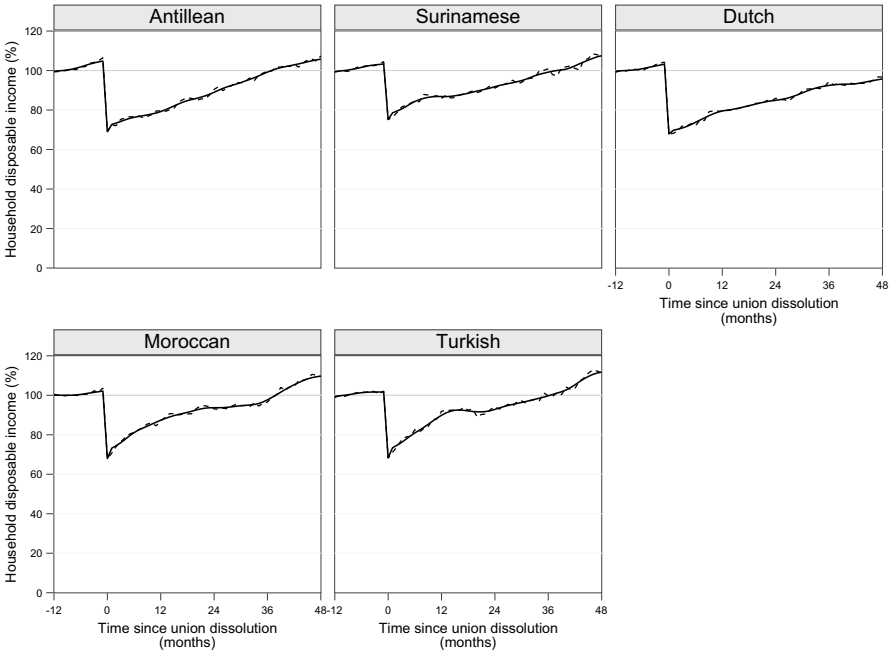

Fig. 1 Women's relative household income trajectories. *Note*: Solid lines display the smoothed observed values. Dashed lines display the unsmoothed values. The sample was weighted to the grand means of age, urbanity, family availability, parental nativity; ethnicity-specific means were conserved for education, working hours, children, marital status, and ethnic composition

incomes quickly recovered as well. Half a year after dissolution, average income had declined by 28% for Dutch, 24% for Antillean, 16% for Surinamese, 20% for Moroccan, and 20% for Turkish women. Four years after dissolution, all groups had recovered or improved compared to the pre-dissolution situation. Recovery occurred more slowly for Dutch women. Keep in mind that incomes were not equivalized for household composition, as is often done in previous studies.

6.2 Proportions Receiving Income

We now turn to the proportions of women with access to each income source in the years surrounding union dissolution. Figure 2 displays the proportions where each line in a subgraph represents a different group and each subgraph represents a different source. The figure shows that receiving labor income was most common among Dutch women, followed by Antillean and Surinamese women, with the Turkish and Moroccan women having the lowest proportions receiving labor income after dissolution. There was limited ethnic divergence following union dissolution in this respect. The proportion of benefit recipients was higher for the migrant groups than for the Dutch group, but for all groups there was a more or less similar increase over time.

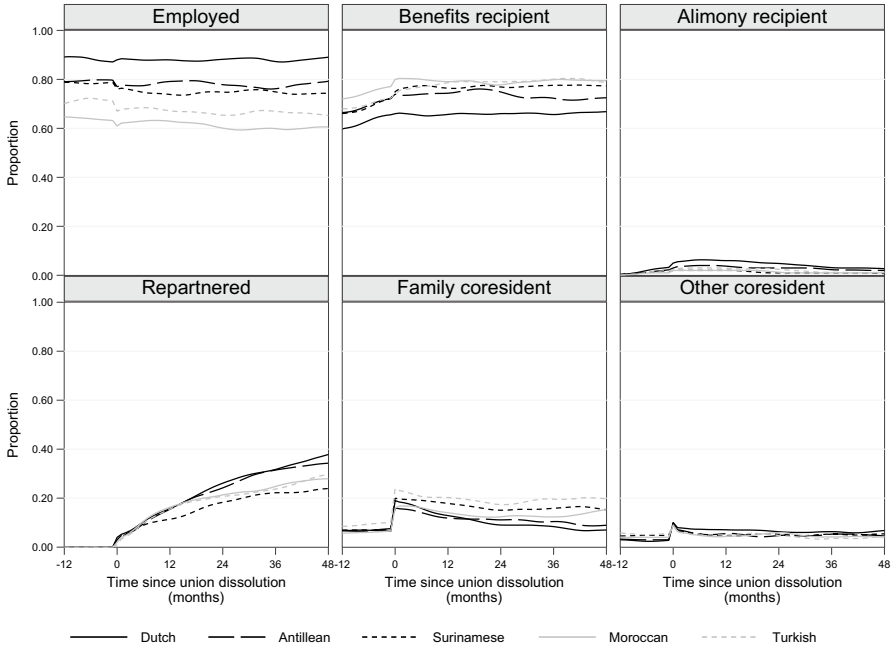

Fig. 2 Proportions receiving income, by source. *Note*: Lines display the smoothed observed values. The sample was weighted to the grand means of age, urbanity, family availability, parental nativity; ethnicity-specific means were conserved for education, working hours, children, marital status, and ethnic composition

Ethnic divergence was notable with respect to repartnering. Dutch and Antillean women were more likely to live with a new partner 4 years after union dissolution than Moroccan, Turkish, and Surinamese women. There also was a more pronounced increase in the proportion receiving income from coresident family for Turkish women than for women in the other groups. Although many women moved in with family members in the wake of dissolution, family coresidence was short lived among Dutch and Antillean women but more permanent among Surinamese, Moroccan, and Turkish women. Alimony and other coresident income sources were uncommon in all groups.

6.3 Effects of Receiving Income

Having shown the proportions of women who receive income from each source, we now examine how much they gain from those sources (give that they have the income source). Figure 3 displays the income effects by source. The figure shows clear ethnic divergence in the effects of employment, benefits, repartnering, and family coresidence. The gain from labor income increased more quickly for the migrants groups, as did the gain from benefits. The divergence of the family coresidence effect is remarkable. Across ethnic groups, the (few) women who lived with family members prior to union dissolution benefited financially from doing so. Four years later, however, Surinamese and Moroccan women living with family

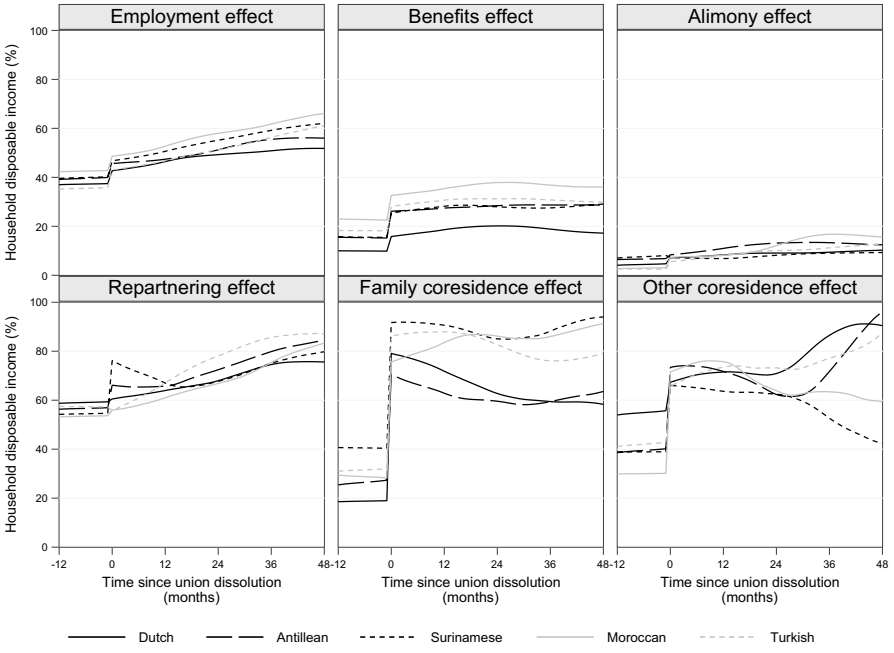

Fig. 3 Effects of receiving an income, by source. *Note*: Lines display the smoothed observed values. The sample was weighted to the grand means of age, urbanity, family availability, parental nativity; ethnicity-specific means were conserved for education, working hours, children, marital status, and ethnic composition

Table 3 Women's incomes as a percentage of predissolution household income

Ethnic group	Time since dissolution	Personal earnings	Personal benefits	Personal alimony	Partner income	Coresident family income	Other member income	Household disposable income
Dutch	Before	32.8	6.1	0.0	58.4	1.2	1.4	100.0
	Upon	34.7[d]	8.1[a,b,c,d]	0.3[c,d]	2.2[c]	16.3	6.1	67.9
	Half year	37.8[c,d]	10.7[a,b,c,d]	0.4[a,c,d]	5.4	13.2	4.9	72.4[a]
	4 years	46.1	11.3[a,b,c,d]	0.3	28.9	3.7[a,c,d]	5.9	96.2
Antillean	Before	30.8	10.6	0.0	55.9	1.6	1.1	100.0
	Upon	33.2[h]	14.9[b,i]	0.2	2.1	12.4[h]	6.4	69.1
	Half year	35.9[h]	20.7[b,i]	0.3	4.6	10.6[e,h]	4.2	76.3
	4 years	44.1	21.6[b]	0.2	30.2	5.9[e,h]	4.0	106.0
Surinamese	Before	30.9	10.5	0.0	53.8	3.0	1.8	100.0
	Upon	33.0[f]	15.3[a,g]	0.2	2.9[f]	18.2[g]	5.7	75.2
	Half year	35.8[f]	20.7[a,g]	0.1[a]	6.0	17.4[e]	3.4	83.5[a]
	4 years	47.1	23.8[a]	0.0	19.5	15.2[a,e]	2.4	108.0
Moroccan	Before	27.1	17.1	0.0	52.8	1.8	1.2	100.0
	Upon	28.4[d]	22.8[d,g,i,j]	0.1[d]	1.0	10.7[g,j]	5.1	68.0
	Half year	31.0	27.1[d,g,i]	0.2[d]	5.3	12.2	4.3	80.1
	4 years	41.0	28.5[d]	0.1	24.2	14.1[d]	2.2	110.1
Turkish	Before	25.1	12.5	0.0	57.6	2.6	2.2	100.0
	Upon	26.6[c,f,h]	16.8[c,j]	0.1[c]	0.4[c,f]	18.8[h,j]	5.4	68.3
	Half year	30.3[c,f,h]	22.9[c]	0.2[c]	5.3	18.0[h]	3.5	80.2
	4 years	41.9	23.8[c]	0.2	26.5	15.7[c,h]	4.0	112.2

The sample was weighted to the grand means of age, urbanity, family availability, parental nativity; ethnicity-specific means were conserved for education, working hours, children, marital status, and ethnic composition. Before is [t_{-12},t_{-7}], upon is [t_0], half year is [t_4,t6], and 4 years is [t_{46},t_{48}]. Superscript letters indicate that, compared to the moment before dissolution, an income component developed statistically significantly different ($p_{\text{Šidák-Holm}} < .05$) for [a]Surinamese vs. Dutch, [b]Antillean vs. Dutch, [c]Turkish vs. Dutch, [d]Moroccan vs. Dutch, [e]Antillean vs. Surinamese, [f]Turkish vs. Surinamese, [g]Moroccan vs. Surinamese, [h]Turkish vs. Antillean, [i]Moroccan vs. Antillean, and [j]Moroccan vs. Turkish. Values of the proportion and effect components are available in Appendix 1

gained far more family income than Dutch women living family. This suggests that income sources are more attractive to, or more selectively used by, some ethnic groups than others.

6.4 Decomposition Analysis

The decomposition into income sources is presented in Table 3. An example can help to illustrate the meaning of the numbers in the table. The total income of Turkish women before dissolution was set at 100 and 25% of that income consisted of personal earnings. Half a year later, their total income dropped to 80% (of their original income) and their labor income increased to 30% (which would amount to 30/80 = 38% of their total income at that time).

A first observation is that personal alimony made up a negligible share of women's predissolution household incomes and hardly increased after dissolution. This is likely because alimony in the Netherlands is only available to ex-spouses who were legally married, tends to be low, tends to be short-lived, and may be refused by the recipient. Similarly, the contribution of non-family household members to the household income was small. Only in the first half year after separation did coresidence with such household members help cushion the financial losses of women. Nonetheless, this cushioning did not differ statistically between ethnic groups.

Concerning personal earnings, we hypothesized that union dissolution could have differential effects by ethnicity (H1). This hypothesis was rejected. Ethnic differences in personal earnings that were present prior to union dissolution persisted throughout the dissolution process. For instance, before dissolution, the personal earnings of Dutch women contributed 33% to their total household income, compared to 31% for Antillean, 31% for Surinamese, 27% for Moroccan, and 25% for Turkish women. Earnings increased substantially after dissolution, but those increases took place in all ethnic groups. The increases did not vary statistically significantly by ethnicity. Interesting to observe is that when women recovered from dissolution (which occurred after 4 years), women in all groups relied more on personal earnings than before.

A somewhat different picture emerged for personal benefits. Here, we hypothesized that union dissolution would increase benefit dependence mostly for Moroccan and Turkish women, followed by Antillean and Surinamese women, and least for Dutch women (H5). This hypothesis was supported. Before dissolution, personal benefits made up 6% of the household incomes of Dutch women, compared to 11% for Antillean, 11% for Surinamese, 17% for Moroccan, and 12% for Turkish women. In the wake of dissolution, personal benefit income increased substantially in all groups and remained an important source of income even 4 years after. The increase in benefits was largest in the Moroccan group, followed by the Turkish group, intermediate in the Antillean and the Surinamese groups, and smallest in the Dutch group. Four years after dissolution, benefits amounted to 11% of the income

of Dutch women and to 22–29% of the income of ethnic-minority women. This means that union dissolution accentuated ethnic differences in benefit dependence.

Regarding the role of the (new) partner, we hypothesized first that the relative loss of partner income following union dissolution would be larger for women in the Dutch group than for women in the minority groups (H2). This hypothesis was rejected. Prior to dissolution, male partners contributed 53–58% of the total household income across ethnic groups, and the loss of partner income immediately after dissolution was accordingly similar. We also hypothesized that increases in new partner income would be larger for women in the Dutch and the two Caribbean groups than for women in the two Muslim groups (H3). This hypothesis was partly confirmed. Four years after dissolution, new partner income amounted to 29–30% of the predissolution household income for Dutch and Antillean women, 24–27% for Moroccan and Turkish women, and 19% for Surinamese women. The Surinamese are clearly an exception to our hypothesis. Nonetheless, the figures affirm that partners play an important role in women's income trajectories.

Finally, we hypothesized that family coresidence would compensate income losses mostly for Moroccan and Turkish women, intermediately for Antillean and Surinamese women, and least for Dutch women (H4). This hypothesis was partly supported. Before dissolution, coresident family members contributed 1–3% to women's total household income across ethnic groups. Half a year after dissolution, the income of coresident family members had increased tremendously to 11–19%. Ethnic differences materialized in the long run. Four years after dissolution, the income of coresident family members amounted to 4% for Dutch women, compared to 6% for Antillean, 15% for Surinamese, 14% for Moroccan, and 16% for Turkish women. In other words, women in the Moroccan and Turkish groups, but also the Surinamese groups, relied considerably more on their family than women in the Dutch and Antillean groups.

7 Discussion

There is a large literature documenting ethnic variation in the prevalence of union dissolution (Andersson et al., 2015; Erman & Härkönen, 2017; Furtado et al., 2013; Hannemann et al., 2020; Kuo & Raley, 2016; Smith et al., 2012; Zhang & Van Hook, 2009). Less is known about ethnic variation in the consequences of union dissolution. There are good reasons to expect moderation effects: ethnic groups differ in separation rates, female breadwinning, kin support, and repartnering. This study examined ethnic variation in the economic consequences of union dissolution for women. Using high-quality data from the Dutch registers, we analyzed changes in women's incomes up to four years after union dissolution. By breaking down income into components, we provided evidence on how women of various ethnic groups are affected by, and respond to, the economic consequences of union dissolution.

Our guiding question was whether ethnicity moderates the separation penalty. A short answer to this question would be: not in general. Women in the Dutch majority experienced the largest declines, followed by the Antilleans, with the three other

ethnic groups experiencing smaller, similar declines. All groups recovered over time, although this occurred more slowly for Dutch women. This finding is partly consistent with findings from child studies, which have found smaller parental separation penalties in some ethnic-minority families for child outcomes (Brand et al., 2019; Cross, 2020; Erman & Härkönen, 2017; Kalmijn, 2010; Sun & Li, 2007). Ethnic moderation of the separation penalty thus depends on whether one looks at the short or the long term.

There were clear variations in the underlying processes, however. For instance, women in the Dutch and Antillean groups gained more from repartnering than women in the other ethnic groups. Although all women suffered large income losses of their ex-partners (Hogendoorn, 2022; see also Avellar & Smock, 2005; Cheng, 2016), Dutch and Antillean women benefited the most from finding a new partner. This distinction between Dutch and Antillean women and the other ethnic groups was primarily attributable to variation in the probability of repartnering, in line with their more liberal family attitudes (Arends-Tóth & Van de Vijver, 2009; Huijnk et al., 2012). Women in all ethnic groups who repartnered benefited considerably from doing so, resulting in household incomes higher than those before dissolution. This underscores previous work on the financial advantage of repartnering (Dewilde & Uunk, 2008; Jansen et al., 2009).

Besides partner income, women's personal earnings were an important income source. Following union dissolution, all ethnic groups steadily increased their employment and own earnings. The increases were not larger for groups in which female labor force participation is more normative, namely the Dutch, Antillean, and Surinamese groups (Khoudja & Fleischmann, 2015). Surprisingly, the average increases in women's earnings were not attributable to an increased employment rate but to increased earnings among the employed population. In fact, Surinamese, Moroccan, and Turkish women simultaneously witnessed a decrease in female employment and a substantial increase in earnings among those employed.

The welfare state provided a safety net for those who could not rely on new partner income or personal earnings. Both the share of women who received welfare benefits and the benefit amounts were largest for Moroccan and Turkish women, intermediate for Surinamese and Antillean women, and lowest for Dutch women. This finding was expected, because welfare increases more for separating women with a lower absolute income (Bonnet et al., 2021; Hogendoorn, 2022; Uunk, 2004). Even so, the size of these payments should not be underestimated. Four years after union dissolution, women of Turkish and Moroccan ethnicity derived about a quarter of their household income from welfare.

Finally, ethnic minorities benefitted from stronger family norms and resource pooling. Women in the ethnic-minority groups more often coresided with extended-family members, they did this for a longer period of time, and those family members contributed more income to the household. At the same time, the contribution of support was small compared to other income sources, amounting to 16% at most after 4 years (in the Turkish group). Support patterns of both the majority and minority groups in the Netherlands seem to align with the notion of 'latent kinship' (Albertini et al., 2018; Bengtson, 2001; Riley & Riley, 1993). Women can rely on family coresidence for financial support immediately after a separation or divorce,

but this support declines when the crisis is resolved. Income sharing with non-family members in the household was uncommon.

We close with limitations and suggestions for future research. The first limitation is that our focus was on (linear) income. By definition, income measures the resources that come in, but not the resources that are needed for an acceptable standard of living. Adjusting for needs would further complicate the analysis, because it would entangle changes in income-related behavior with changes in needs-related behavior. Future work could explore ways of incorporating both incomes and needs, for instance, by looking at poverty rates. Ethnic groups with a lower pre-dissolution income may incur a smaller dissolution penalty on average, yet a small loss may be sufficient for them to be pushed into poverty (Avellar & Smock, 2005). Second, we did not focus on migrant women, as it was not always clear how to define union formation and dissolution events without having a complete union history. Migrants may have entered the country as a couple or may have married after migration. At the same time, migrants face a greater disadvantage than the children of migrants, because they often do not speak the official language upon arrival, their diplomas and working experience may not be recognized, and transnational kin support is more difficult to organize (Glick, 1999; Tibajev & Hellgren, 2019; Vervoort et al., 2012). If better data become available, future work could examine this group. Third and last, we have analyzed four ethnic-minority groups within a single country. This limits the generalizability of the 'ethnicity' effect (Fleischmann & Phalet, 2018). Extending the analysis to other European countries and more groups would be an important avenue for future research.

Appendix

See Table A1.

Table A1 Decomposition of women's relative household disposable income

Ethnic group	Dissolution moment	Personal earnings		Personal benefits			Personal alimony			Partner income			Coresident family income			Other member income			HDI	
		prop	effect	*M*	prop	effect	*M*	prop	effect	*M*	prop	effect	*M*	prop	effect	*M*	prop	effect	*M*	***M***
Dutch	Before	0.89	36.7	32.8	0.61	10.1	6.1	0.01	4.1	0.0	1.00	58.4	58.4	0.07	18.6	1.2	0.03	53.2	1.4	100.0
	Upon	0.88	39.5	34.7	0.66	12.4	8.1	0.05	7.0	0.3	0.04	59.9	2.2	0.19	85.3	16.3	0.10	60.2	6.1	67.9
	Half year	0.88	43.2	37.8	0.65	16.5	10.7	0.06	6.9	0.4	0.09	57.5	5.4	0.17	79.0	13.2	0.07	66.9	4.9	72.4
	4 years	0.89	51.6	46.1	0.67	16.9	11.3	0.03	10.8	0.3	0.38	75.7	28.9	0.07	54.1	3.7	0.07	85.2	5.9	96.2
Antillean	Before	0.79	38.6	30.8	0.67	15.8	10.6	0.01	6.2	0.0	1.00	55.9	55.9	0.07	23.9	1.6	0.03	37.9	1.1	100.0
	Upon	0.77	43.0	33.2	0.74	20.1	14.9	0.03	7.3	0.2	0.03	77.1	2.1	0.16	76.2	12.4	0.10	65.5	6.4	69.1
	Half year	0.77	46.7	35.9	0.73	28.2	20.7	0.04	8.9	0.3	0.08	56.0	4.6	0.15	71.5	10.6	0.06	74.5	4.2	76.3
	4 years	0.80	55.4	44.1	0.72	29.9	21.6	0.02	12.1	0.2	0.35	87.4	30.2	0.09	64.9	5.9	0.04	94.0	4.0	106.0
Surinamese	Before	0.79	39.1	30.9	0.67	15.7	10.5	0.01	6.4	0.0	1.00	53.8	53.8	0.07	41.3	3.0	0.05	39.1	1.8	100.0
	Upon	0.76	43.3	33.0	0.75	20.4	15.3	0.02	8.5	0.2	0.03	97.9	2.9	0.20	90.8	18.2	0.09	64.9	5.7	75.2
	Half year	0.75	47.9	35.8	0.78	26.6	20.7	0.02	6.2	0.1	0.08	71.3	6.0	0.19	92.1	17.4	0.05	64.5	3.4	83.5
	4 years	0.74	63.4	47.1	0.77	30.8	23.8	0.01	9.3	0.0	0.24	81.2	19.5	0.15	100.1	15.2	0.06	43.5	2.4	108.0
Moroccan	Before	0.65	41.9	27.1	0.72	23.5	17.1	0.00	2.2	0.0	1.00	52.8	52.8	0.06	30.5	1.8	0.04	30.3	1.2	100.0
	Upon	0.61	46.2	28.4	0.80	28.5	22.8	0.02	5.1	0.1	0.02	56.9	1.0	0.16	67.1	10.7	0.09	57.5	5.1	68.0
	Half year	0.63	49.1	31.0	0.80	33.8	27.1	0.02	8.3	0.2	0.10	55.9	5.3	0.16	74.7	12.2	0.05	81.9	4.3	80.1
	4 years	0.61	67.1	41.0	0.79	36.4	28.5	0.01	15.3	0.1	0.28	86.0	24.2	0.15	92.0	14.1	0.04	57.3	2.2	110.1
Turkish	Before	0.71	34.6	25.1	0.68	18.5	12.5	0.00	2.9	0.0	1.00	57.6	57.6	0.09	30.2	2.6	0.06	39.5	2.2	100.0
	Upon	0.67	39.8	26.6	0.74	22.6	16.8	0.02	4.6	0.1	0.01	37.7	0.4	0.24	79.7	18.8	0.09	57.4	5.4	68.3
	Half year	0.69	44.1	30.3	0.77	29.8	22.9	0.03	5.5	0.2	0.09	60.3	5.3	0.21	87.4	18.0	0.05	71.6	3.5	80.2
	4 years	0.65	64.8	41.9	0.78	30.4	23.8	0.01	12.9	0.2	0.30	87.5	26.5	0.20	80.0	15.7	0.04	91.7	4.0	112.2

Prop is the proportion, effect is the average amount among those with non-zero income, M is the average component size, HDI is relative household disposable income. The sample was weighted to the grand means of age, urbanity, family availability, parental nativity; ethnicity-specific means were conserved for education, working hours, children, marital status, and ethnic composition. Before is $[t_{-12},t_{-7}]$, upon is $[t_0]$, half year is $[t_4,t_6]$, and 4 years is $[t_{46},t_{48}]$

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Availability of Data and Materials Data are available via remote access after submitting a research proposal to Statistics Netherlands, as is explained on https://www.cbs.nl/en-gb/our-services/customised-services-microdata/microdata-conducting-your-own-research. The code that we developed to analyze the data will be made available via the Open Science Framework.

Declarations

Conflict of Interests The authors declare that they have no conflict of interests.

Consent for Publication No consent for publication is needed as no recognizable individuals participate in this paper.

Ethics Approval Our paper is based on register data from Statistics Netherlands which were analyzed via a secure remote-access connection to Statistics Netherlands. Statistics Netherlands has an elaborate system to protect the privacy of the individuals included in the registers, as is documented on https://www.cbs.nl/nl-nl/over-ons/dit-zijn-wij/onze-organisatie/privacy.

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