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Why Do Lower Educated People Separate More Often? Life Strains and the Gradient in Union Dissolution

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Abstract

In many Western countries, coresidential unions of lower educated people are less stable than those of higher educated people. A prominent explanation of this gradient in union dissolution holds that the lower educated experience more strain. Evidence for this explanation has been limited by a focus on only the economic dimension of strain and on only one partner in each union. In this study, we broadened the concept of strain to cover multiple life domains and capture the experience of both partners in each union. To do so, we used longitudinal data from the Household, Income and Labour Dynamics in Australia survey ($N = 52{,}574$ union-years; 7,930 unions). Generalized structural equation models showed that lower educated individuals experienced more strain not only in the economic domain but also in other life domains. Moreover, lower educated individuals tended to have partners who experienced more strain as well. In total, the joint experience of life strains explained 49% of the education gradient in union dissolution. These results suggest that life strains are pivotal to the stratification of family life.

Introduction

In many Western societies today, the coresidential unions of lower educated individuals are less stable than those of higher educated individuals (Raymo, Fukuda and Iwasawa, 2013; Matysiak, Styrc and Vignoli, 2014; Hogendoorn, Leopold and Bol, 2020). Educational differences in union dissolution have important consequences for social inequality. Whereas higher educated adults and their children accrue the benefits of a stable family life, the lower educated miss out because of family instability (McLanahan, 2004). Hence, sociologists have increasingly geared their efforts towards understanding the negative educational gradient in the risk of union dissolution.

A prominent explanation of the educational gradient in union dissolution has been provided by William Goode (1962). The core premise of Goode's explanation is that lower educated individuals experience more economic strain. Economic strain, in turn, contributes to relationship discord. When dissolution is culturally accepted, this relationship discord expresses itself in the form of dissolution. Goode's thesis therefore predicts higher dissolution rates among the lower educated.

Evidence of Goode's thesis has been mixed. Macro-level evidence confirms that the increased acceptance of divorce has sparked a rise in union dissolution among the lower educated (De Graaf and Kalmijn, 2006; Härkönen and Dronkers, 2006; Matysiak, Styrc and Vignoli, 2014). Micro-level evidence, however, is less conclusive. Studies in countries where dissolution is widely accepted have shown that lower educated individuals do indeed experience greater economic strain, such as material deprivation and employment instability. At the same time, these studies found that economic strain explains about 15–20% of the educational gradient in union dissolution, leaving a large part of the gradient unexplained (authors' calculations of Raymo, Fukuda and Iwasawa, 2013; Kaplan and Herbst, 2015; Boertien and Härkönen, 2018).

The limited support for the strain thesis is surprising. It is well documented that the lower educated face more economic strain, and strain is often seen as the root cause of relationship dissatisfaction and dissolution (Randall and Bodenmann, 2009; Conger, Conger and Martin, 2010). We argue that the reasons for this limited support may be 2-fold. First, a focus on economic strain may be insufficient. The educational gradient in union dissolution could stem from strains in other life domains as well (Brock and Lawrence, 2008). For example, lower educated individuals may experience greater strain regarding their health or social relations. Even if strains in other domains partly overlap with economic strain, disregarding them would yield an incomplete picture. Second, union dissolution is a joint process. Strains experienced by one partner could spill over to the other partner and trigger the dissolution process. By restricting attention to one partner, previous studies may have missed the dyadic nature of dissolution.

In the present study, we make two contributions to the literature on the educational gradient in union dissolution. First, we broaden the concept of strain to cover multiple life domains, namely work, finance, social relations, health, and residence. Second, we model union dissolution as a joint process by incorporating the strain experiences of both partners in a couple. To accomplish this, we used longitudinal data from the Household, Income and Labour Dynamics in Australia survey. This nationally representative household panel allowed us to follow cohabiting and married couples ($N = 7{,}930$) over a period of 17 years (2001–2017). The extensive measures of life strains in these couples made the panel ideally suited to our analysis. We used generalized structural equation modelling to examine the relationships between education, strains, and dissolution, and to assess the explanatory power of the strain thesis.

Theory

Life Strains

The concept of strain originated in role theory. According to role theory, individuals hold various social roles that place various demands on them, which may compete in terms of time or content (Merton, 1957). Strain then arises from the perceived difficulty in meeting role demands (Goode, 1960). Later work generalized this definition, suggesting that demands need not be limited to role performance but could concern any demand in life. Strains have therefore also been referred to as life strains (Pearlin and Johnson, 1977).

Life strains are inherently connected to stress. That is, research in social psychology views strain and stress as two sides of the same coin. Whereas strain concerns the cognitive appraisal of environmental demands, stress concerns the physiological response to these demands (Lazarus and Folkman, 1984). The argument here is that environmental demands, such as job-related tasks or care for a sick relative, require individuals to adapt. Once adaptation efforts have exhausted an individual's capacity to cope, these demands threaten the individual's integrity and turn into a source of stress (Aneshensel, 1992).

Life strains may arise in a variety of domains. The principal domains identified in the literature are work, finance, social relations, health, and residence (Brock and Lawrence, 2008). Strains in these domains can be considered external, in the sense that they originate primarily outside of the couple's relationship. Even so, external strains put pressure on internal couple dynamics, including relationship satisfaction or decisions regarding children (Brock and Lawrence, 2008; Randall and Bodenmann, 2009). Strains therefore bridge between individuals' position in the social structure and the functioning of their romantic unions (Conger, Conger and Martin, 2010).

Strain and Union Dissolution

Strains have long been recognized as a disruptive force on family systems (McCubbin and Patterson, 1982; Conger, Conger and Martin, 1990; Karney and Bradbury, 1995). The process by which external life strains spill over to the functioning of a couple is often described as a 'cascade' (Bodenmann, 2005). In this cascade, strains provoke a stress response. Romantic partners initially try to cope with this stress individually. Once individual coping efforts turn out unsuccessful, dyadic coping is brought into play. Dyadic coping may occur directly, by asking the partner for help in removing the strain or for

emotional support to endure the stress. Yet, the partner may also become involved without help seeking, following internalizing (anxiety, depression) or externalizing (anger, substance abuse) coping behaviours (Slopen *et al.*, 2011).

Dyadic coping implies the spill-over of external strains to internal couple dynamics. While there are instances in which couples successfully deal with strain, continuous exposure to strain may exhaust a couple's coping resources (Hansen, 2005). The result is an increase in discordant couple interactions, ranging from withdrawal and a lack of warmth to ambivalence, defensiveness, and hostility (for reviews, see Randall and Bodenmann, 2009; Conger, Conger and Martin, 2010; Perry-Jenkins and Wadsworth, 2017).

Couple discord, in turn, increases the risk of union dissolution. Reports of conflict and poor relationship quality have consistently been associated with a higher dissolution hazard (Karney and Bradbury, 1995; Randall and Bodenmann, 2009; Birditt *et al.*, 2010; Conger, Conger and Martin, 2010). Both partners play a role in this process. On the one hand, the stressed individual may feel that their partner does not comprehend the significance of the strain or is unable to provide help. On the other hand, the partner may escape from an individual whom they view as excessively demanding (Umberson, 1995). This means that life strains may result in union dissolution through their stress impingement on both partners.

Links to Education

Life strains provide a plausible explanation for the educational gradient in union dissolution because their distribution is socially structured. First of all, lower educated individuals are more often exposed to environmental demands that require adaptation, such as negative life events (Hatch and Dohrenwend, 2007). In fact, the lower educated also worry more about future demands, and these worries too are psychologically demanding (Grace, 2020). In addition, lower educated individuals encounter more difficulties in adapting to environmental demands. This is in part due to their having fewer personal coping resources, such as financial means or health literacy (Park and Kyei, 2011). It is also due to their lower propensity to seek help from outside, perhaps because of unfamiliarity with this possibility or because outside interventions are typically designed for individuals with higher education (Karney, 2020). Education thus represents a resource that enables individuals to seek out healthy environments and deal with problems, which together reduce the experience of strain.

Empirical studies have confirmed the existence of educational differences for most life strains. In the work domain, for example, individuals with lower education perceive greater job insecurity and lower job control, though findings regarding job demands have been mixed (Landsbergis, Grzywacz and LaMontagne, 2014). In the finance domain, individuals with lower education experience greater material deprivation (Bedük, 2018). In the social relations domain, individuals with lower education engage less in civic participation and report fewer people on whom they can rely for social support, though findings regarding close confidants and neighbourhood ties have been mixed (Fischer, 2009; Schafer and Vargas, 2016). In the health domain, individuals with lower education report poorer general health and are more likely to suffer from functional limitations (Cambois *et al.*, 2016). In the residence domain, individuals with lower education experience greater neighbourhood disorder and live in poorer quality housing (Burdette and Hill, 2008).

Moreover, educational differences in strain may accumulate in couples. Part of this accumulation can be expected because of educational homogamy. After all, lower educated individuals are more likely to experience strains related to both their own and their partner's education (De Lange, Wolbers and Ultee, 2013). Yet, couples also accumulate strain over and above homogamy. For example, employment insecurity in couples is greater when one of the partners is lower educated, even when the other partner obtained a higher degree (Grotti and Scherer, 2014). This suggests that an assessment of the strain thesis should not only include partner education but should also explicitly include partner strains.

Following the above argument, we expected that life strains would partly explain the educational gradient in union dissolution. That is, we expected that the lower educated experienced more strain, that strain increased the risk of union dissolution and that the negative association between education and dissolution would become weaker after accounting for strains. Figure 1 gives a graphical overview.

The Australian Case

We studied the educational gradient in union dissolution using data from Australia. Australia is a country where divorce and separation are common phenomena and hence provides a suitable context for testing the strain thesis. In 2001, around the start of the data collection, its crude marriage rate was 5.3, comparable to

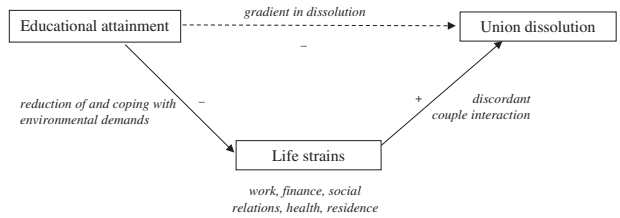

Figure 1. Conceptual model of the educational gradient in union dissolution.

the Netherlands (5.0) and the United Kingdom (4.8), but lower than for instance the United States (8.2) (OECD, 2019). Approximately 15% of Australian marriages dissolve within ten years (Hewitt, Baxter and Western, 2005), again comparable to the Netherlands (Hogendoorn, Leopold and Bol, 2020), but less than in the United Kingdom (Boertien and Härkönen, 2018) and the United States (Martin, 2006).

Even though marriage remains the norm in Australia, cohabitation is on the rise. Unmarried cohabitation among partnered individuals aged 30–34 increased from 14% in 1996 to 24% in 2006, resembling trends in Northwest Europe, Central Europe, and the United States (Heard, 2011; Perelli-Harris *et al.*, 2017). This increase is driven mainly by increased premarital cohabitation and longer marriage postponement and to a lesser extent by the substitution of marriage. The Australian legal system recognizes unmarried cohabitation as 'de facto marriage' after two years of uninterrupted coresidence. Such recognition is unique, shared only with New Zealand and parts of Canada and the United States. Nonetheless, cohabitation remains selective of individuals with less education, lower incomes, and separated parents (Heard, 2011). To avoid selection issues, our analysis included both cohabiting and marital unions.

Education plays an important role in the stratification of Australian society. This is evidenced by the returns to education. Australians with an upper secondary degree receive 23% higher wages and those with a tertiary degree 40% higher wages than their lower educated counterparts. Adjusted for study duration and income taxation, this implies a return rate of 10% per year of tertiary education, one of the highest returns of all industrialized countries (Boarini and Strauss, 2010). Moreover, couples tend to form between people of similar education. Educational homogamy is most pronounced among those with less than compulsory education and those with a master's degree (authors' calculations). Homogamy in Australia is similar to that in other Western countries (Permanyer, Esteve and Garcia, 2019) and remained stable during the data collection period.

Method

Data

We used longitudinal data from the Household, Income and Labour Dynamics in Australia survey (HILDA). HILDA is a large representative panel study of private households in Australia. All persons aged fifteen and older in sampled households were asked to participate in the first wave and in annual follow-up waves. Initial participants were followed also after household splits, and new participants entered the panel if they joined an existing panel household or if they turned fifteen while living in one. A refreshment sample was added in 2011. The data can be requested via the University of Melbourne (https://melbourneinstitute.unimelb.edu.au/hilda).

The household response rate of the first wave was good (66%) and attrition rates were very low (3–13% annually, 35% cumulatively). In case a separated person was lost on follow-up, we identified the separation from the ex-partner. There was no difference in the annual response rate between persons who separated (93%) and who did not separate (91%) during the time of observation. A major benefit of HILDA was that it provided information about partners' life strains as part of the core questionnaire.

The analytic sample was constructed using the first 17 waves of HILDA (2001–2017). We started by selecting all existing and newly formed cohabiting and marital unions ($N = 10{,}208$). We considered the first 30 years since union formation because these were the years during which the educational gradient opened up ($N = 8{,}666$). We dropped unions in which both partners were enrolled in full-time education, because the living conditions of students are little indicative of their socioeconomic status ($N = 8{,}473$). We also dropped unions for which the educational attainment of one or both partners was missing ($N = 8{,}467$). We censored observations ending in death, widowhood, or dropout ($N = 7{,}930$). This yielded a total sample size of 52,574 union-years nested in 7,930 unions. In order to prevent double entries, each union was represented by one randomly chosen partner (cf. Hewitt and De Vaus, 2009). Table 1

Table 1. Descriptive statistics of the analytic sample

	M	*SD*	Min	Max	*N* unions
Individual characteristics					
Educational attainment	15.96	2.46	11	22	7,930
Female	0.50		0	1	7,930
Ethnicity					
Australian-born	0.78		0	1	7,930
Overseas-born Anglophone	0.10		0	1	7,930
Overseas-born non-Anglophone	0.12		0	1	7,930
Religiosity	3.09	3.23	0	10	6,506
Parents separated in youth	0.28		0	1	7,930
Age at union formation	29.66	10.06	15	85	7,930
Union order	1.68	1.03	1	10	7,773
Union characteristics					
Union cohort	1999.90	11.96	1971	2016	7,930
Married since start	0.30		0	1	7,930
Same-sex union	0.02		0	1	7,930
Refreshment sample	0.15		0	1	7,930

Source: Authors' calculations using the Household, Income and Labour Dynamics in Australia data.
Notes: Values without multiple imputation.

describes the analytic sample. Partner information was added separately (see next section).

Measures

The main variables of interest were the following. *Union dissolution* was measured as the termination of a coresidential union, following a split from the household by one or both partners. Living-apart-together relationships were not considered. This information was obtained using a household roster, with the person or persons most responsible for family care indicating all relationships between household members and the interviewer verifying these relationships with the household members in question. *Educational attainment* was measured as the highest out of 22 qualifications (e.g. 'Certificate I', 'Associate degree', or 'Master's degree'). In the graphs, we simplified it into the categories lower secondary education or below, upper or post-secondary education, or tertiary education. In the statistical analysis, we converted it to nominal years of completed education (see Supplementary Table SA1).

Life strains regarded the domains of work, finance, relations, health, and residence. Although these domains overlapped considerably, the analysis confirmed that the measurement of strain across multiple domains improved on measurement in a single domain. In the work domain, we included an index of *job strain* (6 items, e.g. 'I worry about the future of my job', Cronbach's $\alpha = 0.81$) and a single-item measure of *employment difficulty* ('satisfaction with employment opportunities'). In the finance domain, we included a single-item measure of *income insufficiency* ('perceived prosperity given needs and responsibilities') and a single-item measure of *emergency problems* ('difficulty to raise AUD 2000 for an emergency'). In the social relations domain, we included an index of *social isolation* (6 items, 'I have no one to lean on in times of trouble', $\alpha = 0.78$) and a single-item measure of *community exclusion* ('satisfaction with feeling part of local community'). In the health domain, we included an index of *health difficulties* (9 items, 'health limits me in bathing or dressing yourself', $\alpha = 0.82$) and a single-item measure of *functional limitations* ('long-term health condition, impairment, or disability that restricts my everyday activities'). In the residence domain, we included an index of *neighbourhood disorder* (10 items, 'burglary and theft are common in my neighbourhood', $\alpha = 0.82$) and a single-item measure of *home dissatisfaction* ('satisfaction with the home in which I live'). In some cases, the HILDA questionnaire contained items that did not measure the constructs of interest, such as items with ambiguous phrasing ('my job is not complex or difficult' for job strain) or items that captured couple discord rather than external strains ('emotional problems interfered with my social activities' for health difficulties). These items were not included in the measures. All strain variables were time-varying, were coded so that higher scores indicated more strain, and were *z*-standardized since they were not always measured on a natural scale. Table 2 describes the life strain variables. Detailed information on the items,

Table 2. Life strains across five domains

Life strains	*M*	*SD*	Min	Max	*N* union-years
Work					
Job strain	0	1	−1.26	3.94	45,803
Employment difficulty	0	1	−1.29	3.25	46,409
Finance					
Income insufficiency	0	1	−2.76	3.68	45,721
Emergency problems	0	1	−0.69	2.4	45,575
Social relations					
Social isolation	0	1	−2.29	4.32	45,805
Community exclusion	0	1	−1.56	3.23	50,473
Health					
Health difficulties	0	1	−1.44	5.11	45,984
Functional limitation	0	1	−0.49	2.02	50,538
Residence					
Neighbourhood disorder	0	1	−2.64	4.46	46,466
Home dissatisfaction	0	1	−1.23	4.34	50,507

Source: Authors' calculations using the Household, Income and Labour Dynamics in Australia data.

Notes: Values without multiple imputation.

the variation over time, and correlations with other variables can be found in Supplementary Tables SA2–SA4.).

We included the following background variables. *Sex* was a binary indicator of being male or female. *Ethnicity* was measured as country of birth and categorized as Australian-born, foreign-born in an English-speaking country, or foreign-born in a non-English speaking country. *Religiosity* was measured as the importance of religion on a scale from 1 to 10. *Parental separation* was a binary indicator of having parents who separated or divorced before age 15. *Age at union formation* was measured as the individual's age at the formation of the current union. *Union order* was measured using the individual's number of previous unions. *Marital status* was a binary indicator of being married or unmarried at the moment of union formation. *Union sex composition* was a binary indicator of a same-sex or different-sex union. *Union cohort* was measured as the calendar year of union formation. *Refreshment sample* was a binary indicator of belonging to the original or refreshment sample. All background variables were time-invariant. Note that we did not include relationship satisfaction, because it might both precede and follow strains so its location in the causal chain is unclear.

The analysis included partner information. This information was obtained from direct interviews (not by proxy), since HILDA surveyed all household members. We added partner information via additional variables. This revealed the degree to which ego strains alone, as opposed to ego and partner strains jointly, contributed to the educational gradient in union dissolution. (We also considered conducting the analyses separately for men and women. However, this would further complicate the theory with a gender component, exclude same-sex couples without theoretical justification, and result in two gradients to be explained.)

We used multiple imputation to deal with missing values. Around 30% of the union-year observations were missing on at least one variable, 15% on at least two variables, and 13% on three variables or more. Including partner variables, these percentages increased to respectively 41%, 27%, and 20%. These high percentages were due almost entirely to missings on five of the strain variables, which accumulated as the analysis required many variables. The imputation was conducted using chained equations with predictive mean matching from the five nearest neighbours. Indices and standardized variables were treated using the just-another-variable approach (Seaman, Bartlett and White, 2012). We took account of the longitudinal structure of the data by including within-union variable means as auxiliary variables (Young and Johnson, 2015), and we made the imputation suitable for event-history analysis by including the dissolution outcome and the cumulative hazard (White and Royston, 2009). In total, we imputed twenty complete datasets (see Supplementary Table SA5 for imputation diagnostics). This procedure aimed to reduce bias and increase statistical power, facilitating the high data demands of our analysis.

Analytic Strategy

Before conducting the analysis, we described the educational gradient in union dissolution. This aimed to show the association between education and dissolution 'as is', that is, without including any factors that might explain this association. The association was specified as a discrete-time event-history model:

$$\ln(h_{it}) = \beta X_i^e + \boldsymbol{\delta_t} + \upsilon U_i + \rho R_i \qquad (0)$$

where h represented the hazard of dissolution, X^e educational attainment, $\boldsymbol{\delta}$ time since union formation, U union cohort, and R refreshment sample. To reduce the computational burden in the subsequent analysis, we specified a piecewise-constant baseline hazard with eight dummies δ, where each dummy represented a similar portion of union-year observations. The model was estimated using Poisson regression with standard errors clustered at the union level, which is the appropriate estimator for event-history models with a piecewise-constant baseline hazard (Guo, 1993). Our interest lied in the exponentiated coefficient e^{β}, which indicated the ratio by which the dissolution hazard increased with an

additional year of education. This description gave an initial impression of the gradient.

The analysis consisted of three parts, which were estimated simultaneously using generalized structural equation modelling. The first part concerned educational differences in the experience of life strains (left arrow in Figure 1). These educational differences were specified as linear models:

$$\boldsymbol{Z}^{e}_{it} = \gamma X^{e}_{i} + \boldsymbol{\zeta}_{t} + \eta U_{i} + \kappa R_{i} \qquad (1a)$$

where $\boldsymbol{\zeta}$ was the time since union formation and the other terms as described before. $\boldsymbol{Z}^{e}$ included the life strains. $\boldsymbol{Z}^{e}$ also included marital status, union sex composition, sex, ethnicity, religiosity, parental separation, age at union formation, and union order, because these variables might confound the effect of strains on dissolution in the other parts of the analysis. Our interest lied in the coefficients γ, which indicated the increase in strain with an additional year of education.

The second part concerned the effects of life strains on union dissolution (right arrow in Figure 1). The effects were specified as a discrete-time event-history model:

$$\ln(h_{it}) = \theta X^{e}_{i} + \boldsymbol{\lambda}\boldsymbol{Z}^{e}_{it} + \boldsymbol{\xi}_{t} + \mu \mathrm{U}_{i} + \nu \mathrm{R}_{i} \qquad (2a)$$

where $\boldsymbol{\xi}$ was time since union formation and the other terms as described before. By again including life strains and confounders in $\boldsymbol{Z}^{e}$, this part obtained the effects of strain on the dissolution hazard, net of confounders. Our interest lied in the exponentiated coefficients e^{θ}, which indicated the ratio by which the dissolution hazard increased with an additional point of strain.

The third part tested whether the differential experience of life strains could explain the educational gradient in union dissolution (upper arrow in Figure 1). It combined the other parts into an event-history mediation analysis. The direct effect was the effect of education on union dissolution (coefficient θ from Eq. 2a). The indirect effect was the effect of education on each life strain and confounder (coefficient γ from Eq. 1a) times the effect of each life strain and confounder on union dissolution (coefficient λ from Eq. 2a). The total effect was the sum of the direct effect and all indirect effects. We constructed the total effect in this way, rather than by taking the descriptive gradient, because adding variables to the descriptive gradient would affect the total variance and hence the scale of the coefficients (Karlson, Holm and Breen, 2012). Our interest lied in percentage of the total effect that could be attributed to the indirect effects, which indicated the explanatory power of the strain thesis.

The above analysis considered only one partner in each couple. To examine the role of the other partner, we repeated the analysis using information from both partners. We specified the following models:

$$\boldsymbol{Z}^{e}_{it} = \gamma^{e} X^{e}_{i} + \boldsymbol{\zeta}^{e}_{t} + \eta^{e} \mathrm{U}_{i} + \kappa^{e} \mathrm{R}_{i} \qquad (1b^{e})$$

$$\boldsymbol{Z}^{p}_{it} = \gamma^{p} X^{e}_{i} + \boldsymbol{\zeta}^{p}_{t} + \eta^{p} \mathrm{U}_{i} + \kappa^{p} \mathrm{R}_{i} \qquad (1b^{p})$$

$$\ln(h_{it}) = \theta' X^{e}_{t} + \boldsymbol{\lambda}' \boldsymbol{Z}^{e}_{it} + \boldsymbol{\lambda}' \boldsymbol{Z}^{p}_{it} + \boldsymbol{\xi}'_{t} + \mu' \mathrm{U}_{i} + \mathrm{v}' \mathrm{R}_{i} \qquad (2b)$$

where the superscript e denoted ego and p partner. $\boldsymbol{Z}^{e}$ again included ego life strains and ego confounders. $\boldsymbol{Z}^{p}$ included partner life strains and partner confounders, as well as partner education, to ensure that partner life strain effects did not capture other characteristics related to partner education. Note that the effects of ego and partner strains on dissolution were constrained to equality to avoid overfitting, as dissolution took place at the union level and individuals were randomly assigned as ego or partner. According to these models, ego education related to the experience of ego strain and partner strain, and jointly these strains contributed to dissolution. Comparing the results to the ego-only analysis indicated whether an account of both partners provided a better explanation of the gradient in dissolution than an account of one partner only.

The analysis included all life domains to show the total explanatory power of the strain thesis and to account for overlap between domains. A graphical overview of the models is given in Supplementary Figure SA1. To enable others to replicate the analysis or conduct similar analyses, we uploaded the replication files to the Open Science Framework (https://osf.io/cq83b/). The files include a user-written package *nlmed* for conducting nonlinear mediation analysis.

Results

Describing the Gradient

Descriptive results confirmed the existence of an educational gradient in union dissolution. This is illustrated by Figure 2, which shows the Kaplan–Meier curves of union survival. Ten years after union formation, union survival was 73% among the higher educated, 55% among the intermediately educated, and 48% among the lower educated. Thirty years after union formation, these figures amounted to 54%, 39%, and 30%, respectively. In other words, individuals with lower education were almost half as likely to still live with their partner as individuals with higher education.

The educational gradient in union dissolution was also confirmed statistically. This is illustrated in Table 3, which shows the results from a discrete-time event-history model

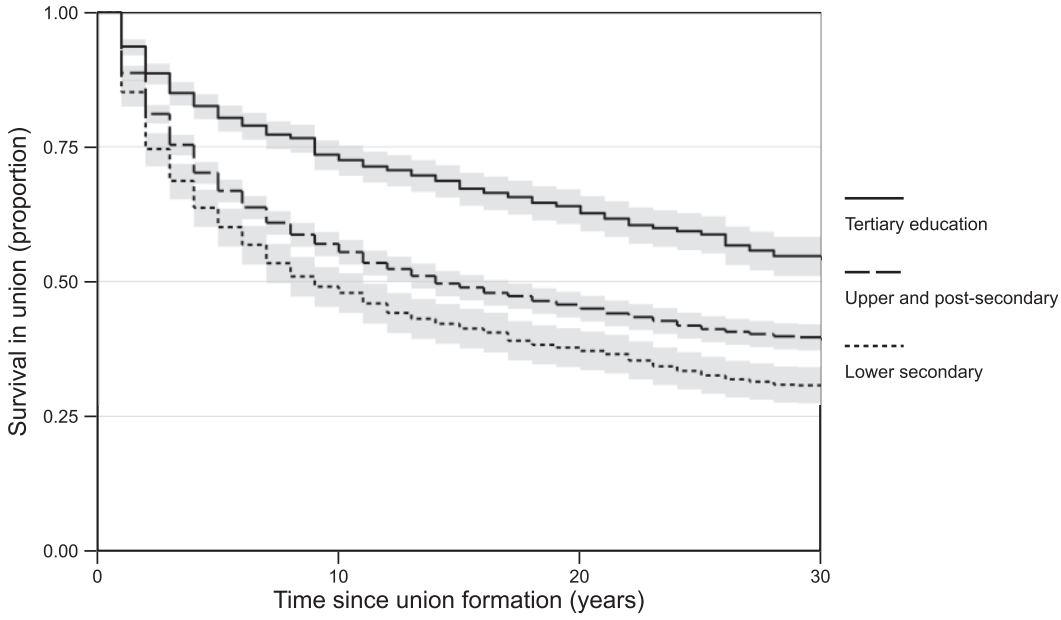

Figure 2. Kaplan–Meier estimates of union survival by education level.

Source: Authors' calculations using the Household, Income and Labour Dynamics in Australia data

Table 3. Event-history model of union dissolution

	b	*HR*
Educational attainment (ego)	−0.104***	0.90
Union cohort	0.010*	1.01
Refreshment sample	−0.094	0.91
Duration 1–2 years	−0.338***	0.71
Duration 3–5 years	−0.774***	0.46
Duration 6–8 years	−1.037***	0.35
Duration 9–12 years	−1.369***	0.25
Duration 13–17 years	−1.555***	0.21
Duration 18–23 years	−1.590***	0.20
Duration 24–30 years	−1.804***	0.16
Intercept	−20.604*	0.00
N union-years	52,574	
N unions	7,930	
N dissolutions	1,977	

Source: Authors' calculations using the Household, Income and Labour Dynamics in Australia data.

Notes: Hazard ratios show exponentiated coefficients from a Poisson regression. The mediation analysis used different total effects because of the rescaling implied in nonlinear models.

*$P < 0.05$, ***$P < 0.001$.

of union dissolution that included educational attainment, union cohort, refreshment sample, and duration (Eq. 0). The education coefficient was −0.104, amounting to a hazard ratio of 0.90 ($e^{-0.104} = 0.90$). Put differently, a 1-year increase in completed education was associated with a 10% decrease in the hazard of dissolution.

Explaining the Gradient

In the first part of the analysis, we examined educational differences in the experience of life strains. The results confirmed the existence of a moderate strain differential. This is illustrated by the left-hand column of Table 4, which shows the education coefficient for each strain (Eq. 1). Individuals with fewer years of completed education experienced more strains across the board. The educational differential was large for strains in the finance domain, where a 1-year decrease in education was associated with a 0.11 standard deviation increase in emergency problems and a 0.09 standard deviation increase in income insufficiency. The educational differential was also present, albeit smaller, in the other life domains. The only exceptions regarded home dissatisfaction, which showed no educational differential, and job strain, which surprisingly increased with education.

Education related not only to the personal experience of life strains but also to partners' experience of life strains. This is illustrated by the right-hand columns of Table 4, which show the coefficients of ego education on ego and partner strains. For instance, a 1-year decrease in education was associated with both a 0.05 standard deviation increase in ego social isolation and a

Table 4. Effects of educational attainment on ego's and partner's life strains

	Ego model	Ego + partner model	
	Ego strains	Ego strains	Partner strains
Life strains	$b_{education}$	$b_{education}$	$b_{education}$
Work			
Job strain	0.05***	0.05***	0.04***
Employment difficulty	−0.07***	−0.07***	−0.04***
Finance			
Income insufficiency	−0.09***	−0.09***	−0.10***
Emergency problems	−0.11***	−0.11***	−0.11***
Social relations			
Social isolation	−0.05***	−0.05***	−0.04***
Community exclusion	−0.03***	−0.03***	−0.03***
Health			
Health difficulties	−0.05***	−0.05***	−0.05***
Functional limitation	−0.05***	−0.05***	−0.04***
Residence			
Neighbourhood disorder	−0.03***	−0.03***	−0.03***
Home dissatisfaction	−0.00	−0.00	−0.01*

Source: Authors' calculations using the Household, Income and Labour Dynamics in Australia data.

Notes: Coefficients from linear regressions of each life strain on ego education, controlling for duration, union cohort, and refreshment sample. Full model results available in Supplementary Tables SA6 and SA7. $N = 52{,}574$ union-years; 7,930 unions.

$^{*}P < 0.05$, $^{***}P < 0.001$.

0.04 standard deviation increase in partner social isolation. In all cases, the educational differential became more discernible when observing both partners in a union.

In the second part of the analysis, we examined the effects of life strains on union dissolution. The results confirmed that the experience of strains increased the risk of dissolution. This is illustrated by the left-hand column of Table 5, which shows the hazard ratios from a model including all strains (Eq. 2). Most life strains were associated with a higher risk of union dissolution. Associations were particularly strong regarding social isolation and problems accessing emergency funds. A standard deviation increase in social isolation was associated with a 13% increase in the hazard of dissolution, and a standard deviation increase in emergency problems was associated with a 14% increase in the hazard of dissolution. Associations were moderately strong for income insufficiency, community exclusion, and home dissatisfaction. Those of employment difficulty, health difficulties, functional limitation, and neighbourhood disorder were in the expected direction but did not reach statistical significance. Job strain posed an exception, as it appeared to decrease the risk of union dissolution.

Accounting for the situation of both partners revealed the destabilizing effect of life strains more clearly. This is illustrated by the right-hand columns of Table 5, which show the hazard ratios of ego and partner strain variables. The risk of union dissolution increased substantially when both partners experienced strain. For instance, a standard deviation increase in social isolation by ego was associated with a 13% increase in the hazard of dissolution. A standard deviation increase in social isolation by both ego and partner, however, was associated with a 22% increase ($e^{0.10+0.10} = 1.22$) in the hazard of dissolution. These patterns also held for most of the other strains. At the same time, strain effects in the joint model never exceeded strain effects in the model with only one partner. This underscores the relevance of looking at both partners since, in models with only one partner, what appears to be the consequence of personal strain picks up on partner strain.

In the third and final step of the analysis, we examined whether the differential experience of life strains could explain the educational gradient in union dissolution. The results showed that strains explained a large part of the gradient. This is illustrated by the left-hand columns of Table 6, which show the indirect effect of education through strains on dissolution. In line with the original strain thesis, strains in the finance domain explained a large portion of the gradient in dissolution, around 23%. Nevertheless, strains in the social relations domains also explained relevant a portion of the gradient, around 8%. Strains in the residence and health domain did not explain a statistically significant part of the gradient. Job strain again played an unexpected role, a finding we come back to in the discussion section. In total, the differential experience of life strains recorded for one person in a union explained 44% of the educational gradient in union dissolution.

The inclusion of life strains experienced by both partners somewhat improved the explanatory power. This is illustrated by the right-hand columns of Table 6, which show the indirect effect of ego education through ego and partner strains on dissolution. For instance, the differential experience of strains in the health domain now explained 9% of the gradient in dissolution. Increases were observed in the other life domains as well, except in the work and residence domains, which did not play a statistically significant role. This means that the gradient stemmed from the fact that lower educated individuals not only experienced more strains themselves but also tended to have partners who experienced more strains. In total, the differential experience of life strains by both partners in a couple explained 49% of the educational gradient in union dissolution. This is a sizeable portion, considerably more than

Table 5. Effects of ego's and partner's life strains on union dissolution

	Ego model		Ego + partner model			
	Ego effects		Ego effects		Partner effects	
Life strains	b_{strain}	HR_{strain}	b_{strain}	HR_{strain}	b_{strain}	HR_{strain}
Work						
Job strain	−0.08***	0.92	−0.02	0.98	−0.02	0.98
Employment difficulty	0.02	1.02	−0.00	1.00	−0.00	1.00
Finance						
Income insufficiency	0.06*	1.06	0.03*	1.03	0.03*	1.03
Emergency problems	0.13***	1.14	0.07***	1.07	0.07***	1.07
Social relations						
Social isolation	0.12***	1.13	0.10***	1.10	0.10***	1.10
Community exclusion	0.04*	1.05	0.03*	1.03	0.03*	1.03
Health						
Health difficulties	0.05	1.05	0.04*	1.04	0.04*	1.04
Functional limitation	0.04	1.04	0.04**	1.05	0.04**	1.05
Residence						
Neighbourhood disorder	0.03	1.03	0.01	1.01	0.01	1.01
Home dissatisfaction	0.07***	1.07	0.04**	1.04	0.04**	1.04

Source: Authors' calculations using the Household, Income and Labour Dynamics in Australia data.

Notes: Coefficients from a Poisson regression of union dissolution on all life strains. Ego models controlled for ego education, duration, union cohort, refreshment sample, marital status, union sex composition, and ego sex, ethnicity, religiosity, parental separation, age at union formation, and union order. Ego + partner models additionally controlled for partner education and partner ethnicity, religiosity, parental separation, age at union formation, and union order. Full model results available in Supplementary Tables SA6 and SA7. $N = 52{,}574$ union-years; 7,930 unions.

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

explained by economic life domains alone, and somewhat more than models that disregard the partner.

Robustness Checks

We conducted several robustness checks, the results of which are available in Supplementary Appendix SB. The first set of checks concerned the model specifications. In the previous sections, we explained the educational gradient in union dissolution 'as is', by first describing the gradient and then adding mediators and confounders. We also tried to explain the 'causal' part of the gradient, by modelling the gradient net of all confounders and then adding the remaining mediators. This yielded a smaller gradient of which a larger part was explained, though results did not differ much (Supplementary Tables SB1.1–SB1.4). Furthermore, the previous sections were based on multiple imputation to facilitate our high data demands. We repeated the analysis using listwise deletion. The smaller number of observations resulted in larger standard errors, but point estimates were similar (Supplementary Tables SB1.5–SB1.7).

The second set of checks concerned subpopulations. In the previous sections, we examined the educational gradient in union dissolution across all individuals. However, the gradient might differ by sex and parenthood. Hence, we repeated the analysis separately for heterosexual men and heterosexual women (not for same-sex couples because of few cases). This resulted in few notable differences, except that men's job strain appeared to stabilize unions whereas women's job strain was unrelated to union stability (Supplementary Figures SB2.1 and SB2.2 and Tables SB2.1–SB2.8). We also repeated the analysis separately for couples with and without children. This again resulted in few differences, except that couples with children witnessed a larger gradient in dissolution and somewhat larger effects of strains on dissolution (Supplementary Figures SB2.3 and SB2.4 and Tables SB2.9–SB2.16).

The third set of checks concerned the direction of causality. Our analysis focused on strains in external life domains because these are relatively exogenous to couple dynamics. Still, couple dynamics might influence personal decisions in these domains and consequently the experience of strain. Hence, we conducted an instrumental-variable regression. Instruments such as job loss and the Great Recession could not be used, since job loss was rare and the recession hardly affected

Table 6. Mediation of educational gradient in union dissolution by ego's and partner's life strains

	Ego model		Ego + partner model	
Life strains	$b_{indirect\ effect}$	Explained (%)	$b_{indirect\ effect}$	Explained (%)
Work				
Job strain	−0.004**	4.84	−0.001	1.75
Employment difficulty	−0.002	1.80	0.000	−0.26
Finance				
Income insufficiency	−0.006*	6.46	−0.006**	7.09
Emergency problems	−0.014***	16.41	−0.014***	17.07
Social relations				
Social isolation	−0.006***	6.90	−0.009***	10.88
Community exclusion	−0.001	1.44	−0.002**	2.03
Health				
Health difficulties	−0.003	2.87	−0.004**	4.76
Functional limitation	−0.002	2.20	−0.004***	4.61
Residence				
Neighbourhood disorder	−0.001	0.92	−0.000	0.41
Home dissatisfaction	−0.000	0.12	−0.000	0.46
All mediators		43.95		48.81

Source: Authors' calculations using the Household, Income and Labour Dynamics in Australia data.

Notes: Products of coefficients from a generalized structural equation model with paths linking education to life strains and paths linking life strains to union dissolution. Full model specification available in Eqs. 1 and 2. Full results available in Supplementary Tables SA6 and SA7. $N = 52{,}574$ union-years; 7,930 unions.

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

Australia. Instead, we used unexpected life events. Income insufficiency was instrumented with major financial improvement (e.g. winning a lottery) and worsening (e.g. bankruptcy), health difficulties with serious injury or illness and death of a friend (Frijters, Johnston and Shields, 2014), and neighbourhood disorder with victimhood of property crime (e.g. burglary). These instruments were plausibly exogenous, exhibited good first-stage correlations with the strain variables (Sanderson-Windmeijer $F \geq 30$), and seemed to comply with the exclusion criterion ($p_{\text{Hansen } J} \geq 0.32$). The results showed that strains caused a higher risk of dissolution (Supplementary Table SB3). Nonetheless, previous work has casted some doubt on the lottery instrument (Boertien, 2012), so we view these results as tentative and encourage others to conduct a more rigorous test.

Discussion

Lower educated individuals are more likely to separate across many Western societies (Raymo, Fukuda and Iwasawa, 2013; Matysiak, Styrc and Vignoli, 2014; Hogendoorn, Leopold and Bol, 2020). Because of its consequences for social inequality, sociologists have had a longstanding interest in the educational gradient in union dissolution (McLanahan, 2004). Particular interest has been paid to the strain thesis, which proposes that the gradient stems from the differential experience of economic strain (Goode, 1962). Recent work has found that economic strain explains about 15–20% of the gradient (Raymo, Fukuda and Iwasawa, 2013; Kaplan and Herbst, 2015; Boertien and Härkönen, 2018), leading some to conclude that 'the argument that increased educational attainment reduces divorce risk by reducing financial hardship and stress [...] stands on weak empirical ground' (Raley and Sweeney, 2020, p. 85).

In this study, we revisited the strain thesis, by broadening it to multiple life domains and by considering both partners in each couple. We used longitudinal data from the Household, Income and Labour Dynamics in Australia survey to follow cohabiting and married couples ($N = 52{,}574$ union-years; 7,930 unions) over a period of 17 years (2001–2017). The results showed that lower educated individuals and their partners were more strained across all life domains and that the joint experience of strain strongly increased the risk of union dissolution. All in all, life strains explained nearly half of the educational gradient in union dissolution. This is a considerable advance on previous studies.

Zooming in on the results, several findings are noteworthy. First, social support and the ability to raise

emergency funds stood out as key factors for union stability. This reaffirms the dual role of education as human capital, giving access to higher and more secure incomes, and as social capital, giving access to network resources such as advice and practical help (Schafer and Vargas, 2016). Second, neighbourhood disorder was unrelated to union stability. Further analysis (not reported) suggested this was due to its overlap with financial strain. Indeed, the connection between education and residence is mainly financial in nature, whereas the connections between education and other life domains are also non-financial. Third, job strain appeared to decrease rather than increase the risk of union dissolution. We believe that this had to do with the measurement. Following Karasek's (1979) model, in which job strain results from a combination of high job demand and low job control, our measure might have captured the demand aspect only. This would also explain why the stabilizing effect was observed for men's but not for women's job strain, as a man's demanding job indicates his successful enactment of the breadwinner role (Hansen, 2005). Last, when considering each life domain in isolation (not reported), adding information on the partner strongly improved the explanatory power of the strain thesis. This was less the case when considering all life domains at once. This may indicate that couples rarely face *particular* strains together but rather accumulate an *overall* amount of strain. Such interpretation is consistent with the spillover-crossover model, according to which strain in one life domain intensifies strain in another life domain of the partner (Bakker, Demerouti and Dollard, 2008). Examples include spillover-crossover from one partner's work exhaustion to the other partner's health behaviour or from one partner's home dissatisfaction to the other partner's parenting behaviour (Doumas, Margolin and John, 2003; Nelson *et al.*, 2009).

Our findings demonstrate that life strains are pivotal to the stratification of romantic relationships. Contrary to notions of match quality, individuals with lower education appear to face circumstances that get in the way of their relationships. This resonates with previous research showing small socioeconomic differences in problems due to romantic standards or social skills, yet large differences due to external stressors (Trail and Karney, 2012). Dissolutions related to external stressors are undesired and possibly preventable. In this sense, it may be fruitful to think of 'excess dissolutions', in analogy to 'excess mortality' from preventable causes. This could aid the search for policy measures that reduce life strains. For example, the public provision of long-term care might reduce the social strain experienced by family caregivers, education programmes and the taxation of unhealthy foods might reduce health strain, and comprehensive social assistance might reduce financial strain (Baert *et al.*, 2008; Nelson, 2012; Briggs *et al.*, 2017).

At the same time, life strains cannot fully explain the gradient in dissolution. To an extent, this might relate to the nature of the strains. This study considered relatively major and enduring strains, which respondents were able to recall when looking back to the past year. Minor or acute strains, including momentary social obligations or difficult customers at work, were not reported in the survey, while they are at least as important for couple interaction (Randall and Bodenmann, 2009). Still, other factors may be at play. One of these factors derives from social exchange theory, according to which higher educated people face higher barriers to dissolution. Recent studies have found that home ownership and divorce intolerance deter higher educated people from dissolving their unions (Boertien and Härkönen, 2018; Van Damme, 2020). This raises questions about the interplay between strains and barriers. One possibility is that dissolutions follows a conditional model, whereby moderately strained unions are most sensitive to the presence or absence of barriers (Amato and Hohmann-Marriott, 2007). Another possibility is that dissolution follows a sequential model, whereby strain triggers the consideration of breaking up and subsequently of barriers to doing so. Yet another model accounts for couple dynamics. Lower educated people may be less able to adapt to changes in their relationships, because the ability to adapt deteriorates in the face of external stressors (Neff and Karney, 2009). This could result in the couple growing apart and eventually separating. Future research could explore these theoretical models.

A final question regards the institutional context. The relevance of strains depends on their educational distribution and their connection to union dissolution. Australia is a highly stratified country where dissolution is widespread. Our findings likely generalize to other Anglo-Saxon countries, which are similar in these respects. Our findings may also hold in the Nordic countries and Western Europe, albeit for a different reason. These countries have been forerunners of the expansion of higher education, so that the lower educated represent an increasingly disadvantaged group despite redistributive efforts of the welfare state (Jalovaara *et al.*, 2019). A different picture may emerge in the Mediterranean countries, where normative barriers to dissolution

remain high. Nonetheless, also in those countries, the continuing deinstitutionalization of family life could strengthen the link between strain and dissolution (Härkönen and Dronkers, 2006). It may only be a matter of time before we witness the stratified consequences of life strains elsewhere.

Supplementary Data

Supplementary data are available at ESR online.

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