Partner's unemployment and well-being: the mediating role of relationship quality and stability

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Abstract

Objective: This study examined relationship quality and stability as mediators of the crossover effects of partner’s unemployment on well-being.
Background: Previous longitudinal studies have focused on reduced financial resources and the deterioration of the unemployed partner’s well-being as reasons for crossover effects. This study combined insights from family research on the impact of negative economic events on relationship functioning and the effects of relationship quality and stability on well-being, to provide an additional explanation and improve our understanding of the underlying relationship processes.
Method: Data on 5,392 couples from the German Family Panel pairfam (2008/09-2018/19) and fixed effects models were used to estimate the impact on well-being of the partner’s transition to unemployment. Furthermore, the product method for mediation analysis was implemented to examine the indirect effects of a variety of interpersonal behavioral and intrapersonal cognitive measures of relationship functioning.
Results: The partner’s transition to unemployment exerted negative effects on well-being. These were more pronounced in women than in men, which was explained by gender-specific effects of the partner’s unemployment on relationship functioning rather than different effects of relationship quality and stability on well-being for women and men.
Conclusion: Ignoring the crossover effects of unemployment leads to an underestimation of its societal costs. Explanations should be sought at the couple level as relationship functioning partly mediated the crossover effects. The way in which men’s and women’s unemployment affected relationship functioning may improve our understanding of gender differences in crossover effects.

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Partner's unemployment and well-being:

the mediating role of relationship quality and stability

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Introduction

Previous research has shown that not only your own unemployment but also that of your partner may exert a negative impact on well-being. Yet the empirical evidence for what are termed crossover effects (Bakker & Demerouti, 2013), has been largely limited to cross-sectional studies based on small community samples (Dew, Penkower, & Bromet, 1991; McKee-Ryan & Maitoza, 2018; Ström, 2003). However, more recent longitudinal research drawing on large-scale representative household panel data confirms that changes in the employment status of one partner may negatively affect the well-being of the other (Kim & Do, 2013; Mendolia, 2014). Whereas most studies report greater crossover effects in women (Bubonya, Cobb-Clark, & Wooden, 2017; Inanc, 2018; Marcus, 2013) others find minor differences or even more pronounced effects in men (Luhmann, Weiss, Hosoya, & Eid, 2014; Nikolova & Ayhan, 2018) as well as highlight the importance of the context studied (Baranowska-Rataj & Strandh, 2020). Although this shows that unemployment generates higher societal costs than previously assessed, only few longitudinal studies have examined why partner's unemployment influences well-being and especially through which respective relationship processes. This is an important limitation, as a detailed understanding of the mechanisms of crossover effects may provide better guidance about how to design measures aimed at reducing them. Consequently, this study raises the following research questions: How does the partner's unemployment affect the quality and stability of the relationship and how do these, in turn, affect well-being?

The two explanations considered the most relevant in previous longitudinal studies are the reduction of financial resources and the unemployed partner's well-being, with empirical studies providing mixed evidence regarding both channels (Bubonya et al., 2017; Inanc, 2018; Kim & Do, 2013; Luhmann et al., 2014; Marcus, 2013; Mendolia, 2014; Nikolova & Ayhan,

2018). Thus, whereas previous longitudinal research has provided first insights into the question of why partner's unemployment negatively affects well-being, the explanations remain, to some extent, incomplete as they do not examine through which changes in the underlying relationship processes crossover effects emerge and have instead focused on mechanisms related to the unemployed partner only.

From the viewpoint of family research, the lack of a couple's perspective and attention to relationship functioning is surprising. Family stress theories (Lavee, 2013) and especially the family stress model (FSM) (Conger, Conger, & Martin, 2010) have shown how negative economic events can shape relationship quality and stability. Research has also attested to the importance of relationship functioning for well-being (Proulx, Helms, & Buehler, 2007; Robles, Slatcher, Trombello, & McGinn, 2014). In line with this, the spillover-crossover model (SCM) considers communication and interactions within couples an essential explanation for crossover effects (Bakker & Demerouti, 2013), and earlier studies based on small community samples support this view (Howe, Levy, & Caplan, 2004; Vinokur, Price, & Caplan, 1996; Westman et al., 2004). Therefore, this study combines these two lines of research, arguing that relationship quality and stability are relevant mediating factors of the crossover effects on well-being of partner's unemployment.

We further contribute to research on the FSM by offering a detailed examination of the impact of negative economic events on relationship functioning. While earlier cross-sectional research examined both relationship quality and stability as well as emphasized their multidimensional character (Aytaç & Rankin, 2009; Conger et al., 1990; Kwon, Rueter, Lee, Koh, & Ok, 2003), recent longitudinal studies have only focused on relationship satisfaction (Blom, Verbakel, & Kraaykamp, 2019; Hardie, Geist, & Lucas, 2014). Complementing these, we

extend the examination of intrapersonal cognitive measures by considering interpersonal behavioral measures of relationship quality and subjective indicators of relationship instability (Booth, Johnson, & Edwards, 1983). Research on relationship quality also distinguishes positive and negative aspects (Bradbury, Fincham, & Beach, 2000; Fincham & Rogge, 2010) and studies based on the FSM emphasize increases in negative over decreases in positive qualities in response to financial hardship (Conger et al., 1990). Consistent with this, research on the effects of relationships on well-being also suggest that strains outweigh strengths (Carr & Springer, 2010; Proulx et al., 2007; Umberson & Thomeer, 2020). Hence, understanding how various aspects of relationship functioning change following unemployment of one partner as well as differently affect well-being advances our knowledge of what makes couples more or less resilient to economic shocks.

We further add to research on the gendered nature of crossover effects. Previous studies suggest that the more negative effects on women may be due to the larger income losses associated with men's unemployment. Complementary to this, we empirically examine whether women may be more negatively affected because they experience greater reductions in relationship quality and stability (Blom et al., 2019; Blom & Perelli-Harris, 2020) or because relationship functioning is more important to their well-being (Kiecolt-Glaser & Newton, 2001; Wanic & Kulik, 2011). A detailed look at the mediating role of relationship processes can thus offer new insights into the reasons for gender-specific crossover effects.

In order to examine how partner's unemployment affects well-being, we use unique data from the German Family Panel pairfam (2008/09-2018/19) and apply fixed effects models, allowing us to rule out bias due to time-constant confounding and measurement errors (Brüderl & Ludwig, 2015). As pairfam was partially motivated by family stress models, it also holds

detailed measures of relationship functioning. We extend earlier research in two additional ways. First, we focus on partner's transitions into unemployment. Standard specifications of fixed effects models assume symmetric effects (Allison, 2019), however previous studies have shown that reemployment does not fully compensate for the negative effects of becoming unemployed on the well-being of individuals (Young, 2012) and their partners (Baranowska-Rataj & Strandh, 2020). Our focus on transitions into unemployment is further motivated by the FSM, where negative economic events represent instances of financial hardship. Second, when testing explanations of crossover effects, we implement the product method of mediation analysis using fixed effects models (Krug & Prechsl, 2020). This allows us to learn how the indirect effects are generated by examining both the effects of partner's unemployment on relationship quality and stability and the effects of the latter on well-being as well as to study gender differences in each of these links.

Background

To provide some background on the crossover effects of partner's unemployment on well-being and the respective gender differences, we discuss theoretical explanations and empirical evidence of previous longitudinal research. Based on the SCM (Bakker & Demerouti, 2013), three mediating factors are usually distinguished: (1) common stressors, such as reductions in financial resources, (2) direct crossover of the unemployed partner's reduced well-being through empathic processes, and (3) indirect transmission through reduced relationship quality and stability as facilitated by communication and interactions. We provide a review of empirical evidence for the first two mechanisms, before motivating the third one, which is the focus of our empirical investigation. We also discuss evidence on gender differences, in order to better understand

whether differences in the total crossover effects between women and men can be explained by gender-specific indirect effects.

The mediating role of reductions in economic resources and the partner's well-being

Reductions in economic resources require adjustments in living standards and lead to increases in unhealthy, and decreases in healthy, behaviors (Korpi, 2001). They also undermine feelings of control and the ability to plan ahead (Strandh, 2000). As partners are economically interdependent, financial consequences may be considered a common stressor.

Some research has examined this channel indirectly yielding mixed evidence (Bubonya et al., 2017; Nikolova & Ayhan, 2018)., Studies that find considerable negative crossover effects net of household income (Kim & Do, 2013; Luhmann et al., 2014) or directly test for its mediating role, show that it is unlikely to be the primary explanation (Bubonya et al., 2017; Marcus, 2013; Mendolia, 2014; Nikolova & Ayhan, 2018). Subjective assessments of changes in financial situation following unemployment seem to be a somewhat more relevant mechanism (Inanc, 2018). As unemployment of men often causes greater income losses (Ehlert, 2012), or maybe is perceived as a more dramatic change of family´s financial situation, this may explain more pronounced crossover effects in women. However, previous research finds that the gender differences in crossover effects persist even after adjusting for financial resources calling for a more in-depth investigation of why gender differences in crossover effects emerge.

Another potential mechanism is a direct crossover from the well-being of the unemployed partner (Inanc, 2018; Kim & Do, 2013). As long as partners in intimate relationships have empathy for each other, the sharing of emotions with an unemployed partner leads to reductions in personal well-being. Available studies have not systematically tested this mechanism, making it difficult to judge its importance. However, from the findings of Inanc (2018) it may be

concluded that reductions in the unemployed partner's well-being partly explain the crossover effects and the gender differences in these.

Overall, there is some longitudinal evidence that economic resources, especially their subjective perceptions, can explain part of the total crossover effects, but little of the gender gap. Partner's well-being may be relevant, but direct tests using mediation analysis are lacking. Moreover, in both cases the question through which relationship processes these mechanisms are exerting their influence remains unanswered. Relationship processes may be triggered by financial hardship (Conger et al., 2010) or reductions in the unemployed partner's well-being (Vinokur et al., 1996) or they may emerge independently. Thus, while the three explanations are not entirely independent of each other, an examination of relationship functioning can provide a deeper understanding of how crossover effects materialize. Consequently, we consider theoretical arguments and empirical evidence for a third explanation that focuses on changes in relationship functioning.

The mediating role of relationship quality and stability

Little is known about changes in relationship functioning as a channel for crossover effects. Some indirect support comes from moderation analyses suggesting that women who were more dissatisfied with their relationships before their partner became unemployed were more negatively affected (Bubonya et al., 2017) or from findings that measures indicative of relationship functioning mediate some of the crossover effects on women (Kim & Do, 2013). However, no recent longitudinal study has directly investigated the mediating role of relationship quality and stability. To further motivate this explanation, in the following, we, therefore, separately review studies on the two constitutive links of this indirect effect.

Family stress theories (Lavee, 2013) and especially the FSM (Conger et al., 2010) argue that negative economic events lead to financial pressures that alter communication and interactions of spouses by increasing hostility, conflicts, withdrawal and distancing, as well as decreasing warmth and support. This, in turn, negatively affects the quality and stability of the relationship. The FSM has found support in cross-sectional research (Aytaç & Rankin, 2009; Conger et al., 1990; Kwon et al., 2003) and while recent longitudinal studies confirm its basic premises, they are focused on relationship satisfaction and do not consider other aspects of relationship quality or relationship stability (Blom et al., 2019; Hardie et al., 2014).

Hardie et al. (2014) find that being at risk of poverty reduces relationship satisfaction of women but not of men. More direct evidence of crossover effects is provided by Blom et al. (2019), who not only show that unemployment reduces men's own relationship satisfaction but also negatively impacts their female partners. Blom and Perelli-Harris (2020) further investigated how changes in employment status are related to changes in relationship happiness, finding that women were negatively affected by their male partner's unemployment. In additional analyses, the authors showed that women's dyadic satisfaction, measured by conflicts and perceived stability, was consistently negatively associated with the employment status of their partners, while dyadic cohesion, which focuses on positives aspects such as joint activities and constructive communication, was less affected. This supports the idea that positive and negative aspects of relationship quality must both be studied (Conger et al., 1990) and that the latter may be more strongly affected. Still, more longitudinal research is needed that considers interpersonal behavioral and intrapersonal cognitive measures of relationship quality as well as perceptions of relationship stability.

Previous longitudinal studies show that the crossover effects on relationship functioning are gendered, but how can this be explained? Research points to the different roles of women and men in romantic relationships and society, which are established through socialization and reinforced by gender norms (Knabe, Schöb, & Weimann, 2016). In many societies, despite a trend towards egalitarianism, men are more often considered to be the main economic providers, while women are expected to take care of household duties and children. From this perspective, unemployment by men represents a greater deviation from ideal gender roles, leading to a greater threat to relationship functioning. Accordingly, men`s behavioral and emotional reactions may place greater demands on women, who may also lose respect for their unemployed partners (Blom & Perelli-Harris, 2020). By contrast, unemployment makes women meet gender-specific expectations rather than deviate from these. This view of a gendered socialization is consistent with women having been found to be more responsive to social rejection as well as family-related stressors, while men are more sensitive to achievement stressors occurring to themselves (Kessler & McLeod, 1984; Stroud, Salovey, & Epel, 2002). Therefore, gender-specific crossover effects may be explained by men having more ego-focused self-portrayals, while women more often hold other-focused selves (Simon, 2014).

In addition to differences in the extent to which unemployment is a stressor, gender gaps may arise as women and men express and cope with stress differently. Men are known to externalize stress and are more likely to display anger. Women, on the other hand, internalize stress and more frequently express sadness (Simon, 2014). As far as coping is concerned, women more often use ‘tend and befriend’ strategies, which emphasize nurturance and interpersonal affiliation, while men are more likely to show ‘flight or fight’ behaviors such as withdrawal (Taylor et al., 2000). Differences in individual strategies, with women engaging in interpersonal and emotion-

focused coping and men preferring interpersonal distance may furthermore affect dyadic coping (Story & Bradbury, 2004).

Overall, we expect that negative dimensions of relationship functioning are more strongly influenced by partner's unemployment and that gender-specific total crossover effects can be partly explained by the fact that the relationship quality and stability of women is affected to a greater extent by unemployment of their partner than that of men.

Besides relationship-functioning being reduced by partner's unemployment, an indirect effect also requires a second link from relationship quality and stability to well-being, which may also contribute to gender differences. Family research offers a great deal of evidence showing that well-being is strongly determined by the quality and stability of relationships (Carr & Springer, 2010; Umberson & Thomeer, 2020). It has also highlighted the need to conceptually differentiate positive and negative dimensions of relationship quality (Robles et al., 2014). Following the marital discord model on depression, it is commonly claimed that negative aspects are more relevant for well-being (Carr & Springer, 2010; Umberson & Thomeer, 2020). In a meta-analysis, Proulx et al. (2007) found some evidence for this as indicators with a negative valence were more strongly related to well-being. Regarding gender differences, women are shown to suffer more from strains and negative behaviors of their partners (Carr & Springer, 2010; Proulx et al., 2007; Umberson & Thomeer, 2020).

Two perspectives explaining gender differences are the interpersonal-orientation and the subordinate reactivity hypotheses (Robles et al., 2014). The first maintains that women are more aware of the affective quality of relationships, due to their relationally-interdependent self-representations (Kiecolt-Glaser & Newton, 2001). They react more strongly to negative life events of family members and have a stronger sense of responsibility for them (Conger, Lorenz, Elder,

Simons, & Ge, 1993; Kessler & McLeod, 1984). The second perspective argues that a different allocation of power between women and men is the reason, as individuals of lower status invest more in relationship maintenance and are also more vulnerable to stress (Proulx et al., 2007; Wanic & Kulik, 2011). This view states that it is the negative aspects of relationship quality that have a greater impact on women, while positive interactions are equally beneficial for both genders. Meta-analytical evidence from cross-sectional research indeed finds that women are affected more strongly (Proulx et al., 2007; Robles et al., 2014).

Overall, we expect that the indirect effects of relationship functioning are stronger for negative than positive aspects, not only because unemployment disproportionately increases exposure to negative dimensions, but also because the latter are more relevant to well-being. Gender differences may arise due to partner's unemployment leading to greater changes in relationship quality and stability of women, but also because women's well-being depends more on good relationships and, especially, the absence of negative interactions.

Methods

Data and Sample

We used data from waves 1 (2008/09) to 11 (2018/19) of the German Family Panel pairfam (data release 11.0, doi: 10.4232/pairfam.5678.11.0.0). It provides annual panel data from a nationwide random sample of about 18,000 individuals (known as anchors) from four birth cohorts (1971-73, 1981-83, 1991-93, 2001-03) including information on partners (Huinink et al., 2011). We first selected a sample of anchors with opposite-sex partners (N=13,424) and excluded Cohort 4 and the refreshment samples, as they were only available for wave 11 (N=10,929). For anchors from Cohort 1 and the DemoDiff subsample, which comes from a study that has been integrated with pairfam, we only used data from wave 2 or 4 onwards, as not all measures were available before

(N=10,325). Anchors and partners were required to be 16 years or older (N=10,041) and to have no missing values on the variables studied (N=9,189).

Because we wanted to study how the well-being of anchors is affected by the partner's transition into unemployment, we further focused on anchors with a partner at risk of becoming unemployed. Such an analysis of transitions is consistent with the FSM emphasis on negative economic events and also considers that standard specifications of fixed effects models assume symmetric effects (Allison, 2019), but previous studies have shown that the impact of becoming unemployed and reemployed differs in magnitude (Baranowska-Rataj & Strandh, 2020; Young, 2012). Therefore, we only included anchors where the partner experienced a transition to unemployment between two interviews (treatment spell) or was continuously employed (control spells). As we used fixed effects models, each treatment and control spell also had to consist of at least two waves to contribute to the analyses (N=5,392). These sample restrictions left us with 29,278 person-years from 5,392 persons (anchors and their partners). Partners may experience more than one transition into unemployment, and we observe 129 and 268 treatment spells by partners for men and women, respectively.

Measures

Dependent variable. The life satisfaction of the anchor was measured on an 11-point scale from 0 (very dissatisfied) to 10 (very satisfied). Global life satisfaction primarily captures the cognitive component of subjective well-being, referring to people's judgments about their life as a whole. It has been shown to be valid, reliable, and sensitive to change such that it is well-suited for our analyses (Diener, Inglehart, & Tay, 2013). Descriptive statistics for this and all the other variables are provided in Table 1 separately for women and men.

Table 1. Descriptive Statistics

	Men		Women	
	Mean	*SD*	Mean	*SD*
Dependent variable				
Life satisfaction (0-10)	7.74	1.46	7.81	1.51
Independent variables				
Partner employed (1=yes, 0=no)	0.99		0.98	
Partner unemployed (1=yes, 0=no)	0.02		0.02	
Confounding variables				
Age (in years)	35.49	7.07	34.46	7.19
Monthly state-level unemployment rate (%)	7.81	2.89	7.79	2.89
Mediating variables				
Network of relationships inventory (NRI) (scale 1-5)				
Intimacy	3.66	0.73	3.89	0.74
Admiration	3.82	0.65	3.72	0.76
Domination	3.16	0.56	2.89	0.59
Conflict	2.46	0.62	2.56	0.66
Conflict styles and behavior (CSB) (scale 1-5)				
Verbal aggression (self)	1.58	0.74	1.83	0.90
Verbal aggression (partner)	1.60	0.79	1.66	0.84
Constructive behavior (self)	3.62	0.78	3.83	0.79
Constructive behavior	3.60	0.82	3.51	0.91
Withdrawal (self)	2.16	0.91	2.16	0.93
Withdrawal (partner)	2.02	0.89	2.26	1.02
Relationship satisfaction and instability (RSI)				
Relationship satisfaction (self) (scale 0-10)	7.90	2.06	7.83	2.14
Relationship satisfaction (partner) (scale 0-10)	7.63	2.02	7.72	2.06
Relationship instability (scale 0-3)	0.33	0.79	0.41	0.89

Note: pairfam, data release 11.0, N = 5,392 persons and 29,278 person-years.

Independent variable. We distinguished between the following activity statuses of partners at an interview t: employment, unemployment, and inactivity. In order to only consider partners who became unemployed, we defined treatment spells that included all the consecutive years of employment before and all the consecutive years of unemployment after a transition from employment to unemployment between interviews t and $t+1$. Control spells consisted of consecutive years of partner's employment. The latter provide information on changes in anchors' life satisfaction in the absence of partner's transition into unemployment and contributes to the

estimation of the effects of the control variables (Brüderl & Ludwig, 2015, p. 346). Both kind of spells were censored if partners experienced any other changes in their activity status, anchors (or partners) (temporarily) dropped out or couples separated.

Mediating variables. Given our interest in the mediation of crossover effects through reductions in relationship quality and stability, and drawing on the pairfam scale manual (Thönnissen, Wilhelm, Alt, Reim, & Walper, 2020) we considered the following indicators, all of which concern the anchor's view of the relationship. With the aim of capturing interpersonal behavioral aspects, an adaptation of the Network of Relationships Inventory (NRI) was used (Furman & Buhrmester, 1985), describing four aspects of interactions between partners: intimacy, esteem, dominance, and conflict. For each dimension, the mean of two items (scales 1-5) was calculated. Details on the items and of those of all other measures of relationship quality and stability can be found in Table A1 in the Appendix.

In order to better understand couple's communication and interactions in cases of conflict, scales of conflict styles and behavior based on work by Bodenmann (2000) were used, and for three dimensions the mean of two items (scales 1-5) was calculated: verbal aggression, constructive behavior and withdrawal. Anchors judged both their own and partner's conflict styles and behaviors. Following recent longitudinal research (Blom et al., 2019; Hardie et al., 2014), we further examined global intrapersonal cognitive measures of relationship quality, including anchor's evaluation of their own and partner's relationship satisfaction on 11-point scales ranging from 0 (very dissatisfied) to 10 (very satisfied). Pairfam also provides a subjective measure of relationship instability (Booth et al., 1983) enabling us to pay attention to the FSM's consideration of the likelihood of the continuation of the relationship (Conger et al., 1990).

For this measure, anchors reported whether they perceived the relationship to be in trouble, thought about separation or suggested separation to their partner with the sum of the three items reflecting the degree of instability.

Confounding variables. To control for time-varying confounding variables, all models included age and survey wave effects as well as the monthly state-level unemployment rate in the month of the interview. When estimating the total crossover effects, we only adjusted for variables that were assumed to affect the partner's risks of becoming unemployed as well as the anchor's life satisfaction in order to avoid any overcontrol bias (Elwert & Winship, 2014). Hence, variables that may lie on the causal path from partner's unemployment to life satisfaction such as household income, family status or own activity status were intentionally not controlled for.

Fixed Effects Models

In order to estimate the crossover effects of partner's unemployment, linear fixed effects models were used with s referring to partner's treatment and control spells and t indicating the survey wave. All models included interaction terms of all variables with the female dummy variable F_s^A, meaning that all coefficients were allowed to differ by gender. To keep the notation simple, these interaction terms are omitted in Equation (1) and all following equations.

(1) $$LS_{\mathrm{st}}^{A} = \gamma \mathrm{T}_{\mathrm{st}}^{\mathrm{P}} + \delta_1 \mathrm{X}_{\mathrm{st}} + \mu_{1\mathrm{s}} + \varepsilon_{1\mathrm{st}}$$

LS_{st}^{A} is anchor's life satisfaction in spell s at survey wave t and T_{st}^{P} is a dummy variable for partner's unemployment, taking values of 0 in the years of employment before and values of 1 in the years of unemployment after the transition. The vector X_{st} includes time-varying confounding variables as well as wave dummies to account for period effects. $\mu_{1\mathrm{s}}$ is the fixed effect, while $\varepsilon_{1\mathrm{st}}$ reflects the idiosyncratic error term. As our units of analysis are the partner's treatment and controls spells, repeated transitions into unemployment within one relationship or different

relationships of one anchor were treated as separate observations. To account for the fact that observations are nested in spells which are nested in relationships and anchors, the standard errors were clustered at the anchor level. As fixed effects models only use variation within spells over time, confounding due to time-constant individual, partner or couple characteristics was implicitly taken into account (Brüderl & Ludwig, 2015). The total crossover effects of the partner's unemployment on anchor life satisfaction are described by γ.

As we were further interested in the indirect crossover effects through relationship quality and stability for each mediating variable M_{st}^{A}, the models in Equations (2) and (3) were fitted, with the variables being defined in the same way as above.

(2) $$MS_{\mathrm{st}}^{A} = \alpha \mathrm{T}_{\mathrm{st}}^{\mathrm{P}} + \delta_2 \mathrm{X}_{\mathrm{st}} + \mu_{2\mathrm{s}} + \varepsilon_{2\mathrm{st}}$$

(3) $$LS_{\mathrm{st}}^{A} = \gamma' \mathrm{T}_{\mathrm{st}}^{\mathrm{P}} + \beta M_{\mathrm{st}}^{A} + \delta_3 \mathrm{X}_{\mathrm{st}} + \mu_{3\mathrm{s}} + \varepsilon_{3\mathrm{st}}$$

In Equation (2), α describes the effect of partner's unemployment on the respective indicator of relationship functioning M_{st}^{A}, while in Equation (3), β is the effect of the latter on life satisfaction. The product $\alpha * \beta$ then represents the indirect crossover effect of the partner's transition into unemployment via the chain of mediation from $\mathrm{T}_{\mathrm{st}}^{\mathrm{P}}$ to M_{st}^{A} to LS_{st}^{A}. We used a clustered bootstrap procedure with R = 250 repetitions to estimate its standard error and construct normal-based 95% bootstrapped confidence intervals for the indirect effects. While the difference $\gamma - \gamma'$ algebraically equals the product $\alpha * \beta$, using the product method of mediation analysis (Baron & Kenny, 1986) offers the advantage that the constitutive links of the indirect effect can be examined separately, as explained by Krug and Prechsl (2020). For example, this allows an enhanced understanding of why an indirect effect is small or large or how gender differences in the total crossover effects are reflected in the separate links of the assumed chain of mediation, providing additional insights into

which theoretical arguments are well-founded and which cannot be supported in the light of the specific empirical evidence.

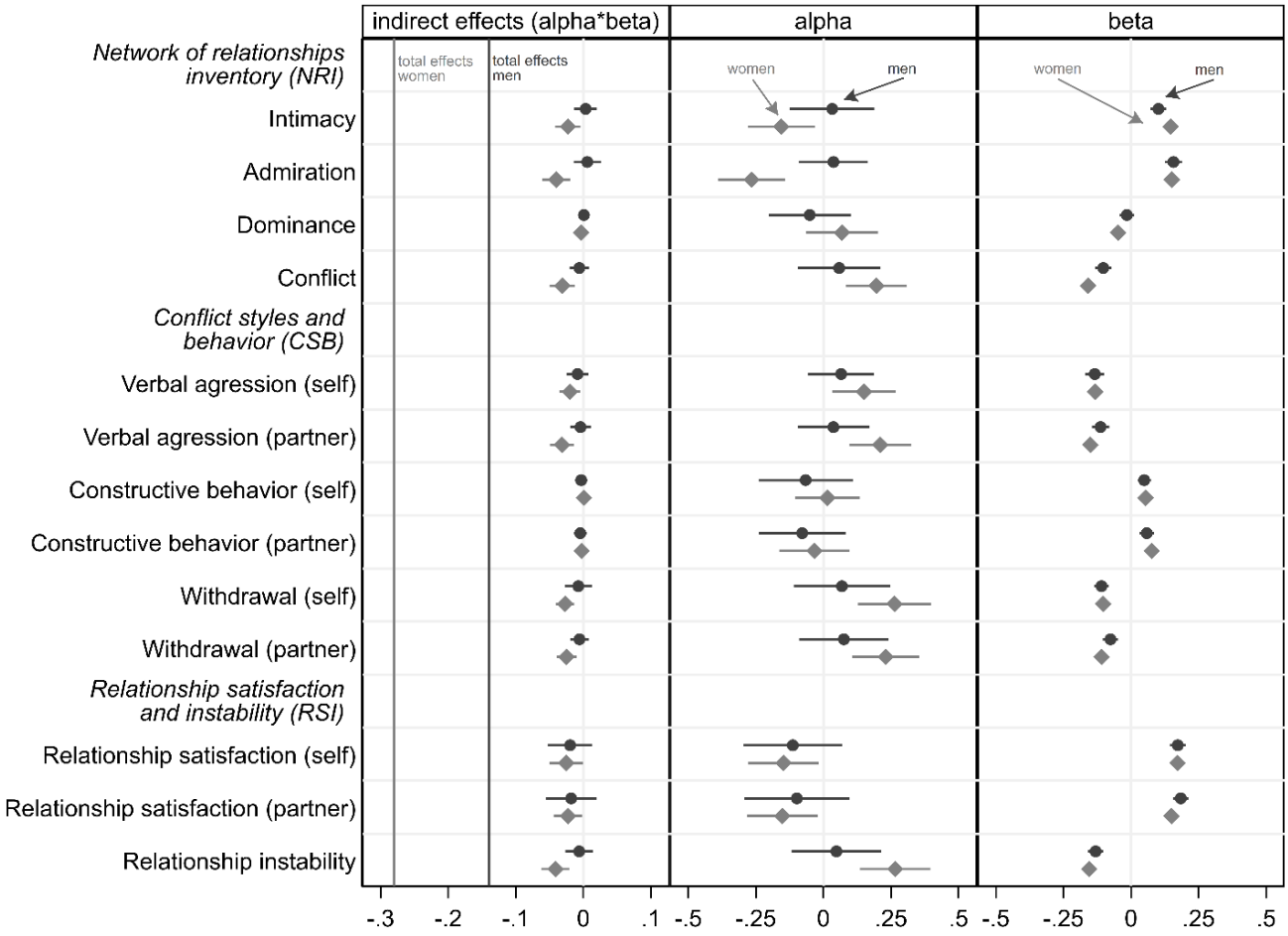
Results

Before the results of the primary analyses are discussed, we first consider the consequences of individual transitions from employment to unemployment for life satisfaction. These may serve as a benchmark for assessing the size and relative importance of the total crossover effects and also allow a plausibility check of our analyses in comparison with previous research using different data. The respective fixed effects models are presented in Table A2 in the Appendix and are based on a sample of partnered anchors, where treatment and control spells were defined in the same way as above, but now refer to the anchors. We found considerable effects of individuals' own transitions into unemployment of -0.76 scale points (95% CI: -1.06, -0.47) for men and -0.49 scale points (95% CI: -0.76, -0.22) for women. Both the magnitude of the effects and the gender gap are consistent with previous studies for Germany (Gebel & Voßemer, 2014; Nikolova & Ayhan, 2018) as well as findings from meta-analyses (Paul & Moser, 2009). In summary, becoming unemployed exerted a negative impact on life satisfaction which appeared to be more pronounced for men than for women, although this difference was not statistically significant.

For the main analyses, results are shown graphically in Figure 1. The key coefficients of the underlying fixed effects models are reported in Tables A3 to A5 in the Appendix. Table A3 contains the estimates of the total crossover effects, which were only about -0.21 scale points for men (95% CI: -0.48, 0.06), but doubled for women to about -0.42 scale points (95% CI: -0.64, -0.20). This gender gap was not statistically significant. For men, the total crossover effect was rather moderate, amounting to less than a third of the total effects of their own unemployment or

about -0.14 standard deviations, while for women, the unemployment of the male partner exerted negative total crossover effects amounting to about 90 percent of the overall effect of their own unemployment or -0.28 standard deviations.

Figure 1. The Effects of Partner's Unemployment on Life Satisfaction: Total Effects, Indirect Effects, and Their Components in Standard Deviations



Note: pairfam, data release 11.0, N = 5,392 persons and 29,278 person-years.

The estimates of the total (vertical lines) and indirect effects (alpha*beta) (left-hand panel) of partner's unemployment on women's (light grey) and men's (dark grey) life satisfaction in standard deviations and their components alpha (middle panel) and beta (right-hand panel) are reported in the Appendix in Tables A4 and A5. Spikes show 95% confidence intervals based on clustered (bootstrapped) standard errors. Standard errors for the indirect effects (alpha*beta) have been bootstrapped using R = 250 repetitions.

The results from this first step of our analysis underline that the negative consequences of male unemployment do indeed extend to their female partners. This is consistent with previous

findings (Baranowska-Rataj & Strandh, 2020; Bubonya et al., 2017; Inanc, 2018), but it still remains unclear how the crossover effects and their gender differences can be explained.

Figure 1 displays all effects in standard deviations with 95 percent confidence intervals. It shows how much of the total crossover effects for women and men (vertical lines at -.28 and -.14 in the left panel) were mediated through the indirect effects of different aspects of relationship functioning. The left-hand panel gives the indirect effects (alpha*beta) for each indicator, while the middle (alpha) and right-hand (beta) panels indicate the components that make it up. For example, the indirect effect through the reduction of intimacy for women is about -0.023, which equals the product of a negative effect of their partners' unemployment on intimacy (alpha=-0.156) and a positive effect of intimacy on women's life satisfaction (beta=0.147). However, this indirect effect accounted for only 8 percent of the total crossover effect on women (=-0.023/-0.283).

Overall, the results presented in Figure 1 lead to three main conclusions. First, the indirect effects via relationship quality and stability were moderate. Among women, no aspect of relationship functioning explained a larger share of the overall effect than 15 percent (=0.041/0.283 for relationship instability). For men, most indirect effects were close to zero and statistically insignificant. Hence, the indirect effects via relationship quality and stability did not appear to be the main reason of why crossover effects emerge. Nevertheless, given the consistent gender differences in the indirect effects, part of the gender difference in the total crossover effects can be attributed to the mediating role of relationship functioning.

Second, the gender gaps are mostly due to the different impact of the partner's unemployment on the assessment of the functioning of the relationship. Men's relationship quality and stability tended to be unaffected by their female partner's unemployment. At the

same time, women usually reported a decline in relationship functioning and, in particular, an increase in perceived instability. This supports the FSM prediction that negative economic events can adversely affect relationships (Conger et al., 2010) and is consistent with recent longitudinal research (Blom et al., 2019; Blom & Perelli-Harris, 2020), and the notion that gender differences emerge at this part of the chain of mediation. We found no clear evidence that positive dimensions are less affected than negatives ones (Conger et al., 1990). Women reported a reduction in intimacy and admiration after their partners became unemployed and an increase in conflicts. In the latter case increases in negative conflict styles such as verbal aggression seemed to be somewhat more pronounced than decreases in constructive behavior.

Third, we found the expected effects of positive and negative dimensions of relationship quality on life satisfaction. Hence our study offers further evidence on which aspects of relationships matter for personal well-being (Proulx et al., 2007; Robles et al., 2014). The small to moderate effects were, however, of very similar magnitude for women and men, contradicting the idea that gender differences in the total crossover effects may be due to the fact that positive and negative aspects of relationships are more detrimental to women's well-being than to men's (Kiecolt-Glaser & Newton, 2001; Wanic & Kulik, 2011).

Discussion

In this study, we examined the total crossover effects of the partner's transition to unemployment on well-being and further investigated to what extent these can be explained by reductions in relationship functioning. Using unique longitudinal data from the German Family Panel pairfam, our results show that the partner's transition into unemployment exerted small to moderate negative effects on well-being. These results are highly relevant given the frequency with which families are confronted with the unemployment of a family member over the course of their lives and the potential for accumulation of joblessness in households (Biegert & Ebbinghaus, 2020).

Our study adds to previous research by showing that unemployment generates higher societal costs than is usually assumed in evaluations examining the well-being of individuals in isolation from their families. It also highlights that mitigation of the negative consequences of unemployment should not only be targeted at the individuals directly affected but should also consider their spouses as well as the couples' underlying relationship processes.

In accordance with many (Bubonya et al., 2017; Inanc, 2018; Marcus, 2013) but not all (Luhmann et al., 2014; Nikolova & Ayhan, 2018) previous studies, we found that the partner's unemployment is more disadvantageous for women than for men, with women being twice as negatively affected. These differences were not statistically significant in our sample, which may reflect a high heterogeneity of individual responses to the partner's unemployment within the groups of men and women. Against the background of clear theoretical predictions of a gender-specific response, it is likely that the crossover effects of negative financial life events may contribute to gender inequalities in well-being. However, further research on this issue is necessary, for example studies that examine the conditions under which the gender differences are small or large (Baranowska-Rataj & Strandh, 2020).

In order to gain a deeper understanding of the reasons for the total crossover effects and, possibly, their gender differences, this study also examined relationship functioning as a potential mechanism linking partner's unemployment to well-being. Previous studies considered the associated channels of reduction in economic resources and the negative impact on the well-being of the individual to be directly affected. However, to gain more knowledge on changes in family's daily relationship processes in the face of a negative economic shock, we integrated two different strands of family research (Conger et al., 2010; Proulx et al., 2007; Robles et al., 2014) to propose relationship quality and stability, as reflected in spousal communication and

interaction, as integral explanations of crossover effects (Bakker & Demerouti, 2013). In line with our expectations, we found statistically significant indirect effects of the partner's unemployment on life satisfaction through several dimensions of relationship functioning among women. Since a large share of total crossover effects remains unexplained by relationship functioning, this points to the need to empirically test further mechanisms in future studies.

Our findings also contribute to family research by providing longitudinal evidence for the FSM prediction that several relationship processes are negatively affected by unemployment. Hence, our study complements recent studies that have focused on relationship satisfaction (Blom et al., 2019; Hardie et al., 2014). In particular, we found that women who had unemployed partners were not only less satisfied with their relationships, but also reported more negative and less positive patterns of communication and interactions, and especially more destructive conflict styles and behaviors in case of disagreements, which was also reflected in the perception of increasing relationship instability. Furthermore, we showed that men and women benefited about equally from improved relationship quality and stability in all these dimensions.

These results are important from the perspective of research on gender differences in responses to life course events. Our study contributes to recent debates suggesting that the effects of negative economic events on relationship functioning (Blom et al., 2019; Blom & Perelli-Harris, 2020) and the impact of relationships on well-being (Kiecolt-Glaser & Newton, 2001; Wanic & Kulik, 2011) may be more pronounced in women than in men. Our results indicated limited gender differences in the effects of relationship quality and stability on well-being. However, we did find gender differences in how the partner's unemployment affects relationship functioning. Thus, gender differences in total crossover effects may be partly attributed to the

way in which female and male unemployment affects the daily functioning of the family, their communication and interactions, and the perceived stability of partnerships.

Despite the strengths of the present study, some limitations remain. While the use of fixed effects models rules out confounding due to time-constant observed and unobserved characteristics, time-varying unobserved factors or measurement errors may still distort our estimates. For example, we cannot rule out that a health shock caused the partner to become unemployed and also negatively affected well-being due to the caregiving burden. As our results are very similar to studies that use job displacement as plausibly exogenous reasons for unemployment (Bubonya et al., 2017; Marcus, 2013; Mendolia, 2014; Nikolova & Ayhan, 2018), we consider it, however, unlikely that our findings can be fully explained in this way. Moreover, we focused on couples who stayed together. Individuals whose well-being is relatively more sensitive to the partner's unemployment may be more likely to separate in the event (or in the anticipation of it). This is plausible given that relationship stability was found to be strongly affected by the partner's unemployment. If this holds, we may have underestimated the negative total impact of unemployment, as well as how much of the effects were transmitted via relationship functioning. Given recent developments in methods for causal inference with longitudinal outcomes and non-ignorable dropout (Josefsson, Luna, Daniels, & Nyberg, 2016), future research could explore this issue further.

Finally, due to the rather small sample sizes, we were not able to examine the heterogeneity in the experience of unemployment and in couples' responses to economic hardship. While we focused on a rather specific measure of unemployment, we were unable to examine how the duration of unemployment or repeated spells might qualify results. It would be also interesting to examine for whom unemployment by one partner leads to a poorer

relationship functioning, as family stress theories highlight that some couples can be expected to be more vulnerable or resistant to the resulting stress (Lavee, 2013).

Overall, our study shows that the detrimental consequences of unemployment extend to partners. These findings contribute to the debate on the factors generating health contagion within couples (Umberson & Thomeer, 2020). The similarity in partners' health and well-being results not only from assortative mating, shared environments and lifestyles, but also because of the spread of the effects of stressful life course events such as unemployment (Wickrama, O'Neal, & Klopack, 2020).

Our study further shows that relationship quality and stability belong to the set of factors mediating the effects of the partner's unemployment and partly explain the previously-documented gender differences. This calls for an examination of how the changing gender relations documented in demographic research (Goldscheider, Bernhardt, & Lappegård, 2015; Pessin, 2018) will moderate the effects of the partner's unemployment on relationship quality and stability, and ultimately well-being, among women and men. This 'gender revolution' has implications for partnership dynamics and also for how people perceive their own and their (prospective) partners' roles within unions (Pessin, 2018) . Consequently, changing gender relations may alter the significance of unemployment for women and men. On the one hand, transitions into unemployment experienced by men may put relatively less strain on women's well-being in the future as couples become more egalitarian. On the other hand, decreases in the magnitude of such crossover effects may be offset by the increasing impact of women's own unemployment on family well-being. Moreover, as long as the gender gap in vulnerability to adverse events experienced by significant others persists over time, women's well-being may continue to be more severely affected by the unemployment of their partners.

Finally, our results underline the importance of family counselling and other measures aimed at communication and interactions between partners in couples affected by unemployment. The way families cope with changes in their economic situation depends on the perceptions and actual functioning of support systems (Cooper & Pugh, 2020). Given that negative experiences related to unemployment affect couple-level processes such as relationship functioning, it is important to recognize the salience of these processes when designing support interventions.

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Appendix

Table A1 Details on the Measures of Relationship Quality and Stability
Table A2 Fixed effects models: Total Effects of Unemployment on Life Satisfaction
Table A3 Fixed effects models: Total Effects of Partner's Unemployment on Life Satisfaction
Table A4 Fixed effects models: Total and Indirect Effects of Female Partner's Unemployment on Male Partner's Life Satisfaction and Their Components
Table A5 Fixed effects models: Total and Indirect Effects of Male Partner's Unemployment on Female Partner's Life Satisfaction and Their Components

Table A1. Details on the Measures of Relationship Quality and Stability

Question and answers
Network of Relationships Inventory (NRI)
(*Answers*: 1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always)
(*Aggregation*: Mean of two items for a dimension, all items of a dimension must be answered)
"How often do the following things happen in your partnership?"
Intimacy
"How often do you tell [name of current partner] what you're thinking?"
"How often do you share your secrets and private feelings with [name of current partner]?"
Admiration
"How often does [name of current partner] express recognition for what you've done?"
"How often does [name of current partner] show that he/she appreciates you?"
Domination
"How often does [name of current partner] make you do things his/her way?"
"How often does [name of current partner] get his/her way when you can't agree on something?"
Conflict
"How often are you and [name of current partner] annoyed at or angry with each other?"
"How often do you and [name of current partner] disagree and quarrel?"
Conflict styles and behavior (CSB) (self and partner)
(*Answers*: 1=Almost never or never – 5=Very often)
(Aggregation: Mean of two items for a dimension, all items of a dimension must be answered)
"What happens when you have a disagreement with [name of current partner]? Please indicate how often each of you engaged in the following behaviors. Please refer to the past six months."
"How about you: How often did you engage in these behaviors?"
"How often did [name of current partner] engage in these behaviors?"
Verbal aggression (self and partner)
"Insult or verbally abuse your partner"
"Insult or verbally abuse you"
"Yell at your partner"
"Yell at you"
Constructive behavior (self and partner)
"Listen and ask questions in order to understand him/her better"

"Listen and ask questions in order to understand you better"
"Endeavor to clarify your position to him/her"
"Endeavor to clarify his/her position to you"
Withdrawal (self and partner)
"Remain silent"
"Remain silent"
"Refuse to talk about the subject"
"Refuse to talk about the subject"
Relationship satisfaction and instability (RSI)
Relationship satisfaction (self and partner)
(*Answers*: 0=Very dissatisfied – 10=Very satisfied)
"All in all, how satisfied are you with your relationship?
"What do you think: How satisfied is [name of current partner] with your relationship?
Relationship instability
(*Answers*: 1=Yes, 2=No)
(*Aggregation*: Sum of three items, all items must be answered)
"Since [date of interview previous wave/the start of your relationship] …"
"… have you ever thought that your relationship or marriage was in trouble?
"… have you seriously considered a separation or a divorce?
"… have you seriously suggested a separation or divorce from [name of current partner], or has [name of current partner] suggested it to you?"

Note: pairfam, data release 11.0, English questionnaire from wave 11.

Table A2. Fixed effects models: Total Effects of Unemployment on Life Satisfaction

	Coefficient	S.E.
Transition into unemployment	-0.76***	0.15
Age	-0.01	0.05
State-level unemployment rate	-0.02	0.02
Transition into unemployment x Female	0.28	0.20
Age x Female	0.06	0.06
State-level unemployment rate x Female	-0.02	0.02
Wave dummies	✓	✓
Wave dummies x Female	✓	✓
Constant	7.66***	0.96

Note: pairfam, data release 11.0, N = 5,169 persons and 27,310 person-years.

This table is based on the fixed effect models specified in the text, but instead of an indicator variable for partner's unemployment it includes an indicator variable for personal unemployment. Standard errors (S.E.) are clustered by anchor.

$^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$.

Table A3. Fixed effects models: Total Effects of Partner's Unemployment on Life Satisfaction

	Coefficient	S.E.
Partner's transition into unemployment	-0.21	0.14
Age	-0.00	0.06
State-level unemployment rate	-0.02	0.02
Partner's transition into unemployment x Female	-0.21	0.18
Age x Female	-0.01	0.07
State-level unemployment rate x Female	-0.00	0.02
Wave dummies	✓	✓
Wave dummies x Female	✓	✓
Constant	8.43***	0.97

Note: pairfam, data release 11.0, N = 5,392 persons and 29,278 person-years.

This table is based on the fixed effect models specified in the text. Standard errors (S.E.) are clustered by anchor.

$^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$.

Table A4. Fixed effects models: Total and Indirect Effects of Female Partner's Unemployment on Male Partner's Life Satisfaction and Their Components

	Total effects		Indirect effects				Components			
Mediator	γ	S.E.	$\alpha * \beta$	S.E.	95% CI		α	S.E.	β	S.E.
Network of relationships inventory (NRI)										
Intimacy	-0.140	0.091	0.003	0.009	-0.014	0.020	0.032	0.080	0.101	0.015
Admiration	-0.140	0.091	0.006	0.010	-0.014	0.026	0.037	0.065	0.157	0.016
Dominance	-0.140	0.091	0.001	0.002	-0.003	0.005	-0.051	0.078	-0.015	0.013
Conflict	-0.140	0.091	-0.006	0.007	-0.020	0.008	0.058	0.078	-0.103	0.015
Conflict styles and behaviors (CSB)										
Verbal aggression (self)	-0.140	0.091	-0.009	0.008	-0.025	0.008	0.065	0.062	-0.134	0.018
Verbal aggression (partner)	-0.140	0.091	-0.004	0.008	-0.019	0.011	0.037	0.067	-0.113	0.016
Constructive behavior (self)	-0.140	0.091	-0.003	0.005	-0.012	0.006	-0.066	0.089	0.049	0.013
Constructive behavior (partner)	-0.140	0.091	-0.005	0.005	-0.014	0.005	-0.079	0.082	0.058	0.013
Withdrawal (self)	-0.140	0.091	-0.007	0.010	-0.028	0.013	0.069	0.091	-0.109	0.013
Withdrawal (partner)	-0.140	0.091	-0.006	0.007	-0.020	0.008	0.076	0.084	-0.076	0.015
Relationship satisfaction and instability (RSI)										
Relationship satisfaction (self)	-0.140	0.091	-0.020	0.017	-0.052	0.013	-0.113	0.093	0.173	0.015
Relationship satisfaction (partner)	-0.140	0.091	-0.018	0.019	-0.056	0.020	-0.098	0.099	0.184	0.015
Relationship instability	-0.140	0.091	-0.006	0.010	-0.027	0.014	0.048	0.084	-0.131	0.015

Note: pairfam, data release, 11.0, waves 1-11, N = 5,392 persons and 29,278 person-years.

This table is based on the fixed effect models specified in the text. All continuous independent and dependent variables have been standardized to zero mean and unit variance meaning that the effects are reported in standard deviations. Standard errors (S.E.) are clustered by anchor. For the indirect effects ($\alpha * \beta$) clustered bootstrapped standard errors with R = 250 repetitions and normal-based 95 percent bootstrapped confidence intervals were used.

Table A5. Fixed effects models: Total and Indirect Effects of Male Partner's Unemployment

on Female Partner's Life Satisfaction and Their Components

	Total effects		Indirect effects				Components			
Mediator	γ	S.E.	$\alpha * \beta$	S.E.	95% CI		α	S.E.	β	S.E.
Network of relationships inventory (NRI)										
Intimacy	-0.283	0.075	-0.023	0.010	-0.042	-0.004	-0.156	0.063	0.147	0.011
Admiration	-0.283	0.075	-0.040	0.011	-0.061	-0.019	-0.266	0.064	0.151	0.011
Dominance	-0.283	0.075	-0.003	0.004	-0.010	0.004	0.069	0.068	-0.048	0.010
Conflict	-0.283	0.075	-0.031	0.009	-0.050	-0.013	0.196	0.058	-0.159	0.011
Conflict styles and behaviors (CSB)										
Verbal aggression (self)	-0.283	0.075	-0.020	0.008	-0.035	-0.004	0.150	0.060	-0.133	0.011
Verbal aggression (partner)	-0.283	0.075	-0.032	0.009	-0.050	-0.014	0.210	0.059	-0.151	0.012
Constructive behavior (self)	-0.283	0.075	0.001	0.003	-0.006	0.007	0.015	0.061	0.054	0.009
Constructive behavior (partner)	-0.283	0.075	-0.003	0.005	-0.012	0.007	-0.033	0.066	0.077	0.009
Withdrawal (self)	-0.283	0.075	-0.027	0.007	-0.041	-0.013	0.263	0.069	-0.103	0.010
Withdrawal (partner)	-0.283	0.075	-0.025	0.008	-0.040	-0.010	0.230	0.064	-0.109	0.010
Relationship satisfaction and instability (RSI)										
Relationship satisfaction (self)	-0.283	0.075	-0.025	0.013	-0.050	-0.000	-0.148	0.066	0.172	0.011
Relationship satisfaction (partner)	-0.283	0.075	-0.023	0.011	-0.044	-0.001	-0.152	0.067	0.150	0.011
Relationship instability	-0.283	0.075	-0.041	0.011	-0.062	-0.020	0.266	0.067	-0.155	0.010

Note: pairfam, data release 11.0, waves 1-11, N = 5,392 persons and 29,278 person-years.

This table is based on the fixed effect models specified in the text. All continuous independent and dependent variables have been standardized to zero mean and unit variance meaning that the effects are reported in standard deviations. Standard errors (S.E.) are clustered by anchor. For the indirect effects ($\alpha * \beta$) clustered bootstrapped standard errors with R = 250 repetitions and normal-based 95 percent bootstrapped confidence intervals were used.