Spillover and Crossover of Work- and Family-Related Negative Emotions in Couples

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Abstract

This paper investigates the interaction of the work and family domain in a detailed manner. Two different aspects of interaction are considered: spillover and crossover effects of work and family in couples. Furthermore, both directions of the work family interaction are respected: work-to-family and family-to-work. Data were obtained from 56 couples (n=112), both of whom were working at least 40 % and had at least one child aged under 13. In line with expectations, spillover effects were found for men's and women's domain specific strain even if same domain stressors were controlled for. Contrary to expectations, however, crossover effects were not found within the family domain. Possibly, men and women take different aspects of the family into consideration, leading to independent strain reactions with respect to the family. Cross domain crossover effects were found for one's traditional gender domain. Thus, men's work strain is related to women's family strain, even if one's same domain stressors are controlled for. The traditional gender role domain seems to exert a stronger influence but, in turn, seems to be more vulnerable than the non-traditional domain.

Keywords
Crossover – Emotional Transmission – Family Stress – Job Stress – Psychological Strain – Spillover – Work-Family Conflict

1 Introduction

People usually live in different life domains. It can be said that working adults have at least two life domains: work and private life. The number of sub-domains private life or non-work contains seems to be individually different. A qualitative study (Amstad & Semmer, 2006) showed that most working parents studied saw themselves in three different life domains: work, family, and leisure time. Interestingly, they had some difficulties in distinguishing between family and leisure time. If they had to do so, they defined leisure time as the time when they had no obligations and were without any family member. As a consequence, leisure time became a very tiny domain of their lives. Therefore, we consider the differentiation between work and family as the most appropriate classification of life domains for working parents (especially if their children live with them in one household). Thus, and because most research has been conducted with respect to work and family (for an overview see, Frone, 2003; Geurts & Demerouti, 2003), we consider these two life domains in our study.

Both life domains, work and family, are a source of positive and negative events. Negative events can be seen as antecedents of experienced stress. One of the well-known, and probably especially critical, effects of stress can be seen in its after-effects (Amstad & Semmer, 2009; Cohen, 1980). Considering work stress, such after-effects are often shown in poor unwinding after work (Frankenhaeuser, Lundbberg, Fredrikson, Melin, Tuomisto, Myrsten et al., 1989; McEwen, 1998; Meijman, Mulder, Dormolen & Cremer, 1992). Poor unwinding concerns the disability to relax and disconnect after work (Grebner, Semmer & Elfering, 2005; Mohr, Rigotti & Müller, 2005). In Westman's (2001) terms, poor unwinding represents spillover between life domains.

1.1 Spillover effect

Spillover means the generalization of behaviour, emotions, attitudes, or stress of one life domain to another life domain (Wilensky, 1960; Geurts & Demeruti, 2003). Spillover is, of course, not restricted to negative events but also refers to positive effects. This paper is concer-

ned, however, with the negative aspects. This means that stress experienced in one life domain „spills over" into another life domain and causes stress or strain in the second life domain as well. Considering work and family as the two principal life domains, this spillover effect can occur in two different directions: from work to family and from family to work. In terms of role theory (Kahn & Byosiere, 1992), and therefore in terms of role-conflicts, we talk about work-to-family conflict and family-to-work conflict (Grennhaus & Beutell, 1985). An example of a spillover effect from work to family is when after a work day one's supervisor was constantly criticising every mistake, one's thoughts are still contemplating these mistakes and probably the disrespect of the supervisor. On the other hand, a spillover effect can happen when a child is ill at home and one's thoughts are constantly with the child. Thoughts continue to revolve around the child even if the person has changed life domain and gone to work. To draw conclusions about the mechanisms of spillover effects it is crucial to study these effects in such a bidirectional way, although this has only been done in the last decade (Frone, 2003). Another reason why both directions of the process must be studied is that the boundaries between the work and family domains seem asymmetrically permeable (Pleck, 1977). Family boundaries seem to be weaker than work boundaries, and consequently family demands are less likely to intrude the work domain than vice versa (Frone, Russel & Cooper, 1992b; Eagle, Miles, Icenogle, 1997). Hence, a stressful dispute with one's spouse is less likely to intrude the work domain, such that the individual would talk about the problem with the supervisor. On the other hand a conflict with a supervisor would most likely be discussed with one's spouse.

With respect to the antecedents, domain specific antecedents are the best predictors for both work-to-family conflicts and family-to-work conflicts (for a review see Eby, Caspar, Lockwood, Bordeaux & Brinley, 2005; Byron, 2005). Domain specific predictors mean in this context that work demands, such as time pressure or conflicts with supervisors, are domain specific predictors for work-to-family conflicts and family demands, such as high responsibility for one's children in a dangerous situation or conflicts with one's spouse are domain specific predictors for family-to-work conflicts.

Several studies have shown that both types of role-conflicts have a negative effect on well-being (for meta-analyses see Allen, Herst, Bruck, & Sutton, 2000; Amstad, Meier, Fasel, Elfering & Semmer, 2011; Kossek & Ozeki, 1998). These negative effects have been shown both with regard to global well-being indicators, e.g., somatic / physical symptoms (Kinnunen & Mauno, 1998), and depression (Frone, Russel & Cooper, 1992a; Netemeyer, McMurrian & Boles, 1996; Schieman, McBrier & Van Gundy, 2003) and with regard to domain specific well-being indicators, e.g. work or family satisfaction (Kinnunen, Geurts & Mauno, 2004; Aryee, Field & Luk, 1999).

With regard to gender differences, results are controversial (for reviews see Barnett & Hyde, 2001; Eby et al., 2005; Frone, 2003; Geurts & Demerouti, 2003; Greenhaus & Parasuraman, 1999; Nelson & Burke, 2002). Some studies found differences while others did not and if the effects of demographic variables, job characteristics, and family characteristics were controlled for, the differences often disappeared (Grzywacz & Marks, 2000). Clearly, this is an unresolved issue that deserves attention in studies on work-family conflict.

1.2 Crossover effects

A spillover effect occurs within a person and is therefore an intra-individual transmission of stress. A rather similar effect of „spilling over emotion" can be observed between persons. This inter-individual transmission of stress is called crossover in a wider sense (Westman, 2001). Crossover effects can be divided into two different types: Firstly, if emotions, stress, or strain, which an individual experiences in the moment (Hatfield, Cacioppo & Rapson, 1992) or over time (Bakker & Schaufeli, 2000) are transmitted to another person of the same life domain, we are talking of emotional contagion or same-domain crossover. Secondly, if stress or emotions experienced in one life domain by an individual leads to stress or similar emotions experienced by a close person in another life domain, this is called crossover in a narrower sense or cross-domain crossover. An example of this phenomenon is where by an individual experiences work stress and transmits these negative emotions to his/her spouse, such that the spouse experiences family strain.

1.2.1 Same Domain Crossover (Emotional Contagion)

Same Domain crossover has been found both within work and the family. It may occur through several mechanisms (cf. Hatfield et al., 1992; Kelly & Barsade, 2001): Implicitly, by mimicking and synchronizing the behaviour of others, and thus converging emotionally; or explicitly, by intentionally inducing emotions in others, or consciously trying to be empathic with others.

Several findings concerning emotional contagion in the work domain have been found to date. Bakker et al. showed that burnout among colleagues is contagious. This was especially true if individuals were highly susceptible to emotional stimuli in general (Bakker, Schaufeli, Sixma & Bosveld, 2001) and if individuals were frequently exposed to colleagues' work-related problems (Bakker & Schaufeli, 2000). This

phenomenon of same-domain crossover of emotions was shown not only between working colleagues, but also between teachers and their students, with positive emotions. Bakker (2005) demonstrated that music teachers' flow experience was contagious to their students' flow experience. The occurrence of emotional contagion has also been shown between sport teams (Totterdell, 2000). Cricket team players' own mood and subjective performance was linked to the average of their team mates' happy mood. This relationship between individuals and team mood was independent of hassle or a favourable standing in the match.

With reference to the family, several studies have shown the importance of marital interactions for an individual's psychological and physiological health. A review of marriage and health involving 64 studies showed that marital functioning has a direct effect on depression and health habits. Indirectly it influences cardiovascular, endocrine, immune and neurosensory mechanisms (Kiecolt-Glaser & Newton, 2001). House, Landis and Umberson (1988) showed the importance of social relationships such as marriage on mortality and morbidity such that socially isolated people died earlier than people in a well established social network. Burman and Magolin (1992) even showed the direct link between the psychosocial quality of marriages and mortality as well as morbidity. Emotional transmission also seems to occur from parents to children; a number of studies have demonstrated the transmission of emotions flow from the marital dyad to parent-child dyads (for a review cf., Larson & Almeida, 1999). Summarizing these reviews and national surveys, it can be said that the reciprocal influence of spouses is clearly shown.

1.2.2 Cross Domain Crossover

Similar to emotional contagion, cross domain crossover also occurs between individuals. However, the difference is that the domain in which the persons are close to each other (e.g., family for spouses, work for colleagues) is not the source of the experienced stress. Westman and Vinokur (1998) discussed three main mechanisms of crossover: The first postulated process is *direct empathic crossover,* which occurs most frequently among very close people, who share a great part of their lives. Particular studies found that men's stress factors of work were associated not only with their own well-being but also with that of their wives (Jones & Fletcher, 1993; Westman, Etzion & Danon, 2001; Kessler & McLeod, 1984). The reverse effect seems to be weaker, although some studies found similar effects in both directions (Bakker, Demerouti & Schaufeli, 2005; Hammer, Allen & Grisgsby, 1997; Hammer, Bauer & Grandey, 2003). Unfortunately, evidence on this issue is limited, as some studies tested only one direction of crossover (cf. Roberts & Levenson, 2001), so that no conclusions can be drawn with regard to the direction of the crossover effect (cf. Westman, 2002).

Thompson and Bolger (1999) focussed on the timing of the emotional transmission. They found that couples, where one person had a stressful situation (an examination) ahead ‚crossed over' their emotions. However, on the day of the stressful situation, when the person with the exam was the most distressed, no emotional transmission took place. The partners had a positive mood regarding the relationship and therefore could fulfil their supportive function fully.

Secondly, Westman und Vinokur (1998) describe the *spurious crossover effect,* whereby there is no causal relation between the stress reactions of both partners. They have common stressors because they share a great part of their lives. Most of the time when this kind of crossover happens, the couple experience a common stressful life event, like burglary.

The last type of crossover Westman (2001) describes is the *indirect process of crossover* through mediating factors like coping mechanisms, communication characteristics, social support, or social undermining. These factors can have different influences on the individuals in a relationship. For example, social support can help someone to deal with the stressful situation, while the other person loses some resources. Considering Hobfoll (e.g., 1998), the loss of resources can trigger stress. Therefore the stress of one person can trigger stress in the other person by depleting his / her resources in supporting the person who is experiencing the actual stressful situation. This was shown in studies with persons who looked after their sick relatives (e.g., Kiecolt-Glaser, Preacher, MacCallum, Atkinson, Malarkey, & Glaser, 2003).

In summary, we know that spillover effects do occur in both directions work-to-family and family-to-work, whereas the second effect is often found to be weaker than the first. Furthermore, there is evidence for same-domain and cross-domain crossover effects. But, there are some shortcomings in this area of research, which our study attempts to address.

1.3 The present study

In the present study, our aim was to get a more complete picture of the phenomenon of how work and family are connected to each other (spillover effect) on the one hand, and how the relations between both life domains are affected by crossover effects of spouses on the other. To understand the mechanisms of the interaction of work and family more precisely, it is important to differentiate between domain specific stressors and domain specific well-being as an outcome. We assume that domain specific stressors, such as conflicts with work colleagues, affect first of all the

same-domain well-being, such as negative emotions towards work. This domain specific outcome can then be influenced by the other domain well-being, such as negative emotions towards one's family, for example. Additionally, it is important to incorporate two kinds of bi-directionality to study these mechanisms differentially:

1 Bi-directionality of work and family
2 Bi-directionality of men and women

The first kind of bi-directionality has three implications. Firstly, the work and the family domain have to be analyzed in a comparable way. Geurts and Demerouti (2003) point out that there is a lack of appropriate measurement of the non-work domain. The same aspects (stressors and well-being) of work and family have to be measured and this must be done on the same detailed level. Secondly, both directions of the process have to be considered. This means work may influence family and family may influence work. Thirdly, to know the independent effect of one domain on another domain, the conditions of the second domain have to be controlled for. Only by controlling the same domain conditions can the net effect of the other domain be studied.

This leads us to the following hypotheses about the spillover effects:

1a: Work related well-being is influenced by family related well-being, even if work related well-being is controlled for work stressors.
1b: Family related well-being is influenced by work related well-being, even if family related well-being is controlled for family stressors.

The second kind of bi-directionality has to be considered to study crossover effects between spouses. Both, men and women, have to be analysed in the same detailed manner. It is also important to consider a bi-directionality between spouses, this means from men to women and from women to men. This implies that both spouses have to fulfil the same selection criteria and both must be asked exactly the same questions. Only if these parameters are fulfilled can conclusions about the inter-individual influence of spouses be drawn.

Because we study couples and the common domain of both partners is the family domain, we assume that same domain crossover effects occur in the family domain only. As we are interested in crossover effects of well-being, it is important to find these effects with respect to the individual domain specific well-being (as opposed to global indicators of well-being). Only by testing domain specific well-being conclusions about the differential effects of same-domain and cross-domain crossover are possible. Furthermore, one's same domain stressors are the best predictors for one's same domain well-being. This leads us to the following hypotheses about the same domain crossover effect:

2a: Men's family related well-being is influenced by women's family related well-being over and above men's family stressors.
2b: Women's family related well-being is influenced by men's family related well-being over and above women's family stressors.

Considering both bi-directionalities, work and family as well as men and women have to be analysed in a detailed and comparable manner. Therefore, if the net

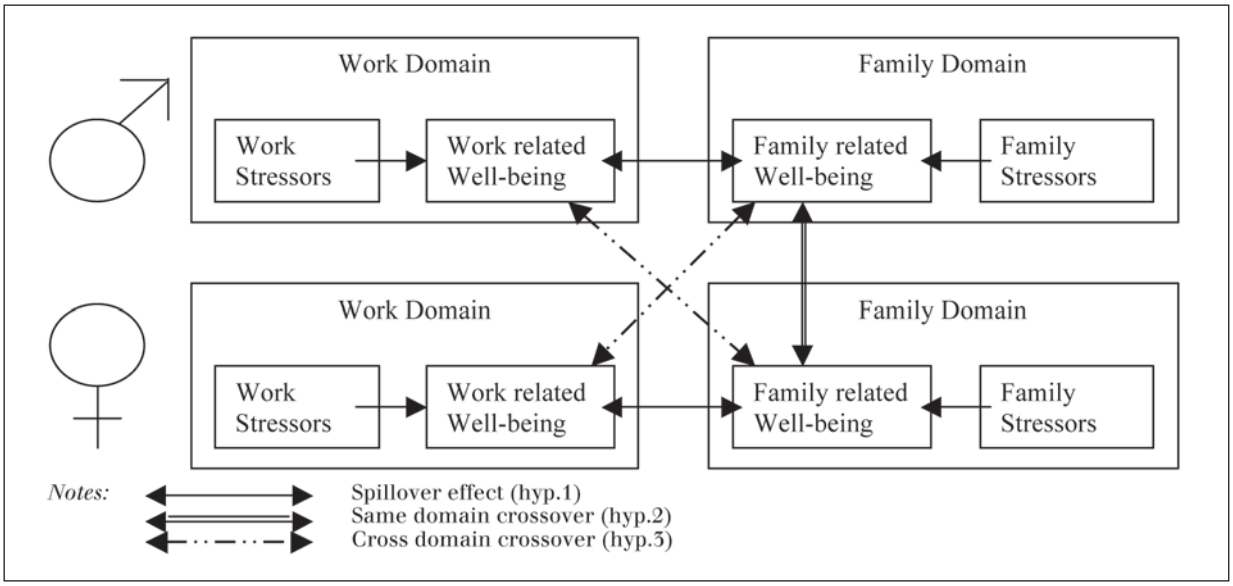

Figure 1: Summary of all hypothesized spillover and crossover effects.

effect of men's first domain on the women's cross domain is studied, women's same domain demands must be controlled for. The same procedure needs to be taken into account if the influence of women on men is studied. Thus, the following hypotheses are tested:

3a: Men's work related well-being is influenced by women's family related well-being over and above men's work stressors.
3b: Women's family related well-being is influenced by men's work related well-being over and above women's family stressors.
3c: Men's family related well-being is influenced by women's work related well-being over and above men's family stressors.
3d: Women's work related well-being is influenced by men's family related well-being over and above women's work stressors.

In figure 1 all hypothesized effects are shown.

2 Methods

2.1 Procedure and Sample

To recruit the sample, an advertisement was placed in a periodical for state employees and posters and flyers were hung up in nursery schools. Additionally, couples were found by means of a snowball system, in other words, by word-of-mouth recommendation of couples who already participated in the study. Three criteria had to be fulfilled in order to take part in the study: Firstly, both members of a couple had to agree to participate in the study. Secondly, both of them had to work at least 40 %, so as to be minimally involved in the work domain. Thirdly, they had to have at least one child aged under 13 years, since this age group seems to be especially demanding (Higgins, Duxburry & Lee, 1994). These restrictions were set to assure that the couples were living the double burden of combining work and family.

The sample consisted of 56 couples (N = 112) with a very high education level: 71.2 % had at least a Bachelor Degree. The mean age was 38.37 years (SD = 5.27). Men worked more paid hours than women (Men M = 36.27, Women M = 24.25).

The couples were interviewed and also completed a questionnaire. Both partners filled in identical questionnaires about their work and family conditions. The present study is based on the questionnaire data only (cf. Amstad & Semmer, 2011, for interview results).

2.2 Measures

As mentioned before, the non-work domain is often not measured in an appropriate way (Geurts & Demerouti, 2003). Furthermore, the measures of work and non-work domains are often not comparable, because the work domain is assessed in much more detail than the non-work domain. For this reason, the questions about an individual's work and family conditions were, wherever possible, mirrored so that both domains became comparable.

Originally all scales came from research on work conditions. For the family domain, the same scales were used, but the questions were adapted referring to ‚family' instead of ‚work'. This procedure was successfully used in other work-family studies (cf. Frone, Russel & Cooper, 1992a). Some scales had to be reduced for the family domain because the formulation of some items was inappropriate for the family domain. In these cases, it is indicated in the description of the measurement.

2.2.1 Domain specific stressors

Three different kinds of domain specific stressors were assessed: *Task related stressors* were investigated using the Inventory of Stressful Task Analysis (ISTA) of Semmer, Zapf and Dunckel (1995). This is an index of 5 different aspects of task related stressors at work: time pressure (4 items), work interruptions (4 items), problems with the work organization (4 items), concentration requirements (4 items) and insecurity (3 items). Items were scored on a 5-point-scale, where 1 stands for *low stressors* and 5 stands for *high stressors.* For example: „How often are you pressed for time?". Internal consistencies (Cronbach's Alpha) of all scales are depicted in table 1. For task related stressors in the family an index of four instead of five aspects was built. The aspect of insecurity about the work task was inappropriate for household chores. Furthermore, some items of the four included aspects could not be adapted for the family domain. For example, the item „Do you have to temporarily retain complicated information, that is difficult to remember (e.g., numbers, names,…)" does not make sense in the family context and was therefore not included. Hence, the following subscales resulted: concentration requirements were reduced to three items, problems with the work organisation was reduced to a single item and time pressure was augmented to a 5-item scale. Overall, not only is the conception of task-related stressors assessed in both domains, but 12 out of 19 items are also the same for the work and the family domain, 8 items referred to the work domain only, and 1 item to the family domain only.

Table 1: Intercorrelations and descriptive statistics among the main study variables.

			men			women									
		variable	M	SD	α	M	SD	α	t	1	2	3	4	5	6	7	8
Work Domain	1	Task related stressors	2.89	0.46	.61	2.80	0.50	.71	0.60	-	.58**	.63**	.45**	-.01 [a]	.35*	.22	.25
	2	Effort-reward stressors	2.60	1.14	.92	2.56	1.01	.89	-0.04	.19	-	.46**	.52**	.14	.42** [a]	.29*	.32*
	3	Social stressors	1.70	0.43	.65	1.58	0.49	.74	0.87	.47**	.34*	-	.48**	-.05	.17	.19 [a]	.08
	4	Resentments	2.97	1.28	.91	2.59	1.14	.58	1.68+	.35*	.15	.29*	-	.02	.32*	.23	.35* [a]
Family Domain	5	Task related stressors	2.55	0.46	.65	2.87	0.49	.60	-3.90**	.13 [a]	-.14	.24	.24	-	.43**	.40**	.38**
	6	Effort-reward stressors	2.12	0.98	.85	2.24	1.14	.68	-0.82	.03	.04 [a]	-.05	.27	.41**	-	.41**	.37**
	7	Social stressors	1.75	0.60	.78	1.81	0.51	.63	-0.88	.14	-.09	.01 [a]	.23	.48**	.63**	-	.54**
	8	Resentments	2.68	1.26	.93	2.34	0.91	.81	1.62	.10	-.12	-.22	.55** [a]	.35*	.56**	.59**	-

Notes: α = Cronbach's Alpha; Correlations above the diagonal are for women (N = 44-54) and those below the diagonal are for men (N = 44-51)
[a] indicate cross domain correlations for same stressors and well-being indicators
+ p ≤ .10; * p ≤ .05; ** p ≤ .01

Effort-reward imbalance was assessed with the 6-item scale of van Yperen (1996), which is a 7-point-scale ranging from 1 totally disagree to 7 totally agree. An example item for work related effort-reward imbalance was „The rewards I receive are not proportional to my investments". The scale was reduced to a 5-item scale for the family related effort-reward imbalance, the following item was not used for the assessment of the family domain „I put more energy into my family than it is worth". This item would create reactance, because it suggests that the family is not valuable.

Social stressors was the third aspect of domain specific stressors. This aspect was assessed using an 8 item scale by Frese and Zapf (1987). An example item is: „People put you down for almost nothing here". This scale was reduced to a 6-item scale for the family related social stressors. Answers were given on a 5-point-scale ranging from 1 strongly disagree to 5 *strongly agree.*

2.2.2 Domain specific well-being

The domain specific outcome was assessed by asking participants about their negative feelings related to the specific life domain. A 7-item scale by Geurts, Schaufeli and Rutte (1999) asking for work related feelings of resentment, or family related feelings of resentment, was used. An example item was „disappointment". The scale ranged from 1 not at all to 7 very strongly. All items were used for both domains.

2.2.3 Controls

Given the importance of gender (Greenhaus & Parasuraman, 2002), all analyses were run for men and women separately. The effect of age on spillover turned out to be insignificant throughout, therefore it was not entered into the analyses of crossover effects.

Means, standard deviations, internal consistencies and correlations of the main variables are shown in table 1, as well test of mean differences between men and women (t-test).

2.3 Statistical analyses

All Hypotheses were tested using hierarchical regression analysis.

3. Results

3.1 Gender differences and correlations

Descriptive results and gender differences in the main variables are considered. Interestingly, gender differences in respect of mean differences are found only

in task related stressors of the family domain. Women report significantly more family task related stressors than men. Furthermore, men tend to report more work resentments than women. Men and women show no differences in all other variables.

The findings concerning men show only one relation between same aspect variables: work and family resentments are correlated significantly ($r = .55$, $p \leq .01$). Women also show this relation between work and family resentments but the relation seems to be weaker ($r = .35$, $p \leq .05$). Additionally, women's work related effort-reward imbalance seems to be related to their family related effort-reward imbalance ($r = .42$, $p \leq .01$).

Summarizing these findings it can be said that participants do differentiate between work and family with respect to different aspects of stressors. Considering these cross domain correlations for the same stressor aspects only women's work and family related effort-reward imbalance are correlated (see table 1). Although feelings of resentment are less differentiated by the participants, they seem to differentiate between work and family emotions. Because if they would not, the correlations should be much higher than the results show (see table 1).

3.2 Spillover

Table 2 shows the spillover effect of work and family stressors into the other life domain. In the first step control variable are entered into the regression analysis. In the second step one's same domain stressors are entered. This means that if work resentments are tested as outcome work stressors are controlled for in the second step. Separate analyses were made for men and women. Results indicate, that for both, men and women, same domain stressors explain a significant amount of variance of the outcome variable (i.e., work or family resentments). In the third step the other domain resentments are entered into the regression analyses. It turned out that not only do men show a stronger effect of family resentments on work resentments, even if work stressors are controlled for, but they also show a stronger spillover effect than women in the family domain. The gender differences in these spillover effects are meaningful, because moderated regression analyses with gender as a moderator reached significance for spillover of work resentments on family resentments ($b = .80$, $p \leq .00$) and for spillover of family resentments on work resentments ($b = .94$, $p \leq .00$).

The importance of controlling same domain stressors is shown in the result pattern such that in three of four hierarchical regression analyses same domain stressors are explaining more variance of the outcome than the other domain resentments. This

Table 2: Spillover effects of work and family resentments.

Outcome:		Work resentments						Family resentments					
		Men			Women			Men			Women		
steps	Variables	β-in	β-final	ΔR^2	β-in	β-final	ΔR^2	β-in	β-final	ΔR^2	β-in	β-final	ΔR^2
1	Controls	-.07	-.03	.00	.09	-.00	.01	-.03	-.16	.00	.16	.08	.02
	Same domain stressors			.15^{+}			.34***			.43***			.31***
2	- task related	.31^{+}	.14		.07	.03		-.00	-.10		.18	.22	
	- effort reward	.08	.11		.34*	.28^{+}		.39*	.28^{+}		.10	.02	
	- social	.10	.31*		.28^{+}	.32*		.34^{+}	.37*		.41**	.38**	
3	Other domain resentments		.67***	.35***		.22^{+}	.04^{+}		.43***	.16***		.21^{+}	.04^{+}

Notes: β-in = standardized coefficients derived from the first step, the variable comes into the regression; β-final = standardized coefficients derived from the final step; ΔR^2 = change in explanation rate in each step; women (N = 52); men (N = 48-49) $^{+}$ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

does not indicate weak spillover effects but this pattern underlines the importance of examining the net spillover effect under control of same domain stressors.

3.3 Same domain crossover effects

Men's and women's family related feelings of resentment are not related after controlling for one's own family related stressors. One's family stressors explained a significant amount of variance in one's family resentments. The highest impact on one's family resentments had effort-reward imbalance (and social stressors in tendency) for men and social stressors for women. Spouse's family related resentments had no effect on one's family resentments (see table 3). Therefore hypotheses 2a and 2b are not verified. Possible reasons are discussed later in this article.

3.4 Cross domain crossover effects

First, cross domain crossover effects of one's traditional gender role domain are considered; that means the relationship between men's work domain and women's family domain. Men's work related resentments are affected by women's family related resentments even if men's work related stressors are controlled for. The

Table 3: Same domain crossover effects of work and family resentments.

	Outcome:	Family resentments					
		Men			Women		
steps	Variables	β-in	β-final	ΔR^2	β-in	β-final	ΔR^2
1	One's same domain stressors			.43***			.35***
	- task related	-.01	-.01		.16	.16	
	- effort reward	.38*	.38*		.13	.12	
	- social	.34+	.34+		.43**	.42**	
2	Other's same domain resentments		-.01	.00		.14	.02

Notes: β-in = standardized coefficients derived from the first step, the variable comes into the regression; β-final = standardized coefficients derived from the final step; ΔR^2 = change in explanation rate in each step; women (N = 44-46); men (N = 44-46) + p ≤ .10; * p ≤ .05; ** p ≤ .01

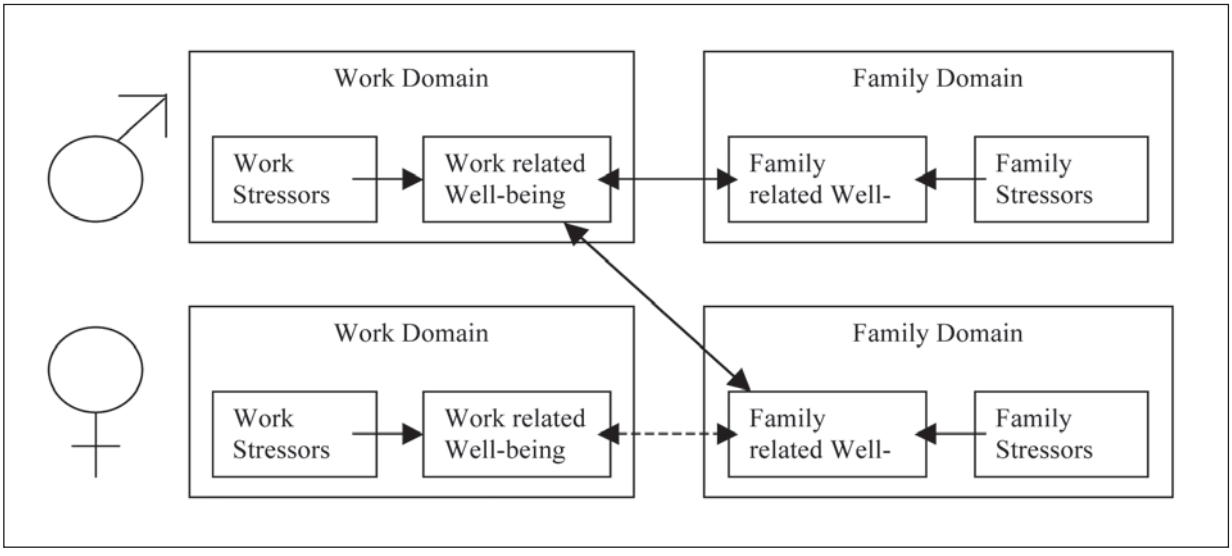

Figure 2: Summary of all resulting spillover and crossover effects.

Table 4: Cross domain crossover effects of work and family resentments.

	Outcome:	Work resentments						Family resentments					
		Men			Women			Men			Women		
steps	Variables	β-in	β-final	ΔR^2	β-in	β-final	ΔR^2	β-in	β-final	ΔR^2	β-in	β-final	ΔR^2
1	One's same domain stressors			.15+			.33***			.40***			.35***
	- task related	.25	.14		.05	.05		.05	.05		.16	.19	
	- effort reward	.11	-.05		.31+	.31+		.36*	.37*		.13	.17	
	- social	.14	.23		.31+	.31+		.29	.29+		.43**	.34*	
2	Other's other domain resentments		.39*	.12*		-.01	.00		-.07	.00		.33**	.10**

Notes: β-in = standardized coefficients derived from the first step, the variable comes into the regression; β-final = standardized coefficients derived from the final step; DR^2 = change in explanation rate in each step; women (N = 44–46); men (N = 44–46) + $p \leq .10$; * $p \leq .05$; ** $p \leq .01$

reciprocal pattern is also seen: women's family related feelings of resentment are affected by men's work resentments even if women's family stressors are controlled for. Hypotheses 3a and 3b are therefore confirmed (see table 4).

On examining the other crossover relation of men's family resentments and women's work resentments an other effect is seen. Women's work resentments are not affected by men's family resentments if women's work stressors are controlled for. Also the reverse effect is not significant. Men's family resentments are not affected by women's work related well-being if men's family stressors are controlled for. All results are summarized in figure 2.

4 Discussion

The aim of the present study was to investigate the interface of work and family life in men and women. To explore this question three kinds of interplay were analysed. Firstly, the reciprocal influence of work and family within a person – the spillover effect – was taken into consideration. Secondly, the reciprocal influence of men and women considering the family domain – the same-domain crossover effect – was analysed. And finally, the reciprocal influence of work and family between spouses – the cross-domain crossover effect – was tested.

4.1 Spillover effects

Results show that men and women experience a spillover effect in both directions: work-to-family and family-to-work. Work and family related feelings of resentment are interdependent even if the stressors of the outcome domain are controlled for. Three aspects of domain specific stressors were analysed: task-related stressors, effort-reward imbalance and social stressors. In all spillover analyses social stressors showed the strongest effect on the same domain resentments. Hence, the results indicate how important social stressors are for one's well-being (Semmer, McGrath, & Beehr, 2005). Of special interest is the aspect of effort-reward imbalance – that is the feeling that one invests more effort into a life domain than the rewards that are received in return (e.g., appreciation). Work-related effort-reward imbalance predicted work resentments only among women; conversely, family-related effort-reward imbalance predicted family resentments only among men. It seems, therefore, that the non-traditional gender role domain is more vulnerable to feelings of an imbalance between one's effort and the rewards one gets. It is possible that men and women need the effort, they put into the non-traditional gender domain to be more valued than the effort they put into

the traditional gender domain. Therefore a resulting imbalance is more likely. Even if there is no gender difference concerning the mean of work related and family related effort-reward imbalance, there seems to be a greater vulnerability to the non-traditional gender domain after controlling for other stressors in this domain.

Another aspect of special interest is the result that women's spillover effect seems to be weaker than men's. This lets us assume that women have more strategies to protect one domain against the other domain since this effect is shown for both directions work-to-family and family-to-work. It would therefore be interesting to look for such coping strategies, i.e. strategies people use for preventing spillover effects.

4.2 Same-domain crossover effects

A point of special interest was that men's and women's family related feelings of resentment were not related to each other after controlling for one's family stressors. We hypothesised a relation because it is the family domain in which couples are closest to each other. Again family related social stressors (and effort-reward imbalance for men) were highly correlated to one's family resentments. The result that family related resentments of men and women are not related, after controlling for one's family stressors, shows perhaps that they take different aspects of family life into consideration. This conclusion can be underlined by the findings of an interview study, conducted with the same couples (Amstad & Semmer, 2011). They had to report one positive and one negative family event from the two previous weeks. Only 7 of 112 events were the same and only 1 couple reported the same positive and negative family event.

Another possible explanation for this result is, that one's family stressors are correlated with spouse's family resentments. In that case – in analyses concerning one's family resentments – little variance would be left for spouse's family resentments after controlling for one's family stressors. However, this was not the case, men's family related feelings of resentment were not associated with women's family stressors and women's family related resentments were associated with men's family related effort-reward imbalance only.

We therefore conclude that couples not only remember different stressful family events, but they also evaluate their family lives independently, which can be seen from the lack of association between family related resentments of men and women after controlling for their same-domain stressors (same-domain crossover effect).

4.3 Cross-domain crossover effects

One of the aims of the present study was to try to answer the question of whether or not there would be crossover effects of emotions in a narrower sense between men and women. Results showed that men's work resentments are related to women's family resentments even if same domain stressors are controlled for. The results seem to indicate that this is the only crossover effect which occurs. Interestingly, considering both kinds of cross domain crossover effects the findings suggest that spouses influence each other in their traditional role domain. However, this effect may not occur with regard to the non-traditional role domain (e.g., family for men and work for women). Because the direction of the traditional gender domain crossover effect is not determined – results showed significant effects in both directions – two contradictory explanations can be offered: Not only might one's traditional role domain be more vulnerable, but also one's traditional role domain might be stronger to influence one's spouse. One of the mechanisms by which cross-domain crossover occurs is because spouses talk to each other about their experiences, they had without the other person. For example, after a work day individuals tell their spouses about negative (and positive) events that happened during the day. Results indicate that men tend to report more of their work day whereas women tend to report more events of their day with the family. This assumption is emphasised by the gender differences of some characteristics in our sample. Men spent about 12 hours more per week than women in paid work, whereas women reported to spent about 27 hours more per week than men in family work like childcare.

4.4 Strengths and limitations

The main contribution of this study lies in three issues. Firstly, the bi-directionality, mentioned in the introduction of this article, concerns the assessment of work and family conditions. Studies which analyse the interface between work and family are interested in assessing both life domains appropriately. One possibility to assure this appropriateness is to use well-established scales in each research domain. This procedure would most likely lead to the use of scales which cover different aspects of the referring domains, because each research field focuses on different aspects. For example, in work psychology the task is the focus of attention, whereas in family psychology the social network is the focus. Such different foci cause an additional problem: Both life domains no longer remain comparable. Such a lack of comparability can easily lead to incorrect conclusions, independent of whether an effect was found or not. In assessing both life domains, work and family,

in a comparable way this bi-directionality is fully accomplished. Secondly, the bi-directionality concerning men and women was considered. Men's and women's work and family conditions were assessed in the same way. Additionally, women and men had to fulfil the same selection criteria of working at least 40% and having at least one child aged under 13. Finally, spillover effects and same-domain as well as cross-domain crossover effects were analysed while controlling for one's same domain stressors. Therefore the net effect of the other life domain for spillover effects, and the net effect of the feelings of resentments of one's spouse can be tested (cf. Bakker, Demerouti, & Dollard, 2008). In addition, several aspects of domain specific stressors were assessed: task-related and social stressors as well as effort-reward imbalance.

Despite these advantages, there are several limitations that must be considered when evaluating our findings. Firstly, all measures of this study are based on self-reported data and are therefore vulnerable to a common method variance. It should be noted, however, that if observed relationships between measured variables are due only to common method variance, there should be a relation between all measures involved. This was not the case in this study. Secondly, our data are cross-sectional data, thus no causal relations can be drawn from these results.

Therefore, for future studies, a longitudinal design should be considered, as well as taking both bi-directionalities (men and women as well as work and family) into account, as the present study has.

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