



## The independent relationships of objective and subjective workload with couples' mood

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### ABSTRACT

Mood signifies general well-being and a positive mood benefits self, one's spouse and the family unit. Dual-earner couples are particularly susceptible to spillover and crossover of mood. A lack of studies on the relationship between workload and mood and the repeated calls for more couple-level research served as the primary impetus for this study. Using data from 629 couples, we examined the relationship between objective (i.e. hours of paid work) and subjective (i.e. time pressure) workload on 1) one's own (positive and negative) mood, 2) spouse's mood, and 3) mood at the couple level. Results of two-level regression analyses indicated that subjective workload was positively related to negative mood. In contrast, objective workload was related to decreased negative mood and to increased positive mood. In addition to support for spillover effect, results supported one crossover effect, such that wives of husbands who devote more hours to paid work reported higher levels of negative mood, even as the husbands themselves reported lower levels of negative mood. Implications of results are discussed.

### KEYWORDS

couples ■ mood ■ workload

Feelings and emotions are at the core of the human experience. However, the focus on cognition has led to the neglect of the role of emotions (Fox & Spector, 2002; Judge & Ilies, 2004). Even when emotions are studied, the

focus is limited to emotional traits (i.e. dispositional temperament) to the exclusion of emotional states, such as moods (Fox & Spector, 2002).

Mood is an affective state that is context-free in that it is not necessarily directed toward any particular object, person or domain (e.g. work, home) (Madjar et al., 2002). Unlike dispositional temperament, often referred to as affectivity, which is a trait, mood is an emotional state (George, 1991; Watson & Pennebaker, 1989; Watson et al., 1988). While mood is less permanent than affectivity, 'moods are not normally fleeting experiences, but typically have some duration' (Fiske & Taylor, 1991: 411). In fact, a positive or negative mood may last for days or weeks (Morris, 1992). Research shows that a mood felt in one setting carries over to another setting (e.g. Diener & Larsen, 1984), and that it can predict outcomes six months later (e.g. Leventhal et al., 1996). In addition, a mood experienced by one person can be transferred to another person; and in a series of experiments, Neumann and Strack (2000) demonstrated mood contagion to be ubiquitous.

Work and family are central life domains. Our time, our identity, and, indeed our very existence are tied to these roles (Brotheridge & Lee, 2005). Thus, it is not surprising that a number of researchers have called for more research on the effects of work and family involvement in dual-earner couples (e.g. Zedeck & Mosier, 1990). We assert that mood has the potential to permeate the work–family boundary. Consequently, studying to see if emotional experiences caused by factors in the work domain transfer to the home domain to affect self and one's spouse has the potential to make an important contribution to work–family literature. Studying mood in the work–family context is of practical significance as mood affects many important outcomes, such as role engagement (Rothbard, 2001) and satisfaction with job and with marriage (Heller & Watson, 2005). Theoretical relevance of studying mood stems from recent research that indicates that mood might be the mediating mechanism that links satisfaction in one role (i.e. work) with satisfaction with and engagement in another role (Greenhaus & Powell, 2006; Rothbard, 2001).

In summary, mood is particularly relevant to our understanding of work–family interface because a negative (or positive) mood induced by experiences in one domain may spill over to another domain. *Spillover* occurs when a stress in either the work or the home domain results in stress in the other domain for the same individual (Leiter & Durup, 1996). While both positive spillover and negative spillover are conceivable, the present study focused on negative spillover. In addition, a spouse's negative (or positive) mood may cross over to his/her partner. *Crossover* effect occurs when a stress experienced by an individual's spouse in the workplace leads to stress being experienced by the individual at home (Leiter & Durup,

1996). Crossover may occur not only from work to family, but also from family to work, although in the present study we focus on the crossover from work to family.

While many factors can elicit mood, our concern is with work-related factors. To be sure, work is not only rewarding in and of itself (Hackman & Oldham, 1976) but it is also a source of resources (e.g. money, status) valued by individuals and their families. However, work is also a potential source of stress. For instance, previous studies on work stress have documented the negative effects of a variety of job-related stressors (Peeters & Rutte, 2005). Workload, a stressor, is a job demand with potential to influence mood (Sparks et al., 1997). For instance, high workload, that is, working excessively long hours and bringing work home, could be expected to be associated with the mood of employees, which in turn, could impact the attention employees devote to their work and to their family (see, for instance, Burke et al., 1980). Balancing the demands of work and family roles is a principal daily task for many dual-earner couples who feel intense time pressure to fulfill their work and family responsibilities (Williams & Alliger, 1994); thus, work overload is a logical choice as an antecedent of mood particularly with respect to dual-earner couples.

Given the importance of mood to work and family life, it is important to investigate the relationship between workload and mood at the individual level and the couple level. However, in spite of repeated calls for more 'couple'-level research (e.g. Parasuraman & Greenhaus, 2002), most previous studies have focused exclusively on spillover and not on the simultaneous examination of spillover and crossover effects. Few studies have examined crossover effects (Bolger et al., 1989; Hammer et al., 1997; Mauno & Kinnunen, 1999; Westman, 2001; Westman & Etzion, 1995; Westman et al., 2001) and many of these studies did not rigorously test for crossover effects. For instance, when testing for crossover of work stress from husband to wife (and from wife to husband), Bolger et al. (1989) did not control for the stress independently experienced by the wife (and husband), thus confounding results reported for crossover effect. In another study by Bolger, it was indicated that depressed mood on a given day was related to feeling less positive and more negative about the relationship by the spouse, but partners preserved their ability to be supportive when examinees needed the support most (Thompson & Bolger, 1999).

In studies examining crossover effects, dependent measures have included family satisfaction (Parasuraman et al., 1992), depression and somatic complaints (e.g. Major et al., 2002) and burnout (e.g. Westman, 2001). Crossover of mood from one spouse to the other has not been examined. It is important to investigate (spillover and) crossover effects of

workload on mood because, as a mediator, mood is likely to be a precursor to outcomes examined in previous studies, such as outcomes of stress and depression (Bolger et al., 1989) as well as a precursor to outcomes in the work domain, such as burnout (Westman et al., 2001) and home domain, such as family satisfaction (Parasuraman et al., 1992).

In summary, the relative lack of research on mood, the lack of research on the influence of workload on mood, methodological weaknesses of previous studies, and the failure to examine crossover effects in spite of repeated calls to do so, served as the impetus for this study. In this study, we examined the influence of objective and subjective workload on 1) one's own mood (i.e. spillover hypothesis), 2) on spouse's mood (i.e. crossover hypothesis), and 3) mood at the couple level. Thereby, this study makes several contributions to the literature. First, we examined the relationship between both objective and subjective measures of workload on positive and negative mood. Second, unlike most previous studies that focused exclusively on within-person or spillover effects, we examined spillover effects (i.e. the relationships between an individual's workload on his/her mood) and crossover effects (i.e. effect on his/her spouse's mood). Third, we also used the couple as a unit of analysis and investigated the association of workload on mood of the couple. Thus, in addition to spillover effects, we also examined crossover effects at the spouse and the couple level.

### **Spillover and crossover of workload to mood**

According to Watson et al. (1988) positive mood or positive affectivity refers to the tendency to experience intense pleasant feelings. At the high end, enthusiasm and excitement anchor the dimension. At the low end, these feelings are absent, but negative affect is not necessarily present. Negative affectivity refers to the tendency to experience intense unpleasant feelings. At the high end, such feelings as anxiety and anger tend to be present. At the low end, these negative feelings tend to be absent, but positive affect is not necessarily present (Judge & Larsen, 2001). Previous research has established that positive affect and negative affect are in fact distinct dimensions of mood that are independent of each other (Watson et al., 1988).

Positive and negative mood are related to various important constructs, such as job satisfaction, affective commitment, and turnover (Chiu & Francesco, 2003; Cropanzano et al., 2003). Generally, research has found that positive mood leads to positive outcomes. In contrast, negative mood is associated with lower levels of job satisfaction and higher levels of withdrawal behaviors (Ashkanasy et al., 2002). Though most previous studies

were viewing mood as an independent variable (for instance, Fisher, 2000; George, 1991; Ilies & Judge, 2002; Williams & Shiaw, 1999), this certainly need not be the case and mood can be modeled also as a dependent variable (Judge & Ilies, 2004).

Workload is expected to be associated with the mood of employees, which in turn, is likely to be associated with the attention employees devote to their work, to their social environment and to their family (see, for instance, Burke et al., 1980). Two components of workload can be distinguished, objective versus subjective workload. Objective workload or work time commitment refers to the number of hours devoted to paid work and work-related activities (Frone et al., 1997; Jimmieson et al., 2004). Subjective workload or time pressure refers to the perception of having too many things to do and not enough time to do them (Frone et al., 1997). Both objective and subjective workload can be expected to be directly related to mood (Burke et al., 1980; Leiter & Durup, 1996).

### Spillover

Hobfoll's (2002) Conservation of Resources (COR) theory provides some insights into the spillover process and can be used to develop or provide rationale for a proposed negative spillover relationship between workload and mood. COR theory suggests that people strive to obtain, retain, protect, and foster valued resources and minimize any threats of resource loss. Threats to resource loss are usually in the form of work demands and the energy and efforts expended toward meeting such demands. Workload, as a specific type of work stressor, can be related to mood by conceptualizing work stressors as resulting from a lack of resources that undermines well-being, shown for example by burnout or depressed mood (Hobfoll, 2002). Expending more resources to meet the high workload leaves one with fewer resources to devote to non-work activities including those related to meeting family obligations. Such an imbalance triggers affect (Hobfoll, 2002).

Along the same lines, the scarcity hypothesis introduced by Goode (1960) posits that individuals have a finite amount of energy, and when energy is put toward effort in one role it becomes depleted and thus unavailable for use in other roles. The scarcity hypothesis is based on the adage 'something has got to give.' Underlying this theory is the notion that individuals have limited resources and that strain, negative affect and frustration may result from individuals' inability to meet the competing demands from personally important domains of work and home. Results of studies by MacEwen and Barling (1994) and Williams et al. (1991) are supportive of the scarcity hypothesis. The COR theory and the scarcity hypothesis suggest

that resource loss resulting from work overload is likely to impact well-being in general, and mood states in particular.

Although working excessively long hours can be interpreted as a sign of dedication or commitment, high workload or overload most often usurps resources. Such high workload can be induced by long work hours and/or perceived time pressure. When workload is high, time and energy demands exceed one's resources making it difficult for the activities to be performed adequately or comfortably (Duxbury & Higgins, 1991). For many couples, work and family compete for limited psychological, physical, and temporal resources. Williams and Alliger (1994) suggest that individuals are likely to bring work-related feelings and thoughts home with them. As the demands of both work and family increase, it seems rather inevitable that the work domain interrupts, or intrudes into, the activities of the family domain, forcing couples to juggle between work and family demands. Indeed, previous studies have reported stronger work interference with family than family interference with work (e.g. Brotheridge & Lee, 2005). Workload is likely to deplete an individual's resources and lower positive mood and enhance negative mood.

Recently, Demerouti et al. (2005) tested a spillover and crossover model among 191 couples. They found a spillover effect of negative work experiences (i.e. exhaustion) to life satisfaction. Judge and Ilies (2004) also examined across- and within-individual relationships between mood and job satisfaction, and spillover in moods experienced at work and at home. Multi-level results revealed that job satisfaction affected positive mood after work and that the spillover of job satisfaction onto positive and negative mood was stronger for employees high in positive and negative mood, respectively. This latter study showed that mood does spill over outside the work environment in that the affective states experienced at work affected mood at home.

*Hypothesis 1:* High workload will be associated with mood. Specifically, a) workload will be negatively related to positive mood, and b) workload will be positively related to negative mood.

### Crossover

Relative to single individuals, couples may experience more demands in the work, family, and personal arenas due to the intertwining of work and home. In fact, dual-earner couples may be particularly vulnerable to reduced mood because they have to balance the simultaneous external demands of both spouses within the family context (Major et al., 2002; Parasuraman & Greenhaus, 2002). The relationship between workload and mood may not

be limited to mood of the individual but might cross over to affect mood of his/her spouse. In a series of four experiments, Neumann and Strack (2000) demonstrated mood contagion to be ubiquitous.

To explain specifically crossover processes from the individual to one's spouse, emotional contagion has been proposed as a mechanism by which mood of one individual affects mood of his or her spouse (Westman & Vinokur, 1998). For instance, Westman and Etzion (1995) reported that one partner's burnout affected spouse's burnout even after the effects of job stress and resources were statistically controlled. Totterdell (2000) and Westman and Vinokur (1998) have suggested that couples could respond similarly to shared events and therefore end up feeling the same way or couples may also influence each other's attitudes such that their attitudes converge. The results of the study by Totterdell involving professional cricket teams showed significant associations between the teammates' moods and the players' own moods demonstrating that people do influence each other's attitudes, feelings, and moods independently of shared events (Totterdell, 2000).

The study of Parasuraman et al. (1992) also provided evidence for crossover of stressors from one spouse to the well-being of the other. In their study, family role stressors experienced by wives were found to decrease well-being of their husbands. Burke's (1982) study also supported the crossover perspective because in this study, wives whose husbands reported greater occupational demands reported greater life demands, and reduced self-worth and life satisfaction.

These studies generally support the idea that increased work demands (e.g. work overload) experienced by an individual's spouse might translate into increased non-work demands for the individual (e.g. household work) and consequently, might affect the individual's mood. It might also be that the workload of an individual's spouse might create additional demands for the individual and affect the individual's mood. For instance, Myers (2000) noted that an unhappy, self-focused, irritable, and withdrawn spouse increases one's stress and is often not perceived as fun to be around. Indeed, studies have found husbands' marital satisfaction to be related to their wives' trait anxiety (Caughlin et al., 2000).

The Demerouti et al. (2005) study could very well be the first study to simultaneously consider both spillover and crossover effects among dual-earner parents. This study demonstrated that when wives are confronted with high job demands this will negatively interfere with family life and increase their feelings of exhaustion. These feelings of exhaustion can be transferred to their husbands. Conversely, when husbands are confronted with high job demands, such demands not only affect their life satisfaction, but are also transferred to their wives. Thus, theoretical arguments as well

as empirical evidence suggest the possibility of crossover effects. However, this study is the first to examine crossover effects of workload on mood.

*Hypothesis 2:* High workload will be associated with mood of the spouse and the couple. Specifically, a) workload will be negatively related to positive mood of the spouse and the couple, and b) workload will be positively related to negative mood of the spouse and the couple.

## Method

We used data from the Family Survey Dutch Population (De Graaf et al., 1998) to test the proposed hypotheses. The Family Survey Dutch Population is a dataset on life course and life situation of the population (18–70-years-old) in the Netherlands. Data were made available by the Steinmetz Data Archives in the Netherlands (database number P1583). The original dataset contained 2029 respondents.

A two-step stratified random sampling approach (random sample of 70 municipalities, random samples within municipalities, over sampling of married/cohabiting population) was used to collect data. Spouses of primary respondents were also interviewed. The overall response rate was 49.5 percent (Van Eijck & De Graaf, 2001). Both face-to-face interviews and a self-administered questionnaire for primary respondents and their spouses were conducted, but the present study only used data from the self-administered questionnaire.

For our analysis, we selected all married and cohabiting heterosexual couples in the dataset and cases with missing values were excluded. A total of 629 couples met our inclusion criteria and data collected from them were used for testing spillover and crossover effects. Mean age of the women was 40.2 years (SD = 10.9), mean age of the men was 42.6 (SD = 11.4) years ( $p < .01$ ).

## Measures

### *Dependent variables*

Positive and negative mood were measured with Watson et al.'s (1988) Positive and Negative Affectivity Scales (PANAS). The scales consist of 20 mood adjectives rated on a five-point Likert-type scale with anchors of 1 = Never to 5 = Nearly Always. Examples of positive mood adjectives include feeling enthusiastic, attentive, and determined ( $\alpha = .84$ ) and negative mood adjectives include feeling rattled, nervous, and fearful ( $\alpha = .86$ ).

### *Independent variables*

We included two measures of workload, subjective and objective workload. The difficulty of coming up with a common denominator for objective workload was exacerbated by the fact that respondents were employed in diverse jobs. The best available index of objective workload contained in the dataset was the numbers of hours devoted to paid work per week. Thus, objective workload was measured as number of hours of paid work per week.

Subjective workload refers to the perception of having too many things to do and not enough time to do them (Frone et al., 1997). In previous studies, subjective workload has been operationalized mainly in terms of time pressure (Van der Doef & Maes, 1999). Burisch (2002) also equates subjective workload with time pressure and, for instance, one of his items to measure time pressure is 'sometimes working under severe time pressure'. Consequently, in the present study, we operationalized subjective workload as experienced time pressure. The items used to measure subjective workload ( $\alpha = .77$ ) were: 1) obligations are becoming too much, 2) feeling incited, 3) does not get time to relax, 4) too little time for friends and family, and 5) running from one job to the other. The items were rated on a five-point Likert-type scale with anchors of 1 = Never to 5 = Nearly Always.

### *Control variables*

To control for lack of resources at the couple level, two variables at the couple level were included. First, mean hours devoted to household tasks of the couple was included because spending more time on household tasks signifies less time to do other things (i.e. fewer resources). Second, family stage might indirectly contribute to time pressure because the demands of caring for children vary with the ages of the children. Consistent with previous research (e.g. Major et al., 2002), family stage was measured/coded as 1) youngest child age 0–4 years, 2) youngest child age 5–12 years, 3) youngest child age 13–18 years, and 4) no children or youngest child 19 years or older, present in the household.

### *Data analysis*

The dataset consists of husbands and wives nested within couples. For each couple, there are exactly two respondents, one husband and one wife. These data can be conceptualized at two levels. Level 1 captures the information of the husbands and wives in each couple, and level 2 captures variability between couples. In such situations, it is appropriate to use a hierarchical two-level modeling approach that simultaneously models effects at the

within- and between-couple levels (Raudenbush et al., 1995; Snijders & Bosker, 1999).

Research with couples requires measurement and data analytic techniques extending beyond those typically used with individual-level data because with couple-level data one can examine if there is a natural distinction between the two dyad members. In heterosexual couples, the dyad members are clearly distinguished by their gender. For instance, if one wants to examine whether there is a significant association between the husband's score on time pressure this variable can be designated as the X variable with the woman's score on negative mood designated as the Y variable. In the present study, we used marital data and thus dyad members were clearly distinguishable (Kashy & Snyder, 1995). Further, we used different types of predictor variables. Family investments (i.e. household activities and family stage) are couple-level variables and these may vary from couple to couple, but within a couple, the two partners have identical scores. For example, family stage has to be the same for the husband and wife who make up a couple. Individual-level variables are variables in which spouses may differ from one another (i.e. the husband's score on time pressure may differ from the wife's score on time pressure). Because of the specific nature of our data, we used the household (HH) package of Stata (Weesie, 1999). This program is specifically aimed at analyzing couple data and analyzes two-level (i.e. couple- and individual-level) datasets of husbands and wives nested within households. So for every analysis we can choose, for instance, whether the wives' scores are designated as the Y variable or the husbands' scores are designated as the Y variable. The HH package allows one to specify: 1) couple variables that are constant within couples (i.e. the family investments of household tasks and family stage), 2) couple variables that are the mean of the scores of the husband and wife (e.g. mean level of negative affect), and 3) individual variables (e.g. wives' score on negative affect, husbands' score on negative affect).

Because objective workload, subjective workload and mood were self-reported and collected at a single point in time, Harman's one-factor test was conducted to investigate the potential influence of common method variance on study results. The underlying assumption of Harman's one-factor test is that if a substantial amount of common method variance exists in the data, either a single factor will emerge or one general factor will account for the majority of the variance among the variables (Podsakoff & Organ, 1986). We entered all the items of the three scales that were used into a single factor analysis. This factor analysis yielded three factors accounting for 46 percent of the variance, and factor 1 accounted for 21 percent of the variance. Since a single factor did not emerge and one general factor did not account for

most of the variance, common method variance is unlikely to be a serious problem in the data.

## Results

Means and standard deviations, along with correlations between study variables, are reported in Table 1. Wives scored higher on negative mood (Mean = 2.3, SD = .5) than husbands (Mean = 2.1, SD = .6,  $p < .01$ ), and worked fewer hours of paid labor than husbands (Mean = 15.2 hours, SD = 15.3 for wives and Mean = 34.29, SD = 17.2 for husbands,  $p < .01$ ). Results of two-level regression analyses are reported in Table 2.

Table 2 shows three separate analyses, one for couples, one for wives, and one for husbands with negative mood as the dependent variable and three analyses (one for couples, wives, and husbands) with positive mood as the dependent variable. For the interpretation of the results, it is important to keep in mind that multilevel programs usually only report gamma parameters or unstandardized ( $b$ ) instead of standardized ( $\beta$ ) regression coefficients (Nezlek & Zyzniewski, 1998). Since the present analyses report unstandardized regression coefficients, the coefficients can be compared within rows but not within columns (as is the case for standardized regression coefficients). For example, the association between hours of paid work and negative mood for women ( $b = -.004$ ,  $p < .001$ ) is stronger than for men ( $b = -.001$ , NS).

Table 2 reads as follows. Model 1: At the couple level negative mood (first column) has no significant relationship with family investments: Household activities  $b = .004$  (NS) and family stage  $b = .016$  (NS). Hours of paid work of the wife is negatively related to negative mood at the couple level ( $b = -.003$ ,  $p < .05$ ) and time pressure of the wife is positively related to negative mood at the couple level ( $b = .112$ ,  $p < .01$ ). Hours of paid work of the husband is also negatively related to negative mood at the couple level ( $b = -.002$ ,  $p < .05$ ) and time pressure of the husband is positively related to negative mood at the couple level ( $b = .184$ ,  $p < .01$ ). Together the variables in Model 1 explain 14 percent of the variance in negative mood at the couple level. Model 4 (column 4) repeats this analysis for positive mood as the dependent variable. Family investments contain two variables at the couple level. These variables are household activities and family stage.

As can be seen from Table 2, in none of the analyses do these variables contribute significantly to explain the dependent variables. Next, information from the wives (hours of paid work and time pressure) and information from the husbands (hours of paid work and time pressure) were entered. In

**Table 1** Means, standard deviations, and correlations for 629 couples (correlations of husbands above the diagonal and correlations of wives beneath the diagonal)

	Couple		Wives		Husbands <sup>a</sup>		1	2	3	4	5	6
	Mean	SD	Mean	SD	Mean	SD						
<i>Couple level (Family investments)</i>												
1 Household tasks	11.84	10.92						.00	.07	-.01	-.08*	-.23**
2 Family stage	2.78	1.28					-.17**	-.04	-.06	-.23**	-.23**	
<i>Individual level</i>												
3 Negative mood			2.34	.54	2.10	.56**	.08*	-.03	-.10*	.29**	-.06	
4 Positive mood			3.63	.52	3.62	.53	-.02	-.04	-.08*	.10*	.21**	
5 Hours of paid work			15.23	15.25	34.29	17.21**	-.03	-.15**	.31**	.05	.31**	
6 Time pressure			2.73	.67	2.71	.68	-.46**	.11**	-.05	.15**	.23**	

Note. <sup>a</sup> tested for differences between wives and husbands.

\*  $p < .05$ , \*\*  $p < .01$ .

**Table 2** Results of two-level regression analyses for 629 couples (unstandardized regression coefficients)

	Negative mood			Positive mood		
	Model 1 (Couple)	Model 2 (Wives)	Model 3 (Husbands)	Model 4 (Couple)	Model 5 (Wives)	Model 6 (Husbands)
<i>Family investments</i>						
Household activities	.004	.005	.003	.006	.006	.005
Family stage	.016	.026	.007	-.010	-.018	-.001
<i>Wives</i>						
Hours of paid work	-.003*	-.004**	-.001	.004**	.006**	.002
Time pressure	.112**	.256**	-.033	.020	.004	.034
<i>Husbands</i>						
Hours of paid work	-.002*	.001*	-.005**	.003**	.001	.001**
Time pressure	.184**	.078	.290**	.002	-.018	.023
R squared	.137**	.123**	.110**	.051**	.030**	.051**

Note. \*  $p < .05$ , \*\*  $p < .01$ .

terms of effect size,  $R$ -square was higher for the models that tested for negative mood than for models that tested for positive mood. For instance, 14 percent of the variance in positive mood (Model 1) was explained, whereas in Model 4 only 5 percent of the variance in positive mood was explained. The separate models for wives and husbands also indicated that the explained variance for negative mood was higher than for positive mood.

With these analyses, we examined the associations of objective and subjective workload on 1) one's own mood (i.e. Hypothesis 1 or the spillover hypothesis), 2) on spouse's mood and mood at the couple level (i.e. Hypothesis 2 or crossover hypothesis). Hypothesis 1, the spillover hypothesis, predicted that workload will be associated with mood. Objective workload (hours of paid work) for wives ( $b = .006$ ,  $p < .01$ , see column 5, Model 5) and for husbands ( $b = .001$ ,  $p < .01$ , see column 6, Model 6) was positively related to positive mood. However these relationships are not in the expected direction. The measure of subjective workload (time pressure) was, for both wives (in Model 5) and for husbands (in Model 6), not significantly related to positive mood. Thus Hypothesis 1a was not supported. Model 2 shows that wives' objective workload (hours of paid work,  $b = -.004$ ,  $p < .01$ ) was negatively related to negative affect. Model 3 shows that husbands' objective

workload ( $b = -.005, p < .01$ ) was also negatively related to negative affect. Model 2 shows that subjective workload of wives ( $b = .256, p < .01$ ) was related to wives' negative mood and Model 3 shows that husbands' subjective workload ( $b = .290, p < .01$ ) was related to husbands' negative mood. Hypothesis 1b was partially supported, that is, only supported for negative affect.

Hypothesis 2, the crossover hypothesis, predicted that workload will be associated with mood of the couple and the spouse. At the couple level in Model 4, again, objective workload was positively related to positive mood ( $b = .004, p < .01$  for wives and  $b = .003, p < .01$  for husbands). However, wives' workload was not significantly related to husbands' positive mood (see Model 6,  $b = .002$  for objective workload, and  $b = .034$  for subjective workload) and also husbands' workload was not related to wives' positive mood (see Model 5,  $b = .001$  for objective workload, and  $b = -.018$  for subjective workload). Thus, Hypothesis 2a received no support. At the couple level in Model 1, hours of paid work was negatively related to negative mood ( $b = -.003, p < .01$  for wives and  $b = -.002, p < .01$  for husbands). At the couple level, subjective time pressure was positively related to negative mood ( $b = .112, p < .01$  for wives and  $b = .184, p < .01$  for husbands). One crossover effect was found (see Model 2) as hours of paid work of husbands was related to wives' negative mood ( $b = .001, p < .05$ ). Hypothesis 2b received mixed support.

## Discussion

Both objective (number of hours of paid work) and subjective workload (time pressure) were found to be related to heightened negative mood. However these relationships were in opposite directions. Results of two-level regression analyses indicated that subjective workload was positively related to negative mood (i.e. as time pressure increases, negative mood increases) whereas objective workload was negatively related to negative mood (i.e. number of work hours increases, negative mood decreases). Unexpectedly, only objective workload and not subjective workload was positively related to positive mood. Apparently, the objective and subjective workload constructs have an independent association with both positive and negative mood further corroborating positive and negative mood as independent dimensions of mood.

In terms of Hobfoll's (2002) COR theory, this suggests that employees perceive subjective time pressure as a resource loss, and consequently experience negative mood. It is possible that objective workload may not be perceived as a resource loss by all employees. It is quite possible that some might consider it as a resource gain, which in turn should enhance positive

mood. For employees, striving to minimize threats of resource loss, both objective and subjective workload stressors are related to mood. Expending more resources to meet high workload leaves one with fewer resources and this imbalance triggered negative mood of employees (Hobfoll, 2002).

According to Hobfoll's (2002) conservation of resources theory, people strive to protect themselves against resource losses. High levels of objective and subjective workload deplete one's resources. Therefore, we expected workload to be associated with both types of mood. Because people strive to protect themselves from resource loss, losses are more salient than gains. Relative to objective workload, perceived time pressure is more salient and therefore, more easily interpreted as a resource loss. This could very well explain why subjective workload (i.e. time pressure) was associated with higher levels of negative affect. In contrast, hours devoted to paid work may not be readily interpreted as a resource loss; it may even be viewed as one avenue for gaining future resources. Working long hours signals one's commitment to one's job and the organization and could quite likely lead to resources (i.e. larger pay increases, promotions) in the future. This interpretation could explain the positive relationship between objective workload and positive affect.

Recall that we had hypothesized a negative relationship between workload and positive affect. It could be that the relationship between number of hours of paid work and positive mood changes from positive to negative when a certain threshold is reached. For instance, work might contribute to positive mood when one is working, say, less than 40 hours per week (in this study, women reported working on average 15.2 hours and men 34.29 hours per week), but might actually decrease positive mood when one is required to work more than 50 hours, week after week. Depressed mood may only arise if the hours worked exceed a particular number of hours (Sparks et al., 1997). Thus, it is possible that a threshold level of work demands exists. And, the relationship between objective workload and mood is likely to be substantial only when the workload exceeds this threshold.

We conducted a post-hoc analysis to check the linearity assumption by drawing a scatter plot to see if nonlinearity is present, such as a curved band or signs of a threshold phenomenon. However, there were no signs of non-linearity. Next, we examined the scatter plot of the residuals by the predicted scores and found no indication for non-linearity. It is possible that due to the low average work hours per week of this Dutch population, we did not find evidence of non-linearity and no support for a threshold phenomenon. Because the hours worked reported are much lower than in other countries such as the US, we may expect to see a stronger relationship using other samples with higher mean weekly work hours. Future research should test our

threshold explanation when examining the influence of objective workload on mood for populations with higher average work hours per week.

We found evidence of crossover, such that wives of husbands who devote more hours to paid work reported higher levels of negative mood, even as the husbands themselves reported lower levels of negative mood. We found no evidence for the reverse effect. This pattern offers two insights. First, crossover can occur without the spillover effect – working more hours does not affect husbands' negative mood (no spillover) but does affect wives' negative mood (crossover effect). Second, it suggests the possibility that effects may cross over in one direction but not necessarily the other direction. This crossover relationship that we found (the negative effect on wives' mood when husbands work more hours) has intuitive appeal and suggests that investigations of crossover effects could provide more insights into the dynamics of work–family interface.

Family investment, hours of paid work and time pressure experienced by couples explained more variance in negative mood than in positive mood suggesting that these variables are experienced more as strains than as resources; and thus, contributing more to negative mood than to positive mood.

It is important to point out that crossover effects in this study were small, just as they were in the study by Demerouti et al. (2005). The small crossover effect in the present study is also consistent with results reported by Westman and Etzion (1995). Additional research is needed to establish the precise processes underlying the effects of crossover. Contagion of mood from one spouse to the other, both spouses responding similarly to shared events and influencing each other's mood, and demands in one domain faced by spouse translating into increased demands for the individual in a different domain are likely mechanisms for crossover effect. The crossover effects we found are consistent with the latter explanation. We suspect that wives of husbands working longer hours had to devote more time toward family obligations, and this felt time pressure could have resulted in the increased level of negative mood reported by wives. We suspect that the precise mechanism underlying crossover effects will vary with the nature of stressors and with the direction of crossover (i.e. work to home versus home to work). Future studies of crossover effects should attempt to identify the exact mechanism underlying the effect.

Although the two-level regression analyses did not indicate any gender differences, wives reported devoting fewer hours to paid work than husbands. Household tasks were related to negative mood of wives but not for husbands. It is quite possible that wives wanted to work more hours but did not have the opportunity to do so because of other family obligations (women often perform the lion's share of household tasks), which could

contribute to negative affect. This raises fairness concerns in the family structure. Performing the lion's share of household tasks reduces the time women can devote to paid labor in a work environment. Or, it could be that women in our sample preferred to work fewer hours but experienced negative affect for other reasons. Future research should consider preferences to work more or fewer hours in addition to hours actually devoted to paid work and perceived time pressure. If people choose to devote more hours to paid work, the relationship with negative mood could be expected to be less evident than when people feel pressured to work more hours than they prefer (Sparks et al., 1997). Future research should investigate this possibility as well.

Focusing only on hours of paid labor may do injustice to other forms of work. The dataset that we used contained number of hours devoted to paid work, but did not contain detailed information about volunteering, taking care of kin, or other non-job responsibilities that could also be related to mood when experienced as workload. Future research is needed to investigate the impact of these other forms of time expenditure. Moreover, we only focused on negative experiences. Demerouti et al. (2005) showed that positive feelings may also crossover between spouses, particularly from husbands to their wives. Future research may focus not only on crossover of negative but also on the crossover of positive feelings among spouses (Hammer et al., 2005).

### Limitations of the present study

The use of self-report measures raises the issue of common method variance, and this was addressed with Harman's one-factor test. Harman's test indicated that common method variance was unlikely to be a serious problem in the data. Nevertheless, the cross-sectional design precludes inferences of causality. Therefore, we are reluctant to suggest that mood arises (in part) from workload, and we caution against any causal interpretation of the results. Workload and mood states were measured concurrently. Therefore, we cannot rule out the possibility that mood influenced perceptions of workload (Williams & Alliger, 1994). However, previous studies have also emphasized the influence of workload on mood (e.g. Bolger et al., 1989; Major et al., 2002; Parasuraman et al., 1992; Westman & Etzion, 1995; Westman et al., 2001). Longitudinal studies may add confidence to our conclusions regarding the specific causal relationships between workload and mood.

Second, we only used data from the Netherlands in this study. The results might have been affected by different labor policies or specific local conditions within the Netherlands. Before drawing general conclusions on the relationships between workload and mood, more research is needed and the theory

needs to be tested and replicated in other countries. We only studied married and cohabiting heterosexual couples. Similar investigations with culturally diverse couples including gay and lesbian couples are needed. Further, while the Family Survey Dutch Population dataset is rich, it does not contain many of the variables we would have measured (e.g. job level, extent to which job allowed flexible scheduling, or did respondents work more or fewer hours than their ideal) had we collected data ourselves. For instance, as one anonymous reviewer pointed out, job level could moderate the relationship between workload and mood. The use of an existing dataset offers the opportunity to use a large dataset on life course and life situation (of the Dutch population) but at the same time restricts our analysis to the variables in the dataset.

## Conclusion

### Contributions of research

This is one of the first studies to simultaneously model data from a representative sample of couples. By exploiting the couple nature of our data, we are able to demonstrate the interdependence of couples' experiences. This study makes several contributions to the literature on workload and mood. A clear contribution of our study was the result that workload of people can be transmitted not only from the work to the home domain but also between individuals (e.g. Fisher, 2000; Judge & Ilies, 2004). Second, positive mood and negative mood are most frequently studied as independent variables. Because these constructs influence various important outcomes (Ashkanasy et al., 2002), the present study focused on mood as a dependent variable. Studying antecedents of mood has implications not only for organizations, but more importantly, is of practical significance to the individual, his/her spouse, and the family as a unit. The regulation of individuals' mood seems essential for managing stressful events and for coping with stressful encounters (Iwasaki, 2001). To promote work–family balance, employers should discourage excessively long hours and avoid work overload because doing so would likely enhance the frequency of positive moods and lower the frequency of negative moods experienced by employees. Enhancing positive moods and reducing negative moods will not only benefit the employees but could indirectly benefit the organization through enhanced employee loyalty and reduced withdrawal behaviors.

Third, most studies have examined mood of individuals but not of couples. Although there is a general agreement of linkages between work and home, theories of work and family linkages (i.e. spillover, segmentation, and compensation) focus primarily on the individual as the unit of analysis as opposed to the couple (Lambert, 1990). Parasuraman and Greenhaus (2002)

note that even in studies in which parallel information is available for both partners much of the empirical research only examines within-person spillover. Hence, beneficial and/or disruptive impact of spouses' experiences on the joint well-being of couples are largely ignored in these individual-oriented studies (Rook & Dooley, 1991). Unlike previous individual-oriented work–family studies, we examined the effects of workload on individuals (husbands, wives) and couples.

In spite of public concern with the time pressures experienced by working couples, few scholars have explicitly examined the influence of number of hours devoted to work and time pressure experienced by an individual on his/her spouse and the joint well-being of the couple. Clearly, having too much to do and experiencing time pressure may create stress that not only affects the individual but also will be transmitted to the spouse and also affect the well-being of the couple (Major et al., 2002). The finding of a crossover relationship within couples (wives of husbands who devoted more hours to paid work reported more negative affect) suggests that this line of inquiry could offer important insights into the relationships between workload and individual, spouse and couple well-being.

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