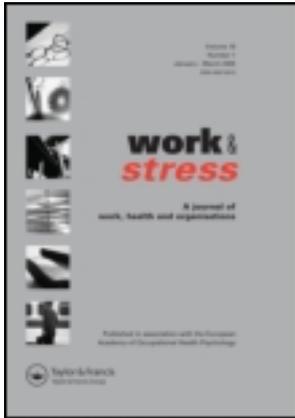


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Work-self balance: A longitudinal study on the effects of job demands and resources on personal functioning in Japanese working parents

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In work-family research the effects on the individual, or the “self”, in terms of personal interests independent of the work and family domains, have been largely neglected. This longitudinal study on 471 Japanese employees with young children investigated how job demands and job resources may have an impact on well-being by facilitating or hindering personal functioning. It was hypothesized that workload would have an unfavourable impact on work-to-self conflict, while supervisor support would have a favourable impact on work-to-self facilitation. In addition, we hypothesized that work–self conflict would diminish well-being (psychological distress and happiness), while work–self facilitation would enhance well-being over time. Structural equation modelling analyses using a full panel design showed that work overload was positively related to work–self conflict over time, whereas supervisor support was positively related to work–self facilitation. Furthermore, work–self conflict predicted psychological distress and happiness at T2, one year later, after controlling for T1 levels. These findings suggest that the demands and resources encountered at work can spill over to the home domain and have an impact on personal functioning and context-free well-being. Further research is needed to determine the importance of work-self constructs in relation to work-family constructs.

Keywords: conflict; facilitation; happiness; psychological distress; work-family interface; work-self interface; Japanese; work-related stress

Introduction

There is ample evidence showing that participation in work and family roles creates inter-role conflict due to incompatible demands (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005). Recently, it has been recognized that participation in one of those domains may also facilitate participation in the other domain due to the expansion of skills, knowledge and positive affect (Wayne, Grzywacz, Carlson, & Kacmar, 2006). While work and family are major life domains, it is surprising that

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researchers have ignored the way these domains influence and are influenced by the individual; namely, the qualities (i.e. personal interests, hobbies, time for oneself) that make each individual unique.

The current study aims to expand the literature on the work – nonwork interface by integrating the role of “the self” in the inter-role relationships. While previous studies have mainly examined how work affects family life, our study claims that individuals have to manage more than work and family. Therefore, the unique contribution of this study is to examine the effects of work on personal interests, i.e. other life roles on top of the family role. By doing this, the aim of the present study is to uncover new ways through which work influences the well-being of individuals, namely not only through the work–family interface (as has been examined so far) but through the work–self interface. This is important to know, as such knowledge informs us about how we can create sustainable jobs in which employees flourish instead of burn out. To achieve these goals we will use two-wave data from Japanese employees with young children, as these individuals are confronted with many challenges in balancing work with family and the self.

The first contribution of this study concerns the expansion of inter-role balancing by examining the impact of work on *personal life*. Thus, an alternative conceptualization of the work-nonwork interface is proposed and tested. The second contribution of the study is that it examines the *longitudinal* relationships between work–self conflict and facilitation on the one hand and predictors as well as outcomes on the other hand. In this way, it counts among the few studies (e.g. Kinnunen, Feldt, Mauno, & Rantanen, 2010) that apply a longitudinal design within the domain of the work-nonwork interface. Although we cannot draw causal conclusions on the basis of a longitudinal field study, we can uncover whether hypothetical predictors have the expected effects on outcomes at Time 2 (after controlling for the level of the outcome variables at Time 1). Contrary to most studies that use European and North American samples, our study is conducted among Japanese working parents with young children. Therefore, the study not only provides insight into the work-nonwork interface in a non-western country, but it also focuses on a country whose workforce is known for having difficulties balancing their work and family lives (Shimazu, Demerouti, Bakker, Shimada, & Kawakami, 2011).

Work-nonwork interface: Role strain vs. role enhancement

During the last two decades, a substantial body of knowledge has been produced on the intersection of work and family roles (for reviews, see Eby et al., 2005; Geurts & Demerouti, 2003). Faced with an increase of dual-earner and single parents in the workforce, blurring gender roles and a shift in employee values towards greater quality of working life, researchers have sought to explain the numerous ways in which work and family roles are interdependent (Edwards & Rothbard, 2000). Derived from a *scarcity hypothesis* that assumes a fixed amount of time and human energy, the conflict perspective claims that individuals who participate in multiple roles (such as work and family) inevitably experience conflict and stress (Greenhaus & Parasuraman, 1999). Marks (1977) criticized the conflict perspective and suggested an *expansion hypothesis* that assumes that participation in multiple roles may provide a greater number of opportunities and resources to the individual

that can be used to promote growth and better functioning in different life domains. Both hypotheses have received empirical support (Demerouti & Geurts, 2004). Note, however, that the literature has been dominated by role conflict theory (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964) that describes the phenomenon but cannot explain the mechanisms of the inter-role interface (Demerouti, 2006). For instance, time and energy deficits have been suggested to explain inter-role conflict (Ten Brummelhuis, Haar, & van der Lippe, 2010), while resource allocation strategies may explain the positive impact of one domain on the other (Weer, Greenhaus, & Linnenhan, 2010).

It has been recognized not only that work can influence family life but also that family can influence functioning at work, both positively and negatively. Consequently, the work-nonwork interface is seen as a multidimensional concept in which the direction (home-work vs. work-home) as well as the quality of the impact (conflict vs. facilitation) are important (Grywacz & Marks, 2000). In the present study, we will focus on the impact the work domain has on the nonwork domain. The reason is that reviews on work-family relations have generally shown that the impact of work on family is more prevalent than the impact of family/nonwork life on work (e.g. Eby et al., 2005). In accordance with the multidimensional nature of inter-role relations we suggest that work can facilitate or hinder not only family functioning but also personal life.

The “self”

Our main tenet is that it is insufficient to focus solely on the work and family domains if we aim to understand how humans balance between different roles (see, for instance, Eby et al., 2005). Demerouti (2012) enlarged the focus of the life domain by examining the self as a supplement to work and family. The “self” refers to the unique qualities of an individual (e.g. his/her personal interests, hobbies and time for oneself) that stand apart from the work or the family role (Demerouti, 2012). It is operationalized as the time spent on personal interests independent of the family domain or work area. Similarly, Kreiner, Hollensbe, and Sheep (2006) suggested that individual identities, defined as aspects of the self that arise from personal characteristics and social categories in which the individuals claim membership, should be incorporated in the interface between life domains. Specifically, people are considered to define themselves as members of groups (collective or group identity), as partners in close relationships (relational or role identities), and in terms of personal aspects or traits (personal or individual identities) (Rothbard & Ramarajan, 2009). Kreiner et al. (2006) introduced the term work-self balance, which is conceptualized as an optimal overlap between aspects of individual and organizational identities. Thus, individuals are viewed as active agents who are able not only to respond to identity pressures but also to initiate identity dynamics proactively and to co-construct the interface of identity boundaries. Also, Allis and O’Driscoll (2008) found that time spent on personal activities, as well as on the family, can facilitate work.

In the present study we suggest that work-self conflict occurs when demands and responsibilities in the work domain are incompatible with time spent on personal interests, or when engagement in one’s work creates negative strain that inhibits one from pursuing one’s personal interests (Geurts & Demerouti, 2003). Work-self

facilitation occurs when resource gains generated at work promote functioning or affect during time devoted to personal interests (Demerouti, 2012). For instance, success at work could make an individual more pleasant during a social evening with friends, whereas a conflict with a colleague may distract an individual from a music lesson.

Demerouti (2012) provided several arguments to justify the added value of the work–self interface. First, the work–self interface is strongly related to the person and therefore could be more predictive of individual outcomes than, for instance, the work–family interface, which is expected and found to be more predictive of family outcomes. As the central dependent variables in the present study – happiness and psychological distress – are individual outcomes, we expect that work–self constructs will be valuable predictors over time. Next, the interruptions (conflict) or positive impact (facilitation) of work aspects on personal interests are expected to be more prevalent and frequent than those of/on family functioning, because work and family represent domains with strong and clear borders that are guarded by border-keepers (i.e. the supervisor at work or the spouse at home) (Clark, 2000). As only the individuals themselves guard time devoted to personal interests, the pressure to conform to a specific role is lacking. In support of this, Hall (1972) found that individuals gave up their personal roles to eliminate role conflict. These issues make it a challenging task for individuals to manage the work–self interface. Finally, according to expectancy-value theory (Erez & Isen, 2002), motivation is largely driven by the personal outcomes that individuals anticipate or receive. Similarly, most need-satisfaction models argue that people make decisions consistent with the extent to which choice alternatives satisfy or do not satisfy their preferences or self-interests (De Dreu & Nauta, 2009). As personal interests drive motivation and behaviour, the work–self interface represents a relevant and powerful experience. Therefore our first hypothesis is:

Hypothesis 1: The work–nonwork interface has a four-factor structure including the dimensions of work–family conflict, work–family facilitation, work–self conflict and work–self facilitation.

Relationships between work characteristics and the work–self interface

In order to investigate the relationship between work characteristics and the work–self interface, the Job Demands-Resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) was utilized as a theoretical basis. This model postulates that job resources such as control over and support in one's work environment are crucial in determining motivation because they help individuals to fulfil their job requirements and to develop themselves. In contrast, job demands, such as work pressure or emotional demands, are considered to deplete individual resources because they require effort and therefore they are associated with costs such as psychological distress.

Several empirical studies have confirmed the associations between these work characteristics and the work–nonwork interface (for reviews, see Eby et al., 2005; Geurts & Demerouti, 2003). Work pressure (or overload) exhibits the most robust relationships with negative work–family conflict (Grzywacz & Marks, 2000). Moreover, as work overload can be relevant to virtually every job, we focus on

this job demand. In a similar vein, higher levels of social support have been associated with less conflict between both domains (e.g. Kinnunen & Mauno, 1998). Grzywacz and Marks (2000) showed that job control is more strongly related to positive than to negative inter-role relationships. Moreover, Bakker and Geurts (2004) found that job demands (i.e. workload and emotional demands) and job resources (i.e. autonomy, performance feedback and possibilities for development) trigger two fairly independent processes: a health impairment process leading to conflict, and a motivational process leading to facilitation. Therefore, it is hypothesized that the perception of a demanding work environment will be primarily related to the experience of conflict, whereas the experience of facilitation will be primarily related to job resources, such as social support. In the present study we focus particularly on social support provided by the supervisor. This is because support by the supervisor can be instrumental and helpful in creating conditions at work (e.g. providing flexibility in working times) that facilitate participation in other life roles (Demerouti, 2006). Therefore:

Hypothesis 2: Time 1 work overload will be positively related to Time 2 work–self conflict.

Hypothesis 3: Time 1 supervisor support will be positively related to Time 2 work–self facilitation.

Work–self interface, psychological distress and happiness

Conflict. The relationship between work–self conflict and psychological distress and happiness may well be understood by using self-regulation theories. The process of self-regulation involves comparison between one's current and ideal states, and where inconsistencies are perceived individuals undertake actions to fix the discrepancies by conducting cognitive and behavioural adjustments (Carver & Scheier, 1981). Cognitive and behavioural adjustments may include focusing attention on the self (Wood, Saltzberg, & Goldsamt, 1990) and exercising self-control (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Rothbard (2001) argued that self-regulation in the form of self-focused attention and ego depletion may provide an explanation for why negative emotions from experiences in one role can reduce engagement in other life domains. Self-focused attention can reduce one's engagement in another role because when people become self-focused, they ruminate on problems from one role and become self-absorbed (Wood et al., 1990) and thus are less available for and engaged in another role. Baumeister et al. (1998) suggested that self-regulation leads to ego depletion because when people engage in volitional acts of self-control and emotion regulation, they draw on a limited resource akin to energy. Thus, increased self-regulation prompted by negative emotions may deplete resources akin to energy, resulting in fatigue (mental or physical), making one less available for and unable to engage in another role. In the case of work–self conflict, the need to regulate negative work-related emotions and experiences leads to decreased mental and physical energy and subsequently to the experience of tension, distress and dissatisfaction in other life domains.

Indeed, work–nonwork conflict has been associated with various outcomes, which can be grouped into role-related outcomes and general health outcomes. In general, work–nonwork conflict may have detrimental effects on health and well-being since it increases, for instance, psychosomatic symptoms and physical health

complaints (Geurts, Rutte, & Peeters, 1999), as well as psychological distress (Kinnunen, Feldt, Geurts, & Pulkkinen, 2006), and decreases marital satisfaction (Kinnunen et al., 2006), overall happiness (Lu, Gilmour, Kao, & Huang, 2006) and family functioning (Roeters, van der Lippe, & Kluwer, 2010). Note that in the study of Lu et al. (2006) work–family conflict was negatively related to happiness only for the Taiwanese and not for the British sample. This highlights again the importance of examining inter-role relations in non-western as well as in western cultures. Following the reasoning of the self-regulation theories we expect:

Hypothesis 4a: Time 1 work–self conflict will be positively related to Time 2 psychological distress.

Hypothesis 4b: Time 1 work–self conflict will be negatively related to Time 2 happiness.

Facilitation. In order to justify the impact of work–self facilitation on well-being, we will use the Resource-Gain-Development (RGD) perspective suggested by Wayne and colleagues (2007). The RGD perspective is a theoretical explanation for the primary antecedents, consequences and moderators of work–family facilitation. Accordingly, personal characteristics and environmental resources (object, condition, energy and support resources) promote the development of new skills, positive affect, capital assets and efficiency in one domain, which helps people function in other life domains. Wayne et al. (2007) proposed that individuals maximize and exploit available resources so that they can experience positive gains. When gains from one domain are applied, sustained and reinforced in another domain, the end result is improved system functioning or facilitation. It is suggested that the accumulation of resources inherent in work–self facilitation result in enhanced outcomes within personal life. In this way the experience of facilitation should enhance overall happiness (representing a positive affective state) and diminish psychological distress.

In support of this theoretical justification, there is evidence that facilitation is linked to positive outcomes. Empirical evidence has consistently demonstrated that role accumulation can have beneficial effects on physical and psychological well-being (Barnett & Hyde, 2001). In addition, satisfaction with work and satisfaction with family have been found to have additive effects on an individual's happiness, life satisfaction and perceived quality of life (Rice, Frone, & McFarlin, 1992). Also Hakanen, Peeters, and Perhoniemi (2011) found in a longitudinal study that work–family facilitation was related to work engagement while family-work facilitation was related to family satisfaction. Thus, our final hypotheses are:

Hypothesis 5a: Time 1 work–self facilitation will be negatively related to Time 2 psychological distress.

Hypothesis 5b: Time 1 work–self facilitation will be positively related to Time 2 happiness.

The Japanese context

Japan is known as a country where long work hours prevail, and as a country whose workforce is having difficulties balancing their work and family lives (Shimazu et al., 2011). In their comparative study of public sector employees in Finland, Japan and the UK, Chandola et al. (2004) showed that Japanese employees had higher scores both on work-to-family conflict and family-to-work conflict compared with Finland

and the UK. The collapse of the bubble economy in 1991 followed by an economic depression led many Japanese companies to increase competition, which resulted in wide-scale restructuring (e.g. lay-offs) and an increase in non-regular employment such as part-time employment, employment on lease and temporary employment. Consequently, regular workers are required to work longer hours in order to deal with increased organizational demands. In addition, balancing work and family lives has become a bigger challenge in Japan since women entering the workforce has become increasingly common (Ministry of Health, Labour and Welfare, 2010). However, labour force participation rates are still low among women (48.5%) compared to men (71.6%). In addition, work hours and hours spent on child care and housework are polarized by gender, with women playing a more important role in child care and housework than men. Because of the low fertility rate in Japan (a total of 1.4 births per family: The World Bank, 2012), the Japanese government has implemented policy measures to reconcile work and family responsibilities to raise birth rates.

However, the reasons for working long hours in Japan are not just economic, but also socio-cultural (Snir & Harpaz, 2004). To the Japanese, work is an end in itself: it is the process of carrying out obligations owed to society and to oneself as a social being (Snir & Harpaz, 2004). In the Japanese culture, time logged at one's desk or workstation is often a symbolic statement of submission to managerial power and loyalty to the organization, because in collectivistic cultures hard work and effort are more highly valued than ability. This context makes the distribution of work–nonwork hours and consequently the work–self interface very relevant for Japanese employees as work, because of its centrality, can have a strong impact on personal interests both in a positive and negative sense.

Method

Participants and procedure

The present study is a part of the Tokyo Work-family INterface (TWIN) study, a large cohort study. The TWIN study was conducted among working parents with preschool children in the Setagaya ward, Tokyo. We analyzed the original data of the first and second waves collected in 2008 and 2009, respectively. The one-year time interval between the two measurements appears to be long enough for possible changes in individual scores, but not too long for too much non-response in our study sample (De Jonge et al., 2001).

In 2008, working parents were approached through the nursery schools of their children. With the help of the Child-raising Assistance Department of the Setagaya ward in Tokyo, a letter was sent to all directors of nursery schools in this ward to approach all parents there. The letter explained the aims, procedure and ethical considerations of the study. All but one nursery school agreed to participate. The researchers distributed questionnaires to all parents through the nursery schools. Participants were included in the study on a voluntary basis. Respondents returned their questionnaires in closed, pre-stamped envelopes to a researcher at the University of Tokyo. Of the 8964 questionnaires distributed, 2946 were returned, resulting in a response rate of 32.9%. Please note that because of the large number of items, we randomly distributed one of two types of questionnaires (i.e. Types A and

B) to the participants. The current study used the Type B questionnaire, which includes measures of work–self conflict and facilitation. Among the 2946 respondents, there were 1546 participants who answered the Type B questionnaire. In 2009, questionnaires were again sent to 1466 respondents who agreed to participate in the follow-up survey, and 963 were returned (65.7% response rate). A total of 471 participants filled in the (Type B) questionnaire twice and represent the panel group used in this study. The whole procedure followed in the present study was reviewed and approved by the Ethics Committees of the Graduate School of Medicine at the University of Tokyo.

The mean age of the sample was 37.3 ($SD = 4.6$). Of the participants 43.5% were male and the majority was married (93.1%), and had at least one (47.1%) or two children (41.0%). For the majority of the participants, the youngest child was four years of age or younger (91.2%). Over half of the participants had a university degree (56.5%) and worked in the private sector (65.7%). The majority worked full time (81.5%), and had no night shifts (82.6%). The most frequently mentioned sector in which participants were employed was the technical, engineering sector (36%), followed by clerical jobs (28.9%), and the service sector (12.1%).

In order to examine potential selection bias, we compared employees from the panel group ($N = 471$) with employees who had dropped out (i.e. those who answered only the first-wave survey of Type B: $N = 1075$) with respect to their baseline levels on the study variables. The panel group reported a lower level of psychological distress (Mean = 9.04, $SD = 4.01$ vs. Mean = 9.53, $SD = 4.45$; $t(1495) = -2.102$, $p < .05$), and a slightly higher level of happiness (Mean = 7.97, $SD = 1.54$ vs. Mean = 7.78, $SD = 1.82$; $t[1501] = 2.08$, $p < .05$) than the participants who had dropped out. Moreover, the percentage of individuals who completed higher education (i.e. university and graduate school) was higher in the panel group (66.2%) than in the dropout group (56.1%) ($\chi^2(4) = 15.21$, $p < .01$). There were no other differences between both groups. Thus, our panel group was more highly educated, happier and less distressed than the individuals who participated only in the first wave.

Measures

Work overload was measured with a short Dutch version of Karasek's (1985) job content scale. This questionnaire was translated into Japanese and validated in previous studies (e.g. Shimazu, Bakker, & Demerouti, 2009). The scale includes four items that refer to quantitative, demanding aspects of the job (e.g. time pressure, working hard). A sample item is: "My work requires working very hard". Items are scored on a five-point scale, ranging from 1 (*never*) to 5 (*always*).

Supervisor support was assessed with the corresponding subscale of the Brief Job Stress Questionnaire (BJSQ) (Shimomitsu, Yokoyama, Ono, Maruta, & Tanigawa, 1998), consisting of three items: "How easy is it to talk with your supervisor?", "How much can your supervisor be relied on when things get tough?" and "How much is your supervisor willing to listen to your personal problems?" Items were scored on a four-point Likert scale, ranging from 1 (*disagree*) to 4 (*agree*).

Work–family conflict and facilitation. Work–family conflict and facilitation were measured through three and four items, respectively, on the basis of the "Survey

Work-home Interference Nijmegen” (SWING; Geurts et al., 2005). The shortened versions have been validated in previous studies (Bakker, Demerouti, & Dollard, 2008; Kinnunen et al., 2006). Example items are “How often does it happen that . . .” “your work schedule makes it difficult for you to fulfil your domestic obligations?” (work–family conflict), and “after a pleasant working day/week, you feel more in the mood to engage in activities with your spouse/family?” (work–family facilitation). The answer categories ranged from 0 (*never*) to 4 (*always*).

Work–self conflict and facilitation were each measured with four items developed by Demerouti (2009), which are presented below. In each case the participant is asked how often it happens that . . .

Work–self conflict items: 1. You find it difficult to fulfil your personal interests because you are constantly thinking about your work? 2. You do not fully enjoy your personal interests because you worry about your work? 3. Your work schedule makes it difficult for you to fulfil your personal interests? 4. You think about all the things that you still have to do for your work, while you are busy with your personal interests?

Work–self facilitation items: 1. You come home cheerful after work, which affects positively the experience of your personal interests? 2. After work you really feel like pursuing your personal interests. 3. You can also perform better in your personal activities as a result of things that you have learned at work. 4. You feel full of energy after work and therefore can enjoy your personal interests more.

The scales represent an adaptation of the SWING (Geurts et al., 2005), where the items have been modified such that they capture the impact of the work domain on the self. Specifically, the first part of each item was identical to the corresponding original SWING item, while the second part was adjusted to capture the time spent on personal interests (i.e. the “self”). In the instructions for these items, we explained that personal interests concern the interests and activities the person does for him/herself and not to satisfy the work- or the family-role. Items were scored on a five-point scale, ranging from 0 (*never*) to 4 (*always*).

Psychological distress was measured with the Kessler 6 (K6) questionnaire (Kessler et al., 2003). It includes six items assessing how frequently one experienced symptoms of psychological distress (e.g. “feeling so sad that nothing can cheer you up”) during the past 30 days. Items were scored on a five-point scale, from 1 (*none of the time*) to 5 (*all of the time*). The Japanese version of the K6 has been validated to screen mental disorders (Furukawa et al., 2008).

Happiness was measured with a single item. Respondents were asked to rate their overall happiness on a 0-10 self-anchoring scale, in which 0 is defined as “not happy at all” and 10 is defined as “very happy”. A one-item happiness scale is often used in happiness research (Lyubomirsky, King, & Diener, 2005).

Data analysis

The panel data were analyzed with covariance structure modelling using AMOS 7.0. We used the maximum likelihood method of estimation. Besides the chi-square statistic, the analysis assessed the goodness-of-fit index (GFI), the root mean square error of approximation (RMSEA), the Tucker-Lewis index (TLI), the comparative fit index (CFI), and the incremental fit index (IFI). As suggested by Marsh, Hau, and Wen (2004), we used the conventional cut-off values to assess model fit i.e. GFI,

CFI, TLI, IFI > .90, and RMSEA < .08 instead of the criteria that have been recommended by Hu and Bentler (1999) (i.e. GFI, CFI, TLI, IFI > .95, and RMSEA < .06). This was done because the cut-offs suggested by Hu and Bentler are far too stringent, meaning that otherwise acceptable models are too often rejected (Marsh et al., 2004).

In order to test the factorial structure of the work–nonwork interface (Hypothesis 1), confirmatory factor analysis (CFA) was conducted for both measurement points separately. The suggested model in which all items capturing the work–nonwork interface loaded on four correlated factors was compared with several alternative models. The models were compared with the chi-square difference test. Hypotheses 2–4 were tested with structural equation modelling (SEM) analyses (see Figure 1). All constructs were represented as latent factors operationalized by the respective items that were included as manifest variables. Moreover, all constructs were included at Time 1 (T1) and Time 2 (T2) so that we utilized a two-wave panel design with lagged effects. The model included work overload, supervisor support, work–self conflict, work–self facilitation, psychological distress and happiness.

Because the happiness factor included only one indicator, we could not calculate its reliability. Following Kline’s (2005) recommendations, we assumed that the happiness item had a reliability of .90. We corrected for random measurement error by setting the random error variance of happiness equal to its variance multiplied by [one minus its internal consistency]. The stability effects were included as paths from the T1 to T2 construct, while synchronous correlations were included as correlations

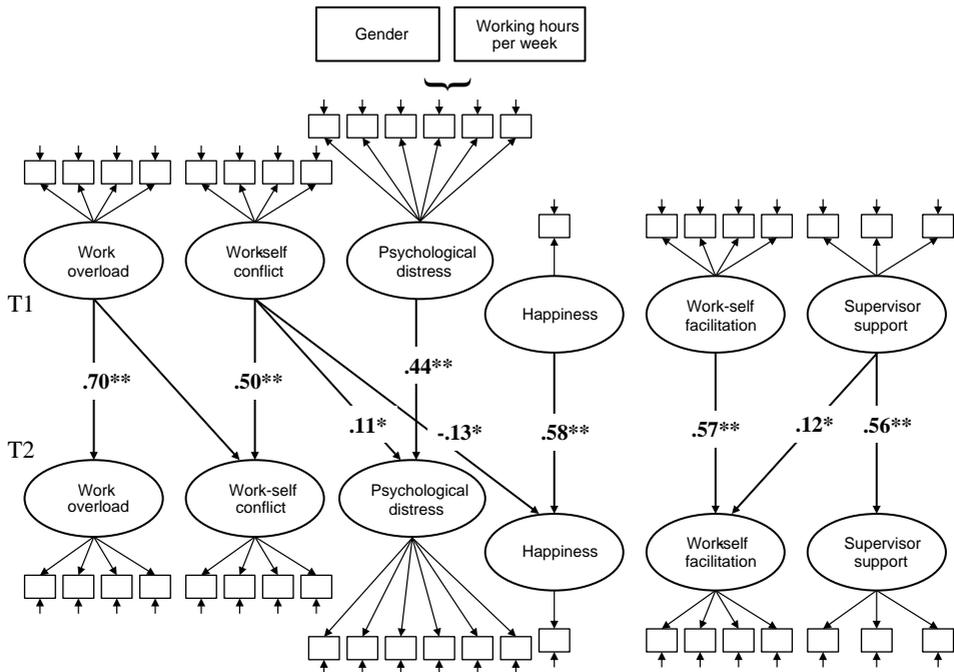


Figure 1. Hypothesized model of work–self conflict and facilitation. Synchronous correlations as well as correlations with and paths from the control variables are excluded for reasons of clarity.

of all constructs within each measurement wave. Next to stabilities and synchronous effects, we included the following paths: T1 work overload on T2 work–self conflict, T1 supervisor support on T2 work–self facilitation, T1 work–self conflict on T2 psychological distress and happiness, and T1 work–self facilitation on T2 psychological distress and happiness. Because gender and working hours per day were related to the study variables, we included them as control variables. Specifically, the control variables were correlated to the T1 latent factors and had paths to the T2 latent factors. Finally, we tested for measurement invariance by constraining the loadings of the respective items per construct to be equal across both waves.

Results

Descriptive statistics and correlations

Table 1 shows the means, bivariate correlations and Cronbach's alphas of all scales. All scales show acceptable reliabilities, although the coefficients for work–family conflict and facilitation at T1 are somewhat lower than expected. The test-retest reliability was higher for work–self conflict ($r = .59, p < .01$) than for work–self facilitation ($r = .24, p < .01$). This indicates that work–self facilitation fluctuates more over time than work–self conflict. Further, the correlations between the conflict dimensions as well as between the facilitation dimensions differ substantially within each measurement point (for the conflict dimensions T1 $r = .71, p < .01$ and T2 $r = .70, p < .01$ and for the facilitation dimensions T1 $r = .44, p < .01$ and T2 $r = .67, p < .01$).

Confirmatory factor analyses

Table 2 shows the results of the CFAs. The four-factor model for T1 included work–family as well as work–self conflict and facilitation as latent correlated factors. This model had an unsatisfactory fit to the data, $\chi^2 (183 \text{ df}) = 760.25, p < .001, \text{GFI} = .86, \text{RMSEA} = .08, \text{TLI} = .86, \text{CFI} = .87, \text{IFI} = .87$. Modification indices showed that the model could be improved substantially by including the correlation between the error term of the two items of work–family conflict (“You have to cancel appointments with your spouse/family/friends due to work-related commitments” and “Your work schedule makes it difficult for you to fulfil your domestic obligations”) as well as between two items of the work–self facilitation (“You come home cheerfully after work, which positively affects the experience of your personal interests” and “After work you have fun in your personal interests”). We included these two correlations between their error terms, as these items have overlap in their content that is apparently not covered only by the respective latent factor. Specifically, both work–family conflict items refer to time-based conflict while both work–self facilitation items refer to enjoyment of personal activities after work. The model fit improved and was acceptable ($\chi^2 (181 \text{ df}) = 612.65, p < .001, \text{GFI} = .88, \text{RMSEA} = .07, \text{TLI} = .89, \text{CFI} = .91, \text{IFI} = .91$) as most indices satisfied the conventional criteria (see Table 2). Importantly, all items loaded significantly on the intended latent factors. The estimated correlation (i.e. after controlling for measurement error) between the two conflict factors was $r = .77 (p < .001)$ and the estimated correlation between the facilitation factors was $r = .62 (p < .001)$. Furthermore, we tested the four-factor

Table 1. Means, standard deviations (*SD*), internal consistencies and bivariate correlations between the study variables; *N* = 471.

	<i>Mean</i>	<i>SD</i>	α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Gender	1.56	.50	–																	
2. T1 Working hours per day	8.48	2.32	–	-.49**																
3. T1 Work overload	3.13	1.07	.90	-.13*	.29*															
4. T1 Supervisor support	2.61	0.72	.82	-.01	-.03	-.09*														
5. T1 Work-family conflict	1.21	0.74	.65	-.14**	.34**	.51**	-.20**													
6. T1 Work-family facilitation	1.33	0.63	.67	.09	-.05	.14**	.12**	.03												
7. T1 Work-self conflict	0.50	0.22	.87	-.20**	.35**	.45**	-.20**	.71**	.02											
8. T1 Work-self facilitation	0.73	0.24	.84	.13**	-.12**	-.04	.19**	-.26**	.44**	-.22**										
9. T1 Psychological distress	1.50	0.66	.88	-.02	.10*	.24**	-.24**	.41**	-.04	.49**	-.26**									
10. T1 Happiness	7.98	1.53	–	.02	-.01	-.03	.26**	-.25**	.14**	-.28**	.35**	-.42**								
11. T2 Work overload	3.13	1.04	.90	-.11*	.22**	.64**	-.09	.43**	.08	.36**	-.10*	.23**	-.10*							
12. T2 Supervisor support	2.58	0.72	.85	.01	.03	.00	.50**	-.05	.11*	-.06	.13**	-.13**	.21**	-.05						
13. T2 Work-family conflict	0.79	0.59	.70	-.08	.23**	.33**	-.13**	.53**	.09	.48**	-.08	.29**	-.14**	.42**	-.15**					
14. T2 Work-family facilitation	1.45	0.63	.72	.00	-.03	.15**	.14**	-.03	.45**	-.07	.32**	-.12**	.22**	.08	.15**	-.01				
15. T2 Work-self conflict	1.96	.89	.88	-.23**	.26**	.36**	-.11*	.52**	.06	.59**	-.09*	.29**	-.17**	.42**	-.10*	.70**	-.04			
16. T2 Work-self facilitation	1.63	.70	.83	.13**	-.11	.03	.09*	-.01	.37**	-.07	.24**	-.11*	.12**	.01	.18**	-.03	.67**	-.06		
17. T2 Psychological distress	1.81	.79	.91	.01	-.03	.14**	-.22**	.25**	-.02	.28**	-.18**	.47**	-.28**	.25**	-.30**	.43**	-.16**	.41**	-.15**	
18. T2 Happiness	7.83	1.65	–	.03	-.04	-.05	.18**	-.20**	.09	-.25**	.18**	-.29**	.59**	-.11*	.24**	-.28**	.21**	-.31**	.18**	-.48**

Notes: **p* < .05 level (2-tailed); ***p* < .01 level (2-tailed). 1 = male, 2 = female.

Table 2. Goodness-of-fit indices (maximum-likelihood estimates) for the confirmatory factor analyses; $N=471$.

Model	χ^2	df	p	GFI	RMSEA	TLI	CFI	IFI
<i>Time 1</i>								
1. Four-factors	612.65	181	.001	.88	.07	.89	.91	.91
2. Four-factors constrained	976.59	183	.001	.85	.10	.80	.83	.83
3. Work-family and work-self	1828.70	186	.001	.66	.14	.59	.64	.64
4. Conflict and facilitation	1209.26	186	.001	.79	.10	.77	.80	.80
5. One-factor	2032.39	187	.001	.64	.15	.55	.60	.60
Null	4777.25	210	–	.34	.22	–	–	–
<i>Time 2</i>								
1. Four-factors	331.82	83	.001	.91	.08	.90	.92	.92
2. Four-factors constrained	617.76	85	.001	.85	.12	.80	.83	.83
3. Work-family and work-self	1572.65	88	.001	.67	.19	.45	.53	.53
4. Conflict and facilitation	530.98	88	.001	.86	.10	.84	.86	.86
5. One-factor	1398.89	89	.001	.65	.18	.52	.60	.60
Null	3314.33	337	–	.41	.26	–	–	–

Notes: χ^2 = chi square; df = degrees of freedom; GFI = goodness of fit index; RMSEA = root mean square error of approximation; TLI = Tucker Lewis index; CFI = comparative fit index; IFI = Incremental Fit Index.

constrained model in which we assumed that the two conflict and the two facilitation dimensions had no discriminant validity. This was done by constraining both the correlation between the conflict dimensions and the correlation between the facilitation dimensions to 1. The fit of the model that assumes no discriminant validity for the conflict and the facilitation dimensions (i.e. four-factors constrained) was significantly worse than that of the freely estimated four-factors model ($\Delta\chi^2(2) = 363.94, p < .001$), indicating that work–family conflict and work–self conflict as well as work–family facilitation and work–self facilitation are correlated but distinct dimensions.

The fit of the four-factor model was significantly better than the fit of an alternative “work–family and work–self” model in which work–family conflict and facilitation collapsed into one factor and work–self conflict and facilitation formed a second factor, $\Delta\chi^2(5) = 1216.05, p < .001$. Moreover, the fit of the four-factor model was significantly better than the fit of the “conflict and facilitation” model in which the conflict dimensions collapsed into one factor and the facilitation dimensions formed a second factor, $\Delta\chi^2(5) = 496.61, p < .001$. Finally, the fit of the four-factor model was significantly better than the fit of the one-factor model in which all items loaded on one single factor, $\Delta\chi^2(6) = 1419.74, p < .001$.

Findings were largely similar for T2, as the four-factor model was significantly better than the four-factor constrained model $\Delta\chi^2(2) = 285.94, p < .001$, the “work–family and work–self” model $\Delta\chi^2(5) = 1240.83, p < .001$, the “conflict and facilitation” model $\Delta\chi^2(5) = 199.16, p < .001$ and the one-factor model $\Delta\chi^2(6) = 1067.07, p < .001$. These findings indicate that the four dimensions of the work–nonwork interface are separate factors. Yet the two conflict dimensions and the two facilitation dimensions were strongly correlated. These findings provide support for Hypothesis 1.

Structural equation modelling

Prior to hypotheses testing, we examined measurement invariance for the two waves. The model that allowed different loadings per measurement wave showed a satisfactory fit to the data, χ^2 (925 df) = 2222.07, $p < .001$, GFI = .85, RMSEA = .06, TLI = .89, CFI = .90, IFI = .91. The model that assumed measurement invariance between both waves (in which factor loadings of each item on the respective construct were constrained to be equal in both waves) also showed a satisfactory fit, χ^2 (941 df) = 2256.65, $p < .001$, GFI = .84, RMSEA = .06, TLI = .89, CFI = .90, IFI = .91. Moreover, the constrained model was not significantly worse than the model allowing different measurement models per wave, $\Delta\chi^2$ (16 df) = 34.58, *n.s.* This provides evidence for the measurement invariance of our constructs in both waves. Moreover, all stability effects were significant and ranged between .44 and .71, while all items significantly loaded on the respective factors within each measurement wave and the loadings ranged between .64 and .99.

Results of the constrained model are showed in Figure 1. T1 work overload were significantly and positively related to T2 work–self conflict ($\beta = .13$, $p < .01$). This provides support for Hypothesis 2. T1 supervisor support was positively related to T2 work–self facilitation ($\beta = .12$, $p < .05$), which provides support for Hypothesis 3. Moreover, we found that, after controlling for T1 psychological distress, T1 work–self conflict was positively related to T2 psychological distress ($\beta = .11$, $p < .05$). This provides support for Hypothesis 4a. Additionally, we found that, after controlling for T1 happiness, T1 work–self conflict was negatively related to T2 happiness ($\beta = -.13$, $p < .05$), providing support for Hypothesis 4b. With respect to T1 work–self facilitation, we found that it had no lagged effects on T2 psychological distress and happiness. Thus, Hypotheses 5a and 5b had to be rejected.

Next to examining the hypothesized relationships, we tested an alternative model in which we added the paths from T1 work overload to T2 work–self *facilitation* as well as from T1 supervisor support to T2 work–self *conflict*. This model was tested because earlier reviews (e.g. Eby et al., 2005) have shown that work overload can be negatively related to facilitation, while supervisor support can be negatively related to conflict. In support of this, Crawford, LePine, and Rich (2010) showed in their meta-analysis that specific demands influenced also the motivational process leading to facilitation (next to their impact on the health impairment process), while specific resources influenced the health impairment process leading to conflict (next to the motivational process). However, adding these alternative paths in the constrained model did not result in a significant increase of the model fit ($\Delta\chi^2$ (2) = 0.54, *n.s.*). Moreover, none of the additional paths was significant.

Discussion

This study expands our understanding of inter-role relationships by investigating whether work may impact on personal life. With this longitudinal study in Japanese working parents we showed that work may cause work-to-self conflict, and that this in turn seems to harm employee well-being. Contrary to our expectations, work-to-self facilitation was not beneficial for well-being over time. Work overload and supervisor support were found to have impact on the work–self interface by hindering or

facilitating personal interests over time. Taking these findings together, our study makes several contributions to the literature on the work-nonwork interface.

Theoretical contributions

Based on identity theory (Kreiner et al., 2006), we hypothesized that work may influence not only family life but also aspects of the self, operationalized as time devoted to personal interests independent from work-related or family-related activities. We used two-wave data to show with confirmatory factor analysis that work–self conflict and facilitation represent other dimensions than work–family conflict and facilitation. The analysis confirmed that the four dimensions have discriminant validity. Also, the correlations between the conflict dimensions as well as between the facilitation dimensions varied per measurement point. This indicates that the two new dimensions do not show the same variation as the existing work–family scales. However, we found that there was some overlap in the content of two work–self facilitation items. Both items refer to the enjoyment of personal activities after work. Note that eliminating one of the two items from this scale would still result in a reliable scale. Similarly, we found that two items of work–family conflict showed considerable overlap. This was probably due to their reference to a time-specific conflict. Both new scales were internally consistent but work–self conflict had a higher test-retest reliability than work–self facilitation. To justify the importance of considering work–self conflict and facilitation, we showed that these had unique longitudinal relationships with hypothesized predictors and outcomes after controlling for stability effects.

Specifically, the second contribution of the present study is that work overload was shown to influence the level of work–self conflict over time. We reason that this is because work overload depletes individual resources and because it requires effort as it is associated with higher interference of work with time spent on personal interests (Grzywacz & Marks, 2000; Demerouti et al., 2001). However, we found that a supportive supervisor facilitates functioning during time spent on personal interests because this support can be used in the long run to achieve individual goals. These findings suggest that whether work facilitates or interferes with functioning during time spent on personal interests depends on different work characteristics. Thus, facilitation and conflict seem to be outcomes of different processes (Bakker & Geurts, 2004; Geurts & Demerouti, 2003).

The third contribution concerns the finding that work–self conflict had longitudinal effects on well-being, i.e. psychological distress and happiness. Work–self conflict had detrimental effects on both indicators of well-being. These longitudinal relationships were found after controlling for Time 1 well-being. However, contrary to our expectations work–self facilitation was unrelated to both well-being indicators. Earlier research on work–family conflict and facilitation has also found that conflict was a better predictor of well-being than facilitation, which indicates that negative experiences are more influential than positive experiences (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Similarly, Mesmer-Magnus and Viswesvaran (2005) found in their meta-analysis that the correlation between work–family conflict and psychological health was $r = -.23$ while the meta-analyses of McNall, Nicklin, and Masuda (2010) resulted in a correlation of $r = .17$ between work–family facilitation and psychological health. These results suggest that conflict

has a slightly stronger relationship with health than facilitation. Our findings further suggest that the dimensions of the work–self interface have criterion validity as at least conflict was predictive of two important indicators of well-being over time.

A fourth contribution is that this study adds to our knowledge on the longitudinal effects of the work–nonwork interface on context-free well-being. The majority of the studies in work–family research have either been cross-sectional (Ten Brummelhuis et al., 2010) or looked at outcomes in the work or the family domain (cf. Eby et al., 2005). The present study showed that work–family conflict (and work–self conflict) influences happiness representing a positive context-free experience. Similarly, earlier research has found longitudinal effects of work–family conflict on marital satisfaction (Leiter & Durup, 1996) and family satisfaction (O’Driscoll, Brough, & Kalliath, 2004). Moreover, this study is the first to examine the longitudinal effects of the work–nonwork interface on psychological distress. Work–family conflict has been found to diminish health by increasing symptoms such as emotional exhaustion (Geurts et al., 1999) and depressive symptoms (van Hooff et al., 2005). All in all, these observations emphasize the need for more longitudinal studies focusing on the work–nonwork interface and on nonwork outcomes other than family satisfaction. Such research will enable the field to disentangle the intriguing connection between work and nonwork life.

Limitations and future research

A first limitation of our study is that our hypotheses were tested with self-reported data. This could potentially lead to inflated correlations due to common method variance or memory effects. However, we believe this is not a major problem in our study, for two reasons. First, our conclusions are based on the longitudinal (and not the cross-sectional) associations and it seems unlikely that during the second study wave participants recalled their answers during the first study wave. Second, inspection of the correlation matrix reveals that most of our correlations were moderately high. This suggests that our associations were certainly not inflated by common method bias.

A second limitation concerns the explicit focus on one job resource, i.e. supervisor support, and one job demand, i.e. work overload, as predictors of facilitation and conflict, respectively. While it is informative to uncover the long-term effects of these two work characteristics, which are relevant for virtually every job, other job resources and job demands have been found to be relevant for the development of conflict and facilitation, including emotional demands, autonomy, performance feedback and opportunities for professional development (Bakker & Geurts, 2004). Therefore, future studies need to investigate the long-term effects of a broader range of job demands and job resources as possible predictors of work–self (and work–family) conflict and facilitation. Moreover, future studies should examine whether the predictors of the work–self interface are identical to the predictors of the work–family interface.

A third issue that needs to be discussed is the generalizability of the findings to populations other than those used in this study. Our participants were Japanese working parents with children under the age of six. The first question is whether the effects of work–self interface on outcomes could also be confirmed among western employees, because the concept of “self” seems to be different between western

people and East Asian people. According to Markus and Kitayama (1991), the Japanese have an “inter-dependent self”, whereas western people have an “independent self”. Moreover, it can be assumed that the work–self interface, compared to the work–family interface, would have stronger effects among western employees, whereas the work–family interface, compared to the work–self interface, would have stronger effects among Japanese people. Testing country context as a potential moderator seems therefore a promising avenue for research. Additionally, because employees with young children are juggling more with balancing roles (Grzywacz & Bass, 2003), it is possible that the findings cannot be generalized to employees without children or those with older children. However, as our panel group was more highly educated, happier and less stressed than the dropouts, it is quite likely that employees who had been less successful in dealing with their workload and their inter-role relationships refrained from participating in our study, leaving behind those who were more successful. This so-called “healthy worker effect” (Karasek & Theorell, 1990) may have resulted in an underestimation of the unfavourable effects investigated in our study. Also, the relatively low response rate might indicate that only individuals interested in work-nonwork issues participated in the study. Again, future research is needed to examine the generalizability of our findings to other populations and cultures.

A fourth limitation concerns the fact that happiness was operationalized by one single item that can be criticized for having unknown error variance and reliability. The convergent validity between single-item and multi-item measures has been confirmed for overall job satisfaction (Wanous, Reichers, & Hudy, 1997) and for global satisfaction (Diener, 1984). Our measure corresponds to that of previous studies (Wanous et al., 1997) and shows a high test-retest reliability (path = .58, $p < .001$). This suggests that the measurement error should not be a serious threat for our measure of happiness. Note that for the analyses we assumed a reliability of $\alpha = .90$ for happiness.

Finally, it would have been informative to examine the importance of work–self conflict and facilitation over and above that of work–family conflict and facilitation. The simultaneous consideration of all constructs resulted in models with computation problems and models with artificially high values of the coefficients – probably due to the rather small N for such a large model (with 202 free parameters) and because of the high stabilities and the correlations between the conflict and facilitation dimensions. We call for future research to examine whether work–self constructs are as important as or even more important than the work–family constructs.

Implications

Undoubtedly, it is important for both employees (in terms of their well-being) and employers (in terms of healthy and employable employees) to get more insight into how to keep employees healthy and happy. Our findings suggest that employers should not overlook the impact of work on family and personal life as a source of stress in the lives of both employed mothers and fathers. The present study suggests that work–family conflict is only one part of the multiple challenges that employed parents experience in balancing work and family demands. Not only can work hinder or facilitate functioning in family life but the influence of work expands to personal

life as well. Our study shows that the impact of work on personal interests is linked to long-term effects on well-being.

To date, strategies implemented by employers have sought to mitigate the impact of family on work behaviour with an eye toward improving employee productivity while on the job, and have paid less attention to how working conditions can be improved in order to mitigate the negative influence of work on family (Bakker et al., 2008). In the majority of countries, most employers provide family-friendly policies such as maternity and parental leaves, child care programmes, alternative work schedules, and employee assistance and relocation programmes, which are appropriate for dealing with family demands and consequently for reducing the negative influence of family life on work. Undoubtedly, such practices can help employees balance both life domains. However, our findings suggest that organizations should at the same time pay attention to and redesign or optimize the workload that they put on their employees in order to avoid interference from work to personal life, while having supervisors playing a supporting role for their employees in order to facilitate their participation in personal interests.

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