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Explaining the Variable Effects of Social Support on Work-Based Stressor-Strain Relations: The Role of Perceived Pattern of Support Exchange

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Abstract

Seeking to explain mixed empirical findings regarding the buffering effect of social support on work-based stress-strain relations, we posit that whether an increase in the level of support received buffers or exacerbates the harmful effects of workload on employee health and well-being is contingent upon the general pattern characterizing an employee supportive exchanges across his/her close relationships. Specifically, we propose that the buffering effect of receiving social support depends on whether the employee perceives his/her social exchanges as reciprocal (support given equals support received), under-reciprocating (support given exceeds support received), or over-reciprocating (support received exceeds support given). Based on longitudinal data collected from a random sample of blue-collar workers, our findings support our predictions, indicating that the buffering effect of social support on the relationship between work hours (on the one hand) and employee health and well-being (on the other) varies as a function of the pattern of exchange relations between an employee and his/her close support providers.

The negative effects of workload on employees' physical health, emotional well-being and social relationships have been widely documented in the occupational health literature (e.g., Krantz, Berntsson & Lundberg, 2005; Sparkes, Cooper, Fried & Shirom, 1997). Workload is considered a job-stressor, reflecting the demands placed upon an employee in his/her job (Ilies et al., 2007). Such demands may generate psychological and behavioral strain (i.e., aversive reaction to stress), with these strains accumulating and potentially eliciting or exacerbating longer-term health problems to the extent that recovery time is insufficient (Etzion, Eden, & Lapidot, 1998; Major, Klein & Ehrhart, 2002).

In recent years, researchers have increasingly stressed the role of supportive relations in facilitating work-recovery processes and reducing the harmful effects of a heavy workload (Sonnentag & Zijlstra, 2006). Supportive relations are considered an important coping mechanism against insufficient work-recovery time (Sonnentag & Bayer, 2005; Uchino, 2004). This notion is consistent with the general conceptualization in the occupational stress literature of social support as a buffer against the harmful effects of job stressors (House, Landis & Umberson 1988; Viswesvaran, Sanchez & Fisher, 1999). More specifically, the

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"buffering hypothesis" suggests that the harmful effects of job stressors on employee health and well-being may be attenuated as a function of support received.

Despite the popularity of the buffering hypothesis, research findings regarding this proposed effect have been inconsistent. Indeed, there is evidence that receiving social support may not only fail to alleviate the negative impact of job stressors (e.g., Beehr et al., 2000), but may even *intensify* these harmful consequences, serving as a kind of "reverse-buffer" (e.g., Glaser et al., 1999; Kaufmann & Beehr, 1986). These findings have stimulated calls for research aimed at exploring the "dark side" of social support (Ryff & Singer, 2000: 35). The current paper takes a step in this direction by showing how the divergent buffering effects of social support on the relationship between work hours and employee well-being may be explained by differing patterns of exchange between employees and their network of close support providers.

Previous research aiming to explain the divergent effects of social support suggests that the receipt of social support is a phenomenon embedded in the broader context of an individual's supportive exchange relationships (Rook, 1987; Vaananen et al., 2005). That is, the degree to which support received serves to buffer stressor-strain relations may depend upon whether the person's supportive exchange relations in general are perceived as reciprocal (equal amounts of support received and given) or not, and if not, whether the pattern is one of *over-reciprocation* (support received exceeds that given) or *under-reciprocation* (support given exceeds that received) (Rook, 1987). However, to date, research in this area has focused on understanding the main effects of these alternative supportive exchange patterns on people's health and well-being (e.g., Buunk et al., 1993), leaving unresolved the question as to whether and how these exchange patterns may moderate the extent to which support received attenuates, or buffers, stressor-strain relations.

Moreover, research on supportive exchanges is generally based on one of three alternative explanatory frameworks. Drawing on Equity theory (Walster, Walster & Berscheid, 1978) and the notion of reciprocity norms (Gouldner, 1960), the first perspective predicts an advantage for balanced (i.e., reciprocal) supportive exchanges over unbalanced exchanges. The other two perspectives employ the theory of Esteem Enhancement (Batson, 1998) and Response Shift theory (Sprangers & Schwartz, 1999), respectively, to predict an advantage for under-reciprocation. As social support is widely viewed as a key mechanism by which individuals cope with stressful or challenging situations (Thoits, 1986; 1995), we draw on coping theory to suggest that each of these three perspectives focuses on only one possible mechanism by which the pattern of supportive exchange determines the efficacy of receiving social support. In the current study, we integrate these three perspectives into a general framework that explains how differing supportive exchange patterns may influence the strength and nature of the buffering effect of receiving social support on stressor-strain relations in general, and on the relationship between workload and employee well-being in particular.

We begin by addressing the concept of social support and the assumptions underlying the buffering effect of support on the strain associated with job-stressors in general and temporal workplace demands in particular. Following this, we define what we mean by patterns of supportive exchange, and discuss their implications on employee health and well-being according to the equity, esteem-enhancement, and response-shift perspectives. We explain the benefits of taking a relational approach to capturing supportive exchange patterns, namely one that focuses on the pattern of supportive exchanges across an employee's close relationships. Finally, we draw on coping theory (Lazarus & Folkman, 1984) and the conceptualization of social support as a key coping mechanism (Thoits, 1986) to explicate how the three perspectives noted above work in tandem to determine whether and how

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social support conditions stressor-strain relations. More specifically, we propose that social support received will buffer the harmful effect of work hours on employee health and well-being when employees perceive the pattern of supportive exchange with their close social network as being reciprocal. We further propose that this buffering effect will be diminished when recipients perceive the pattern of supportive exchange as *under*-reciprocating (i.e., support received is lower than that given), and even reversed when recipients perceive this pattern as *over*-reciprocating (i.e., support received is greater than that given).

Workload and Social Support

The effort-recovery model (Meijman & Mulder, 1998) stresses the importance of respite (i.e., off-work time) as a mechanism underlying employees' ability to maintain their health and well-being (Etzion et al., 1998). According to this model, the effort required to meet work demands produces short-term physiological and psychological load reactions, which are reversible under normal circumstances. That is, under normal conditions, when an employee is no longer confronted with work demands, his/her psychobiological systems return to their pre-demand level. However, these load reactions can accumulate to the extent that opportunities for recovery are insufficient, resulting in long-term negative effects on the employee's health and well-being (Sonnentag, 2001). Building on this notion, the potential harmful effects of work hours on work-recovery processes have been widely discussed in the literature (Ilies et al., 2007; Sonnentag & Fritz, 2007). More specifically, this literature suggests that extended work hours increase employees' exposure to work demands while reducing the time available for performing those off-job activities which allow psychological detachment from work (Ilies et al., 2007; Sonnentag & Fritz, 2007). Studies have highlighted both short- and long-term implications of demanding work schedules (e.g., Caruso, 2006; Hulst, 2003), showing that insufficient work-recovery time results in increased health complaints, absence due to sickness two years later (DeCroon, Sluiter & Frings-Dresen, 2003; Sluiter, van der Beek, & Frings-Dresen, 1999), and long-term health care costs (Ganster et al., 1991). Still, in light of inconsistent research findings concerning the relationship between work hours and employee health and well-being (Barnett 2006) researchers have highlighted the need to explore a wide range of moderators in this relationship (Tucker & Ratherford, 2005).

Recent research suggests that the receipt of social support may strengthen employees' psychobiological systems and hence promote work-recovery processes (Sonnentag & Fritz, 2007). In general, social support reflects a process in which Actor A (the support provider) invests resources such as energy, time, money or goods so as to ‘bring about a constructive change’ in Actor B (the recipient) (Bacharach, Bamberger & McKinney, 2000: 705). Psychologically, receiving social support promotes a positive sense of self and a feeling that one can master demanding circumstances (Hobfoll, 2002). Physiologically, receiving support has positive immediate and longer-term effects on the cardiovascular, immune, and neuroendocrine systems, and hence promotes physiological strengthening that improves individuals' responses to work demands (Heaphy & Dutton, 2008). Accordingly, it has been suggested that receiving social support may attenuate the harmful effects of workload in general and temporal workplace demands in particular (Joudrey & Wallace, 2009; Tucker & Rutherford, 2005).

The conceptualization of social support from an effort-recovery perspective is consistent with the general perception of social support in the occupational-stress literature – namely, as a key coping mechanism having the potential to buffer the harmful effects of any job stressor on employee health and well-being. Statistically, the buffering effect of social support is represented by an interaction in which those who receive more social support experience weaker negative effects of job stressors on health and well-being relative to those

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who receive less social support (Beehr et al., 2003). In other words, greater social support received is associated with weaker harmful effects of job stressors.

Although this effect seemed promising and intuitive when proposed, research findings in this area have tended to be mixed. While several studies have found evidence for the buffering effect (e.g., Tucker & Rutherford, 2005), others have not (e.g., Ganster et al., 1986), and still others have found a *reverse* buffering effect, in which an increase in support received exacerbated, rather than weakened, the negative impact of stressors on health and well-being (e.g., Glaser et al., 1999). As a result, increased attention has been given to the "dark side" (Ryff & Singer, 2000: 35) of social support, namely to the harmful aspects of supportive relationships, and to exploring conditions under which receiving social support generates negative, rather than positive consequences (Kawachi & Berkman, 2001).

Social Support and Patterns of Supportive Exchanges

Recent psychological research suggests that the apparent inconsistencies regarding the role of social support in promoting health and well-being may stem at least partially from the tendency of research in this area to disregard the exchange-based nature of social support. That is, researchers tend to conceptualize support recipients as passive agents in their support-related social interactions, rather than active players in exchange relationships (Vaananen et al., 2005). We draw on this notion to suggest that the efficacy of receiving social support as a coping mechanism may depend upon the interplay between the employee's perceptions of support given and support received (see Rook, 1987).

According to social exchange theory, people implicitly or explicitly calculate investments made versus benefits received in their interpersonal relationships (Blau, 1964; Homans, 1958), and perceive these relationships accordingly in terms of three patterns of exchange: (1) reciprocal, in which equal amounts of resources are invested and gained; (2) over-reciprocating, in which the resources gained exceed those invested; and (3) under-reciprocating, in which the resources invested exceed those gained (Walster et al., 1978). Recent research in the area of supportive exchanges has led to three main perspectives regarding the role that these exchange patterns may play in supportive relationships.

Drawing on equity theory (Adams, 1964; Walster et al., 1978) and the notion of reciprocity norms (Gouldner, 1960), the first perspective predicts an advantage for reciprocal supportive exchanges in promoting individuals' health and well-being. Social reciprocity reflects the idea that the effort exerted on another's behalf should generally be proportionate to the expected return from that investment. According to Gouldner (1960), these meta-norms of reciprocity are universal ways in which human beings govern interactions and maintain social stability (Gouldner, 1960). Later researchers have established that reciprocal supportive exchanges promote social satisfaction and a heightened sense of identity, stability, belonging and trust (Rook, 1987; Thoits, 1986). When reciprocity norms are violated, the resulting imbalance generates social dissatisfaction, with under-reciprocation (giving more than receiving) leading to feelings of exploitation and resentment, and over-reciprocation (receiving more than giving) producing feelings of indebtedness, guilt, and shame (Bowling et al., 2004; Rook, 1987).

The two other perspectives both predict an advantage for under-reciprocation in supportive exchanges, though each draws on a different explanatory mechanism. One perspective, based on the theory of esteem enhancement (see Batson, 1998), suggests that the act of giving help may in and of itself contribute to the health and well-being of the support provider, by promoting a self-image grounded in a sense of being an important and valuable person (Vaananen et al., 2005). In contrast, receiving support would require that the individual admit some limitation in his or her ability to independently manage a problem,

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and thus a self-affirmation of weakness. Accordingly, a supportive exchange that is perceived as under-reciprocating may be expected to generate a more positive self image and as such, contribute to enhanced health and well-being. A supportive exchange that is perceived as over-reciprocating may be expected to generate a negative self-evaluation and, as such, contribute to distress and generally negative health-related outcomes (Liang et al., 2001).

The other perspective, based on response-shift theory (Schwartz & Sendor, 1999), draws its force from the idea that under-reciprocating supportive exchanges generate internal changes – or shifts in focus – that improve the perceived quality of life of those in need. Response-shift theory focuses on social comparison processes, suggesting that engaging in other-directed activities changes an individual's internal standards, values or conceptualizations. Put simply, individuals who give more support than they receive are likely to be more focused on the problems of others than on their own troubles and difficulties. Accordingly, these individuals may under-weight their own problems, perceiving them as less difficult and burdensome. Research also suggests that such disengagement may promote a heightened sense of mastery and control over one's troubles and difficulties (Daltory et al., 1999; Dibb & Yardley, 2006; Sprangers & Schwartz, 1999), and hence improve the perceived quality of life of individuals in the face of resource-eroding circumstances (Schwartz et al., 2008). On the other hand, from such point of view, individuals who receive more support than they give may over-weight their own problems and difficulties, perceiving them as worse than they may in fact be. This may diminish the person in need's sense of mastery and control over stressful circumstances, hence reducing his/her perceived quality of life in the face of resource-eroding circumstances.

In the current study, we integrate these three perspectives to explain how the general pattern of supportive exchanges across an individual's close relationships may influence the buffering effect of social support on stressor-strain relations in general, and the relationship between work hours and employee well-being in particular. We look next at what comprises the general pattern of supportive exchanges across an individual's close relationships.

The General Pattern of Supportive Exchanges Across an Individual's Close Relationships

Research in the area of supportive relations has focused primarily on close relationships (e.g., Bolger, Zuckerman & Kessler, 2000; Gleason et al., 2003). Such relationships are defined as involving mutual interdependence and interconnected activities (Kelley et al., 1983), and hence are considered the most important and effective source of social support (Hobfoll, 2002). Although it has been suggested that close relationships are based on communal norms, which emphasize giving out of concern for the welfare of another with no obligation on the part of the recipient (see Clark & Mills, 1993), other research suggests that reciprocity norms – the idea that individuals have an obligation to reciprocate for support received, and a concomitant expectation of reciprocity for support given – do indeed play an important role in such relationships. For example, Gleason et al. (2003) found that reciprocity in support transactions in committed relationships was associated with higher levels of positive and lower levels of negative mood. Antonucci and Jackson (1990) argue that in close relationships, reciprocity occurs over longer time spans, with giving seen as a resource stored in a “social support bank” from which one can withdraw when needed.

Additionally, researchers examining the consequences of supportive exchanges have tended to focus on specific dyadic relationships, such as those between romantic partners (e.g., Gleason et al., 2003) or supervisors and subordinates (e.g., Buunk et al., 1993). However, supportive relations between a target individual and any particular other may be linked to or

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contingent upon the individual's supportive relations with other close individuals. For instance, a person who feels that he or she is always helping others at work may seek extra support from a family member or a close friend outside of work, so that overall, the target person may perceive the exchange of support across his/her close relationships as being in balance. This strategy, known as social network compensation (Zettel & Rook, 2004), has been proposed as a mechanism whereby individuals minimize the impact of loss, deficiency or decline in the interpersonal domain by relying on other resources in that domain. Accordingly, the patterns of exchange that characterize certain types of relationships or specific dyads may be less meaningful than the general pattern of supportive exchanges across an individual's close relationships (Rook, 1987).

Our model proposes that the buffering effect of the totality of support perceived to be received from close others on the relationship between work hours and employee health and well-being is contingent upon an employee perception of the general pattern that characterizes his/her supportive exchanges with close others. More specifically, we suggest that the degree to which support perceived to be received from those handful of others with whom one feels the closest buffers the negative impact of work hours on the employee's health and well-being depends on whether the total amount of such support, as perceived by the employee, is equal to (reciprocal exchange), greater than (over-reciprocating exchange), or less than (under-reciprocating exchange) the total amount of support the employee perceives that he/she has given to those handful of others with whom he/she feels the closest.

An Integrative Explanatory Framework

A person's ability to cope with negative or stressful events is crucial to his or her physical and psychological well-being (Endler & Parker, 1990). In the transactional stress-coping model proposed by Lazarus and Folkman (1984), coping is defined as “constantly changing cognitive and behavioral efforts to manage the specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 114). Thoits (1986; 1995) established the connection between coping and social support, suggesting that receiving social support can be seen as the active participation of significant others in an individual's efforts to alter a stressful situation, change the meaning of the situation, or change his/her emotional reaction to the situation (Thoits, 1986: 417). In general, this line of research highlights three main mechanisms by which receiving social support may aid a person's stress-management efforts: (1) by building up the person's sense of identity and belonging; (2) by improving his/her self-image; and (3) by enhancing his/her sense of control and mastery over the stressful situation (Thoits, 1995; Schreurs & de Ridder, 1997).

These three mechanisms reflect the three different perspectives toward reciprocity discussed above. More specifically, the first mechanism relates to the equity-based perspective, which suggests that normative expectations of reciprocity serve as the foundation for stable social interactions (Gouldner, 1960), and in turn, promote a heightened sense of identity and belonging (Rook, 1987; Thoits, 1986). The second mechanism relates to the esteem-enhancement perspective, which highlights the implications of supportive exchanges on the self-image of the person in need (Batson, 1998). The third mechanism reflects the response-shift perspective which focuses on social comparison processes generated by supportive exchanges, and their implications on the person in need's sense of mastery and control over stressful circumstances (Daltory et al., 1999; Dibb & Yardley, 2006; Sprangers & Schwartz, 1999).

Accordingly, we integrate these three perspectives into a single explanatory framework, assuming that supportive exchanges involve a combination of psychological mechanisms

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operating in tandem to influence the efficacy of receiving social support as a means by which to cope with stressful or challenging situations (Stephens, 1990; Thoits, 1986).

In the context of reciprocal exchanges, an increase in support received is inherently coupled with giving the same levels of support in return. In this case, all three mechanisms operate concurrently and in a complementary manner to enhance the efficacy of support received. More specifically, receiving social support in such a context may promote a sense of identity and belonging (due to the equitable exchange), positive self-image (resulting from a state of competency), and a sense of control over the stressful situation (resulting from changes in the self-evaluation standards of the person in need). Accordingly, receiving social support in the context of a reciprocal supportive exchange is likely to promote the coping capabilities of the person in need.

In the context of under-reciprocating exchanges, an increase in support received is inherently coupled with giving even greater levels of support. Accordingly, two mechanisms may operate to increase the efficacy of receiving social support as coping assistance, and one mechanism may operate to attenuate this efficacy. More specifically, receiving social support in such a context may promote a positive self-image (the result of receiving high levels of support while being able to return even greater support to close others), and perhaps also generate a stronger sense of control and mastery over the stressful circumstances (resulting from the under-weighting of one's personal problems). Still, the violation of reciprocity norms may lead to a weaker sense of identity and belonging. These self-limiting implications are likely to attenuate the efficacy of receiving social support as coping assistance.

In the context of over-reciprocating exchanges, an increase in support received is inherently coupled with giving lower levels of support. In this case, the three mechanisms discussed above may operate in tandem to reduce the efficacy of receiving social support as coping assistance. More specifically, social support received in such a context may lead to a weaker sense of identity and belonging (resulting from the violation of reciprocity norms), a negative self-image (resulting from a state of dependency and incompetence), and a weaker sense of control over the stressful situation (resulting from the over-weighting of one's own problems). Such negative consequences may not only detract from the benefits of the support itself, but also increase the person's psychological distress to the extent that support received increases (Liang et al., 2001; Rook, 1987).

Accordingly, we propose that the totality of support perceived to be received from close others may buffer (attenuate) the harmful effects of work hours on employee health and well-being when the general pattern characterizing the exchange of support across these close relationships is perceived by an employee as reciprocal. We also propose that this buffering effect may be weaker when the general pattern characterizing the exchange of support with close others is perceived by the employee as under-reciprocating (support received is lower than support given). Finally, we suggest that this buffering effect may be reversed, such that the totality of support perceived to be received from close others may strengthen the harmful effects of work hours on employee health and well-being, to the extent that the general pattern characterizing the exchange of support across these close relationships is perceived by an employee as over-reciprocating (support received is greater than support given). Consequently, we hypothesize that the relationship between work hours and employee health and well being is jointly moderated by the totality of social support perceived to be *received* in the context of an employee's close relationships, as well as the totality of support perceived to be *given* in the context of these same relationships. The nature of this hypothesized three-way interaction is such that:

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Hypothesis 1: Social support received attenuates (buffers) the inverse relations between work hours and employee health/well-being when the amount of support received equals the amount of support given (reciprocal exchange pattern).

Hypothesis 2: The attenuating (buffering) effect of social support received on the inverse relationship between work hours and employee health/well-being is weaker when support given exceeds support received (under-reciprocating exchange pattern).

Hypothesis 3: Social support received amplifies (reverse-buffers) the inverse relationship between work hours and employee health/well-being to the extent that the amount of support received exceeds the amount of support given (over-reciprocating exchange pattern).

Method

Subjects

Given that our hypotheses assume variability in individuals' patterns of supportive exchange with close others, we sought to test these hypotheses in an empirical context in which such variability could be reliably assured. Prior research (e.g., Rook, 1987) suggests that such variability tends to be less characteristic of younger samples. For example, younger adults tend to report that around 60 to 75 percent of their relationships are balanced (see Buunk et al., 1993; Vannanen et al., 2005). In contrast, Antonucci, Fuhrer and Jackson (1990) reported an inverse relationship between age and perceptions of reciprocal relationships. The lack of consensus as to whether these unbalanced relationships are over- (Wenger 1986; Dykstra 1995) or under- (Morgan, Schuster & Butler, 1991; Tryfan 1992) reciprocated further suggests heightened exchange pattern variability as individuals age. Moreover, prior research suggests that older workers are more likely to have stable supportive relationships both inside and outside of the workplace (Fischer, 1982), suggesting that relying on a sample of older workers would reduce the prevalence of strictly family-based close relationships, and thereby ensure greater variability in potential sources of support. Consequently, in order to maximize exchange pattern variability, we opted for a sampling frame focused on middle-age workers (age 40-55) and their older colleagues (56 and older), a workforce segment that currently accounts for over 50% of the US civilian labor force (BLS, 2009).

We operationalized this sampling frame by drawing a random sample of employees with 20 or more years of organizational tenure (mean age = 56) from the membership lists of nine national and local unions representing workers in three main employment sectors in the United States: transportation, manufacturing and construction. Survey data were collected at two points in time (T1 and T2) through telephone interviews. The total number of respondents at T1 was 1,279 (out of a target sample of 2,812, an overall response rate of 46%). The respondents were divided among the three employment sectors as follows: 933 respondents were members of three unions in the transportation sector, and included railroad workers, flight attendants and urban transport workers; 178 respondents were members of two unions in the manufacturing sector, and included unskilled assembly-line workers, semiskilled machine operators and skilled-trades workers; and 168 respondents were members of four unions in the construction sector, and included electricians, plumbers and painters. The number of respondents from each sector in the final sample (n=1,279) was proportionate to the number in the target sample (n=2,812).

All T1 respondents were interviewed one year after the first interview (+/- 2 weeks). As noted by Garst, Frese and Molenaar (2000), stressors have both long and short-term effects on strain. These researchers found lags of six and fourteen months to manifest essentially identical stressor-strain slopes when the latter were assessed in terms of psychological

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outcomes. However, because the effects of stressors on physiological strain outcomes appear to be less synchronous (Leitner & Resch, 2005), a 12-month lag was deemed preferable. Of the 1,279 T1 respondents, 1,122 participated in the T2 survey (dropout rate: 12%). We excluded 252 of these respondents due to missing data on one or more core demographic variables or on one of the physical health or depression measures at Time 1 or 2. This left us with a final sample of 964 participants, of whom 73% were men and 27% women.

We checked for possible sample bias by testing for differences between the final sample and those individuals who dropped out or were excluded (n=315). There were no significant differences along any of the variables of theoretical interest (depressive symptoms, diagnosed illnesses, support received, support given, and hours worked) between the two groups, confirming an absence of sample bias.

Measures

Telephone interviewers asked participants to name those adult individuals to whom they currently felt especially close, and to report the amount of emotional and instrumental support received from and given to these close individuals, as we next describe. Respondents identified between one and three others as especially close to them (2% identified one individual, 5% identified two individuals and 93% identified three individuals). This small number of close others is consistent with other studies on close relationships in the work (e.g., Bacharach, Bamberger & Vashdi, 2005; Wright & Cho, 1992) and non-work environment (Klockner & Matthies, 2004; Fischer, 1982; Verbrugge 1977; 1983). For example, in their study of network density Fischer and Shavit (1995) found that although on average people named 11 individuals who were important to them, they considered only three of these people as especially close.

Social Support Received and Given *(assessed at Time 1)*—Emotional support, expressed through sympathetic and caring behaviors, and instrumental support, in the form of direct assistance (Beehr, 1985; House, 1981), were measured using Caplan et al.'s (1975) four-item social support instrument. Per convention, emotional support received from others was measured through two items asking participants to indicate the extent to which each of the persons named listens, shows understanding and caring, and provides advice when needed. Emotional support given to others was measured through two corresponding items asking participants to indicate the extent to which they do the same for each of the persons named. Instrumental support received from others was measured though two items asking participants to indicate the extent to which each of the persons named goes out of their way to do things (like sharing tasks and providing information) to make the recipient's life easier. Instrumental support given to others was measured through two corresponding items asking participants to indicate the extent to which they do the same for each of the persons named. All measures were rated on a four-point Likert scale ranging from 1=“not at all” to 4=“a great deal” (Cronbach's alpha for these measures ranged from 0.73 to 0.85).

Although instrumental and emotional support may be viewed as nested within a common latent support variable, and despite consistently high correlations between the two forms of support, researchers have tended to measure each of these support dimensions on an independent basis rather than aggregating them together into a single support measure. Among the strongest reasons for assessing instrumental and emotional support independently is the fact that they have been demonstrated to differentially relate to a range of support-relevant outcomes such as anxiety and depression (Chi & Chou, 2001). In the current study, we conducted a CFA to assess the empirical basis for examining the moderating effects of two separate support dimensions as opposed to a single, overarching support variable encompassing these two dimensions. For both support received and given,

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the results of this CFA indicate that with respect to each of the close individuals named by the participant, the two-factor model fits significantly better with the data. For support received, the two-factor model for emotional and instrumental support produced GFI=0.99, NFI=0.99, NNFI=0.98, RMSEA=0.03, compared with GFI=0.98, NFI=0.98, NNFI=0.96; RMSEA=0.13 for the single-factor model ($\Delta\chi^2_{(1)}=22.08$, $P<0.001$). For support given, the two-factor model produced GFI=0.99, NFI=0. 99, NNFI=0.99, RMSEA=0.01, compared with GFI=0.98, NFI=0.93, NNFI=0.82; RMSEA=0.12 for the single-factor model ($\Delta\chi^2_{(1)}=32.20$, $P<0.001$). Accordingly, for each of the two types of social support we computed the totality of social support available from close others as the sum of support received from the 1 - 3 close others named by the participant. We likewise computed the totality of support given to close others as the sum of support given to the 1-3 close others named.

Health and Well-Being *(Assessed at Times 1 and 2)*—Physical health was assessed on the basis of the Lifetime History of Physician-Diagnosed Illnesses measure (11 items). This instrument, developed by the National Institute on Aging, has been used in a wide variety of epidemiological studies focusing on the health-related problems of older populations (e.g., Colsher & Wallace, 1990), and has been shown to have strong predictive validity (e.g., Salive et al., 1992). Participants were asked to report (yes or no) whether they "had ever been diagnosed by a physician" with certain chronic illnesses: Heart disease/heart attack (10% at T1, 13% at T2), stroke (1% at T1, 1.5% at T2), high blood pressure (34% at T1, 38% at T2), cancer (10% at T1, 12% at T2), diabetes (8% at T1, 9.5% at T2), emphysema/bronchitis (6% at T1, 8% at T2), cirrhosis/liver disease (2% at T1 and T2), kidney trouble (6% at T1, 7% at T2), stomach/intestinal disease (12% at T1, 15% at T2), anemia (7% at T1, 9% at T2), and mental disorder (5% at T1, 7% at T2). Overall, at T1, 39% of the participants reported no health-related problems, 33.5% reported having had one health-related problem, 19% reported two health-related problems, 6% reported three problems, and 2.5% reported having had four to six health-related problems. At Time 2, 30% of the participants reported no health-related problems, 35% reported one, 22% reported two, 8.5% reported three, and 4.5% reported having four to seven health related problems.

Emotional well-being was examined in terms of depressive symptoms, assessed on the basis of the Center for Epidemiologic Studies' Depression Scale (CES-D) developed by Radloff (1977). This instrument contains 20 items that assess the frequency of various affective, behavioral, interpersonal and somatic symptoms. Participants were asked to report on a scale from 1=never to 5=frequently, "How often you felt this way during the past month…" (e.g., "I felt that everything I did was an effort"). Cronbach's Alpha for this measure was 0.88.

Number of Hours Worked *(Assessed at Time 1)*—Participants were asked to report the average number of hours worked per week at their current job during the past year. Union work rules limited inter-week variation in work hours, as evidenced by the fact that for those who did not retire between Time 1 and Time 2, the average number of hours worked per week at Time 1 was highly correlated with the same measure at Time 2 (r = .65, $P<.001$; mean hours at Time 1 = 41.01 [SD=14.44] vs. 39.39 [SD = 14.43] at Time 2; t = 1.77, *ns*).

Control Variables—We controlled for three demographic attributes: marital status, age, and gender. In addition, because some participants were (or during the course of the study, became) eligible for some form of retirement or early retirement benefit, we also controlled for workers' retirement between Time 1 and Time 2.

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In order to rule out possible confounding effects from other work or non-work related stressful events besides work hours, we controlled for family stress, general work stress and financial stress. Family stress and general work stress were measured on the basis of Holmes and Rahe's (1967) Schedule of Recent Events (SRE) Scale, and financial stress was assessed on the basis of Ilfeld's (1976) measure.

Assuming that some individuals may over- or under-report their physical or emotional state so as to generate a more sympathetic impression in the eyes of the researchers, we controlled for social desirability on the basis of the BIDR scale (Paulhus, 1986). Furthermore, because diagnosed illnesses may lead to depressive symptoms and vice versa, we also controlled for depressive symptoms at Time 2 when assessing the diagnosed illnesses model and for diagnosed illnesses at Time 2 when assessing the depressive symptoms model.

Finally, in order to take into account the compositional effects of close supportive relationships, we controlled for the composition of supportive exchange patterns across the close relationships of an employee. We differentiated between three categories of composition across an employee's close relationships: (1) completely balanced (in which an employee reported to receive and give equal levels of support in the context of each of his/her close relationships, such that he/she has only balanced exchanges with close others); (2) completely unbalanced (in which an employee reported to receive and give unequal levels of support in the context of each of his/her close relationships, such that she/she has only unbalanced exchanges with close others); and (3) mixed (in which an employee reported to receive and give equal levels of support in the context of certain close relationships, and unequal levels with respect to others, such that he/she has both balanced and unbalanced exchanges with close others). With respect to instrumental support, 27% of the final sample reported to have completely balanced composition, 26% reported to have completely unbalanced composition, and 47% reported to have mixed composition. With respect to emotional support, these figures were 55%, 10%, and 35% respectively.

Analytical procedure

We applied a multi-level approach for data analysis, since responses were nested within nine different unions, which in turn were nested within three economic sectors (manufacturing, transportation and construction). Accordingly, we took this nested structure into account when estimating the coefficients for the independent variables at the individual level of analysis. However, in all of the models the estimated variance between unions was non-significant, indicating no dependence between individuals from the same union. We therefore discarded the multi-level components in favor of a single-level analysis (reported in the text and tables).

We tested our hypotheses on the basis of a series of three-way interaction models with hours and social support measures centered at their mean to reduce multi-colinearity. These models included hours worked at Time 1, social support received at Time 1, social support given at Time 1, and the interactions between them as predictors. In this way, we operationalized the pattern of supportive exchange in terms of the joint interplay between giving and receiving support. This approach differs from the common conceptualization of reciprocity, which is based on the difference score between giving and receiving (see Liang et al., 2001). As the difference between giving and receiving support cancels out the relative contribution of each, this method does not allow the investigator to assess the effect of the level of support received as moderated by the pattern of supportive exchange. Three-way interaction models allowed us to use support received and given as interval-scaled components.

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The three-way interaction between work hours, support received and support provided assesses the extent to which the effect of work hours on health and well-being varies as a function of both the amount of support received and the amount of support given. In order to interpret this three-way interaction, we estimated the simple slopes (Aiken & West, 1991) of work hours under various conditions of support received and support given. More specifically, since the buffering effect of social support expresses the extent to which an increase in support received affects the relationship between work hours and depression/ illnesses, we estimated the simple slope of work hours under conditions of relatively low and high levels of support recieved, in the context of each of the patterns of supportive exchanges (i.e., reciprocal, over-reciprocating and under-reciprocating).

To assess the buffering effect of social support in the context of reciprocal supportive exchange, we estimated the simple slopes of work hours under conditions of (1) low support received and given; (2) moderate support received and given, and (3) high support received and given. That is, we assessed the degree to which an increase in support received, when accompanied by a parallel increase in support given, attenuates (i.e., buffers) the generally positive slope of work hours on depression and diagnosed illness.

To examine the buffering effect of social support in the context of over-reciprocating exchange patterns, we estimated the simple slopes of work hours under conditions of (1) moderate support received and low support given, (2) high support received and low support given, and (3) high support received and moderate support given. Since over-reciprocation implies that recipients receive more support than they give, this allows us to assess the degree to which an increase in support received from moderate (where support given is low) to high (where support given can be either low or moderate) strengthens (i.e., reverse-buffers) the generally positive slope of work hours on diagnosed illness and depression.

Finally, to examine the buffering effect of social support in the context of under-reciprocating exchange patterns, we estimated the slopes of work hours under conditions of (1) low support received and moderate support given, (2) low support received and high support given, and (3) moderate support received and high support given. Since under-reciprocation implies that recipients give more support than they receive, this allows us to assess the degree to which an increase in support received from low (where support given can be either moderate of high) to moderate (where support given is high) attenuates the generally positive slope of work hours on diagnosed illness and depression.

With respect to the depressive symptoms model, we used the level of depressive symptoms at Time 2 as the dependent variable and the measure of depression at Time 1 as a control variable. Such a restriction is highly recommended in the case of longitudinal panel data (Rugosa, 1980).

With respect to diagnosed illnesses, applying a case-control design (Kasl & Jones, 2003), we treated as a case those subjects who, in the context of this lifetime diagnosis measure, added a new diagnosis from Time 1 to Time 2 (20% of the total sample). We treated as controls those who reported no change from Time 1 to Time 2 (80% of the sample). Accordingly, we conducted logistic a regression analysis to predict an increase in diagnosed illnesses from Time 1 to Time 2.

Results

Means, standard deviations and correlations among the variables are displayed in Table 1. While as expected, a positive and significant correlation was found between weekly hours and diagnosed illnesses at Time 1 (r = .12, P< .001) and Time 2 (r = .09, P< .01), weekly hours were found to be negatively related to depressive symptoms at Time 1 (r = -.10, P < .

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001) and Time 2 (r = -.16, P < .001). Further insight into this negative association between hours and depressive symptoms was gained by taking into account gender differences. Controlling for gender, the association between hours and depressive symptoms turned positive and insignificant (b = .01, *ns* for both Time 1 and 2 respectively). Table 2 reveals that females were more depressed than males (r = .18, P < .001, r = .29, P < .001, for Time 1 and 2 respectively) and also worked fewer hours a week (r = -.58, P < .001). Accordingly, since 73% of our participants were males, not controlling for gender differences resulted in a negative association between hours and depressive symptoms. Similarly, Table 2 indicates that when potential control variables are not considered, no significant relationship exists between the number of hours worked at Time 1 and an increase in diagnosed illnesses (r = -.02, *ns*). However, when control variables are taken into account, the effect of weekly hours worked on both depressive symptoms and an increase in diagnosed illnesses was found to be both positive and significant, as described below.

Confirmatory factor analysis was used to assess the discriminant validity of our multi-item measures. This analysis included only those multi-item measures that were found to be relatively highly correlated (r < .3) with at least one other multi-item measure (i.e., emotional support received and given, instrumental support received and given, depression, family stress, general work-related stress, and social desirability). The results of this CFA indicate that a model in which each of the multi-item measures is treated as a distinctive construct demonstrates better fit with the data (GFI=.85, NFI=.64, NNFI=.56, RMSEA=.03) compared with a model in which all measures are combined into a single construct (GFI=.50, NFI=.25, NNFI=.27, RMSEA=.05). Likewise, the multi-construct model shows a better fit than a model which includes three constructs, one explaining all forms of social support (given and received), one explaining depression and all forms of stressors, and one explaining social desirability items (GFI=.82, NFI=.55, NNFI=.50, RMSEA=.04).

Results of the estimated models are presented in Table 2. The results of the analyses on the simple slopes of hours, contingent upon support received and given, are presented in Figure 2. Although discriminate validity results (noted above) support the distinction between emotional and instrumental support, the overall pattern of results was similar for both measures. Accordingly, to conserve space we report here the results for overall support (the mean of emotional and instrumental support) received and given. More detailed results focusing separately on emotional and instrumental support are available from the authors.

Each estimated model includes a control model, a two-way interaction model, and a three-way interaction model. The control model includes only control variables. The two-way interaction model assesses the interaction between support received at Time 1 and support given at Time 1. Note that although our hypotheses concern the extent to which the buffering effect of social support received is moderated by support given (expressed in terms of a three-way interaction between weekly hours worked, support received and support given), we also assessed this two-way interaction in order to examine the extent to which our theoretical framework can be generalized to a direct effect of support received and not only to its buffering effect. Finally, Model 3 assesses the three way interaction between weekly hours worked at Time 1, support received at Time 1 and support given at Time 1.

Consistent with our hypotheses, the results presented in Table 2 indicate that the buffering effect of the totality of support received from close others at Time 1 on the relationship between hours worked at Time 1 and employee health and well-being outcomes (depressive symptoms at Time 2 and an increase in diagnosed illnesses between Time 1 and Time 2) is significantly moderated by the general pattern of supportive exchanges across an employee's close relationships. Regarding depressive symptoms, Model 2(D) shows significant positive effects of work hours on depressive symptoms (b = .002, P < .05). This model also shows a

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significant two-way interaction between support received and support given (b = -.01, P < .05). Simple slopes analysis for these interactions indicates that the effect of support received is not significantly different from zero under conditions of moderate (b = .002, *ns*) or high (b = -.01, *ns*) support given. However, the effect of support received on depressive symptoms is positive and significantly different from zero under conditions of low support given (b = .04, P < .05). This indicates that support received is associated with increased depressive symptoms to the extent that support received exceeds support given (an over-reciprocating exchange pattern).

Additionally, the three-way interaction model (3D) shows a significant three-way interaction between work hours, support received and support given (b = -.001, P < .05). These results indicate that the moderating effect of support received at Time 1 on the relationship between hours worked at Time 1 and depressive symptoms at Time 2 varies significantly as a function of the amount of support given at Time 1. Simple slopes analyses based on these significant three-way interactions indicate that for reciprocal exchanges (Figure 2a), the slope of work hours is positive and significantly different from zero (b = .01, P<.001) under conditions of low support received and given. This slope was found to be slightly weaker, yet still significantly different from zero under conditions of moderate support received and given (b = .004, P<.001), and negative and significantly different from zero under conditions of high support received and given (b = -.006, P<.05). This indicates that in the context of reciprocal supportive exchanges, support received not only attenuates the generally positive relationship between work hours and depressive symptoms, but also yields negative relationships, such that depression severity declines as a function of hours worked.

With respect to the over-reciprocating exchange pattern (Figure 2b), the results indicate that the simple slope of work hours on depressive symptoms is positive and significantly different from zero under conditions of moderate support received and low support given (b = .015, P<.001), with this slope being stronger under conditions of high support received and low support given (b = .02, P<.001), and weaker under conditions of high support received and moderate support given (b = .01, P<.001). This indicates that in the context of a more over-reciprocating exchange pattern (i.e., support received exceeds support given), higher levels of support received strengthen (reverse-buffer) the generally positive effect of work hours on depressive symptoms.

Finally, concerning under-reciprocating exchange patterns, the results (Figure 2c) indicate that the slope of hours worked on depressive symptoms is not significantly different from zero (b = .002, *ns*) under conditions of low support received and moderate support given, as well as under conditions of low support received and high support given (b = -.004, *ns*). However, under conditions of moderate support received and high support given, this slope was found to be negative and significantly different from zero (b = -.005, P<.05). Accordingly, an increase in support received in the context of under-reciprocating exchange patterns was found to buffer (attenuate) the generally harmful effect of work hours on depressive symptoms, yielding an inverse relationship between work hours and depressive symptoms (yet one slightly weaker than that obtained in the context of reciprocal supportive exchange patterns).

While the control model (Model 1(D)) explains 42% of the total variance in depression, the main effect model with the two-way interaction between support received and support given (Models 2(D)) explains 44% (ΔR^2 = .02, P<.01), and the three-way interaction model (Model 3(D)) explains 46% of the variance (ΔR^2 =.02, P < .01). This represents a nearly 5% increase in the total amount of variance explained by the control model, and for Model 3(D), a 5% increase in the variance explained by the main effect and two-way interaction models.

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Regarding diagnosed illnesses, Model 2(I) of Table 2 shows s significant positive effect of work hours on an increase in diagnosed illnesses from T1 to T2 (b = .02, P < .05; *OR* for 1 hour change = 1.02, *OR* for 1 *SD* change in work hours = 1.24). This model also shows a significant two-way interaction between support received and support given (b = -.07, P < .05). The simple slopes analysis for these interactions indicates that the effect of support received on illnesses is not significantly different from zero under conditions of moderate (b = .05, *ns*) or high (b = -.09, *ns*) support given. However, the effect of support received on illnesses was found to be positive and significantly different from zero under conditions of low (b = .40, P < .05; *OR* =1.49) support given. This indicates that support received is associated with an increase in employee illnesses to the extent that support received exceeds support given (an over-reciprocating exchange pattern).

Additionally, Model 3(I) shows a significant three-way interaction between work hours, support received, and support given (b = -.01, P < .01). These results indicate that the moderating effect of support received at Time 1 on the relationship between hours worked at Time 1 and increased employee illnesses from Time 1 to Time 2 significantly varies as a function of the amount of support given at Time 1. Simple slopes analyses based on these significant three-way interactions indicate (Figure 2a) that under conditions of low support received and given, the slope of work hours is positive and significantly different from zero (b = .06, P<.001; *OR* for 1 hour change = 1.06, *OR* for 1 *SD* change in work hours = 2.55). This slope was found to be slightly weaker, yet still significantly different from zero under conditions of moderate support received and given (b = .04; P<.01; *OR* for 1 hour change = 1.04, *OR* for 1 *SD* change in work hours = 1.79) and negative and significantly different from zero under conditions of high support received and given (b = -.06, P<.05; *OR* for 1 hour change = .93, *OR* for 1 *SD* change in work hours = .47). This indicates that in the context of reciprocal supportive exchange, support received not only attenuates the generally positive relationship between work hours and employee diagnosed illnesses, but also yields negative relationships, with the probability of experiencing an increase in diagnosed illnesses from Time 1 to Time 2 actually declining as a function of the number of hours worked at Time 1.

With respect to the over-reciprocating exchange pattern, the results indicate (Figure 2b) that the simple slope of work hours is positive and significantly different from zero under conditions of moderate support received and low support given (b =.10, P<.01; *OR* for 1 hour change =1.11, *OR* for 1 *SD* change in work hours = 4.04), with this slope becoming stronger under conditions of high support received and low support given (b = .14, P<.01; *OR* for 1 hour change = 1.15, *OR* for 1 *SD* change in work hours = 6.41), and weaker, while still significantly different from zero, under conditions of high support received and moderate support given (b = .04, P<.05; *OR* for 1 hour change = 1.04, *OR* for 1 *SD* change in work hours = 1.73). This indicates that support received strengthens (reverse-buffers) the generally positive effect of work hours on employee diagnosed illnesses only to the extent that support is received in the context of a more over-reciprocating exchange pattern.

Finally, concerning under-reciprocating exchange patterns, the results (Figure 2c) indicate that under conditions of low support received and moderate support given, the slope of hours worked is positive and significantly different from zero (b = .05, P<.01; *OR* for 1 hour change = 1.05, *OR* for 1 *SD* change in work hours = 1.85). This slope was found to be not significantly different from zero in the case of low support received and high support given (b = .03, *ns*; *OR* for 1 hour change = 1.03, *OR* for 1 *SD* change in work hours = 1.34), as well as in the case of moderate support received and high support given (b = -.02, *ns*; *OR* for 1 hour change = .98, *OR* for 1 *SD* change in work hours =.79). Accordingly, although an increase in support received in the context of under-reciprocating exchanges was found to attenuate the generally harmful effect of work hours on the likelihood of an increase in

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diagnosed illness, this buffering effect is weaker compared to that found in the context of reciprocal exchanges.

Since the diagnosed illnesses models were assessed on the basis of logistic regression, effect sizes were estimated based on Cox and Snell's (1989) generalized R^2. Although such likelihood-based R^2 measures are typically lower than those obtained in linear regression, they still provide an indication as to the model's relative explanatory strength (Hosmer & Lemeshow, 2000). Accordingly, the main effect and two-way interaction models (2I) (R^2 =.06) added 2% to the generalized R^2 of the control model (R^2 =.04), and the three-way interaction models (3I) (R^2 =.8) added 2% to the generalized R^2 of the main effect models (P<.001). Overall, this indicates a substantive increase in explanatory strength.

Discussion

The results presented above generally support the core proposition underlying our study, indicating that the effect of work hours on employee health and well-being is moderated by the totality of perceived support both received from and given to close others. More specifically, we found that in the context of reciprocal supportive exchanges (an equal amount of support received and given), an increase in the level of support received not only attenuates the generally harmful effect of work hours on employee health and well-being, but actually *reverses* this effect, such that employees experience improved health and well-being as a function of longer hours at work. In the context of under-reciprocating supportive exchanges (support given exceeds support received), an increase in support received is associated with a weaker buffering of the generally harmful effect of work hours. Finally, in the context of over-reciprocating supportive exchanges (support received exceeds support given), an increase in support received was found to strengthen (reverse-buffer) the generally positive effect of work hours on diagnosed illness and depression. As we detail below, these effects may have important implications for social support theory, as well as for research in the area of social exchanges.

Our results shed new light on the often inconsistent findings in the literature with respect to the stress-buffering effect of social support by suggesting that this effect may be more precisely modeled by taking into account the conditioning role of the general pattern characterizing an individual's close supportive exchanges. While the moderating effect of social support on various outcomes has been widely studied, mixed findings concerning this effect have yielded limited understanding of how social support protects individuals from the harmful impact of environmental demands (Beehr, 1985; Beehr et al., 2003). Moreover, although these mixed findings have resulted in a call for more research on possible contingency factors (Beehr, King & King, 1990), few such factors have been examined to date.

In the current study, we suggest that our understanding of the stress-buffering effect of social support might be enhanced by taking into account the fact that the receipt of social support occurs within the broader context of employees' support exchange relationships. Accordingly, drawing from coping theory, we suggested that the receipt of social support is likely to buffer the negative impact of work hours (and perhaps other job-stressors) on health and well-being to the extent that it is provided in the context of supportive exchange patterns that promote the efficacy of social support as a coping mechanism (Thoits, 1986; 1995).

In this context, we integrated three explanatory perspectives concerning the role of exchange patterns in supportive relations. The first, the equity-based perspective (Walster et al., 1978), highlights the beneficial effect of balanced (i.e., reciprocal) exchanges on peoples' sense of

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identity and belonging. The other two perspectives stress the advantage of giving more support than receiving (i.e., under-reciprocating exchanges), with one perspective focusing on implications relating to the self-image of the person in need (the esteem-enhancement perspective; Batson, 1998) and the other on social comparison processes and their implications on the person's sense of control and mastery over stressful circumstances (the response-shift perspective; Sprangers & Schwartz, 1999). As each perspective highlights one mechanism by which receiving social support may affect an individual's ability to cope with stressful circumstances (Thoits, 1986), we suggested that these three perspectives can be seen as complementary, rather than competitive. Accordingly, we proposed an overarching explanatory framework, focusing on the way in which three psychological mechanisms relating to the recipient's (1) sense of identity and belonging (2) self-image, and (3) sense of control and mastery over the stressful situation operate in tandem to determine whether and how receiving social support affects the stress-management efforts of an individual.

Based on this framework, we suggested that reciprocal exchange patterns may enhance the efficacy of the support received from close others, by promoting a sense of identity and belonging (due to the equitable exchange), positive self-image (resulting from a state of competency), and a sense of control over the stressful situation (resulting from changes in the self-evaluation standards of the person in need).

Our framework also suggests that although support received in the context of under-reciprocating support exchanges may promote a positive self-image (the result of receiving high levels of support while being able to return even greater support to close others), and a stronger sense of control and mastery over stressful circumstances (resulting from the under-weighting of one's personal problems), the violation of reciprocity norms may be harmful to the recipient's sense of identity and belonging. This may detract from the efficacy of receiving social support as a coping mechanism.

Finally, we suggested that in the context of over-reciprocating exchanges, an increase in support received may further reduce the coping capabilities of the person in need, since support received in such a context may be harmful to the recipient's sense of identity and belonging (resulting from the violation of reciprocity norms), self-image (resulting from a state of dependency and incompetence), and sense of control over the stressful situation (resulting from the over-weighting of one's own problems).

Overall, our findings supported these ideas, reinforcing Thoits's (1986) argument regarding the participation of significant others in an individual's stress management efforts, and pointing to the potential value of coping theory and the conceptualization of social support as a coping mechanism in understanding the implications of receiving social support. Moreover, these findings suggest that the tendency of research in the area of supportive relations to conceptualize individuals as mere recipients of social support, rather than as active players in supportive exchanges (Bacharach et al., 2000; Vaananen et al., 2005), may explain the mixed findings regarding the buffering effect of receiving social support. Thus, to the extent that future research considers the conditioning role of supportive exchange patterns as well as other factors characterizing the broader supportive exchange relationships within which support is received, it may be possible to enhance cross-study consistency.

However, aside from these insights, the results summarized above also raise several important questions. First, in the current study we adopted a relational perspective that takes into account the totality of support the target person (the subject) receive and give in the context of his/her close relationships. However, a question arises as to whether such a relational approach indeed increases the predictive capability of the interplay between

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support received and given, or rather involves the loss of information concerning support received and given at the dyadic level. Accordingly, we conducted a series of supplementary analyses in which we assessed the effects of the dyadic-based three-way interactions between work hours, support received and support given[1]. Consistent with the relational approach adopted in the current study, the results of these analyses indicated that the three-way interactions based on the totality of support constructs significantly predicted employee depressive symptoms and illnesses over and above the dyadic-based three-way interactions (which we found to be statistically insignificant). This suggests that greater insight regarding the buffering effect of social support can be gleaned by taking into consideration the *totality* of support received from and given to close others, as opposed to the support received and given at the dyadic level.

Second, although our study was guided by the assumption that hours worked is a potential stressor, influencing employee health and well-being, it may be that the causal mechanism is exactly the opposite. For example, it may be that people's work hours are limited by emotional difficulties, recurrent illness, and other health-related factors. In order to reduce the possibility that employee health and well-being might be predictive of work hours, using longitudinal data we regressed illness and depression at Time 2 on hours worked at Time 1. Moreover, we included restrictions on the nature of the causal influences by controlling for the relevant Time 1 health and well-being measure (Rugosa, 1980), thus enhancing our ability to effectively model the effect of employees' usual work hours on subsequent health and well-being. In addition, we conducted supplementary analyses in which we controlled for the number of hours worked at Time 2.

Third, it is possible that other stressors in the work or non-work environments are responsible for the effect of hours on employee health and well-being or for the harmful effect of over-reciprocating supportive exchanges. For example, it is possible that some people require more support than they give because they must contend with additional demands (family problems, a sick spouse) – demands that may also make them more vulnerable to the negative effects of work hours on health and well-being. Additionally, it is possible that those who work more hours do so because of financial stress that in itself debilitates their health and well-being. In order to rule out such alternative explanations, we tested our models while controlling for work- and family-related stress as well as for financial stress. In these analyses, the harmful effect of hours on health and well-being as well as the moderating role of support received and supportive exchange patterns were found to be significant above and beyond the effects of other possible stressors in the work or non-work environment.

Finally, a question arises concerning whether our findings are generalizable to other stressor-strain relationships. In the current study we focused solely on the moderating role of supportive exchange patterns in explaining how social support may buffer the effect of work hours on employee health and well-being. However, in a series of supplementary analyses, we examined whether our model can be generalized to other stressors, both work and non-work related. The results[2] of these analyses showed consistency for our predictive model across two other stressors: financial stress and family stress. Still, these results were found only with respect to depressive symptoms as the outcome, with work hours being the only stressor for which similar results were found for both depressive symptoms and illnesses. This seems to be in line with the general conceptualization of work hours as a workload dimension having long-term mental as well as physical implications for employees (Caruso, 2006;Hulst, 2003), as well as with the conceptualization of social support as a coping

[1]Detailed description of these analyses and results are available from the first author.
[2]Available from the first author

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mechanism having the potential to promote work-recovery processes by improving the functioning of employees' psychobiological systems (Sonnentag & Fritz, 2007). Still, we encourage others to explore the conditioning role of supportive exchange patterns on the way in which social support may moderate the effects of other potential work-based stressors on these and other manifestations of strain.

Implications for Management and Policy

Practitioners also increasingly view the availability of social support as a key coping mechanism which can mitigate the negative impact of stressful job situations (Beehr et al., 2000; Viswesvaran et al., 1999). Accordingly, in recent years increased attention has been given to promoting supportive work environments and encouraging formal and informal helping interactions in and outside of the workplace as a means by which to better employee mental and physical welfare and improve performance (Beehr et al., 2003; Cohen, 2004). However, the results of the current study indicate that social support may not always be beneficial, even when it is provided by close others. Our findings suggest that employers and policy makers may wish to consider developing workplace interventions that not only increase the availability of support to those in need, but also generate the kind of supportive environment encouraging more equitable exchange patterns. For instance, implementing employee support programs such as peer-based assistance programs (Bacharach, Bamberger & Sonnenstuhl, 1994) or an employee support foundation (Grant, Dutton & Rosso, 2008) may increase opportunities for employees to “give back” in the context of their work environment by providing emotional and financial support to fellow employees in need. Additionally, developing family-friendly programs accompanied by family-supportive work climates (see Allen, 2001) may improve employees' ability to invest time and energy in their non-work relations and reciprocate for support received in this context.

The current study provides a better understanding of the complex relationship between working hours and employee health and well-being by showing that the consequences of increased hours worked may vary between individuals depending on both the amount of support received from close others and the nature of exchange within which support is received. While it appears that for some individuals (those receiving high levels of reciprocal support) working increased hours may be beneficial, for others it may yield no benefit or may even be harmful.

This may help in explaining several previous findings indicating that long work hours are related to better mental health in certain samples (Barnett & Shen, 1997; Ozer et al., 1998). Research linking work hours and employee personal and professional development suggests that employees who are able to adapt to new environments and changing conditions and better balance their work and family lives, may benefit from working long hours (Barnett & Gareis, 2000; Metz, 2004). Accordingly, it is possible that employees who have high-quality close supportive exchanges (in which they receive and give high levels of support), have better coping capabilities (e.g., sense of identity and belonging, high self-esteem, and stronger sense of control over stressful circumstances) that enable them to better adjust to changing conditions and balance work and family lives when working long hours. Hence, these employees may benefit from working increased hours and enjoy better quality of life.

In that sense, our findings also suggest that drawing on research findings showing an insignificant or negative relationship between work hours and strain to conclude that long hours worked are not harmful and may even improve employees' health and well-being, may be over simplistic. Our findings reinforce the notion that the health-related consequences of work hours are likely to be contingent upon a variety of situational and contextual factors, only one of which we considered in this study. Accordingly, although restricting employee work hours may be unnecessary for some employees and may limit their freedom to enjoy

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the benefits associated with working increased hours (e.g., overtime pay), for others such restrictions may be well-justified.

Limitations and Implications for Future Research

Several important shortcomings of the present analysis should be considered in assessing the overall contribution of our findings to management theory in general and workplace social support theory in particular. One limitation may stem from the fact that our sample included relatively highly tenured employees. Like many other studies examining supportive social relations (e.g., Liang et al., 2001; Rook, 1987), we focused on older individuals – a population that offers a number of empirical advantages for this area of research (Fischer, 1982). However, this focus may have introduced bias into our results in two ways. First, given that a significant proportion of our sample were or (during the course of the study) became eligible to retire, it is conceivable that our results may have been confounded by the effects of workforce disengagement. However, given that we controlled for retirement and that this effect was not statistically significant in any of the models tested, we deem it highly unlikely that retirement introduced any such bias. Furthermore, if anything, the fact that 29% of the sample retired during the course of the study should have only increased the probability of Type II error, in that the impact of workplace stressors such as temporal demands on physical and emotional well-being are likely to be diminished among those disengaging from the workforce, thus providing less of a main effect for social support to moderate.

Second, bias may also have been introduced in that older people may be more vulnerable to over-reciprocating exchanges. To the extent that physical deterioration is associated with age (Krause, 1987), older adults may be more sensitive to being over-reciprocated in the context of their close relationships. For these people, seeking and receiving assistance may be highly costly as it threatens their perception of themselves as competent individuals while potentially “bolstering their role identities as needy dependants” (Siebert, Mutran & Reitzes, 1999, pp. 529). Accordingly, for these employees, receiving social support in the context of over-reciprocation may be associated with more severe reactions to environmental demands. However, given that our sample was comprised of adults still healthy enough to engage in often physically demanding, blue-collar work, we believe that the potential for such bias in the current sample is limited and that our findings remain generalizable to the broader population of workers. Moreover, even if our focus on this population limits the generalizability of our findings to workers aged 40 and over, it is important to note that this population already comprises a significant portion of the workforce, and one that is expected to grow in the years to come (Hedge, Borman & Lammlein, 2006). Still, we recommend that researchers test our models using samples that include both younger and older employees, allowing a better understanding of the role of supportive exchange patterns by examining whether their moderating effects vary across different age groups.

Lastly, additional research attention should be given to exploring whether our explanatory framework can be generalized to the potentially direct effect of receiving social support on employee health and well-being. Although in the current study we found that support received negatively affects the health and well-being of employees to the extent that the exchange of support is perceived as over-reciprocating, additional research is required in order to better understand whether and how patterns of supportive exchange moderate the direct effect of social support.

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Figure 1.
Conceptual model: Support Received and Support Given as Moderators of the Stressor (Work Hours) – Strain (Diagnosed Illness, Depression) Relationship.

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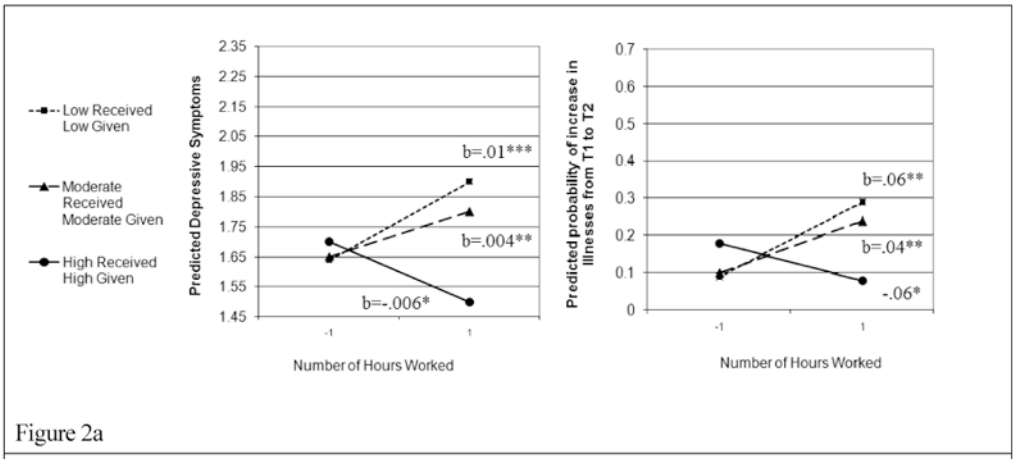

Figure 2a

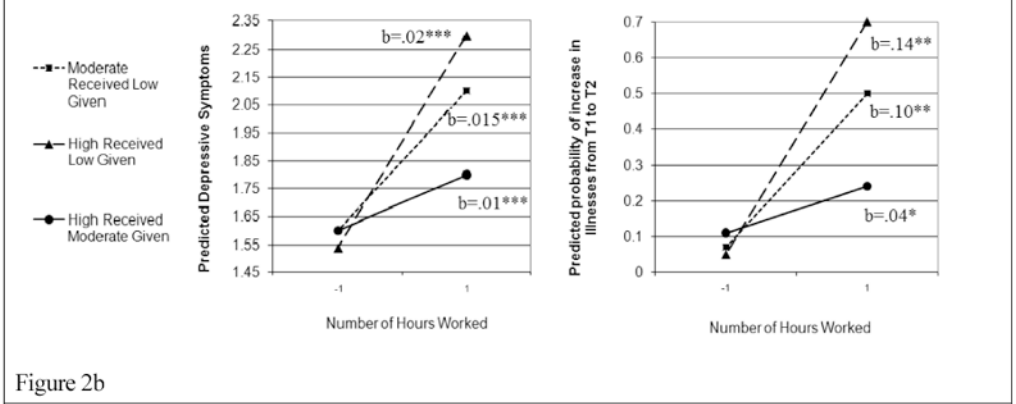

Figure 2b

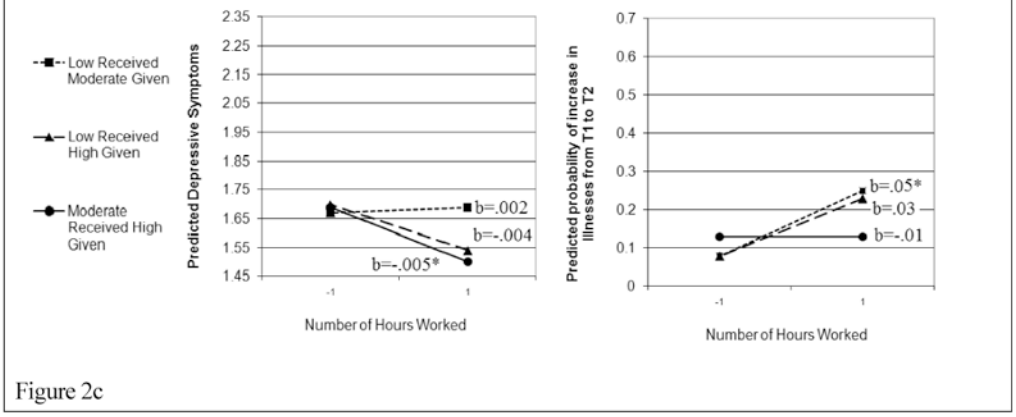

Figure 2c

Figure 2.

Figure 2a: Simple Slopes of Work Hours for Reciprocal Pattern of Supportive Exchange
Figure 2b: Simple Slopes of Work Hours for Over-Reciprocating Pattern of Supportive Exchange
Figure 2c: Simple Slopes of Work Hours for Under-Reciprocating Pattern of Supportive Exchange
* P≤0.05; ** P≤0.01; *** P≤0.001

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Table 1

Means, Standard Deviations and Correlations among Study Variables (n=964)

Variable name	**M**	**SD**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**		
1) Sector (construction =1)	.14	.35																								
2) Sector (manufacturing =1)	.17	.37	-.18																							
3) Gender (female=1)	.27	.45	0.24	-.07																						
4) Marital status (married=1)	.79	.41	.09	-.02	-.28																					
5) Retirement (between Time 1 to 2)	.29	.45	-.11	.07	-.24	.10																				
6) Social Desirability	3.46	.44	.11	.01	-.12	.07	-.07																			
7) Family Stress	1.17	.84	-.07	-.03	.11	-.16	-.04	-.11																		
8) Financial Stress	1.22	.48	0.05	-.02	.14	-.12	-.04	-.16	.23																	
9) General work stress	.86	.79	-.03	.02	-.05	.02	.13	-.16	.49	.20																
10) Age	55.87	4.74	-.08	-.30	-.27	.07	.27	.01	-.04	-.11	-.05															
11) Depression (Time 1)	1.71	.58	-.12	.06	.18	-.13	.002	-.40	.26	.27	.32	-.11														
12) Depression (Time 2)	1.76	.52	-.14	-.01	.29	-.13	-.07	-.37	.24	.23	.26	-.12	.60													
13) Diagnosed illnesses (Time 1)	.99	1.02	-.09	.03	-.06	.03	.10	-.16	.11	.07	.09	.10	.12	.11												
14) Diagnosed illnesses (Time 2)	1.15	1	-.05	.01	-.05	.02	.10	-.13	.12	.14	.11	.07	.15	.14	.91											
15) Increase in illnesses from T1 to T2	.20	.40	.01	-.03	.06	-.02	.04	-.01	.02	.07	.02	.04	.08	.07	.002	.39										
16) Number of Hours Worked	41.1	14.05	-.02	.17	-.58	.17	.19	.03	-.06	-.09	.07	.24	-.10	-.16	.12	.09	.003									
17) Emotional Support Received	10.8	1.67	.02	-.02	.14	-.04	-.02	.03	-.02	-.02	-.05	-.07	-.07	-.04	-.02	-.02	-.01	-.03								
18) Emotional Support Given	11.25	1.53	.003	-.02	.16	-.05	-.01	.03	-.03	-.03	-.05	-.09	-.04	-.03	-.01	-.01	-.01	-.04	.81							
19) Instrumental Support Received	9.64	2.02	.04	-.03	.04	.07	.05	.05	-.03	-.04	-.05	-.02	-.12	-.10	.01	-.01	-.05	-.01	.68	.60						
20) Instrumental Support Given	11.12	1.59	.03	-.002	.11	.03	.02	-.002	-.03	-.04	.01	-.08	-.05	-.04	.01	-.001	-.02	-.01	.77	.82	.69					
21) Instrumental Support Exchange Composition: Completely Balanced=1	0.27	.44	.02	.02	-.07	.10	.04	.08	-.03	-.004	-.05	.03	-.10	-.09	-.02	-.02	-.02	-.01	.03	-.10	.36	-.07				
22) Instrumental Support Exchange Composition: Completely Unbalanced=1	.26	.44	-.01	.03	.03	-.13	-.09	-.04	.03	.02	-.02	-.03	-.09	.08	-.02	-.002	.04	.01	-.004	.06	-.36	.04	-.36			
23) Emotional Support Exchange Composition: Completely Balanced=1	.55	.50	-.04	-.01	.02	-.03	.02	.08	.02	-.03	-.03	.05	-.10	-.08	-.01	-.001	.03	.01	.27	.03	.21	.02	.33	-.19		
24) Emotional Support Exchange Composition: Completely Non-Balanced=1	.10	.30	.01	.01	-.04	.02	-.01	-.07	-.02	.01	.04	.02	.06	.03	-.01	-.01	-.032	-.004	-.17	-.09	-.15	-.04	-.14	.25	-.38	
25) Number of Close Relationships	2.9	.33	.02	-.02	.09	-.05	.002	-.01	-.04	.002	-.04	-.06	.01	.01	.002	.01	.002	-.02	.73	.84	.53	.79	-.17	.16	-.13	.09

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P≤0.05 for |.08| ≥ r ≥|0.07|;

** P≤0.01 for |.10| ≥ r ≥|0.09|;

*** P≤0.001 For r ≥|0.11|

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Table 2

The Buffering Effect of Social Support Received on Depression/Illnesses, Contingent on Social Support Given (n=964)

	Depression						Increase in Illnesses					
	Model1(D)		Model2(D)		Model3(D)		Model1(I)		Model 2(I)		Model 3(I)	
Effect	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**
Intercept	1.76***	.24	1.82***	.22	1.81***	.22	-5.03**	1.66	-4.78**	1.67	-5.20**	1.70
Sector (construction vs. transportation)	-.05	.04	-.03	.04	-.03	.04	.43	.28	.48	.28	.51	.28
Sector (manufacturing vs. transportation)	-.06	.04	-.06	.04	-.05	.04	-.22	.28	-.32	.28	-.31	.28
Gender (female)	.19***	.03	.24***	.04	.23***	.04	.50	.24	.77**	.27	.79**	.28
Marital status (married)	.02	.03	.03	.03	.02	.03	.11	.24	.11	.24	.13	.25
Diagnosed illnesses (Time 1)	.01	.01	.01	.01	.01	.01	.87***	.08	.88***	.08	.87***	.08
Retirement (between T1 to T2)	.003	.03	.003	.03	.01	.03	.20	.22	.20	.22	.19	.22
Depressive Symptoms (Time 1)	.44***	.02	.44***	.03	.44***	.03	.12	.18	.12	.18	.11	.18
Social Desirability	-.16***	.03	-.16***	.03	-.16***	.03	.30	.23	.36	.23	.39	.23
Age	-.006	.003	-.01	.003	-.01*	.003	.01	.02	.003	.02	.01	.02
Family Stress	.02	.02	.02	.02	.02	.02	-.23	.13	-.23	.13	-.22	.13
Financial Stress	.05	.03	.05	.03	.05	.02	.15	.19	.12	.19	.13	.19
General work stress	.05*	.02	.05**	.02	.05**	.02	.03	.14	.01	.14	-.01	.14
Exchange Composition (completely balanced vs. mixed)	-.02	.03	-.01	.03	-.02	.03	.13	.22	.17	.25	.16	.24
Exchange Composition (completely unbalanced vs. mixed)	-.02	.04	-.03	.04	.02	.03	.35	.22	.32	.24	.32	.24
Number of Hours Worked			.002*	.001	.004***	.001			.02*	.01	.04***	.01
Support Received			.002	.01	.01	.02			.05	.11	.06	.11
Support Given			-.05*	.02	-.05*	.02			-.27	.16	-.26	.16
Support Received * Support Given			-.01*	.004	-.01*	.003			-.07*	.03	-.07*	.03
Hours * Support Received					.001	.001					-.001	.01
Hours * Social Support Given					-.005**	.002					-.03**	.01
Hours * Support Received * Support Given					-.001*	.0003					-.01**	.004
R-square/Pseudo-R-square	.42		.44		.46		.04		.06		.08	

	Depression						Increase in Illnesses					
	Model1(D)		Model2(D)		Model3(D)		Model1(I)		Model 2(I)		Model 3(I)	
Effect	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**	**Est.**	**SE**
Δ R-square			.02**		.02**				.02*		.02**	

† P≤0.10;

* P≤0.05;

** P≤0.01;

*** P≤0.001

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