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# Work orientations in the job demands-resources model

Work  
orientations

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## Abstract

**Purpose** – This study aims to examine the role of instrumental vs intrinsic work orientations in the job demands-resources (JD-R) model.

**Design/methodology** – Using a sample of 123 employees, the authors investigated longitudinally whether an instrumental work orientation moderates the motivational process, and mediates the health impairment process in the JD-R model.

**Findings** – Regression analyses revealed that an increase in job resources over time was particularly beneficial for experienced flow at Time 2 among employees holding an instrumental (vs intrinsic) work orientation. In addition, structural equation modeling analyses showed that work pressure was reciprocal with need for recovery, which was reciprocal with instrumental work orientation.

**Research limitations/implications** – Findings suggest that work orientation should be integrated in research linking work characteristics with motivational and health impairment processes.

**Practical implications** – Organizations should avoid placing overly high demands on their employees as these not only impair employees' health, but also change their orientation towards work.

**Social implications** – Organizations can contribute to the wellbeing of individuals and society by designing jobs that provide affordable demands and sufficient resources.

**Originality/value** – The present study successfully integrated work orientations in the JD-R model.

**Keywords** Flow, Instrumental work orientation, Job resources, Need for recovery, Work pressure, Employee behaviour, Human resource management

**Paper type** Research paper

The increased competition in the global economy together with the increased difficulty for organizations to achieve and maintain success have extended the interest of scholars and managers in understanding predictors of employees' motivation (e.g. Fried *et al.*, 2008). This is because of the important role motivation play as a precursor of commitment, performance, and productivity (Fried *et al.*, 2008). Research in the area of motivation has focused on employees' intrinsic motivation to work (e.g. Deci, 1975; Hackman and Oldham, 1980), because employee motivation and engagement predict organizational performance (Demerouti and Cropanzano, 2010; Fried and Ferris, 1987). However, it is arguably just as important to identify ways to engage employees whose motivation to work derives primarily from an extrinsic orientation. Such employees see work as a means toward valued extrinsic ends



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(e.g. income), rather than an intrinsic end in itself due to its close association with growth and fulfillment.

The central aim of this longitudinal study is to examine the role that extrinsic or intrinsic work orientation plays in the way in which job characteristics influence employee health and motivation. We will follow participants over the period of one month, aiming to predict their experience of flow at work (i.e. the total immersion in one's job) and their need for recovery (i.e. the strong need for rest). Because we will focus on health and motivational processes at work, we will use the Job Demands-Resources model (Bakker and Demerouti, 2007; Demerouti *et al.*, 2001), which recognizes job resources as initiators of motivation and job demands as initiators of health impairment. Within this framework, we will examine whether the motivating role of job resources for flow at work is the same for employees holding an extrinsic vs intrinsic work orientation, and whether an extrinsic or intrinsic work orientation places additional demands on employees and consequently increases their need for recovery.

### **Instrumental orientations toward work**

It is generally agreed that the centrality of work rests on two potential, motivational sources: extrinsic or instrumental, on the one hand, and social or intrinsic, on the other (Harpaz, 2002). Intrinsic and extrinsic work orientations represent work-related reinforcement preferences, or tendencies, to value specific types of incentives inherent in the work environment (Caldwell *et al.*, 1983; Glynn, 1998; Herzberg, 1966). Individuals with an intrinsic orientation (or expressive orientation) value opportunities for intellectual fulfillment, creative self-expression, and the pleasure associated with task mastery on the job. Individuals with an extrinsic orientation primarily value remuneration and view work principally as a means to attaining remuneration.

Although these orientations conceptually appear to be bipolar, instruments assessing individual differences related to intrinsic and extrinsic motivation tend to yield scores that are nearly independent (Amabile *et al.*, 1994; Pintrich and Garcia, 1991). This happens when the measures focus on the effects of the absolute importance of employees' orientations (e.g. Butler and Vodanovich, 1992). However, studies in which the relative importance of intrinsic vs extrinsic orientations were examined have yielded a more consistent pattern of results regarding the impact of work orientations on wellbeing and health (e.g. Vansteenkiste *et al.*, 2006; Vansteenkiste *et al.*, 2007). Vansteenkiste *et al.* (2007) found that holding an extrinsic, relative to an intrinsic, work orientation was associated with less positive outcomes (i.e. less satisfaction with, dedication to, or vitality while on the job) and more negative outcomes (i.e. higher emotional exhaustion, short-lived satisfaction after successful goal-attainment, or turnover intention). These relations were not limited to job outcomes, but also emerged when indicators of employees' general mental health were used. As we also aim to explain motivational and health-related outcomes, we place both core work orientations, instrumental and intrinsic, on a single continuum. In this way one end represents a high instrumental and low intrinsic work orientation and the other end represents the opposite pattern (i.e. a low instrumental and high intrinsic work orientation).

While the structure of work values/orientations typically remains fairly constant over time, the importance of specific values may fluctuate (Sagie *et al.*, 1996). Schulenberg *et al.* (1988) examined short-term fluctuations in the underlying factors of the work values of seven college students. The respondents completed a work values

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inventory daily for approximately 100 days. The authors found coherently structured intra-individual variability in patterns of work values that differed across the respondents. These findings imply that the relative importance of values/orientations may change over time and across situations due to external stimuli and day-to-day events. Therefore, in our study we will use a short time lag of one month between the measures to examine the role of work orientations in the motivational and health impairment process – initiated by work characteristics.

### *Job demands-resources model*

According to the job demands-resources (JD-R) model (Bakker and Demerouti, 2007; Demerouti *et al.*, 2001), work characteristics can be classified in two general categories:

- (1) job demands; and
- (2) job resources.

Job demands are those aspects of the job that require sustained effort, and are therefore associated with certain costs. Job resources are those aspects of the job that are functional in dealing with job demands and stimulate personal growth and development.

These two categories of work characteristics evoke two independent psychological processes. According to the health impairment process, high job demands, which require sustained effort, may exhaust employees' resources and lead to energy depletion and health problems (see Caplan *et al.*, 1975). Specific job demands (e.g. work pressure or emotional demands) have been repeatedly found to predict exhaustion (i.e. severe fatigue) among various occupational groups (e.g. Bakker *et al.*, 2005; Bakker *et al.*, 2003; Demerouti *et al.*, 2004).

In the present study, we will focus on work pressure, which represents a job demand that can exist in every occupational context. Moreover, work pressure is associated with chronic psychological outcomes such as exhaustion, which raises the importance of the construct of need for recovery (Sonnentag and Zijlstra, 2006). Need for recovery is the sense of urgency that people feel to take a break from the demands when fatigue builds up (Van Veldhoven and Broersen, 2003; Sluiter *et al.*, 1999). Inherent in the experience of need for recovery is a temporal reluctance to continue with the present job demands or to accept new demands. Therefore, need for recovery can be viewed as an early stage of a long-term strain process leading to prolonged fatigue and psychological distress (Jansen *et al.*, 2002).

According to the motivational process proposed by the JD-R model, job resources, due to their motivational potential, encourage employees to meet their goals (Demerouti *et al.*, 2001). In turn, employees may become more committed to their job, because they derive fulfillment from it (Hackman and Oldham, 1980). Previous studies have shown that several job resources (e.g. colleagues' support, performance feedback, supervisory coaching) lead to work engagement (Bakker *et al.*, 2003), and to flow at work (Demerouti, 2006).

As we will follow employees over a period of four weeks, we will focus on flow at work, which represents a short-term outcome of the motivational process. Flow signifies an engrossing and enjoyable experience that it is worth doing for its own sake even (Csikszentmihalyi, 1999). Two core dimensions of flow are included in most definitions. The first dimension is concentration: people in flow fully concentrate and

are immersed in what they do (Bakker, 2005, 2008; Jackson and Marsh, 1996; Csikszentmihalyi, 1990). This dimension is included in the flow state scale (Jackson and Marsh, 1996), and the WOLF (Bakker, 2008); in the latter scale it is referred to as absorption. The second core flow dimension is enjoyment (Bakker, 2008; Csikszentmihalyi, 1990), or the fact that people feel happy about having had a peak experience. Also Jackson and Marsh (1996) considered this dimension, which they called autotelic experience (i.e. an intrinsically rewarding and enjoyable experience), as the end result of being in flow. Bakker (2005, 2008) suggested that people experience flow when all flow elements are experienced simultaneously. As this can only be examined with the experience sampling method, we will focus on the flow dimensions. Moreover, we will exclude the intrinsic work motivation component because we will capture this motivational aspect in our work orientation scale as an enduring characteristic rather than a fluctuating experience. In this way we avoid conceptual overlap between these constructs.

According to Csikszentmihalyi (1997), flow tends to occur when a person faces a clear set of goals such that the individual knows how to act without needing to ask what should be done and how. Moreover, Csikszentmihalyi regarded immediate feedback as a necessary condition to experience flow. Because of the organizational power supervisors have, their feedback may be particularly influential to employees' performance. Therefore, we will focus on the following job resources: role clarity and feedback from the supervisor.

#### *Instrumental orientations and the motivational process*

Sagie *et al.* (1996) suggested that work motives might influence psychological responses to the work environment. Thus, work orientations can be moderators or mediators in the relationship between environmental variables and job behavior like performance, attendance, and withdrawal. We suggest that when job resources increase over a four-week time period, this will be more beneficial for flow for those employees who have an instrumental or extrinsic work orientation, relative to those with an intrinsic work orientation. This is because extrinsically-oriented individuals focus primarily on obtaining external indicators of worth, such as social approval and external rewards (Vansteenkiste *et al.*, 2007). For such individuals, the increase in resources would prime them to focus on the characteristics of the job, resulting in increased flow at work. Also, cognitive evaluation theory proposes that excess in external rewards for conducting an already intrinsically valued task can be experienced as controlling and may therefore negatively influence quality of motivation (Deci and Ryan, 1985). This perspective implies that for those relatively high in intrinsic orientation, higher rewards might actually be associated with lower motivation and, thus, lower flow. These employees have a natural desire to actualize, develop, and grow at the workplace (i.e. self-development) (Kasser and Ryan, 1993), and they enjoy their work activities and focus on them (i.e. experience flow) because they are attracted by their job and not because of an external resource provided. Therefore:

- H1.* An increase in job resources (i.e. feedback from the supervisor, role clarity) will have a stronger positive association with T2 flow dimensions (work enjoyment and concentration) among employees with an instrumental work orientation than among their counterparts with an intrinsic work orientation.

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*Instrumental orientations and the health impairment process*

*Work pressure – need for recovery.* According to Hobfoll (2001), demanding characteristics of work result in loss because they draw on employees' (energy) resources. When losses occur, people apply resource conservation strategies (based on anticipated outcomes) by investing resources available to them in order to adapt successfully (Hobfoll, 2001). Therefore, we expect that the higher the job demands, the higher the effort employees will invest in meeting them and the higher their need to recover from the loss of energy (i.e. resource loss). Recent research has shown that job demands, like workload, can have a strong (longitudinal) impact on psychological outcomes such as exhaustion (Demerouti *et al.*, 2001; Demerouti *et al.*, 2004). Moreover, job demands have been found to predict need for recovery over the period of two years (e.g. Sluiter *et al.*, 2003).

Conversely, job strain has been found to influence job demands over time (Zapf *et al.*, 1996), suggesting reversed causal relationships between working conditions and strain. More recent studies have provided additional evidence for reverse causation between exhaustion and work pressure (Demerouti *et al.*, 2004; Demerouti *et al.*, 2009). Possible explanations for reversed causal effects are that the behaviors of employees experiencing a high need for recovery place additional demands upon them because they fall behind in their work (Demerouti *et al.*, 2004) or that fatigued employees may evaluate job demands more critically, thus creating a negative work climate (Bakker and Schaufeli, 2000). Therefore:

- H2.* Job demands (i.e. work pressure) will be positively related to need for recovery, and need for recovery will be positively related to job demands over time.

*Need for recovery – instrumental orientation.* Extrinsically oriented individuals focus primarily on obtaining external indicators of worth, such as external rewards, and as a result often neglect their personal desires and interests. Adopting an "outward" (Williams *et al.*, 2000) or having an extrinsic orientation (Fromm, 1976; Van Boven & Gilovich, 2003) is likely to diminish psychological health because such an orientation hinders the satisfaction of basic psychological needs. These needs are innate and universal and include the needs for competence (success at challenging tasks), autonomy (freedom of choice), and relatedness (establishing mutual respect). Having a strong focus on extrinsic, relative to intrinsic, life values is detrimental to wellbeing (e.g. lower self-esteem, vitality, self-actualization and social productivity) and is associated with greater ill-being (e.g. higher narcissism, depressive complaints) as well as poorer physical health, higher emotional exhaustion and low vitality (Kasser and Ryan, 1993; Vansteenkiste *et al.*, 2006, 2007). Therefore, we expect that having instrumental orientations towards work will be detrimental for the energy reserves of employees.

If job demands continuously draw upon employees' resources, and there is insufficient time to replenish them, employees will develop a strong need for recovery. Changing one's orientation towards work (i.e. becoming more instrumentally oriented) may partly satisfy this increased need for recovery. Just as equity can be achieved in an unbalanced relationship by decreasing one's own investments in that relationship (Bakker *et al.*, 2000), employees with a high need for recovery may change their work

orientations toward becoming more instrumental, and will thus put less effort into their work. Thus:

- H3. An instrumental work orientation will be positively related to need for recovery, and need for recovery will be positively related to an instrumental work orientation over time.

## Method

### *Participants and procedure*

The study sample consisted of Dutch employees from different sectors of the economy, who held a variety of jobs, which helped increase the potential generalizability of the findings (Warr, 1990). A consulting company interested in developing a questionnaire to measure flow and its antecedent conditions provided the researchers a network of possibly interested organizations. Of the supervisors, nine each employed at a different organization, were invited by letter and follow-up phone calls to participate in the study. In total, eight of the supervisors agreed to participate and they were employed at one of the following organizations: bank, ministry, train engineering/consultancy agency, training office, donation service office, production company, or transport company.

Overall, 305 surveys were distributed, accompanied by a letter that emphasized and assured the anonymity and confidentiality of the data. The employees were asked to return their completed questionnaires in pre-stamped envelopes. The response rate for the first questionnaire was relatively high: 60 percent ( $N = 183$ ). The second questionnaire was distributed four weeks later. In order to increase the response rate in the second wave, the researchers informed the participants that for each completed questionnaire they would make a small financial donation to a worthy cause. A total of 130 employees responded to the questionnaire (response rate 42.6 percent) of which 123 individuals completed the survey at both times. The majority of the participants had administrative (23 percent) or managerial jobs (20 percent), while 13 percent had professional or production function, and 11 percent were advisors.

Of the 123 employees, 61.5 percent were male, with an average age of 38.6 years ( $sd = 10.3$ ). The majority of the participants worked full time, and organizational tenure was 9.7 years ( $sd = 11.0$ ). About 59 percent of the participants held a college or university degree. Most participants worked with people (44.5 percent); 29.4 percent worked primarily with information, 2.5 percent worked primarily with things, while 23.5 percent reported combinations of these. Finally, close to 37 percent of the participants lived with a partner; 46 percent had children; and 35 percent had a partner and children living at home.

### *Measures*

Except for need for recovery, for all other constructs a four-point scale was used to measure respondents' levels of agreement with each statement (1 = strongly disagree, 4 = strongly agree). This was done to keep the questionnaire simple so that employees with low or high educational levels would be able to respond to the items, and a comparison of the mean scores of the different dimensions would be possible.

Work pressure was measured with a shortened version of the psychological demands scale of Karasek's (1985) job content questionnaire. Research with Dutch samples from different sectors (e.g. Bakker *et al.*, 2003, Demerouti *et al.*, 2004) has

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shown that this shortened version is reliable and valid. The scale consists of three items assessing quantitative, demanding aspects of the job (e.g. time pressure, working hard). A sample item is: "My work requires working very hard." This scale has been used in prior research (that named it pace and amount of work) and has been found to predict need for recovery (Van Veldhoven and Broersen, 2003).

*Job resources.* Feedback from supervisor was assessed with the three-item scale of "feedback from the company" developed by Teas (1981). The items were slightly adapted such that they were no longer specific for salespersons. This scale is originally based on Hackman and Oldham's (1980) scale "feedback from agents". A sample item is: "My supervisor lets me know how well I am doing on my job". Previous research has found that this measure is predictive of flow (Demerouti, 2006). Role clarity was assessed with six items of the scale developed by Rizzo *et al.* (1970). An example item is: "Clear, planned goals and objectives exist for my job." All responses were coded such that higher scores referred to more job resources. Previous research reported a favorable reliability estimate for this measure, and it was shown to be related to anxiety and job satisfaction, demonstrating predictive validity (Spector *et al.*, 2000).

*Flow.* Work enjoyment was assessed with a subscale of Bakker's (2008) work-related flow scale. We used three of the four items of this subscale and added a reverse-coded item. Participants had to recall their main activities of the previous month and to report the degree to which they agreed with each statement. Example item is: "When I was working on the activity very intensely, I felt happy". Concentration was measured by five items. Four of these came from Jackson and Marsh's (1996) flow state scale, assessing the degree to which employees have a complete focus upon their task (e.g. "My attention was focused entirely on what I was doing."). One additional item was developed especially for the present study, namely "My thoughts were wandering to other things during the task" (reverse-coded). Participants had to recall their main activities of the previous month and to report the degree to which they agreed with each statement.

Need for recovery was assessed with an 11-item scale of Van Veldhoven and Broersen (2003). This scale contains yes/no questions representing short-term effects of a day of work, with questions such as: "I find it hard to relax at the end of a working day" (1 = "no"; 2 = "yes"). A mean score was calculated by averaging the scores on the individual items, such that higher scores indicated a higher need for recovery. Jansen *et al.* (2002) provide a more detailed description of the need for recovery and its associations with fatigue and psychological distress.

Instrumental/ intrinsic orientations were measured with four items developed for the purposes of this study. Namely: "I conceive work as an obligation that I have to fulfill"; "I get satisfaction/fulfillment from my work" (reversed); "Paid work is just a way to make a living"; "I work because I enjoy it, and not because I have to" (reversed). Principal axis factoring at each measurement point showed that these items loaded on one factor, with loadings ranging from 0.58 to 0.75 at time 1 and from 0.54 to 0.82 at time 2. High scores on this scale represented high instrumental orientation, while low scores on the scale represented high intrinsic orientation.

### *Statistical analysis*

Hierarchical multiple regression analysis was used to examine the potential moderating role of Time 1 instrumentality in the relationship between Time 2 – Time 1 changes in

job resources and flow outcomes at Time 2. The change scores were preferred because subtraction of T1 scores removes the stable individual differences between subjects, thereby increasing the power of the statistical test (Norman, 1989). Moreover, change scores allow to test whether an increase in job resources has the expected relationship with flow rather than differences in the level of resources between both measurement points. According to Norman (1989), the use of change scores can potentially correct for these differences. T1–T2 changes in resources were measured as residual scores (cf. Hobfoll *et al.*, 2003). We obtained these change scores by regressing T2 scores of resources on the corresponding T1 scores (Smith and Beaton, 2008). The differences between the predicted and observed scores of T2 resources are the standardized residual scores that we used in the regression analyses. Positive residual scores indicate an increase and negative scores a decrease in resources. Two regression analyses were performed separately, with both resources as dependent variables. This method of using residual scores as indicators of change has the advantage of not inflating errors that might occur with the use of difference scores (Edwards and Parry, 1993).

Following Baron and Kenny's (1986) guidelines, the job resources were analyzed in different regression models to minimize problems due to low statistical power. Each flow dimension at Time 2 was regressed on the antecedent sets:

- (1) the flow dimension measured at Time 1 was entered as control;
- (2) instrumental orientation at Time 1; and Time 2 – Time 1 changes in job resources; and
- (3) the interaction term between instrumental orientation and changes in job resources.

Structural equation modeling (SEM) was used to examine the indirect effect of instrumental value in the health impairment process. We used the original mean scores per measurement as otherwise we would not be able to test the existence of indirect effects. We analyzed the data with covariance structure modeling (Jöreskog & Sörbom, 1993), using the maximum-likelihood method implemented in the AMOS computer program (Arbuckle, 2006). Model fit was assessed with the standard chi-square test, as well as with several fit indices suggested by Byrne (2001). Finally, Sobel tests were conducted as formal tests of the indirect effect.

## Results

Table I displays the descriptive statistics for, and the correlations among, the study variables, as well as the internal consistencies.

### *Longitudinal moderation*

*H1* suggested that an increase in job resources over time would be beneficial for flow for employees with high (vs. low) instrumental orientation. As can be seen in Table II, the antecedent variables accounted for a notable proportion of variance in flow indicators at Time 2 (36 percent–56 percent). This is partly because flow at Time 1 explained a substantial proportion of the variance in flow at Time 2, indicating that flow is relatively stable over a four-week time-period. Instrumental orientation at Time 1 was not significantly related to flow at Time 2. Both  $\Delta$  feedback from the supervisor and  $\Delta$  role clarity were significantly and positively related to enjoyment and unrelated to concentration.

|                       | Mean | SD   | 1      | 2      | 3       | 4       | 5       | 6       | 7      | 8      | 9       | 10     | 11      | 12     | 13     | 14   |
|-----------------------|------|------|--------|--------|---------|---------|---------|---------|--------|--------|---------|--------|---------|--------|--------|------|
| <i>Time 1</i>         |      |      |        |        |         |         |         |         |        |        |         |        |         |        |        |      |
| 1. Work pressure      | 2.50 | 0.66 | 0.78   |        |         |         |         |         |        |        |         |        |         |        |        |      |
| 2. Feedback           | 2.95 | 0.59 | -0.07  | 0.72   |         |         |         |         |        |        |         |        |         |        |        |      |
| 3. Role clarity       | 2.91 | 0.48 | -0.14  | 0.27** | 0.75    |         |         |         |        |        |         |        |         |        |        |      |
| 4. Work orientation   | 1.88 | 0.55 | -0.06  | -0.23* | -0.24** | 0.75    |         |         |        |        |         |        |         |        |        |      |
| 5. Need for recovery  | 1.56 | 0.30 | 0.28** | -0.18* | -0.16   | 0.42**  | 0.84    |         |        |        |         |        |         |        |        |      |
| 6. Work enjoyment     | 3.20 | 0.59 | 0.05   | 0.12   | 0.33**  | -0.40** | -0.30** | 0.88    |        |        |         |        |         |        |        |      |
| 7. Concentration      | 3.09 | 0.53 | 0.20*  | 0.10   | 0.41**  | -0.33** | -0.11   | 0.51**  | 0.78   |        |         |        |         |        |        |      |
| <i>Time 2</i>         |      |      |        |        |         |         |         |         |        |        |         |        |         |        |        |      |
| 8. Work pressure      | 2.53 | 0.59 | 0.63** | 0.04   | -0.05   | -0.08   | 0.14    | 0.02    | 0.08   | 0.68   |         |        |         |        |        |      |
| 9. Feedback           | 2.88 | 0.59 | 0.06   | 0.57** | 0.29**  | -0.26** | -0.09   | 0.18    | 0.25** | 0.08   | 0.70    |        |         |        |        |      |
| 10. Role clarity      | 2.87 | 0.48 | -0.02  | 0.16   | 0.66**  | -0.17   | -0.10   | 0.32**  | 0.39** | 0.05   | 0.34**  | 0.83   |         |        |        |      |
| 11. Work orientation  | 1.90 | 0.55 | -0.07  | -0.20* | -0.21*  | 0.71**  | 0.28**  | -0.25** | -0.15  | -0.12  | -0.29** | -0.18* | 0.79    |        |        |      |
| 12. Need for recovery | 1.58 | 0.32 | 0.36** | -0.13  | -0.14   | 0.21*   | 0.70**  | -0.24** | -0.02  | 0.36** | -0.08   | -0.07  | 0.13    | 0.83   |        |      |
| 13. Work enjoyment    | 3.19 | 0.63 | 0.12   | -0.05  | 0.27**  | -0.38** | -0.30** | 0.70**  | 0.52** | 0.07   | 0.22**  | 0.38** | -0.34** | -0.25* | 0.92** |      |
| 14. Concentration     | 3.07 | 0.55 | 0.25** | 0.03   | 0.30**  | -0.28*  | -0.20*  | 0.50**  | 0.54** | 0.18*  | 0.27    | 0.40   | -0.26** | -0.17  | 0.69** | 0.83 |

Notes:  $n = 123$ . \* $p < 0.05$ ; \*\* $p < 0.01$

Table I. Means, standard deviations, and correlations among the study variables

**Table II.**  
Regression analyses  
involving job resources  
and instrumental  
orientation in the  
prediction of flow at  
Time 2

| Predictors                                  | Enjoyment |                 | Concentration |                 | Enjoyment |                 | Concentration |                 |
|---|-----------|-----------------|---------------|-----------------|-----------|-----------------|---------------|-----------------|
|   | $\beta$   | <i>t</i> -value | $\beta$       | <i>t</i> -value | $\beta$   | <i>t</i> -value | $\beta$       | <i>t</i> -value |
| Dependent variable at T1                    | 0.62      | 9.18***         | 0.48          | 6.18***         | 0.64      | 9.37***         | 0.50          | 6.58***         |
| Instrumental orientation T1                 | -0.10     | 1.58            | -0.09         | -1.15           | -0.11     | 1.73            | -0.12         | -1.46           |
| $\Delta T2 - T1$ supervisor feedback        | 0.20      | 2.97**          | 0.10          | 1.33            | 0.13      | 1.99*           | 0.14          | 1.79            |
| Instrumental orientation x $\Delta T2 - T1$ |           |                 |               |                 |           |                 |               |                 |
| supervisor support                          | 0.09      | 1.43            | 0.13          | 1.58            | 0.14      | 2.19*           | 0.02          | 0.33            |
| $R^2$                                       | 0.56      |                 | 0.36          |                 | 0.54      |                 | 0.35          |                 |
| <i>F</i> -value                             | 36.97***  |                 | 16.79***      |                 | 34.13     |                 | 15.57***      |                 |
| Df  | 122       |                 | 122           |                 | 122       |                 | 122           |                 |

**Notes:** Values in table are standardized beta coefficients. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . T1 = Time 1; T2 = Time 2;  $\Delta T2 - T1$  = Residual scores of the regression of Time 2 score on Time 1 score

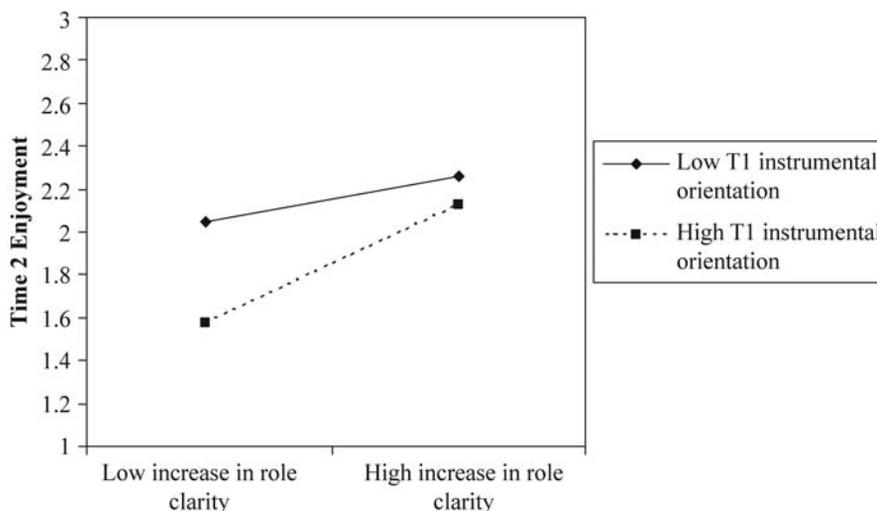
The interaction between T1 instrumental value and  $\Delta$  role clarity was significant in explaining enjoyment ( $\beta = 0.14, p < 0.05$ ). Graphical representation of the significant interaction that is presented in Figure 1 was derived from simple slope analysis with the unstandardized regression coefficients (B values) of the regression lines for employees high (1 SD above the mean) or low (1 SD below the mean) on the moderator variable.

Figure 1 indicates that an increase in job clarity was more beneficial for enjoyment among employees with high instrumental value than among those with intrinsic orientation. However, simple slope analysis showed that none of the groups had a slope that was significantly different from zero ( $B = 0.24, t(123) = 0.29, n.s.$  for high instrumental orientation;  $B = 0.07, t(123) = 0.22, n.s.$  for low instrumental orientation). This provides partial support for  $H1$ , as one of the four possible interactions was significant.

*Longitudinal relations*

All variables were modeled in SEM as single-indicator latent factors. The use of latent variables with multiple indicators was avoided in order to have sufficient cases for the number of parameters to be estimated. All latent factors were corrected for random measurement error by setting the random error variance of each construct equal to the product of its variance and one minus its internal consistency (Jöreskog and Sörbom, 1993). A series of nested models was fit to the data. First of all, a model with stability paths (i.e. the path of the Time 1 to Time 2 measurement of the same variables) and synchronous (within-wave) correlations was specified (Model 1). This model exhibited deficient fit (cf. Table III).

$H2$  suggested reciprocal relationships between work pressure and need for recovery. Therefore, we added the lagged paths from T1 work pressure to T2 need for recovery and from T1 need for recovery to T2 work pressure. Both paths were significant ( $\beta = 0.40, p < 0.001, \beta = 0.18, p < 0.05$ , respectively) and the addition of these paths significantly improved the model fit,  $\Delta\chi^2(df2) = 25.38, p < 0.001$ . Thus,  $H2$  was supported.



**Figure 1.** The effect of instrumental orientation on the relationship between role clarity and enjoyment

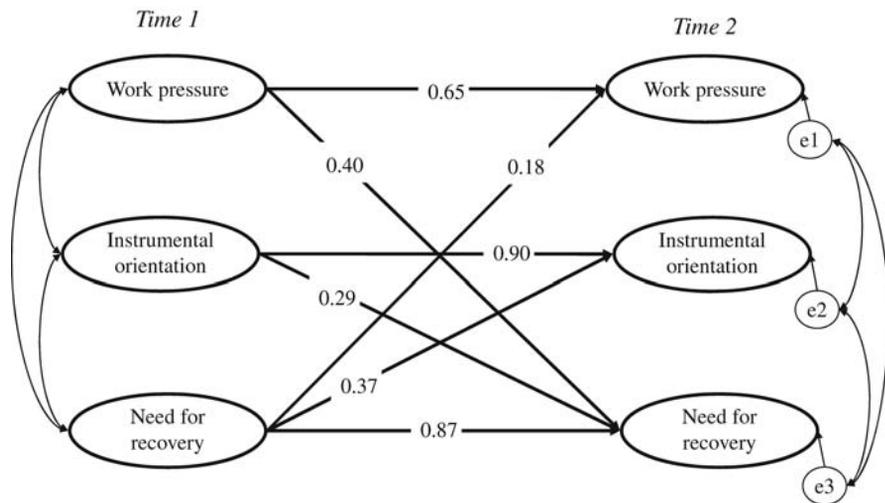
*H3* suggested reciprocal relationships between instrumental orientation and need for recovery. To test this hypothesis, we added to the previous model the paths from T1 instrumental orientation to T2 need for recovery and from T1 need for recovery to T2 instrumental orientation. Both paths were positive and significant ( $\beta = 0.29, p < 0.01, \beta = 0.37, p < 0.01$ , respectively). The model significantly improved by adding these relationships,  $\Delta\chi^2 (df2) = 15.18, p < 0.001$ . This provides support to *H3*. Figure 2 displays the paths of the final model.

In order to test the alternative hypothesis that work pressure and instrumental orientation are related, we added the lagged paths from T1 work pressure to T2 instrumental orientation and from T1 instrumental orientation to T2 work pressure to the previous model. As expected, none of these paths were significant. Finally, we conducted Sobel tests to see whether work pressure and instrumental orientation were indirectly related through need for recovery. The indirect relationship T1 work pressure  $\rightarrow$  T2 need for recovery, T1 need for recovery  $\rightarrow$  T2 instrumental orientation was significant,  $z = 2.81, p < 0.01$ . The indirect relationship T1 instrumental orientation  $\rightarrow$  T2 need for recovery, T1 need for recovery  $\rightarrow$  T2 work pressure was also significant,  $z = 1.69, p < 0.05$  (1-tailed).

| Model description                                 | $\chi^2$ | df | <i>p</i> | AGFI | NFI  | NNFI | CFI  | RMSEA |
|---|----------|----|----------|------|------|------|------|-------|
| M 1. Stability                                    | 41.69    | 7  | 0.001    | 0.74 | 0.85 | 0.73 | 0.87 | 0.20  |
| M 2. Work pressure-need for recovery              | 16.31    | 5  | 0.006    | 0.83 | 0.94 | 0.88 | 0.96 | 0.14  |
| M 3. Instrumental orientation – need for recovery | 1.13     | 3  | 0.771    | 1.00 | 1.00 | 1.00 | 1.00 | 0.00  |
| M 0. Null-model                                   | 286.49   | 15 |          | 0.43 |      |      |      | 0.39  |

**Table III.**  
Fit statistics of the various nested models

**Notes:** *n* = 123. AGFI = Adjusted goodness of fit; NFI = Normed fit index, NNFI = Non-normed fit Index, CFI = Comparative fit index, RMSEA = Root mean square error of approximation



**Figure 2.**  
Results of structural equation modeling (maximum likelihood estimates)

**Note:** *n* = 123

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## Discussion

The aim of this study was to examine the role of instrumental vs intrinsic orientation toward work in the motivational and health impairment process of the Job Demands–Resources model. As hypothesized, we have found some evidence for the moderating role of work orientations in the motivational process that explained the experience of flow at work. Our results suggest that flow components are probably within a resourceful work environment, e.g. environments with high motivating potential (Bakker, 2005; Demerouti, 2006). However, the degree to which flow components are experienced within a resourceful work environment is influenced by the basic motivation of individuals regarding whether they work for income or for fulfillment. Moreover, we have found that work orientations were reciprocal with need for recovery, which, in its turn, over time was also reciprocal with work pressure. In other words, work pressure and work orientations were indirectly related through need for recovery, meaning that work orientations are both an initiator and an outcome of the health impairment process. Need for recovery can be viewed as an early signal of diminished wellbeing and is considered a precursor of exhaustion (Demerouti *et al.*, 2009). Next to the importance of longitudinal evidence (Sluiter *et al.*, 2003), with this study we contribute to the literature by showing that shorter time effects (over the period of one month) of job demands on need for recovery are also visible.

### *Role of work orientations in the motivational process*

Because employees with an instrumental work orientation focus primarily on obtaining external indicators of worth through their work, we expected that an increase in job resources over time would be particularly beneficial for them. We have found that employees with an instrumental work orientation at Time 1 enjoyed their work more, one month later, when work goals had become clearer in a period of four weeks, compared to employees who had an intrinsic work value. While in fact only one of four interactions was significant, one should bear in mind that this interaction predicted outcomes over time and after controlling for stability effects. Thus, in our opinion, this one interaction has more value than interactions that make predictions within time. These findings indicate that core work orientations influence to some extent the strength of the motivational process in the JD-R model, such that the motivating role of job resources is stronger for employees with an instrumental orientation compared to those with an intrinsic orientation. Contrary to the widely accepted view in the motivation literature that extrinsically oriented employees value only increases in income (cf. Harpaz, 2002), our results suggest that even employees who work to earn money and not to obtain fulfillment from their job may benefit when they are provided with a more enriched work environment that includes motivational aspects such as clear goals.

This finding may have interesting implications for the theory of motivation at work. For example, Hackman and Oldham (1980) argued that motivational factors such as job feedback are most beneficial to individuals with high growth need strength (GNS), that is, individuals who are high in intrinsic work orientation, rather than to individuals with low growth need strength, who tend to be high on instrumental or extrinsic orientation. However, our results suggest that, at least with regard to feedback as a key motivator, employees high on instrumental orientation – who are likely to be low on GNS – will also benefit from the resource of feedback.

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*Role of work orientation in the health impairment process*

As we hypothesized, work pressure was reciprocal with need for recovery. This finding is consistent with earlier studies (Demerouti *et al.*, 2004; Demerouti *et al.*, 2009) in which longitudinal reciprocal relationships between job demands and exhaustion were found. Demands such as a heavy workload seem to initiate a negative spiral at work because they deplete the energy reserves of employees. In the present study, we have shown that this negative spiral does not end with depleted energy (or high need for recovery) but persists, as need for recovery in its turn was reciprocal with an instrumental orientation. The finding that an instrumental work value was detrimental for need for recovery over time supports earlier cross-sectional studies in which it was found that having an extrinsic, relative to an intrinsic, work value orientation is related to less vitality and more exhaustion (e.g. Vansteenkiste *et al.*, 2007). One explanation for this relationship provided by Vansteenkiste and his colleagues is that these orientations thwart the satisfaction of basic psychological needs for autonomy, competency, and relatedness at work. Additionally, need for recovery stimulated an instrumental work orientation over time, which suggests that employees react to aversive work experiences by developing such orientation in order to restore equitable relationships between investments and outcomes.

Overall, our findings suggest the following health impairment process: work pressure ↔ need for recovery ↔ instrumental work orientation. This pattern of relationships means that an instrumental orientation is both an initiator and an outcome in the health impairment process. Job demands promote an instrumental work value because they increase employees' need for recovery. Aversive (demanding) conditions exhaust individuals and consequently these individuals view their work as a means toward high earnings. Moreover, an instrumental orientation ultimately leads to a demanding work environment because it seems to increase individuals' need for recovery, resulting in a reduced ability to fulfill their work tasks, and consequently in an increase of backlog of work. Hence, a high need for recovery can be the result not only of demanding aspects of work but also of internal individual characteristics that act as personal demands. Thus, having an instrumental, relative to an intrinsic, value seems to exhaust employees because it poses an additional demand on them.

*Study limitations*

The first limitation of our study concerns the utilization of self-report data. This could have potentially inflated correlations due to common method variance and memory effects (Podsakoff *et al.*, 2003). However, for several reasons, we believe that this was not a major problem in our study. 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, except for the autocorrelations and the correlations between the flow dimensions, all other correlations were quite modest (below 0.41).

Second, our hypotheses were tested with a relatively small sample of 123 workers. Although our response rate was quite acceptable, this small sample could, in itself, lead to two problems. First, there is the possibility that the low *N* leads to insufficient power to reject the null hypothesis. However, the results showed that this did not apply to this study, as several hypotheses were confirmed. Second, a small sample could also mean that a small number of outliers could disproportional affect the findings. As the results

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reported here were in full agreement with those obtained in previous research, it would appear that outliers did not strongly affect our findings.

Third, the study focused only on one job demand and two job resources. Although work pressure is a demand applicable to every occupational context, according to LePine *et al.* (2005), it concerns a challenge demand. Therefore, we cannot generalize the current findings to hindrance demands like role conflicts. Moreover, the job resources that we examined, i.e. role clarity and supervisor feedback, signal external aspects of job design that involve other people at work as informants. The open question for future research is whether the findings apply also to job resources that concern task-related aspects such as job autonomy and task variety.

#### *Implications for research, practice, and society*

Our findings could provide employers and managers with valuable information on how to most effectively allocate their resources to contribute to higher employee motivation and engagement at work, which is particularly important during these times of severe global recession and high competition. Perhaps the most important contribution of our study is that even employees who work to earn money and not obtain psychological fulfillment by their job may benefit when they are provided with job resources associated with motivational aspects at work. Thus, while increasing the clarity of work goals (through job redesign approaches) is beneficial for all employees, we showed that it would be particularly beneficial for those employees who value external rewards. Second, organizations should be aware that increased work pressure creates a risk factor for individuals, as it is related to diminished levels of energy or increased need for recovery, and consequently to a more instrumental rather than intrinsic work orientation. Therefore, workload should be acceptable and job resources sufficient as such working conditions are related to better wellbeing, which can further contribute positively to society as a whole in the form of active participation of employees in their family and societal life (Voydanoff, 2005).

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**Further reading**

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