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The impact of social comparisons of job demands and job control on well-being

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Abstract

We extended the job demand–control model by including a social comparison perspective and hypothesised that an employee's work-related well-being is to some degree relative to the perceived work environment of coworkers rather than absolute (in terms of isolated effects of individual work characteristics). Hence, we account for the social context when examining the effects of individual job characteristics. Using a lagged study design with two measurement times eight weeks apart, we examined the effects of the (in) congruence between one´s own job demands and job control with the perceived job demands and job control of coworkers on job satisfaction, emotional exhaustion, cynicism, and professional efficiency. Findings from polynomial regression analyses and response surface methodology revealed that perceiving coworkers as having either higher or lower demands than oneself is associated with lower job satisfaction and higher levels of emotional exhaustion. This provides partial support for our hypotheses. We found first-time evidence that social comparison processes regarding job demands can influence employees´ well-being.

KEYWORDS

job demand–control model, organisational psychology, polynomial regression analysis, social comparison, subjective well-being

INTRODUCTION

The impact of social comparisons of job demands and job control on well-being.

Poor psychological well-being at work can result in negative behavioral reactions, such as absenteeism or turnover intentions, which costs organisations and national economies billions of dollars a year (Kocakulah et al., 2016; Maar et al., 2011). There are several models for the study of stressors at the workplace, with the job demand–control (JDC) model (Karasek, 1979; Karasek & Theorell, 1990) being one of the first and most influential. According to the model, the job demands of an individual jobholder are related to decreased psychological well-being, whereas their job control is related to increased psychological well-being (see Häusser et al., 2010, for a review). We argue that this focus on individual job demands and job control as predictors of well-being should be extended, as it neglects social context effects that could shape the associations of these individual job characteristics. Specifically, following Lerner and Tetlock´s (1999) notion that "people do not think and act in a social vacuum" (p. 270), we propose that the impact of an individual's job demands and job control critically depends on the (perceived) job demands and job control of their coworkers.

In line with this central argument, the social comparison theory (Festinger, 1954) suggests that individuals engage in social comparisons when objective criteria or comparison standards are not available. The premises of the social comparison theory have been applied to different domains of the work context (for a comprehensive review, see Greenberg et al., 2007), including applications to career success (Heslin, 2003), organisational justice perceptions (Colquitt et al., 2005), pay-level perception (Harris et al., 2008), and job performance (Buunk et al., 2001). Despite the application to this broad range of organisational contexts, social comparison processes regarding specific job characteristics, that is job demands and job control, have not yet been examined. However, the general absence of objective standards by which the level of one's own job demands and job control can be measured is likely to create the desire to compare one's own job characteristics with those of others.

One reason for the neglect of social comparisons regarding job demands and job control may be that Karasek (1979) originally developed the JDC model to describe the impact of objective work characteristics on health and well-being as the JDC model "[…] is a stress-management model of strain which is environmentally based" (Karasek, 1979, p. 287). This definition, however, puts only weak emphasis on psychological processes, particularly social cognitive processes such as social comparisons. Integrating the social comparison theory and JDC, we argue that the impact of the individual job characteristics is shaped by the social context. We posit that rather than making an isolated evaluation of how demanding a job is and how much control this job allows for, employees account for the perceived job demands and job control of relevant others (e.g. their coworkers). Accordingly, employees' reactions to their work environment are — to some degree — relative to the perceived work environment of others rather than absolute (in terms of isolated effects of individual work characteristics).

THE JOB DEMAND–CONTROL MODEL

The job demand–control model (Karasek, 1979; Karasek & Theorell, 1990) describes the impact of the work environment on well-being, emphasizing two fundamental dimensions: job demands and job control. Job demands represent stressors in the work environment, such as heavy lifting, time

pressure or interpersonal conflicts. Job control describes the autonomy employees have to control their tasks and when or where they want to carry out these tasks. Both job demands and job control exist on a continuum from low to high levels. According to the model, job demands are negatively associated with psychological well-being, whereas the model predicts a positive relation between job control and well-being (Ganster, 1989). This so-called strain hypothesis of the JDC model has been supported in numerous studies (for reviews, see, e.g., Häusser et al., 2010; de Lange et al., 2003).

With regard to specific indicators of psychological well-being, a review by Häusser et al. (2010) shows that job satisfaction and emotional exhaustion (as the major facet of the burnout construct) are the most frequently examined operationalizations of well-being in studies testing the strain hypothesis of the JDC model. Therefore, we decided to focus on these two indicators of well-being, with the strongest empirical basis. However, following Maslach et al.'s (2001) recommendation, we also included the other two burnout dimensions, cynicism and professional efficacy.

APPRAISAL and SOCIAL COMPARISON PROCESSES

Research on the JDC model is surprisingly scarce regarding the specific psychological or behavioral mechanisms linking these environmental factors to the psychological well-being of an individual (see Häusser & Mojzisch, 2017, for a discussion). As the subjective perception (or appraisal) of a stressor determines whether work characteristics improve or hamper well-being (Lazarus & Folkman, 1984), and because objective standards are often missing, we assume that individuals compare their own job demands and control with those of similar others. That is, we propose that social comparison processes enter the appraisal process insofar as they contribute to the employees' perception of whether their job demands and job control pose a threat or not. According to the transactional stress model (Lazarus & Folkman, 1984), potential stressors are evaluated as to whether they are a potential threat in a primary appraisal process. If a situation is appraised to be a threat, available resources are evaluated regarding whether they are sufficient to cope with the stressor in a secondary appraisal process. With respect to the JDC model, job demands are potential stressors that are appraised in the primary appraisal process (e.g. "Is the complexity of the given task threatening for me?"). In the secondary appraisal, an individual appraises his or her resources to cope with these stressors (e.g. "Do I have the skills to deal with such a complex (and threatening) task?"). During the secondary appraisal, job control is of crucial importance, as control provides coping resources (e.g. scheduling control) to deal with the stressors. We assume that individuals appraise job demands while accounting for the job demands of their coworkers (e.g. "Is my task more complex as compared to the tasks of my colleagues?"), with unfavorable comparisons resulting in higher perceived threat. Similarly, during the secondary appraisal, individuals compare their own job control with the job control of their colleagues (e.g. "Do I have more or less scheduling control as compared to my colleagues?"), with unfavorable comparisons resulting in lower perceived coping opportunities, and ultimately in lower psychological well-being and higher stress.

Generally, research on social comparison processes has emphasized that the emotional reaction to social comparisons with others critically depends on the direction of comparison, that is downward comparison versus upward comparison — or as we put it: favorable versus unfavorable comparison. Typically, upward comparisons produce negative effects (Muller & Fayant, 2010), because comparisons with a better-off reference (= unfavorable comparisons) can produce negative feelings such as envy, negative tension, resentment or feelings of dejection (Adams, 1963; Exline et al., 2004).

Although unfavorable comparisons can also be motivating as they provide successful models (e.g. Guyer & Vaughan-Johnston, 2018; Wood et al., 1985), particularly under conditions of threat, unfavorable comparisons are likely to have a negative impact on self-esteem, subjective well-being, and mood (Guyer & Vaughan-Johnston, 2018; Wills, 1981).

Taken together, we posit that unfavorable comparisons of job demands (own demands > perceived coworkers' demands) and job control (own control < perceived coworkers' control) should be negatively associated with well-being. Therefore, we extend the "classic" predictions of the JDC model's strain axis, by putting forward hypotheses on unfavorable comparisons with respect to relative job characteristics. Regarding the choice of social comparators, we defined coworkers as structurally equivalent actors (cf. Shah, 1998), meaning colleagues from the same organisation with whom employees usually work closely together:

Hypothesis 1   *Employees who perceive their own job demands as higher than their coworkers' will report lower well-being (i.e. lower job satisfaction and higher burnout).*

Hypothesis 2   *Employees who perceive their own job control as lower than their coworkers' will report lower well-being (i.e. lower job satisfaction and higher burnout).*

The prediction of which emotional reactions to expect from favorable comparisons of job characteristics (perceiving coworkers as having lower demands or higher control), however, is less clear. According to Wills' (1981) downward comparison theory, comparing oneself favorably with others should have a positive impact, which should be especially true for individuals under stress. This relationship has been supported by several empirical studies (e.g. Buunk et al., 2005; Guyer & Vaughan-Johnston, 2018). Yet, favorable comparisons may also reduce psychological well-being. Particularly, favorable comparisons might result in guilt and discomfort (Adams, 1963; Exline et al., 2004; Harris et al., 2008), violation of the need for competence (Deci & Ryan, 2008), or a superior position that can even produce hostile behavior by coworkers (Exline et al., 2004; Salovey & Rodin, 1984). As, to the best of our knowledge, the present study is the first to examine relative effects of job demands and job control, and as the literature on favorable comparisons is diverse and context-specific, we refrain from formulating directed hypotheses, but will address the issue of consequences of favorable incongruence in a more exploratory manner. We will also return to this issue in the discussion in more detail.

METHOD

To test our hypotheses, we invited German employees aged 18 to 67 from diverse areas of work to participate in a preregistered online study (see preregistration at: https://osf.io/gd4w9?view_only=1d157 59e9bcf43f0a2cf002c7ca9215a). To reduce the danger of common-method bias (Podsakoff et al., 2003), we conducted the survey with two waves eight weeks apart. Following a rationale of a lagged two-wave design, for the analysis, we used the answers on job demands and job control (predictor variables) from Time 1 and the measures on job satisfaction and well-being from Time 2 (outcomes). The decision for a retest interval of eight weeks was guided by recent recommendations from research on stressor–strain relationships (Dormann & van de Ven, 2014). These recommendations state that time lags should be chosen in such a way that they map onto the research question and so that they are feasible (e.g. not resulting in too high dropout rates) (Junker et al., 2020). With a retest interval of 8 weeks, we attempt to meet both requirements. Moreover, various studies have shown that

patterns of burnout can react at short notice (Rowe, 2000; Schaufeli, 1995), so we considered a retest interval of eight weeks to be appropriate.

Participants and procedure

Participants completed an online questionnaire administered via the online platform SoSci Survey (Leiner, 2014). Participants were recruited via social media, and we also contacted several companies directly via email. Based on previous research applying polynomial regression analyses (e.g. Byza et al., 2017; Riggs & Porter, 2017; Rupprecht et al., 2016), we targeted a sample size of 200. To account for the potential need to exclude some participants (because of expected dropouts from T1 to T2), we over-recruited at the first measurement point by 50%. Finally, 294 employees participated in the first wave, of which 192 also participated in the second wave (35% dropout), who thus formed the final sample for our analyses. Informed consent was obtained from all subjects.

Participants' age ranged between 18 and 62 years ($M = 28.37$; $SD = 11.89$), 64% were women. The majority of the participants in our sample were married (41%) or in a relationship (31%), 20% were single. Fifty-six per cent had a university degree, 21% secondary school education, 17% graduated from high school, and 6% had other degrees. All of the participants were employed, and none were on leave (such as maternity leave, parental leave, sabbaticals, or longer holidays). The majority worked full time with a minimum of 35 hr per week (80%), and 20% worked part time with at least 15 hr per week. All participants worked in companies with at least ten employees, most of them in companies with more than 500 employees (70%) or with 100–499 employees (18%). Their overall work experience was as follows: 27% with less than 5 years, 18% with 5 to 9 years, 24% with 10 to 19 years and 32% with 20 years or more of work experience. The tenure ranged between less than 1 year and 43 years ($M = 11.70$, $SD = 10.77$). The sample consisted of employees from a broad range of areas (e.g. teacher, civil servant, nurse, market researcher, recruitment, software engineer, professional fire brigade, social worker). The monthly net income of 51% of the sample was between 2,000€ and 3,500€, 32% stated that they earned less than 2,000€, 14% earned more than 3,500€, and 4% provided no information. The study was approved by the local ethics committee and preregistered with the Open Science Framework prior to data collection.

In the first wave (T1), participants were asked to provide their demographic information and answered questions on how they perceived their own job demands and job control. To assess the impact of relative job demands and job control, the participants rated the job demands and job control of those coworkers they usually work closely with. Afterward, they answered questions regarding job satisfaction and burnout. An identical questionnaire was used in the second wave (T2).

Measures

wn job demands

For the measurement of own job demands, we used six items (e.g. "*Do you have to work very fast?*") from the Copenhagen Psychosocial Questionnaire (COPSOQ; Nübling et al., 2005). Participants indicated their agreement with the items on a scale from 1 = *(almost) never* to 5 = *always*. Cronbach's alpha was 0.73 (T1) and 0.74 (T2).

Own job control

For the measurement of own job control, we used eight items (e.g. "*Do you have any influence on what you do in your work?*") from the COPSOQ (Nübling et al., 2005). As for demands, participants indicated their agreement with the items on a scale from 1 = *(almost) never* to 5 = *always*. Cronbach's alpha was 0.75 (T1) and 0.78 (T2).

Coworkers' job demands

For the measurement of perceived coworkers' job demands, we used a customized version of the COPSOQ (Nübling et al., 2005) in which we adapted the six statements to refer to the job demands of others (e.g. "*Does your colleague have to work very fast?*"), but used the same items and the same 5-point Likert scale as for the rating of own demands. Cronbach's alpha for perceived coworkers' demands was 0.79 (T1) and 0.76 (T2).

Coworkers' job control

In line with the measurement of perceived coworkers' job demands, for the measurement of perceived coworkers' job control we adapted the eight items from the COPSOQ (Nübling et al., 2005) to refer to the job control of others (e.g. "*Do your colleagues have any influence on what they do in their work?*"), using the same 5-point Likert scale. Cronbach's alpha for perceived coworkers' control was 0.79 (T1) and 0.80 (T2).

Job satisfaction

We measured job satisfaction with a single-item measure ("*If you think about your overall work situation, how satisfied are you with your work as a whole?*") on a Likert scale ranging from 1 = *very unsatisfied* to 5 = *very satisfied*. We decided to use this single-item measure as Wanous et al. (1997) meta-analytically found that such single-item measures of overall job satisfaction are an acceptable alternative to scale measures when the space of the questionnaire is limited and researchers have to make choices about how many statements to include in their survey. Moreover, single-item measures of job satisfaction are frequently used in JDC research (Häusser et al., 2010).

Burnout

We used the German version of the Maslach Burnout Inventory (MBI-GS-D; Büssing & Glaser, 1999) to measure emotional exhaustion (5 items; e.g. "*I feel emotionally exhausted through my work*") as well as the two other dimensions of the burnout construct, namely cynicism (5 items; e.g. "*I doubt the meaning of my work*") and professional efficiency (6 items; e.g. "*In my opinion, I do a good job*"). Participants indicated their agreement with the items on a scale from 0 = *this feeling never occurs* to 5 = *very often*. For emotional exhaustion, Cronbach's alphas were 0.87 at Time 1 and 0.88 at Time 2; for cynicism, they were 0.82 at Time 1 and 0.83 at Time 2; and for professional efficiency, they were 0.69 at Time 1 and 0.72 at Time 2.[1]

Analysis

To test our core assumption that incongruence in the form of unfavorable perceptions of own job characteristics as compared to perceived coworkers' job characteristics negatively relates to well-being, we employed polynomial regression analysis in SPSS Statistics 25, together with response surface methodology, which has more explanatory power than difference scores (Shanock et al., 2010). The use of difference scores to examine incongruence effects has been criticized as difference scores reduce a three-dimensional relationship between two predictor variables and an outcome variable to a two-dimensional relationship (Edwards, 2002). In contrast, polynomial regression analysis provides nuanced insights into the joint effects of two predictor variables and allows three-dimensional response surfaces to be generated in order to examine the precise nature of these effects (Byza et al., 2017; Riggs & Porter, 2017). As a feature of this analysis, we examined whether the discrepancy between participants' own job characteristics and perceived coworkers' job characteristics predicts variation in well-being over and above the absolute (i.e. isolated) effects of the individuals' job characteristics. In the following, we exemplarily describe our analytical strategy using job demands; the procedure for job control was identical.

As a first step, we tested whether the data contained a sufficient share of people who report discrepant values (compared to in-agreement values) for relative job demands in either direction of incongruence: a) own job demands higher than perceived coworkers' job demands or b) own job demands lower than perceived coworkers' demands. Following recommendations from Shanock et al. (2010), we defined a value as discrepant when the standardised score on one predictor (own job demands) was at least half the standardised deviation above or below the standardised score on the other predictor (perceived coworkers' demands).

Next, we ran polynomial regression analyses using the following equation: $Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2$, where Z is the dependent variable (e.g. emotional exhaustion at T2), X is Predictor 1 (own demands at T1), and Y is Predictor 2 (perceived coworkers' demands at T1). In the polynomial regression analysis, we entered covariates in Step 1 if there was a significant correlation of the potentially confounding variable(s) with the indicators of well-being at Time 2. In Step 2, we entered own demands and perceived coworkers' demands. In Step 3, we added the squared terms of each variable and their cross-product. Before calculating the three second-order polynomial terms — namely X^2, Y^2, and XY — we scale-mean-centered the predictors in order to reduce the danger of multicollinearity (Aiken & West, 1991). We ran separate analyses for each of the four indicators of well-being (job satisfaction, emotional exhaustion, cynicism, and professional efficiency) for job demands and for job control (hence, eight polynomial regression models in total).

If the inclusion of the second-order polynomial terms significantly increased R^2, or if any of the individual second-order terms were significant, the requirements for response surface methodology were met (Kreiner, 2006). If one of these two conditions was met in a model, we calculated the surface patterns (a_1-a_4) and plotted a three-dimensional response surface for visual inspection of the data.

The four surface values ($a_1 - a_4$) indicate whether different relationships between the predictor variables (own demands versus. perceived coworkers' demands) relate to the response variable (indicators of well-being). Here, each of the four surface values allows a unique question about how (mis)matches matter to be answered: The surface values $a_1 - a_2$ reflect the tests along the line of congruence and provide information on whether and how matches between the predictor variables matter. On the other hand, the surface values $a_3 - a_4$ reflect the tests along the line of *in*congruence, indicating whether and how *mis*matches between the predictor variables matter. In Hypotheses 1 and 2, we assumed an incongruence effect, predicting negative consequences for well-being from an unfavorable relation of job demands (own demands > perceived coworkers' demands) and job control

TABLE 1 Means, standard deviations (*sd*), and correlations among study variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Gender	—														
2 Age	0.05	—													
3 Family status	0.03	−0.50**	—												
4 Working hours	0.24**	0.08	−0.15*	—											
5 Occupation size	0.12*	0.27**	−0.06	−0.05	—										
6 Tenure	0.07	0.76**	−0.38**	0.08	0.26**	—									
7 Work experience	0.03	0.88**	−0.50**	0.11	0.23**	0.80**	—								
8 Own demands	−0.03	0.20**	−0.11	−0.06	0.00	0.15*	0.15*	—							
9 Coworkers' demands	−0.04	0.11	−0.10	0.01	−0.02	0.13*	0.10	0.71**	—						
10 Own control	−0.23**	0.03	0.01	0.00	0.01	0.02	0.06	−0.04	0.10	—					
11 Coworkers' control	−0.14*	−0.04	0.06	0.01	0.05	−0.07	0.00	−0.05	−0.02	0.78**	—				
12 Job satisfaction	−0.04	0.04	0.01	0.00	−0.03	0.04	0.06	−0.19**	−0.10	0.31**	0.23**	—			
13 Emo. exhaustion	0.02	−0.04	−0.04	−0.07	−0.04	0.00	−0.04	0.36**	0.19**	−0.25**	−0.14*	−0.40**	—		
14 Prof. efficiency	−0.13*	0.10	−0.01	0.05	−0.10	0.12	0.12*	−0.05	0.13*	0.34**	0.16*	0.45**	−0.42**	—	
15 Cynicism	−0.03	−0.06	−0.02	0.02	−0.01	−0.06	−0.07	0.10	0.01	−0.34**	−0.21**	−0.54**	0.60**	−0.58**	—
Mean	1.64	38.37	3.14	1.20	5.52	140.38	3.26	3.11	3.07	3.37	3.29	3.64	2.66	3.78	2.32
SD	0.48	11.89	1.84	0.40	0.87	129.28	1.29	0.64	0.65	0.63	0.62	1.02	1.01	0.56	1.03
Range								1 – 5	1 – 5	1 – 5	1 – 5	1 – 5	0 – 5	0 – 5	0 – 5

Note: For gender: 1 = male, 2 = female; for family status: married and lives with partner, married but does not live with partner, registered life partnership, single, divorced, widowed coded 1 to 7; for working hours: 1 = 35 hr or more, 2 = 15 to 34 hr; for tenure mean: shown in months.

*$p < .05$ (one-tailed);

**$p < .01$ (one-tailed).

(own control < perceived coworkers' control). Consequently, we will briefly explain how to interpret the tests along the line of incongruence.[2]

Tests along the line of incongruence (a_3 – a_4)

The a_3 coefficient indicates the slope along the line of incongruence, the a_4 indicates the curvature along this line. For an incongruence effect, as postulated in Hypotheses 1 and 2, the a_3 should not be significant, whereas the a_4 coefficient should be significant. A further prerequisite for our hypotheses to be confirmed is that the coefficients a_1 and a_2 must not significantly differ from 0. A positive a_4 value indicates a convex (upward) curve, suggesting that the outcome variable increases more sharply as the two predictors (e.g. own demands and perceived coworkers' demands) diverge in either direction. A negative a_4 reveals a concave (downward) curve, indicating that the outcome variable decreases more sharply as the two predictors diverge.

RESULTS

Table 1 shows means, standard deviations, and correlations for all variables relevant for the analysis. With regard to potentially confounding variables, none of the four indicators of well-being was significantly related to age, family status, working hours, organisational size, or tenure (all $rs < |0.12|$, all $ps > 0.05$). Gender ($r = -0.13$. $p = .03$) and work experience ($r = 0.12$, $p = .049$) were significantly correlated with professional efficiency, but with none of the other three outcomes (all $rs < |0.07|$, all $ps > 0.17$). Therefore, we controlled for gender and work experience in all models with professional efficiency.

Next, we checked for the percentage of discrepant values to decide whether or not we could proceed with polynomial regression and response surface analysis. The analysis revealed a sufficient percentage of discrepant ratings for both directions of incongruence: Twenty-one per cent of the sample reported that they perceive their own job demands to be higher and 21% reported that they perceive their own job demands to be lower than their coworkers' job demands. For job control, 16% of the sample perceived to have higher job control and 19% perceived to have lower job control than their coworkers. Thus, the data were suitable for the planned analysis (see Supplemental Material 1).

Tables 2 and Supplemental Material 2 (job demands) and Supplemental Materials 3 and 4 (job control) show the detailed results of each polynomial regression analysis. As we did not predict effects along the line of congruence, we report the results for the surface patterns a_1 and a_2 in Tables 2, but do not discuss them in detail.[3]

Effects of own job demands and own job control on job satisfaction and burnout

The higher the participants perceived their own job demands to be at Time 1, the lower they rated job satisfaction and professional efficiency and the higher they perceived their level of emotional exhaustion to be at Time 2 (all $R^2 > |0.27|$, all $ps < 0.03$). However, own job demands did not significantly predict cynicism ($R^2 = 0.29$, $p = .08$). The regression analysis further fully supports the "classic" JDC strain axis effects regarding own job control: The higher the participants rated their own job control to

TABLE 2   Polynomial regression results, job demands with job satisfaction and emotional exhaustion

	Job satisfaction		Emotional exhaustion	
	Model 1	Model 2	Model 1	Model 2
Variable	b (SE)	b (SE)	b (SE)	b (SE)
Constant	3.67 (0.07)***	3.82 (0.10)***	2.60 (0.07)***	2.48 (0.10)***
Predictors				
Own demands	−0.37 (0.16)*	−0.29 (0.17)	0.70 (0.15)***	0.65 (0.15)***
Perceived coworkers' demands	0.10 (0.16)	0.07 (0.16)	−0.20 (0.15)	−0.18 (0.15)
Own demands squared		−0.57 (0.25)*		0.51 (0.23)*
Own demands X Perceived coworkers' demands		0.37 (0.35)		−0.57 (0.33)
Perceived coworkers' demands squared		−0.05 (0.23)		0.19 (0.21)
R^2	0.04	0.07	0.14	0.16
F	3.65*	2.71*	14.81***	7.01***
ΔR^2		0.03		0.02
ΔF		2.04		1.70
Surface tests				
a_1 (congruence slope)	−0.21		0.47	
a_2 (congruence curvature)	−0.25		0.13	
a_3 (incongruence slope)	−0.36		0.83	
a_4 (incongruence curvature)	−0.98*		1.27**	

Note: $N = 192$ b = unstandardised regression coefficients. SE = standard error. $a_1 = (b_1 + b_2)$, where b_1 is beta coefficient for own demands, and b_2 is beta coefficient for perceived coworkers' demands. $a_2 = (b_3 + b_4 + b_5)$, where b_3 is beta coefficient for own demands squared, b4 is beta coefficient for the cross-product of own demands and perceived coworkers' demands, and b5 is beta coefficient for perceived coworkers' demands squared. $a_3 = (b_1 − b_2)$. $a_4 = (b_3 − b_4 + b_5)$.

*$p < .05$;

**$p < .01$;

***$p < .001$.

be at Time 1, the lower their emotional exhaustion and cynicism, and the higher their job satisfaction and professional efficacy at Time 2 (all $R^2 > |0.47|$, all ps < 0.01).

Perceived incongruence of job characteristics

In the models analyzing the impact of relative demands on job satisfaction and relative demands on emotional exhaustion, adding the second-order terms did not result in a significant change in R^2. However, one of the individual second-order terms (X^2) was significant, so the preconditions to

interpret the surface patterns were met (Kreiner, 2006) (see Table 2). The models for professional efficiency and cynicism failed to achieve a significant change in R^2 when adding the second-order terms (all $\Delta R^2 < |0.02|$, all ps > 0.41), and also, none of the individual second-order terms were significant (all bs $< |0.20|$, all ps > 0.11) (see Supplemental Material 2). Thus, neither of the two preconditions to interpret the surface patterns were met, so we renounced further analysis on these two indicators of well-being.

Next, we calculated the surface patterns (a_1-a_4) and plotted the three-dimensional response surface to examine the relation between relative job demands and emotional exhaustion as well as relative job demands and job satisfaction (see Hypothesis 1).

Relative job demands and emotional exhaustion

For emotional exhaustion, the slope along the line of incongruence was not significant ($a_3 = 0.83$, $p = .17$). However, the curvature along the line of incongruence was positive and significant ($a_4 = 1.27$, $p = .004$). This means that the relation between incongruence and emotional exhaustion follows a U-shape: emotional exhaustion increased as the discrepancy between own job demands and perceived coworkers' job demands increased in either direction (see also Figure 1).

Relative job demands and job satisfaction

The slope along the line of incongruence was not significant ($a_3 = -0.36$, $p = .23$). However, in line with the results for emotional exhaustion, the curvature along the line of incongruence was negative and significant ($a_4 = -0.98$, $p = .04$), indicating an inverted U-shaped parabola. This means that as the
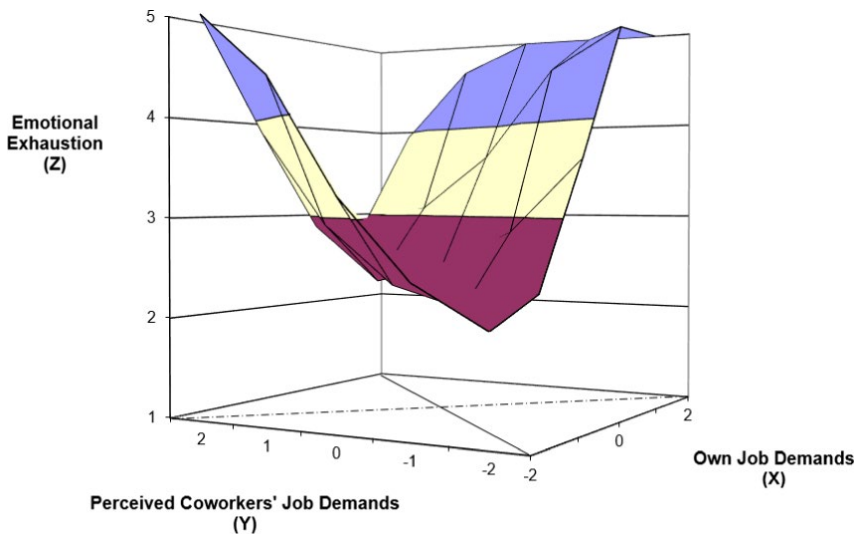

FIGURE 1 Emotional Exhaustion as Predicted by Own Job Demands — Perceived Coworkers' Job Demands Discrepancy Levels

Note: The black line on the floor of the graph depicts the line of perfect agreement between own job demands and perceived coworkers' job demands. The dashed line on the floor of the graph depicts the line of incongruence between own job demands and perceived coworkers' job demands [Colour figure can be viewed at wileyonlinelibrary.com]
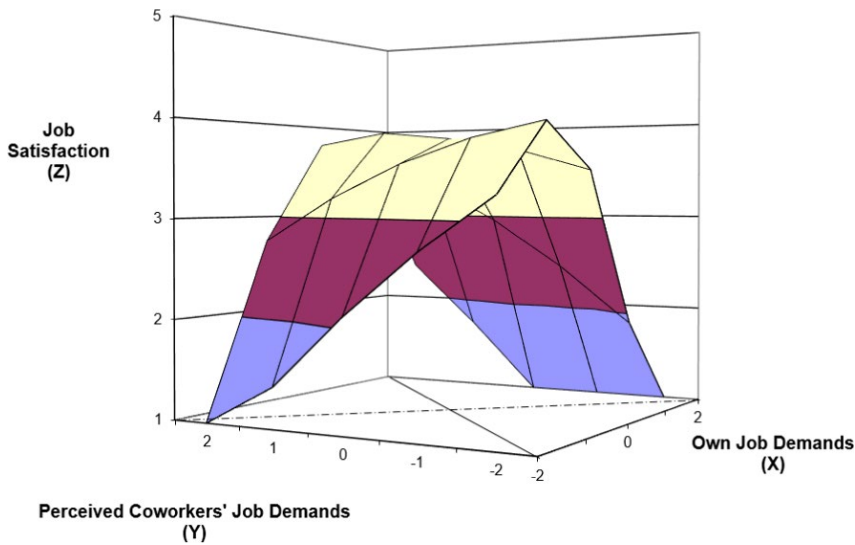
FIGURE 2 Job Satisfaction as Predicted by Own Demands — Perceived Coworkers' Demands Discrepancy Levels

Note: The black line on the floor of the graph depicts the line of perfect agreement between own job demands and perceived coworkers' job demands. The dashed line on the floor of the graph depicts the line of incongruence between own job demands and perceived coworkers' job demands [Colour figure can be viewed at wileyonlinelibrary.com]

discrepancy between own job demands and perceived coworkers' job demands increased — no matter in which direction — job satisfaction decreased (see also Figure 2).

Hence, Hypothesis 1 was partially supported.

Relative job control and well-being

All models for relative job control (see H2) failed to achieve a significant change in R^2 when adding the second-order terms (all $\Delta R^2 < |0.03|$, all $ps > 0.17$), and also, none of the individual second-order terms were significant (all $bs < |0.68|$, all $ps > 0.05$) (see Supplemental Materials 3 and 4). Thus, none of the models indicated an incongruence effect, and response surface methodology was not appropriate for further analysis.

DISCUSSION

The purpose of our study was to better understand the stressor–strain relationship that is examined in the JDC model by accounting for the social context in which job characteristics unfold their effects. Although JDC research is implicitly based on the assumptions that individuals objectively rate their job characteristics and that these ratings are made independently of the job characteristics of others, we hypothesised that an employee's reaction to a work experience is relative to the job characteristics of their coworkers. Based on the social comparison theory (Festinger, 1954), we hypothesised that the perceived difference between own job demands and job control as compared to coworkers' job demands and job control affects psychological well-being. In particular, we assumed that unfavorable comparisons of job demands (own demands > perceived coworkers' demands) and job control (own

control < perceived coworkers' control) should negatively affect well-being. For favorable comparisons (relative low demands and relative high control), we refrained from formulating directed hypotheses as the prediction was less clear, but examined them in a more exploratory manner.

Replicating earlier research (see Häusser et al., 2010, for a review), our results supported the "classic" strain hypothesis of the JDC model (i.e. isolated effects of individual job demands and job control). The results from polynomial regression analyses and response surface methodology provide initial support that social comparisons play a role in work-related well-being. Although the analysis did not reveal incongruence effects for professional efficiency and cynicism, we found that the incongruence between own demands and those perceived in coworkers in either direction was negatively related to job satisfaction and emotional exhaustion. Emotional exhaustion and job satisfaction also show the most robust relationships with individual (isolated) job demands (cf. Häusser et al., 2010); hence, the relative effect for these two indicators of well-being is of particular interest.

Importantly, a discrepancy not only in an unfavorable but also in a seemingly favorable direction, whereby the individuals perceived themselves as having lower job demands than their coworkers, was negatively related to job satisfaction and positively related to emotional exhaustion. Different mechanisms might explain why favorable incongruence between own job demands and perceived coworkers' job demands results in impaired psychosocial well-being: A growing body of research indicates that individuals may experience discomfort or even guilt when they perceive themselves as being in a better position than relevant others (Exline et al., 2004; Harris et al., 2008). According to Adams' equity theory (1963), employees, who perceive themselves as being over-rewarded compared with their colleagues, may develop feelings of guilt, which creates negative tension and dissatisfaction. Moreover, recall that being in an *un*favorable position often induces envy and resentment against those better off or feelings of dejection. These negative emotions might not only result in negative consequences for one's own well-being (see Hypotheses 1 and 2), but also result in toxic social interactions, such as envious hostility toward the better-off others (Exline et al., 2004; Salovey & Rodin, 1984). Exline et al. (2004) emphasized that social comparison research should acknowledge that being a *target* of a social comparison can also have psychological effects. Hence, it is plausible that employees might be concerned about or be affected by negative reactions from colleagues who are worse off (i.e. workplace bullying). It may also be that the feeling of having lower demands than coworkers causes a feeling of under-challenge. The successful completion of a little demanding task may not be attributed to one's own competence. Thus, the need for competence might not be satisfied, which ultimately results in reduced psychological well-being (Deci & Ryan, 2008).

In contrast to job demands, we did not find the expected incongruence effects for job control. One explanation for these findings might be that it is more difficult to (accurately) estimate the job control of others than to estimate their job demands. Employees likely know from team meetings, work plans, or observations which workload their colleagues have or whether their job position (e.g. being a senior consultant versus an assistant) puts them in more or less demanding situations. How much autonomy a coworker has, however, is likely to be more complex to estimate, for three reasons: First, job control might be less obvious (e.g. from job descriptions) for observers as compared to job demands. Second, although the experience of autonomy certainly depends on objective characteristics, the feeling of autonomy is ultimately subjective (Deci & Ryan, 2008), which makes it difficult to estimate how much autonomy a coworker actually experiences. Third, in part, employees actively influence their degree of autonomy as well as the use of decision latitude and skill discretion. Drawing on research on job crafting (see Wang et al., 2016, for a review), the nature and success of job control (partly) depends on employees' personality, their personal initiative and/or self-confidence, and is not (exclusively) specified externally — which further complicates the assessment of coworkers' job control.

Limitations and future research

The present study has some limitations that should be accounted for when interpreting the results. First, the sample contained a high share of people who perceived their own demands to be more or less on the same level as coworkers' job demands (58% in agreement as per definition), with even a higher share for job control (65% in agreement). Although this finding is per se of some interest (to the best of our knowledge, there is no study testing the perceived congruence of own and coworkers´ job characteristics), the high degree of congruence is somewhat challenging for our analyses. One requirement to test for incongruence effects is that the data contain discrepant predictor pairs for both directions of incongruence: a) own demands/control higher than perceived coworkers' demands/control or b) perceived coworkers' demands/control higher than own demands/control. We assessed the deviation in our data as sufficient and therefore ran the polynomial regression analysis. However, the picture might become even clearer with increasing degrees of incongruence in the sample. Particularly for job control, the high degree of agreement might have contributed to the nonsignificant results. Future studies might follow up on this, for example, by using preselected samples with higher degrees of incongruence or experimental approaches to produce strong (perceived) incongruence. Such experimental approaches would also provide better insights into the causal directions underlying the incongruence effects.

Second, our study is, to the best of our knowledge, the very first to examine relative effects of job demands and job control in addition to the "classic" isolated effects of the JDC model using a heterogeneous sample of about 200 employees. Future studies might attempt to test whether these findings generalize to the broader working population or more specific settings that are highly prone to social comparisons.

Third, we focused on perceived differences between own job characteristics as compared to the job characteristics of coworkers due to the subjective nature of social comparison processes. In addition, objective incongruence between job characteristics might also have consequences for well-being. For example, if coworkers have objectively higher job demands as compared to oneself, this might diminish their actual capacity (time, motivation) to provide support, which in turn could have negative consequences for one´s own well-being. To better understand the consequences of objective (in)congruence, future studies on context effects within the JDC model should use multi-source data. This would also offer the possibility of uncovering whether the perceived incongruence corresponds to the actual incongruence of job characteristics.

Practical implications

The present research provides valuable insights for employee- and organisation-focused interventions with the aim to reduce the risk of impaired psychological well-being. Managers need to be aware that employees compare their own job demands with their coworkers' job demands and that these comparisons relate to their job satisfaction and emotional exhaustion. Therefore, managers should try to keep demands similar between employees working closely together and also ensure that employees perceive it as such. Creating transparency and involving employees in the work planning might be one way to avoid perceived incongruence of job demands. Here, it seems advisable to avoid incongruences in both directions as not only unfavorable but also favorable comparisons can have a negative impact.

CONCLUSION

With our study, we added a new perspective to the JDC model by accounting for social comparisons regarding job characteristics. The results provided initial support for the assumption that social comparison processes play a role in the relationship between job demands and job satisfaction and emotional exhaustion. Future research is needed to better understand the mechanisms through which relative job demands elicit these associations.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ETHICAL STATEMENT

The study was approved by the local ethics committee prior to data collection.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request.

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ENDNOTES

[1] As further variables, we measured organisational citizenship behavior (OCB) with two subscales (initiative and helpfulness) of the German OCB questionnaire (Staufenbiel & Hartz, 2000), subjective sleep quality via a single item (PSQI; Buysse et al., 1989), and social comparison orientation via the German INCOM scale (Schneider & Schupp, 2011). Besides the indirect measurement of relative working conditions, we also directly asked the respondents to state how they perceive their overall job demands or job control compared with those of their coworkers. We included all of these additional variables for educational purposes, and they are beyond the scope of the present paper.

[2] ***Tests along the line of congruence (a_1-a_2).*** The curvature along the line of congruence (a_2) indicates whether matches at extreme levels (e.g., own demands and coworkers' demands are very high) have a different outcome compared with matches at low levels. A positive a_2 means the outcome is higher when the predictors match at extreme levels, while a negative value indicates the outcome is higher when the predictors match at moderate levels. The slope along the line of congruence (a_1) indicates whether the effect of a match is different at lower levels of the scale compared with higher levels of the scale. A positive a_1 indicates that the outcome is higher when the predictors match at higher levels of the scale as compared to lower levels of the scale. For negative a_1, it is the other way around.

[3] We also ran the analysis with controlling for Time 1 outcome in the respective model. However, due to high stability of the outcome variables from T1 to T2 (all $rs > 0.39$, all $ps < 0.001$), the remaining unexplained variance in T2 outcomes was very small.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

Supplementary Material

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