

Daily SOC Strategy Use and Innovative Performance: The Role of Job Autonomy and Time  
Pressure

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**Abstract**

Knowledge on how to improve employees' *daily* innovative performance is imperative, because innovation contributes importantly to organizational competitiveness. We tested a model in which daily use of selection, optimization, and compensation (SOC) strategies mediates the relationship between daily job autonomy and daily innovative performance. Moreover, we predicted that the association between daily SOC strategy use and daily innovative performance is stronger on days when time pressure is high (vs. low). Hypotheses were tested using a daily diary study in which employees filled out a short questionnaire at the end of their workday for a period of five workdays ( $N = 91$ ; 381 daily entries). Results of structural equation modeling analyses supported our mediation, but not our moderation hypothesis.

*Keywords:* autonomy; diary study; innovation; selection, optimization, compensation; time

pressure

## Daily SOC Strategy Use and Innovative Performance: The Role of Job Autonomy and Time Pressure

Innovative performance entails that employees generate, disseminate, and implement new and potentially useful ideas (Ng & Feldman, 2013a; Ng, Feldman, & Lam, 2010). These behaviors contribute significantly to organizational competitiveness and survival (Anderson, Potočník, & Zhou, 2014; Welbourne, Johnson, & Erez, 1998; West & Farr, 1990). Despite their importance, employees may not engage in innovative behaviors because they are also risky. That is, new ideas may not be appreciated by supervisors or colleagues, and/or may not be successfully implemented. Therefore, a strong sense of agency (i.e., desire to intentionally make things happen through one's own actions; Bandura, 2001) appears to be important for innovative performance (e.g., trying out different things, convincing others, dealing with setbacks and rejection). Given its importance to the innovation process, it is surprising that scholars have largely neglected an agency perspective on innovative performance (Ng & Lucianetti, 2016).

Existing models of employee innovative performance focus primarily on individual differences (e.g., ability; Guilford, 1976) or task-related and contextual factors (e.g., goals, leadership, work-group relations; Scott & Bruce, 1994). Process theories of employee innovation have placed a stronger emphasis on volitional engagement in the innovation process itself. For instance, Amabile's (1996) componential theory of innovation suggests that employees' level of intrinsic motivation impacts the extent to which they engage in problem identification. Similarly, Ford's (1996) theory on the competition between creative and habitual actions proposes that individuals' knowledge, abilities, motivation, and sense making attempts affect their engagement in the innovation process. However, hardly any research has examined individuals' active and dynamic use of behavioral strategies as a predictor of innovative performance.

Our main contribution to the literature is that we extend research on antecedents of individual-level innovation (Hammond, Neff, Farr, Schwall, & Zhao, 2011) by taking an agency perspective on innovative performance (i.e., use of selection, optimization, and compensation [SOC] strategies) and integrating this perspective with existing research on job characteristics as antecedents of innovation. Specifically, based on conservation of resources (COR) theory (Hobfoll, 1989, 2001), we argue that job autonomy provides employees with the opportunity to actively regulate their resources toward goal achievement using SOC strategies (Baltes & Baltes, 1990). Because SOC strategy use is a behavioral resource (Schmitt, Zacher, & Frese, 2012), it should benefit employees' innovative performance due to the more efficient investment of relevant, yet limited personal resources (e.g., time, energy, effort) at work. Finally, following COR theory (Hobfoll, 1989, 2001), we argue that SOC strategy is most beneficial to employees' innovative performance when resources are threatened (i.e., when time pressure is high).

In addition, we take a dynamic perspective on the psychological process resulting in innovative performance by looking at the *daily* work context (i.e., job autonomy, SOC strategy use, and time pressure). This is different from research studying between-person differences in innovative performance, because rather than looking at why some employees show better innovative performance than others (i.e., between-person differences), we study why the same employee sometimes shows more or less innovative performance (i.e., within-person differences; Zacher & Wilden, 2014). For example, research on between-person differences in job autonomy and time pressure shows that these job characteristics are important predictors that explain why some employees perform more innovatively than others (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Hammond et al., 2011). However, actively managing resources is an ongoing, dynamic process (Halbesleben et al., 2014) and the extent to which employees experience autonomy and time pressure can vary greatly from day to day (e.g., Breevaart, Bakker, &

Demerouti, 2014; Kühnel, Sonnentag, & Bledow, 2012). Studying how these daily fluctuations in resource availability and management affect employees' daily innovative performance brings us closer to the process through which innovative performance is realized. Additionally, our research may explain why employees who generally show high/low innovative performance may show low/high innovative performance on a specific day. Furthermore, studying both between-person and within-person differences in innovative performance helps to build the nomological network surrounding individual-level innovative performance, especially since results do not always seem to generalizable across and within persons (Dalal, Bhave, & Fiske, 2014). From a practical perspective, our study may provide valuable knowledge to guide practitioners in enhancing innovative performance on the days that they are particularly needed (e.g., when brainstorming about a new project). We use a daily diary study to examine innovative performance in the context of employees' daily work lives, thereby increasing the ecological validity of our findings and diminishing the influence of recall bias on participants' reports of their work experiences (Bolger, Davis, & Rafaeli, 2003).

### **Theoretical Framework and Development of Hypotheses**

According to COR theory, people are motivated to obtain, retain, foster, and protect valued resources (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014; Hobfoll, 2001). In addition, existing resources are instrumental in gaining further resources and preventing resource loss. The existence of gain spirals is supported by research showing that job resources build additional resources (for an overview, see Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010). For example, Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009) showed that daily job autonomy and coaching by the supervisor led to an increase in personal resources such as optimism and self-efficacy the following day. In an attempt to explain *how* valued resources are enhanced, we propose that employees use SOC strategies to regulate the efficient investment of

valued resources, and that the use of these strategies is facilitated on those days that employees have high job autonomy. Consequently, we argue that the efficient investment of valued resources (e.g., time, energy, attention) is associated with an increase in employees' innovative performance, particularly on the days that time pressure is high.

### **SOC Strategy Use as a Mediator of the Relationship between Job Autonomy and Innovative Performance**

SOC strategy use refers to the active regulation of limited individual resources such as time and energy (Baltes, 1997; Baltes & Baltes, 1990). It includes the choice and prioritization of goals, as well as strategies to pursue these goals, such as optimizing resources that are needed for goal attainment and substituting for actual or potential resource losses (Freund & Baltes, 2000; Marsiske, Lang, Baltes, & Baltes, 1995). SOC strategy use is an important behavioral resource (Schmitt et al., 2012) that is related to favorable work outcomes such as job satisfaction (Wiese, Freund, & Baltes, 2000), job engagement (Weigl, Müller, Hornung, Leidenberger, & Heiden, 2014; Zacher, Chan, Bakker, & Demerouti, 2015), and job performance (Bajor & Baltes, 2003). The current study expands the nomological network surrounding SOC strategy use, considering SOC strategy use as a mediator in the relationship between daily job autonomy and daily innovative performance.

Job autonomy is a work-related resource that entails the extent to which employees can make decisions at work, including their level of discretion over which work goal to pursue, methods, and schedules (Hackman & Oldham, 1976; Humphrey, Nahrgang, & Morgeson, 2007). Similar to the use of SOC strategies, job autonomy varies from day to day (Breevaart et al., 2014; Xanthopoulou et al., 2009). Accordingly, we argue that employees are more able and motivated to use SOC strategies on the days that they have more job autonomy (see also Venz, Pundt, & Sonnentag, 2017). For instance, on the days that employees have high job autonomy, they may

decide to prioritize certain tasks and goals over others (i.e., selection), invest their time and energy into specific tasks (i.e., optimization), and compensate for a lack of task-relevant resources (e.g., knowledge) by using other relevant resources (e.g., time; i.e., compensation). Conversely, when employees have less job autonomy they are less likely to use SOC strategies because they have less decision latitude to decide on which goals to pursue and how and when to fulfill their tasks. Indeed, and consistent with research on links between job autonomy and proactive work behavior (Den Hartog & Belschak, 2012; Parker, Williams, & Turner, 2006; Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012), recent meta-analytic research found that general job autonomy and SOC strategy use were positively associated at the between-person level (Moghimi, Zacher, Scheibe, & Van Yperen, 2017; Weigl et al., 2014). This means that employees who generally have higher job autonomy are more likely to use SOC strategies compared to employees who have generally lower levels of job autonomy. In the current study, we examine whether the use of SOC strategies also varies within the same person, specifically arguing that employees will use more SOC strategies on those days that they experience more job autonomy.

In addition, we propose that employees will show better innovative performance on the days that they use more SOC strategies and we propose three theoretical arguments to support this claim. First, given that innovation is desired by most employees and organizations (Potočník & Anderson, 2016), it seems likely that on those days that employees use more SOC strategies, they will invest their resources in the generation, dissemination, and implementation of new ideas. That is, the deliberate and proactive *selection* of work goals and tasks should directly increase the likelihood that employees select goals and tasks that contribute to innovative performance. *Optimizing* goal pursuit in the context of innovation tasks and effective

*compensation* for a lack of resources relevant for innovation tasks should also directly result in higher innovative performance.

Second, we argue that SOC strategy use as a behavioral resource is likely to contribute to the resource-intensive engagement in innovative performance. Engaging in the *selection* of goals and tasks at work, *optimizing* the investment of resources relevant for other work tasks, and *compensation* in the context of other tasks should free resources (e.g., energy, time, effort) that can be invested to generate, disseminate, and implement new and useful ideas. In support of this argument, research has shown that employees are more able and willing to invest their time and energy into their work on the days when they have high levels of resources (Breevaart et al., 2014; Sonnentag, Dormann, & Demerouti, 2010).

Third, employees who effectively manage their resources are known to experience a more positive and fulfilling state of mind at work (i.e., are more engaged in their work; Venz et al., 2017; for a meta-analysis see Nahrgang, Morgeson, & Hofmann, 2011), which is accompanied by the experience of more positive emotions (e.g., Ouweneel, Le Blanc, Schaufeli, & van Wijhe, 2012). Positive emotions broaden people's minds and increase personal resources. For example, positive emotions trigger the willingness to experiment and try things out, which may result in new ideas, and novel solutions. Following from this reasoning, employees may generate, disseminate, and implement more new and potentially useful ideas (i.e., show better innovative performance) on the days that they use more SOC strategies.

*Hypothesis 1:* Daily SOC strategy use mediates the positive relationship between daily job autonomy and daily innovative performance.

### **The Moderating Role of Time Pressure**

Actively regulating resources is effortful (Muraven, Tice, & Baumeister, 1998) and it is therefore imperative to know when SOC strategy is most beneficial to employees. Yet, little is

known about the situations in which SOC strategy is most efficient. Based on COR theory, we argue that SOC strategy use and innovative performance are more strongly associated when time pressure is high. Time pressure is a job demand that entails the experience of having to perform too many work tasks in too little time, and therefore employees feel that they have to work faster and longer (Major, Klein, & Ehrhart, 2002). According to COR theory (Hobfoll, 1989, 2001), the investment of resources (e.g., SOC strategy use) is particularly important for further resource gain in the context of potential resource loss or threat of loss. Time pressure may threaten valuable resources and investing resources in innovative performance is a way of proactive coping with the threat of resource loss (Baltes & Baltes, 1990). That is, innovative performance may limit resource loss, and/or secure or even build additional resources such as time and energy by resulting in for example more efficient ways of working. Accordingly, Schmitt et al. (2012) showed that employees' use of SOC strategies was particularly important for the prevention of fatigue when problem solving demands at work were high as compared to when these demands were low. Whereas job demands are typically considered antecedents of SOC strategy use, meta-analytic results showed that overall, there was no significant direct relationship between job demands and SOC strategy use (see Moghimi et al., 2017) and that it may be more likely that job demands and SOC strategy use interactively predict work outcomes (see Moghimi et al., 2017, for further examples of interactive effects of SOC strategy use and job characteristics on important work outcomes).

High levels of time pressure indicate a lack of personal and contextual resources and may threaten current resources and further resource gain. Thus, when employees experience high levels of time pressure, careful selection of goals and tasks (both innovation-related and innovation-unrelated), optimization of personal resources, and compensation for lost resources should especially enable higher innovative performance. In contrast, when time pressure is low,

the use of SOC strategies to optimize resource investment may be unrelated to innovative performance, because valued resources are not at risk of loss. Overall, we expect that the positive association between daily use of SOC strategies and daily innovative performance is stronger when daily time pressure is high compared to when it is low.

*Hypothesis 2:* Daily time pressure moderates the positive relationship between daily SOC strategy use and daily innovative performance. That is, the relationship between daily SOC strategy use and daily innovative performance is stronger on days with higher compared to lower time pressure.

### **Method**

We tested our hypotheses at the within-person level only using a quantitative daily diary study across five workdays (Beal, 2015).

#### **Participants and Procedure**

Ninety-one German employees participated in our daily diary study; 47 women and 39 men (5 participants did not indicate their gender). Participants' were between 22 and 64 years of age ( $M = 43.66$ ,  $SD = 12.43$ ). The majority of the participants had a university degree (68.1%). On average, participants' worked in their organization for 10.54 years ( $SD = 10.55$ ), ranging from a few months to 36 years. Participants' job descriptions included consultant, engineer, general practitioner, manager, pastor, secretary, and teacher.

Participants were recruited through personal and professional contacts for a diary study (Beal, 2015) over five consecutive work days by a group of five students as part of their Bachelor thesis work. Demerouti and Rispens (2014) argue that involving students in the data collection process increases the heterogeneity of the sample, and as a result, the generalizability of the findings. To guard the quality of the data collected by the students, the students were fully briefed about the aims of the study and the difficulty of the data collection by the second author

(Demerouti & Rispens, 2014). One-hundred-and-ten employees indicated their interest in the study in person, over the phone, or via email and subsequently received an email with a link to the baseline survey that assessed demographical information.

One-hundred and seven employees completed the baseline survey. In the week following their recruitment, starting on Monday, employees received an email every day at the end of the workday with a link to the survey that assessed their daily job characteristics, use of SOC strategies, and innovative performance. Since we were interested in within-person fluctuations, only those employees who completed at least three daily surveys were included in the final sample ( $N = 91$ ). Overall, these participants provided 381 daily entries.

### Measures

The time period of all items was adapted to the daily context by referring to “today” in each item.

**Job autonomy.** To measure daily job autonomy, we used the full set of nine items reflecting three dimensions of job autonomy from Morgeson and Humphrey (2006). Example items are “Today, my job allowed me to make a lot of decisions on my own” (decision-making autonomy), “Today, my job allowed me to make my own decisions about how to schedule my work” (work scheduling autonomy), and “Today, my job allowed me to make decisions about what methods to use to complete my work” (work methods autonomy). We used the three dimensions as indicators of the latent job autonomy construct. Across days, Cronbach’s alpha for the scale ranged from .91 to .96. Participants answered the questions on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*).

**SOC strategy use.** We used the 12-item scale initially developed by Baltes, Baltes, Freund, and Lang (1999; see also Freund & Baltes, 2002) and adapted to the work context by Zacher and Frese (2011). The scale measures the three dimensions of selection, optimization, and compensation. Example items are “Today at work, I focused on the one most important goal at a

given time” (selection), “Today at work, I kept working on what I had planned until I succeeded” (optimization), and “Today, when things at work didn’t go as well as they used to, I kept trying other ways until I achieved the same result I used to achieve” (compensation). We used the three dimensions as indicators of the latent SOC strategy use construct. The items were answered on a 5-point scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Schmitt et al. (2012) and Zacher et al. (2015) showed that SOC strategies can be reliably measured at the day-level (see also Breevaart, Bakker, Demerouti, & Hetland, 2012). In this study, Cronbach’s alpha for the scale ranged from .91 to .96 across the five workdays.

**Time pressure.** We assessed daily time pressure with three items from Semmer, Zapf, and Dunckel (1999; see also Kühnel et al., 2012). The items were “Today, how often were you pressed for time at work?”, “Today, how often did you have to work faster than usual to get your work done?” and “Today, how often did your work require you to work very fast?” We used the three items as indicators of a latent time pressure construct. Participants provided their responses on 5-point scales ranging from 1 (*never*) to 5 (*very often*). Across days, Cronbach’s alpha for the scale ranged from .91 to .95.

**Innovative Performance.** We measured daily innovative performance with five items adapted from a measure by Ng and Feldman (2013a; see also Ng et al., 2010). The measure captures the generation, dissemination, and implementation of new ideas. The first item asked participants to indicate the number of new ideas (1 = *no new ideas*, 2 = *1 new idea*, 3 = *2 new ideas*, and 4 = *3 or more new ideas*; note that Ng and Feldman used response scales starting with 0 instead of 1) they had come up with the past day about key workplace issues such as saving money and cutting costs, improving work quality, improving customer service, making a better product, and working together effectively (i.e., idea generation).

The second item asked participants who generated one or more new ideas whether they shared their idea(s) with anyone else and if they did, with whom. Participants who had not come up with any new idea(s) were asked to answer “no” (coded as 1). Additional response options were 2 = *yes—to co-workers*, 3 = *yes—to supervisors*, and 4 = *yes—to co-workers and supervisors* (Ng & Feldman, 2013a). The third item asked participants whether they had helped spread new ideas or solutions generated by co-workers or supervisors (1 = *no* and 2 = *yes*). Together, items two and three capture the dissemination of ideas.

Item four and five assessed the implementation of ideas. Whereas item four asked about the implementation of participants’ own ideas (1 = *no ideas or ideas not implemented*, 2 = *yes—by myself*, 3 = *yes—by others*, and 4 = *yes—by myself and others*), item five asked about the implementation of ideas generated by co-workers or supervisors (1 = *no* and 2 = *yes*; for further information on the coding of the items and the validity of the scale, see Ng et al., 2010). Thus, item four and five assess the implementation of ideas. Across days, Cronbach’s alpha for the overall innovative performance scale (i.e., the sum of scores of the five items) ranged from .72 to .83. Consistent with other researchers who used self-report scales to assess innovative performance (Axtell, Holman, & Unsworth, 2000; Shalley, Gilson, & Blum, 2009), Ng et al. (2010) showed that their measure of innovative performance possesses content and construct validity (see also Ng & Feldman, 2013a). Consistent with the scoring approach recommended by Ng and Feldman (2013a), we used the three dimensions (i.e., generation, dissemination, and implementation of new idea) as indicators of a latent innovative behavior construct.

**Demographic variables.** We measured participants’ age, gender, and job tenure. We did not control for these demographic characteristics because research showed that they are largely unrelated to innovative performance (Hammond et al., 2011; Ng & Feldman, 2013b).

### **Statistical Analyses**

We used Mplus (Muthén & Muthén, 2012) to test our moderated mediation model using structural equation modeling. The data collected had a multilevel structure, with days (Level 1,  $N = 381$ ) nested in persons (Level 2,  $N = 91$ ). The proportions of variance residing at the within-person level were 49.7 percent for daily job autonomy, 44.3 percent for daily SOC strategy use, 39.7 percent for daily time pressure, and 62.4 percent for daily innovative performance, indicating that about half of the variance in our study variables was explained by between-person (i.e., Level 2) differences. We used the TYPE=COMPLEX option in Mplus to account for the nested structure of our data (i.e., days nested in persons). Furthermore, we used the MODEL INDIRECT option to estimate the indirect effects and the XWITH option to create the interaction effect between the latent variables “daily job autonomy” and “daily SOC strategy use”.

## Results

### Descriptive Statistics, Correlations, and Variance Components

Table 1 shows the means, standard deviations, range of reliability estimates, and both within- and between-person correlations of the study variables. Daily job autonomy was negatively related to daily time pressure ( $r = -.24, p < .05$ ) and positively related to daily SOC strategy use ( $r = .19, p < .05$ ). Furthermore, daily SOC strategy use was positively correlated with daily innovative performance ( $r = .21, p < .001$ ). On the between-person level, autonomy ( $r = .26, p < .05$ ), SOC strategy use ( $r = .39, p < .001$ ) and time pressure ( $r = .38, p < .01$ ) were positively related to innovative performance. Although our study focuses on within-person fluctuations in job characteristics, SOC strategy use, and innovative performance rather than general between-person differences in these variables, we report correlations on both levels to discuss our findings within the full nomological network of these variables.

### Measurement Model

Before testing our hypotheses, we examined our measurement model, consisting of four latent variables and their indicators: daily job autonomy (three indicators: decision-making, work methods, and work scheduling autonomy), daily SOC strategy use (three indicators: selection, optimization, and compensation), daily time pressure (three items), and daily innovative performance (three indicators: generation, dissemination, and implementation of ideas). All indicators loaded significantly onto their intended factor ( $p < .001$ ) and the model fitted very well to the data ( $\chi^2[42] = 113.307$ ; CFI = 0.956; TLI = .939; RMSEA = 0.060; SRMR = 0.061). Additionally, we tested several other measurement models, including a one-factor model and a three-factor model in which job autonomy and time pressure were collapsed into one factor, but none of these models showed acceptable fit to the data (see Table 2).

### **Mediation Model**

Hypothesis 1 states that daily SOC strategy use mediates the relationship between daily job autonomy and daily innovative performance. We used structural equation modeling to test our mediation model. First, we showed that daily job autonomy was positively associated with daily SOC strategy use ( $b = .136$ ,  $SE = .064$ ,  $p = .033$ ;  $b^* = .250$ ,  $SE = .098$ ,  $p = .011$ , 95 percent CI [.058, .441]). Daily SOC strategy use, in turn, was positively associated with daily innovative performance ( $b = .746$ ,  $SE = .230$ ,  $p < .001$ ;  $b^* = .448$ ,  $SE = .074$ ,  $p < .001$ , 95 percent CI [.303, .592]). Furthermore, results showed a significant indirect effect ( $b^* = .112$ ,  $SE = .047$ ,  $p = .017$ , 95 percent CI [.020, .204]), providing support for Hypothesis 1. That is, on days with more job autonomy, employees make greater use of SOC strategies, which enhances the generation, dissemination, and implementation of new ideas (i.e., innovative performance). The mediation model fitted very well to the data ( $\chi^2[25] = 66.889$ ; CFI = 0.952; TLI = .932; RMSEA = 0.066; SRMR = 0.051) and explained 6.2% of the variance in daily SOC strategy use and 20% of the variance in employees' daily innovative performance. In addition, we ran the mediation model

including the direct effect from daily autonomy to daily innovative performance. Contrary to previous findings on between-level relationships between job autonomy and innovative performance, daily job autonomy was unrelated to daily innovative performance in the hypothesized mediation model ( $b^* = .047$ ,  $SE = .073$ ,  $p = .523$ , 95 percent CI [-.097, .191]), indicating that we have a full mediation.”

### **Moderated Mediation Model**

According to Hypothesis 2, daily time pressure moderates the positive relationship between employees' daily SOC strategy use and daily innovative performance, such that the relationship is stronger when daily time pressure is high as compared to when it is low. We tested our moderated mediation model using structural equation modeling (see Figure 1). We did not find a significant interaction effect between daily SOC strategy use and daily time pressure on daily innovative performance ( $b = .215$ ,  $SE = .122$ ,  $p = .078$ ). Thus, Hypothesis 2 was not supported. However, the pattern of the interaction effect was in line with our expectations.

### **Discussion**

We found support for our mediation model, showing that employees make greater use of SOC strategies on the days that they have more job autonomy, and consequently, show more innovative performance. That is, employees generate, disseminate, and implement more new and potentially useful ideas on days when they use strategies to actively regulate valued resources (i.e., SOC strategies). However, based on conventional levels of statistical significance (two-tailed  $p < .05$ ), we did not find support for the assumption that SOC strategy use was more strongly related to innovative performance on days when time pressure was high. Importantly, however, this interaction effect was in the expected direction and just missed conventional levels of statistical significance ( $p = .078$ ).

### **Theoretical Implications**

Our findings have important implications for research on innovative performance. That is, we are among the first to contribute to the literature on individual-level innovation by taking an agency perspective (Ng & Lucianetti, 2016). Innovative performance require a sense of agency (i.e., desire to intentionally get things done through your own actions; Bandura, 2001), because it requires believing in one's own ideas and convincing others. New ideas may not always be well received by others and employees may experience setbacks when implementing their ideas, and therefore innovation can be considered a risky behavior. Potočnik and Anderson (2016) discussed the close relationship between innovative performance and proactivity - that is - self-initiated and future-oriented behaviors enacted to change the environment or oneself. Based on an agency perspective (Ng & Lucianetti, 2016), we showed that SOC strategy use is particularly relevant for daily innovative performance, because these behaviors require the active regulation of limited resources.

Second, previous research on between-person differences in innovative performance has shown that job characteristics such as job autonomy and time pressure are important predictors of innovative performance (Hammond et al., 2011). That is, those employees who have more job autonomy and work under greater time pressure, show more innovative performance. Our study builded on and expanded this research by examining *how* job autonomy may contribute to innovative performance and by examining job characteristics (i.e., autonomy and time pressure) as proximal (i.e., daily) antecedents of innovative performance. The former is important because it provides insights in the workings of innovative performance, which may help to better understand the innovation process, and consequently, help to improve innovative performance within organizations. The latter is important because this dynamic approach brings us closer to the process through which innovative performance is realized, and may explain why employees (who are generally more/less innovative) are less or more innovative on specific days. In

addition, our within-person approach helps build the nomological network surrounding innovative performance on multiple levels (i.e., within- and between-persons), which is especially important because findings do not always seem to generalize across these levels (Dalal et al., 2014).

Consistent with a study by Zacher and Wilden (2014), we showed that within-person fluctuations in innovative performance explain most of the total variance in these behaviors. This finding highlights the importance of the dynamic part of innovative performance. We found that job autonomy was not directly related to innovative performance *within* persons in our proposed mediation model. That is, we did not find a direct relationship between daily job autonomy and daily innovative performance, but an indirect effect: on the days that employees have more job autonomy, they use more SOC strategies, which in turn was related to more innovative performance. However, in line with previous research on between-person differences in innovative performance, job autonomy was positively related to innovative performance at the *between*-person level (see Table 1). Thus, it seems that whereas job autonomy is related to general innovative performance (Hammond et al., 2011), job autonomy does not relate directly to innovative performance on a daily basis. This interesting finding suggests that 1) the nomological network surrounding daily innovative performance may be different from that of general innovative performance and more research on the dynamic part of innovative performance is needed, and 2) there may be important mediators on the between-person level that explain the relationship between autonomy and innovative performance.

Finally, two important propositions of COR theory are that 1) people who possess more resources, are more likely to invest these resources to protect their existing and gain new resources, and 2) people will protect their resources when the loss of valued resources is imminent. Our study shows *how* employees can protect and gain resources. That is, we showed

that when employees have more job-related resources (i.e., job autonomy), they are more likely to invest in the active regulation of personal resources (i.e., SOC strategy use). Furthermore, SOC strategy use is a behavioral resource itself (Schmitt et al., 2012). Thus, consistent with COR theory, our findings suggest that job-related resources may translate into behavioral resources, i.e. when employees are resourceful, they are likely to use these resources to build additional resources. Inconsistent with COR theory, we found that time pressure did not moderate the relationship between SOC strategy use and innovative performance. Although the effect was in the expected direction, it was not significant, which may be due to the strong main effect of daily SOC strategy use on daily innovative performance (see Figure 1).

Another explanation could be that the moderating effect of time pressure depends on whether time pressure is perceived as a challenge or a hindrance demand. According to Cavanaugh, Boswell, Roehling, and Boudreau (2000), job demands can be perceived as either hindering or challenging, depending on whether they either prevent employees from achieving their goal, or whether they contribute to employees' growth and development. Time pressure is typically categorized as a challenge demand (for a meta-analysis see Crawford, LePine, & Rich, 2010), which is consistent with the small, but positive direct relationship between daily time pressure and daily innovative performance in our study. We argued that combined with SOC strategy use, time pressure would be a challenge demand, motivating employees to engage in innovative performance to limit resource loss or even build additional resources. Yet, employees may also consider time pressure a hindrance demand, whereby resources are threatened or already lost to the extent that employees feel like proactively coping with that situation (i.e., by using SOC strategies) is not going to make a difference. Studying the specific relationship between SOC strategy use and job demands is interesting and necessary, especially since the meta-analysis by Moghimi et al. (2017) suggests that rather than directly affecting SOC strategy

use, job demands and SOC strategy use interactively predict work outcomes.

### **Implications for Future Research and Practice**

Our findings show that innovative performance fluctuates within persons over time. That is, employees show most innovative performance on those days when SOC strategy use is high, which may provide practitioners with important tools to increase innovative performance when needed (for example when having a brainstorming meeting about launching a new product). Resulting from our study, the daily work environment plays a crucial role in optimizing employees' innovative performance. Providing employees with the autonomy to make decisions, schedule their work, and choose their own work methods, is indirectly associated with employees' daily innovative performance. Therefore, practitioners could guide employees to proactively ask for more autonomy to decide how to schedule and perform their work (i.e., job crafting; Wrzesniewski & Dutton, 2001; Tims & Bakker, 2010), and organizations to structurally provide autonomy to their employees.

To build the nomological network of innovative performance, more research on daily antecedents and processes related to these employee behaviors is needed. Why do job characteristics such as autonomy, but also other resources such as job complexity and role expectations (Hammond et al., 2011) contribute to employees' innovative performance? For example, a resourceful work environment may contribute to employees' innovative performance, because resources spark employees' work engagement (for meta-analyses, see Crawford et al., 2010; Halbesleben, 2010) and/or because resources fulfill employees' basic needs for autonomy, competence, and relatedness, which allow employees to flourish at work (Breevaart, Bakker, Demerouti, Sleebos, & Maduro, 2015; Kovjanic, Schuh, & Jonas, 2013).

Moreover, it would be interesting to look at differences and similarities between models of individual-level innovative performance on both the between and within person level.

According to Dalal et al. (2014), psychological processes do not necessarily generalize across within- and between-person levels, which is also what we found in our current study. That is, job autonomy was directly related to innovative performance at the between-person level, but only indirectly (through SOC strategy use) at the within-person level. Studying within- and between-person differences and similarities is not only important from a theoretical perspective, but also from a practical perspective. For example, organizations whose primary objective is to invent new products and/or who are leading innovators, may be especially interested in hiring creative individuals (i.e., personality differences related to innovation), but also in creating a daily work environment that facilitates employees' innovativeness.

Daily diary studies are a promising method to study the different stages of the innovation process. That is, daily diaries allow for the study of different proximal antecedents of the generation, dissemination, and implementation of new and potentially useful ideas, as well as the study of how these processes unfold. For example, how long does it take before new ideas are dissemination and consequently, implemented? In addition, what factors contribute or hinder the generation, dissemination, and implementation of these ideas? Although these questions did not fit with the research questions in the current study, our study does show that all three innovation stages fluctuate greatly from day to day (ranging from 65.2% in idea generation to 73.4% in idea dissemination). We therefore encourage researchers studying individual-level innovation to use daily diary studies in order to further examine the dynamic part of innovative performance at work.

Finally, we examined a basic tenet of COR theory, which is that SOC strategies particularly contribute to innovative performance on the days that valued resources are threatened (i.e., when time pressure is high). Previous research has shown that time pressure is a challenge demand that contributes to both work engagement (Crawford et al., 2010) and individual-level

innovation (Hammond et al., 2011). It would be interesting for future research to examine whether time pressure is always considered a challenge demand and whether SOC strategy use also contributes to innovative performance when hindrance demands threaten resources.

Hindrance demands are demands such as role-conflict, organizational politics, and daily hassles that not only consume energy, but also thwart goal achievement and personal growth (Cavanaugh et al., 2000). It seems likely that job demands such as these thwart rather than stimulate employees' innovative performance.

### **Limitations**

Our study has a number of limitations that should be addressed in future research. First, we used employees' self-reports to measure job characteristics, SOC strategy use, and innovative performance, which increases the risk of common method bias influencing our results. Although common method bias is rarely strong enough to invalidate results (e.g., Spector, 2006), and we used structural equation modeling to control for measurement error (Podsakoff, MacKenzie, & Podsakoff, 2012), multi-source ratings such as supervisor ratings of employees' innovative performance are needed in future studies.

Second, the validity of our self-reported innovative performance measure may be criticized as not accurately reflecting actual behaviors. This measure was developed by Ng et al. (2010) and used in multiple studies on innovative performance (e.g., Ng & Feldman, 2013a; 2013b). Supervisor ratings and objective measures of innovative performance may be conceived as better ways to operationalize the construct. However, Ng and Lucianetti (2016) recently presented convincing theoretical reasons and empirical evidence to support the validity of the self-reported innovative performance measure. Specifically, they argued that employees are in a good position to evaluate the novelty of their behaviors in the work context, whereas others (e.g., colleagues and supervisors) may not be aware of the subtleties of employees' innovative behavior

or overlook truly innovative performance entirely. Moreover, Ng and Lucianetti (2016) demonstrated that self-ratings of innovative performance are moderately and positively related to supervisor ratings and objective measures of innovative performance (see also Ng & Feldman, 2013a), and that common method biases such as impression management, trait affect, and acquiescence bias did not affect their results. They concluded: “a person’s assessment of his or her own innovative behavior is not necessarily biased or contaminated” (Ng & Lucianetti, 2016, p. 21).

Third, it could be argued that daily use of SOC strategies frees up personal resources that employees could invest in any form of active work behavior, not just innovative performance. We agree, yet the focus of our current study was on predicting employees’ daily innovative performance. Previous research, including daily diary studies, have shown that SOC strategy use benefits job engagement and different forms of performance, including task and contextual performance (Moghimi et al., 2017). However, previous research has neglected the potential linkage between SOC strategy use and innovative performance, which constitutes an increasingly important dimension of the work performance domain (Welbourne et al., 1998). Nevertheless, future studies could investigate how and why employees choose to invest personal resources that are freed through SOC strategy use into different forms of work performance, including innovative performance.

Finally, despite theoretical arguments to support the direction of our hypotheses, we are unable to establish causality in our study. It may be possible that on days that employees generated, disseminated, and implemented new ideas, they were also more likely to use SOC strategies and/or that when employees use more SOC strategies, they experience more job autonomy. Yet, we argue that greater innovative performance does not lead to an increased use of strategies to regulate *limited* resources, because working more effectively (due to innovative

performance) may free up *additional* resources such as time and energy. We suggest that researchers to use multiple measurement moments a day to shed further light on the issue of causality. For example, future research could employ a daily diary design asking employees to fill out questions about their autonomy and/or SOC strategy use after lunch, followed by questions about their SOC strategy use and/or innovative performance at the end of the workday. Yet, diary studies can be invasive when employees have to fill out a questionnaire multiple times a day (cf. Fisher & To, 2012; Ohly, Sonnentag, Niessen, & Zapf, 2010), so we would recommend researchers to limit the questions so employees are only interrupted in their work for a short time. In the current study, we were interested in within-day, within-person relationships between our study variables. Furthermore, in the current study we focused on the daily work context (i.e., job autonomy, time pressure), but the broader organizational context (such as type of profession, organizational culture) is an interesting avenue for future studies on cross-level effects. For example, creativity may not always be valued (Mueller, Melwani, & Goncalo, 2012). That is, novel ideas are associated with uncertainty about whether the ideas are useful and/or whether the ideas will be implemented. Consequently, when organizations are high in uncertainty avoidance, the use of daily SOC strategies may not necessarily result in higher daily innovative performance.

### **Conclusion**

In summary, taking an agency and resources perspective, this study demonstrated that daily job autonomy indirectly contributes to employees' innovative performance through the use of SOC strategies. That is, on the days that employees have more job autonomy, they are more likely to regulate their resources by using SOC strategies, and in turn, they are more likely to generate, disseminate, and implement new and potentially useful ideas. Our study contributes to the nomological network surrounding innovative performance and calls for more research on the antecedents and underlying processes explaining within-person fluctuations in these behaviors. In

addition, our findings show the importance of the dynamic process (i.e., fluctuations) underlying individual-level innovative performance. Finally, to get a better understanding of the nomological net surrounding individual-level innovative performance, it is interesting to compare findings on within-person differences with findings on between-person differences in innovative performance.

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Table 1

*Descriptive Statistics, Observed Within-Person Correlations (Below the Diagonal), and Between-Person Correlations (Above the Diagonal) between the Study Variables, and the Range of Cronbach's Alphas (on the Diagonal)*

Variable	$M_{\text{observed}}$ (SD)	$M_{\text{latent}}$	1-ICC	1	2	3	4
1. Daily job autonomy	3.70 (0.60)	3.71	.50	(.91-.96)	.31***	-.18	.26**
2. Daily SOC strategy use	2.97 (0.41)	3.02	.44	.19**	(.77-.89)	.14	.39***
3. Daily time pressure	2.46 (0.74)	2.42	.40	-.24**	.06	(.91-.95)	.38**
4. Daily innovative performance	7.14 (2.10)	1.46	.62	-.02	.21***	.07	(.72-.83)

*Note.*  $N = 91$  employees provided 381 daily entries.  $M_{\text{latent}}$  reflects the average mean of the factor indicator. The intraclass correlation coefficient (ICC) is calculated by dividing the between-person variance ( $\tau_{00}$ ) by the sum of  $\tau_{00}$  and the within-person variance ( $\sigma^2$ ). 1-ICC refers to the percentage of within-person variance observed for the variable. The multilevel correlations were obtained using the observed variables.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Table 2

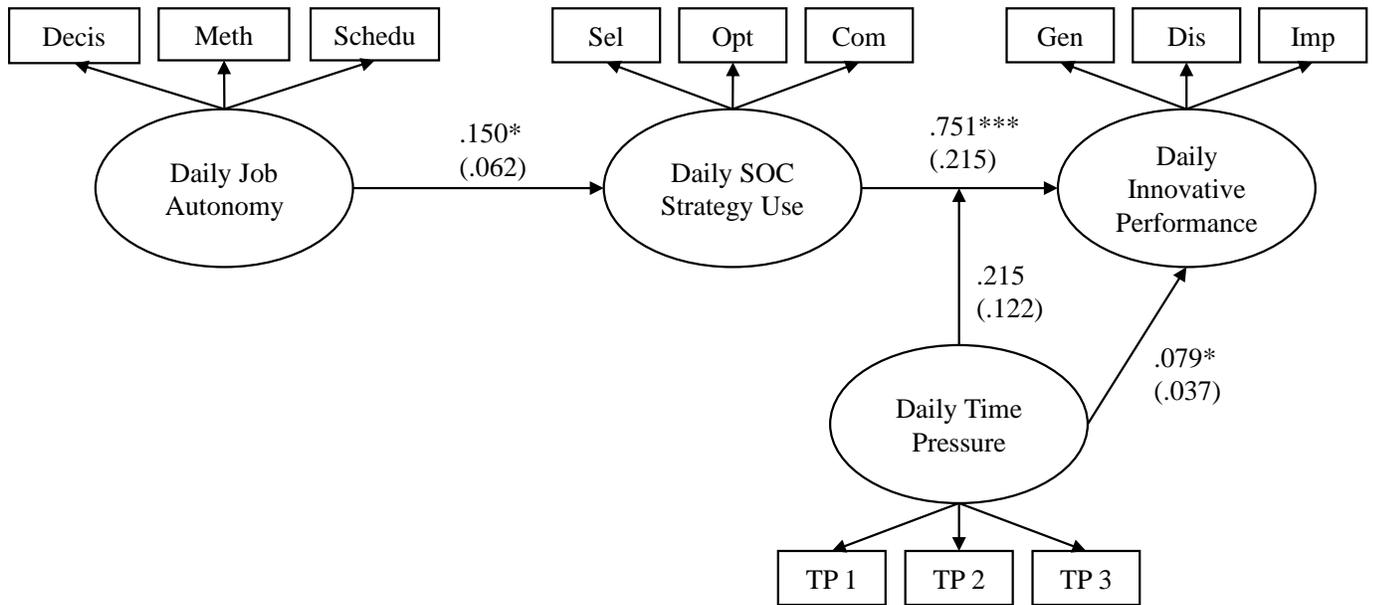
*Model Fit of Various Measurement Models*

Model	$\chi^2(df)$	CFI	TLI	RMSEA	SRMR
1. One-factor model	1168.32 (54)	.247	.080	.233	.223
2. Three-factor model <sup>1</sup>	808.37 (51)	.488	.338	.197	.174
3. Three-factor model <sup>2</sup>	452.73 (51)	.729	.649	.144	.151
4. Four-factor (hypothesized) model	113.31 (42)	.956	.939	.060	.061

*Note.* <sup>1</sup>Combining job autonomy and time pressure into one factor. <sup>2</sup>Combining job autonomy and SOC strategy use into one factor.

Figure 1

*Results of Moderated Mediation Model*



*Note.* Unstandardized coefficient estimates and standard errors (in parentheses) are reported.

Standardized coefficient estimates are not yet available for latent moderated structural equation

modeling in Mplus. Decis = decision-making autonomy, Meth = work methods autonomy,

Schedu = work scheduling autonomy, Sel = selection, Opt = optimization, Com = compensation,

Gen = generation of ideas, Dis = dissemination of ideas, Imp = implementation of ideas.

\*  $p < .05$ , \*\*\*  $p < .001$ .