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# Reactions to Changes in Work Control: Implications for Self-Determined and Non-Self-Determined Individuals

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We investigate the extent to which individuals' global motivation (self-determined and non-self-determined types) influences adjustment (anxiety, positive reappraisal) and engagement (intrinsic motivation, task performance) in reaction to changes to the level of work control available during a work simulation. Participants ($N = 156$) completed 2 trials of an inbox activity under conditions of low or high work control—with the ordering of these levels varied to create an increase, decrease, or no change in work control. In support of the hypotheses, results revealed that for more self-determined individuals, high work control led to the increased use of positive reappraisal. Follow-up moderated mediation analyses revealed that the increases in positive reappraisal observed for self-determined individuals in the conditions in which work control was high by Trial 2 consequently increased their intrinsic motivation toward the task. For more non-self-determined individuals, high work control (as well as changes in work control) led to elevated anxiety. Follow-up moderated mediation analyses revealed that the increases in anxiety observed for non-self-determined individuals in the high-to-high work control condition consequently reduced their task performance. It is concluded that adjustment to a demanding work task depends on a fit between individuals' global motivation and the work control available, which has consequences for engagement with demanding work.

*Keywords:* work control, self-determination, person-environment fit, adjustment, engagement



Work control is a form of behavioral control described as having discretion over tasks, methods, pace, and scheduling (Breaugh, 1985; Ganster, 1989; Jackson, Wall, Martin, & Davids, 1993). The importance of work control for employee well-being and job performance is evident in organizational research on autonomy (Spector, 1986), empowerment (Spreitzer, 1995), and participative decision-making (Miller & Monge, 1986). Work control also is important in alleviating (i.e., buffering) the negative consequences of high job demands on employee health and engagement (Karasek, 1979; Karasek & Theorell, 1990; Bakker, Demerouti, & Euwema, 2005). Moreover, intervention studies demonstrate that the introduction of work control is beneficial for decreasing role strains (Jackson, 1983) as well as improving mental health and work performance (Bond & Bunce, 2001; Richardson & Rothstein, 2008).

However, there are situations in which having discretion can have a negative impact on well-being and performance (Burger, 1989; Greenberger & Strasser, 1986; Thompson, Armstrong, & Thomas, 1998). High control can induce cognitive fatigue due to the effortful use of mental resources (Carver & Scheier, 1982; Muraven & Baumeister, 2000; Shapiro, Schwartz, & Astin, 1996). Indeed, in a cohort study of over 20,000 Norwegian workers, Strømholm, Pape, Ose, Krokstad, & Bjørngaard (2015) found an increased risk of sickness absence due to higher work control. Moreover, Langfred (2004) observed lower levels of team performance when members have high individual autonomy and low monitoring of each other. Furthermore, although high control is theorized to transform demands into a positive challenge, thus resulting in better performance (Karasek, 1979; Karasek & Theorell, 1990), there is limited empirical support for this (Taris & Kompier, 2005; Taris, Kompier, De Lange, Schaufeli, & Schreurs, 2003). These divergent effects (both main and interactive) of control could be due to: (a) individual differences that determine for whom control will be beneficial—based on a person-environment fit (P-E Fit) approach—and (b) the process of adaptation to variations in control.

Ostensibly, individuals' motivation should be central to how they react to, and whether they have the capacity to flexibly adapt to, increased or decreased autonomy in work conditions. As such, we argue that individuals' global motivation will be a moderating variable that determines the extent to which access to high work control fosters better adjustment (i.e., as reflected by lower anxiety

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and higher positive reappraisal) and engagement (i.e., as reflected by higher intrinsic motivation and task performance), and test these propositions for individuals undertaking a demanding work simulation.

## Global Motivations Should Influence Reactions to Work Control

Self-determination theory (SDT) proposes the existence of different "qualities" of motivation (Deci & Ryan, 1987; Deci & Ryan, 2000; Vallerand, 1997). According to SDT, these motivations can be organized along a continuum and classified into two main types. These two types reflect the degree to which motivation is driven by external sources and is *non-self-determined* (i.e., punishment/reward contingencies, pressure from self/others, and feelings of guilt; also called *controlled motivation*) or is internalized and is *self-determined* (i.e., pleasure, volition, importance, and coherence with one's values; also called *autonomous motivation*). One result of these orientations is that non-self-determination prompts more defensiveness and reactivity to environments, whereas self-determination prompts more reflectivity, internalization, and greater self-awareness (Hodgins & Knee, 2002; Hodgins et al., 2010; Hodgins, Yacko, & Gottlieb, 2006, Knee & Zuckerman, 1998; Koestner & Zuckerman, 1994; Soenens, Berzonsky, Vansteenkiste, Beyers, & Goossens, 2005).

At the global (or trait) level, self-determination is chronic and generalizable to a broad range of situations and contexts (Deci & Ryan, 1985b; Vallerand, 1997). SDT scholars argue that global motivation, because it reflects habitual preferences and behavioral tendencies, might only be triggered or revealed in environments that provide affordances for such tendencies to emerge (O'Connor & Vallerand, 1994; Philippe & Vallerand, 2008). This is in line with P-E Fit theory, which contends compatibility between the person and their environment (P-E Fit) facilitates adjustment and engagement, because of an enhanced capacity of the individual to operate within that environment (French, Caplan, & Harrison, 1982; Kristof-Brown, Zimmerman, & Johnson, 2005). Conversely, an incompatibility (P-E Misfit) undermines adjustment and engagement. According to SDT, highly self-determined individuals are likely to have had their need for autonomy repeatedly satisfied during their development and across contexts and situations (Deci, & Ryan, 1985a, 1987, 2000; Ryan & Deci, 2000; Vallerand, 1997). Therefore, these individuals are likely to have gained experience in, and comfort with, environments that afford opportunities to act autonomously, such as in jobs that provide high work control. However, individuals who have developed higher non-self-determination are likely to have had their need for autonomy not satisfied or even thwarted, resulting in discomfort with opportunities to act autonomously due to either: (a) a lack of experience, or (b) prior experiences of failing to use autonomy to their advantage.

Prior research supports this P-E Fit approach to SDT. Baard, Deci, and Ryan (2004) found that self-determined employees who had more autonomy-supportive supervisors reported better adjustment and performance. Fernet, Guay, & Senecal (2004) found that high control buffered the effect of job demands on burnout only for self-determined employees, whereas low control exacerbated stress. Unfortunately non-self-determination was not investigated in these studies. Parker, Jimmieson, & Amiot (2010) extended on this research by treating the two types of motivation as distinct. It was found that: (a) for employees with higher self-determination, high control increased work engagement while low control did not, and (b) for employees higher in non-self-determination, passive jobs resulted in the lowest levels of work engagement.

Although this prior research shows that motivation moderates the effects of work control on adjustment and engagement, a between-participants perspective was adopted, which does not account for the dynamic and changing nature of the work context. Indeed, experience-sampling research has confirmed that work control perceptions do fluctuate from one day to the next (Butler, Grzywacz, Bass, & Linney, 2005; Daniels, Boocock, Glover, Hartley, & Holland, 2009; Daniels & Harris, 2005; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). However, although experience sampling captures temporal dynamics of *perceived* work control, only an experimental design allows examination of changes in objective work control and how different individuals react to such changes.

## The Current Study

To capture these temporal and situational processes, we employ a within-participants experimental research design and measure participants' reactions to changes in work control, as reflected in their adjustment (i.e., anxiety, positive reappraisal) and engagement (i.e., intrinsic motivation, task performance). Whereas the majority of prior experimental research on work control used between-participants designs (i.e., assigning participants to low or high control for the entire task; see Flynn & James, 2009; Jimmieson & Terry, 1997, 1999; O'Brien, Terry, & Jimmieson, 2008; Parker, Jimmieson, & Amiot, 2009; Perrewe & Ganster, 1989; Searle, Bright, & Bochner, 1999, 2001), some studies have manipulated work control using a within-participants design. For example, Niessen and Volmer (2010) used a work simulation to examine adaptation to increased autonomy on a task involving provision of mock advisory services to university students. They found that participants who began with low work autonomy (i.e., had to follow a fixed set of requirements) showed poorer task performance when autonomy was increased during later trials on the task. We argue that more self-determined individuals will be better equipped to take advantage of a change from low to high work control. Conversely, more non-self-determined individuals may be reactive and unable to take advantage of such control opportunities when these are presented (finding more comfort in low control environments). Thus, we extend on Neissen and Volmer by investigating how individuals' motivation modulates the effects of an increase (as well as a decrease) in work control on adjustment and engagement during demanding work.

Participants completed two trials of an inbox activity under different conditions of work control. The levels of work control were varied to create an increase (low-to-high control), decrease (high-to-low control), or no change in work control (low-to-low or high-to-high control). To reduce the complexity of the experimental design, demands were set at a moderately high level and held constant. This aspect of the design is important, given that high work control is proposed to be stress-buffering (and also energizing for motivation and performance) only under higher levels of demand (Karasek, 1979; Karasek & Theorell, 1990). Given our theoretical approach and research design, we expect a three-way

interaction of trials (i.e., the change in the dependent variables from baseline to Trial 1 to Trial 2), work control-change (i.e., the experimental manipulations of work control level and change), and motivation (i.e., self-determined or non-self-determined). In the next sections, we explain our rationale for the expected reactions to changes in work control for each indicator of adjustment (i.e., anxiety, positive reappraisal) and engagement (i.e., intrinsic motivation, task performance).

## Implications of P-E Fit and P-E Misfit for Adjustment

Specifically, we theorize that P-E Fit will enable participants to remain calm and better manage their emotions during the work simulation, where as P-E Misfit will generate greater stress reactivity and poorer emotion regulation. Participants' mood state of anxiety is measured to reflect stress reactivity, an affective consequence of the work simulation (see also Weiss & Cropanzano, 1996). To capture the coping process that takes place as individuals adapt to changing work situations (Lazarus & Folkman, 1984), participants' positive reappraisal of the situation also is examined. Positive reappraisal is a powerful antecedent-focused emotion regulation strategy (Gross, 2002) that can improve physiological, affective (Gross, 2002), and cognitive responses to stress (Gross, 2002; Jamieson, Nock, & Mendes, 2012), as well as task performance (Jamieson, Mendes, Blackstock, & Schmader, 2010).

In terms of adjustment, prior research has found that self-determination, as opposed to non-self-determination, fosters more adaptive and less maladaptive coping strategies (Amiot, Blanchard, & Gaudreau, 2008; Amiot, Gaudreau, & Blanchard, 2004), as well as less defensive coping and self-handicapping (Knee & Zuckerman, 1998). To account for the potential mediating variables that underpin these effects, scholars postulate that self-determination leads individuals to interpret and appraise their experiences in a more open and nondefensive manner. However, we argue that these habitual coping responses will be further enhanced depending on P-E Fit (or P-E Misfit) during the work simulation.

Indeed, research by Parker, Jimmieson, & Amiot (2013) found individuals high in non-self-determination working under high work control experienced stress reactivity to fluctuations in workload; this effect occurred when workload increased or decreased. In contrast, participants with high self-determination used high work control to their advantage by adapting planning coping strategies in response to changes in workload. The present study extends on Parker and colleagues' work by examining how motivation moderates emotional reactions (anxiety) and cognitive appraisals to levels of, and variations in, work control. This research design enables us to ask the questions: (a) will self-determined individuals experience stress-reactivity when work control decreases?, (b) will non-self-determined individuals experience stress-reactivity when work control increases?, and, (c) after two trials on the inbox activity, will non-self-determined individuals still find high work control stressful?

As such, for individuals high in self-determination (vs. low self-determination), we hypothesize that high work control (and increases in control) represents a P-E Fit; more specifically, such conditions will enable better management of emotion (i.e., less anxiety and more positive reappraisal from Trial 1 to Trial 2; *Hypothesis 1a*). Conversely, we hypothesize that low work control (and decreases in control) represent a P-E Misfit for these individuals; more specifically, such conditions will generate stress reactivity (i.e., more anxiety and less positive reappraisal from Trial 1 to Trial 2; *Hypothesis 1b*).

For individuals high in non-self-determination (vs. low non-self-determination), we hypothesize that high work control (and increases in control) represents a P-E Misfit; more specifically, such conditions will generate stress reactivity (i.e., more anxiety and less positive reappraisal from Trial 1 to Trial 2; *Hypothesis 2a*). Conversely, we hypothesize that low work control (and decreases in control) represent a P-E Fit for these individuals; more specifically, such conditions will enable better management of emotion (i.e., less anxiety and more positive reappraisal from Trial 1 to Trial 2; *Hypothesis 2b*).

## Implications of P-E Fit and P-E Misfit for Engagement

We theorize that P-E Fit will enable participants to enjoy and perform well on the task, whereas P-E Misfit will reduce task enjoyment and performance. To capture participants' task enjoyment, we included situation-specific intrinsic motivation (Deci & Ryan, 1985a; Vallerand, 1997). In line with prior inbox simulations (Parker, Jimmieson, Walsh, & Loakes, 2015), we included objective measures of participants' task performance (i.e., the number of emails completed and quality of responses).

Prior experimental research priming controlled and autonomous motivations has shown that autonomous motivation was associated with greater performance on a variety of tasks (Hodgins & Knee, 2002; Hodgins et al., 2010; Hodgins et al., 2006). In the education setting, studies have demonstrated that self-determined individuals respond to failure in a mastery-oriented fashion, whereas non-self-determined individuals respond in an ego-involved and reactive manner (Koestner & Zuckerman, 1994). Indeed, experimental research by Parker, Jimmieson, & Amiot (2013) has demonstrated that individuals high in non-self-determination who are working under high work control experience initially less intrinsic motivation, but under low work control, experience initially more intrinsic motivation, despite the level of workload assigned.

Improved engagement should occur when there is a "fit" between individuals' motivation and the work control afforded. For instance, for self-determined individuals in the high-to-high control condition, we should observe increased task performance because of a longer experience with the task under optimal conditions for them. In conditions where the level of control changes to suit individuals' motivation (e.g., for individuals high in self-determination in the low-to-high control-change condition), we also should see an improvement in task performance as the situation changes from a "misfit" to a "fit." Indeed, individuals with higher trait self-determination have better self-regulatory capacity, as evidenced by enhanced error detection during goal-directed tasks (Legault & Inzlicht, 2013). This flexible and open manner of dealing with circumstances may allow these individuals to take advantage of high control environments, which, by definition, require self-direction and self-monitoring of goal progress. In contrast, individuals with high non-self-determination (and those with low self-determination) might struggle to adaptively utilize such working conditions through a lack of self-awareness and self-regulatory capacity. The task structure (i.e., strict rules and

procedures) that low work control provides should better suit these individuals, because such environments compensate for their lack of self-regulatory capacity.

As such, for individuals high in self-determination (vs. low self-determination), we hypothesize that high work control (and increases in control) represent a P-E Fit; more specifically, such conditions will enable better engagement with the task (i.e., more intrinsic motivation and task performance from Trial 1 to Trial 2; *Hypothesis 3a*). Conversely, we hypothesize that low work control (and decreases in control) represent a P-E Misfit for these individuals; more specifically, such conditions will result in poorer task engagement (i.e., less intrinsic motivation and task performance from Trial 1 to Trial 2; *Hypothesis 3b*).

For individuals high in non-self-determination (vs. low non-self-determination), we hypothesize that high work control (and increases in control) represents a P-E Misfit; more specifically, such conditions will result in poorer task engagement (i.e., less intrinsic motivation and task performance from Trial 1 to Trial 2; *Hypothesis 4a*). Conversely, we hypothesize that low work control (and decreases in control) represent a P-E Fit for these individuals; more specifically, such conditions will enable better engagement with the task (i.e., more intrinsic motivation and task performance from Trial 1 to Trial 2; *Hypothesis 4b*).

# Method

## Participants

Participants were 156 first year psychology students who participated in the study for course credit. The sample consisted of 76.30% females, aged 17 to 54 years ($M$ = 20.59; $SD$ = 6.75). Work experience was reported by 90.40% of the sample.

## Experimental Design, Procedure, and Task

Two weeks prior to the experiment, participants completed a measure of global motivation and relevant demographic variables. To reduce expectancy effects, the work simulation was presented as a decision-making task. Participants completed two trials of the inbox activity (within-participants) under one of four work control-change conditions (between-participants). As such, the experiment was a mixed 2 (trials: first and second) × 4 (work control-change: high-to-low, low-to-high, low-to-low, or high-to-high) factorial design.

Upon arrival, participants completed a questionnaire to gauge baseline anxiety and intrinsic motivation. They were then randomly assigned to one of four control-change conditions. Audio recordings and written instructions informed participants there would be eight emails to address during each 15-min trial, and that each trial would be followed by a questionnaire. A practice email was provided, on which they worked for 5 min. Participants were then exposed to the manipulation of work control. For the second trial, participants in the nonchanging conditions (i.e., low-to-low or high-to-high) were provided a reminder of the instructions; however, in the changing conditions (i.e., low-to-high or high-to-low), they received new instructions. After the final questionnaire, participants were thanked and debriefed.

The inbox activity was an emailing task (Parker, Jimmieson, & Amiot, 2013, Parker, Jimmieson, & Johnson, 2013). Participants were instructed to adopt the role of "Kim Jones," HR Manager at Madison Department Store. Contextual information about Madison was provided. The emails were from employees of "Kim Jones" and contained issues related to performance evaluations and managing the human resources of a retail store. Emails were of similar length and the order presented was randomized. Within each trial, participants were required to respond to eight emails. Although held constant, the level of demand is equivalent to moderate to high demand conditions used in similar research (e.g., Jimmieson & Terry, 1997, 1999; Parker et al., 2009). To further ensure the task remained demanding throughout each trial, each trial began with five emails with two extra emails sent 6 min into the trial and a final email sent at the 11-min mark.

## Work Control Manipulation

The manipulation of work control has been used in previous experiments (Parker, Jimmieson, & Amiot, 2013, Parker, Jimmieson, & Johnson, 2013). In high control trials, participants were instructed that they could determine the order they completed the emails (high method control), the relative amount of time spent on each email (high pacing control), as well as allocation of rest breaks (high scheduling control). In low control trials, participants were instructed they must complete the emails in the order received, from oldest to newest (low method control), they should attempt to divide their time evenly among the emails (low pacing control), and they should remain working on the task for the entire time (low scheduling control).

## Measures

**Global motivation.** Two weeks prior to the experiment, the Guay, Mageau, and Vallerand (2003) measure of global self-regulation was used to assess participants' global (i.e., trait) self-determination and non-self-determination. Nine items measured autonomous motivation (i.e., self-determined self-regulation) and six items measured controlled motivation (i.e., non-self-determined self-regulation). To better capture the core construct of non-self-determination, three items related to amotivation were excluded (Deci & Ryan, 1985b). Following the stem, "In general, I do things," participants indicated the extent to which each item applied to them. An example self-determination item is "Because they reflect what I value most in life" and an example non-self-determination item is "Because I want to be viewed more positively by certain people." Items were rated from 1 (*the statement usually doesn't apply to me at all*) to 7 (*the statement always applies to me*).

**Manipulation checks.** Perceptions of work control were measured via a 5-item semantic differential scale. An example item is 1 (*I had to reply to the emails in the order they arrived in my inbox;* i.e., low control) versus 9 (*I could reply to the emails in any order I saw fit;* i.e., high control). Internal consistency at Trial 1 was $\alpha$ = .95 and at Trial 2 was $\alpha$ = .97. To ensure that the level of task demands remained constant across trials and conditions, items measuring workload and complexity also were included. Seven items measured workload (Trial 1 $\alpha$ = .89; Trial 2 $\alpha$ = .93), for example, "I felt busy throughout the activity." Three items measured complexity (Trial 1 $\alpha$ = .71; Trial 2 $\alpha$ = .83), including, "It was difficult to address employees' concerns." Items were rated from 1 (*strongly disagree*) to 7 (*strongly agree*).

**Anxiety.** Three items (i.e., *I feel anxious, on edge*, and *panicky*) from the Profile of Mood States (McNair, Lorr, & Droppleman, 1971) were used to measure the mood state of anxiety at baseline and following each trial. Items were rated from 0 (*not at all*) to 4 (*extremely*), in response to how participants were feeling "right now."

**Positive reappraisal.** Three items from the Ways of Coping Checklist (Lazarus & Folkman, 1984) were adapted to reflect positive reappraisal of each trial. An example item is "I looked for something good in what had happened during the inbox task." Items were rated from 0 (*no, not at all*) to 4 (*yes, all the time*).

**Intrinsic motivation.** Four items from the Situational Motivation Scale (Guay, Vallerand, & Blanchard, 2001) measured intrinsic motivation toward the inbox activity. An example item is "I am doing the inbox activity because it is fun." Items were rated from 1 (*does not correspond at all*) to 7 (*corresponds exactly*).

**Task performance.** The number of emails completed by each participant during each 15-min trial was recorded as a quantitative measure of task performance. In addition, a qualitative measure of task performance was obtained by coding participants' email responses. Two independent coders who were blind to the experimental conditions performed the coding. Responses were coded as 1 (*poor*), 2 (*basic*), and 3 (*good*; see Parker et al., 2015). The kappa statistic for interrater reliability was .85. Raters' scores for each email were averaged and an average quality score computed for each participant (i.e., the sum of averaged rater quality scores was divided by number of emails completed).

# Results

## Manipulation Checks

Analyses of covariance (ANCOVAs) were conducted on demand manipulation checks (i.e., workload and complexity) and revealed no differences across trials or conditions of work control-change ($ps > .311$), suggesting that demand perceptions did not change over trials or as a function of work control. Mean levels of workload ($M_{\text{Trial 1}} = 5.16$, $SD_{\text{Trial 1}} = 1.00$; $M_{\text{Trial 2}} = 4.73$, $SD_{\text{Trial 2}} = 1.26$) and complexity ($M_{\text{Trial 1}} = 4.71$, $SD_{\text{Trial 1}} = 1.08$; $M_{\text{Trial 2}} = 4.74$, $SD_{\text{Trial 2}} = 1.15$) were above the midpoint on a 7-point scale, supporting the inbox activity as demanding.

In support of the manipulation, an ANCOVA revealed work control perceptions varied depending on the work control manipulations, as evidenced by the interaction of trials and condition, $F(3, 148) = 337.153$, $p < .001$, partial $\eta^2 = .87$. Work control perceptions did not change in the low-to-low ($M_{\text{Trial 1}} = 1.35$, $SE_{\text{Trial 1}} = 0.29$; $M_{\text{Trial 2}} = 1.22$, $SE_{\text{Trial 2}} = 0.29$), $F(1, 148) = 0.236$, $p = .628$, *ns*, and high-to-high ($M_{\text{Trial 1}} = 6.28$, $SE_{\text{Trial 1}} = 0.29$; $M_{\text{Trial 2}} = 6.28$, $SE_{\text{Trial 2}} = 0.28$), $F(1, 148) > 0.001$, $p = .987$, *ns*, conditions. As expected, participants in the low-to-high condition increased perceptions of work control, $F(1, 148) = 619.259$, $p < .001$, partial $\eta^2 = .807$, from $M_{\text{Trial 1}} = 1.50$ ($SE_{\text{Trial 1}} = 0.28$) to $M_{\text{Trial 2}} = 7.81$ ($SE_{\text{Trial 2}} = 0.28$). In addition, participants in the high-to-low condition decreased work control perceptions, $F(1, 148) = 402.457$, $p < .001$, partial $\eta^2 = .731$, from $M_{\text{Trial 1}} = 6.68$ ($SE_{\text{Trial 1}} = 0.29$) to $M_{\text{Trial 2}} = 1.32$ ($SE_{\text{Trial 2}} = 0.29$).

## Data Analysis Strategy

Descriptive statistics, reliabilities, and correlations are displayed in Table 1. To test the hypotheses, motivations (i.e., self-determination and non-self-determination) were median split to create low and high groups (see MacCallum, Zhang, Preacher, & Rucker, 2002). The median score for self-determination was 4.83 and for non-self-determination was 4.67. Both variables were normally distributed (i.e., skew and kurtosis statistics were nonsignificant), thus supporting the use of a median split procedure to create low and high groups. ANCOVAs, rather than moderated regressions, were employed, given the repeated-measures experimental design and 4-level control-change manipulation (West, Aiken, & Krull, 1996). This statistical technique enabled examination of whether

Table 1
*Descriptive Statistics and Bivariate Correlations (N = 156)*

| Variables | *M* | *SD* | Range | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baselines | | | | | | | | | | | | | | | | | |
| 1. Anxiety | 1.57 | .72 | 0–4 | (.81) | | | | | | | | | | | | | |
| 2. Intrinsic motivation | 3.01 | 1.08 | 1–7 | .11 | (.87) | | | | | | | | | | | | |
| Global motivation measures | | | | | | | | | | | | | | | | | |
| 3. Self-determination | 4.86 | .67 | 1–7 | −.02 | .18* | (.73) | | | | | | | | | | | |
| 4. Non-self-determination | 4.61 | 1.04 | 1–7 | .16* | .09 | .33** | (.80) | | | | | | | | | | |
| Post Trial 1 measures | | | | | | | | | | | | | | | | | |
| 5. Anxiety | 2.13 | .95 | 0–4 | .39** | .17* | .12 | .16* | (.87) | | | | | | | | | |
| 6. Positive reappraisal | 2.30 | .76 | 0–4 | .13 | .26** | .11 | .09 | .05 | (.60) | | | | | | | | |
| 7. Intrinsic motivation | 3.14 | 1.24 | 1–7 | .13 | .64** | .11 | .18* | .04 | .46** | (.91) | | | | | | | |
| 8. Quantitative performance | 4.69 | 1.68 | 1–8 | −.02 | −.12 | −.14 | −.11 | −.09 | −.11 | −.02 | | | | | | | |
| 9. Qualitative performance | 1.99 | .42 | 1–3 | −.14 | .03 | −.04 | .17* | −.11 | .09 | .07 | −.25** | (.87) | | | | | |
| Post Trial 2 measures | | | | | | | | | | | | | | | | | |
| 10. Anxiety | 1.80 | .91 | 0–4 | .37** | .12 | .15 | .25** | .52** | .17* | .23** | −.07 | −.05 | (.90) | | | | |
| 11. Positive reappraisal | 2.40 | .90 | 0–4 | .02 | .16 | .25** | .06 | .13 | .55** | .28** | −.10 | −.03 | .23** | (.78) | | | |
| 12. Intrinsic motivation | 3.27 | 1.42 | 1–7 | .12 | .63** | .17* | .17* | .03 | .30** | .87** | −.12 | .09 | .21** | .31** | (.94) | | |
| 13. Quantitative performance | 6.29 | 1.55 | 1–8 | −.10 | −.03 | −.07 | −.03 | −.12 | −.15 | −.03 | .67** | −.07 | −.03 | −.02 | −.03 | | |
| 14. Qualitative performance | 1.94 | .36 | 1–3 | −.12 | .10 | −.01 | −.02 | .09 | .11 | .02 | −.04 | .34** | −.10 | −.05 | .04 | −.18* | (.84) |

*Note*. *M* = mean; *SD* = standard deviation. Reliabilities are reported in parentheses.
* $p < .05$. ** $p < .01$, two-tailed.

changes in the dependent variables across measurements (i.e., baseline to Trial 1 to Trial 2) were due to (a) the manipulation of work control-change, (b) type or level of global motivation, or (c) an interaction of work control-change and type or level of global motivation. The results reported here include the full factorial ANCOVAs (where all factors, i.e., trials, work control-change condition, self-determination, and non-self-determination, were included simultaneously) for each dependent variable (Table 2). This approach allows consideration of the effects of both types of motivation at once.

## ANCOVA Results

### Adjustment outcomes.

***Anxiety.*** A main effect of non-self-determination on anxiety, $F(1, 137) = 11.620$, $p = .003$, partial $\eta^2 = .061$ (see Table 2), revealed that those with high non-self-determination were more anxious ($M = 2.02$; $SE = 0.09$) than those low in non-self-determination ($M = 1.68$; $SE = 0.08$). There was a significant two-way interaction of trials by work control-change condition, $F(6, 274) = 2.836$, $p = .011$, partial $\eta^2 = .0758$. However, this interaction was qualified by a three-way interaction of trials, work control-change condition, and non-self-determination, $F(6, 274) = 2.781$, $p = .012$, partial $\eta^2 = .057$ (Figure 1).

The three-way interaction was followed up with the simple effects of trials. For individuals low in non-self-determination, anxiety decreased from Trial 1 to Trial 2 for nonchanging conditions; low-to-low ($p = .003$) and high-to-high ($p = .011$). In the conditions in which work control changed, there was a nonsignificant decrease in anxiety for the low-to-high ($p = .075$) and high-to-low ($p = .063$) conditions. For individuals low in non-self-determination, across all four of the work control-change conditions, by the end of Trial 2, levels of anxiety were no different than they were at baseline ($p$s $> .226$).

For individuals high in non-self-determination, anxiety was unchanged from baseline and from Trial 1 to Trial 2 in the low-to-low condition ($M_{\text{Baseline}} = 1.99$, $SE_{\text{Baseline}} = 0.17$; $M_{\text{Trial 1}} = 2.10$, $SE_{\text{Trial 1}} = 0.22$; $M_{\text{Trial 2}} = 1.78$, $SE_{\text{Trial 2}} = 0.21$), $F(2, 136) = 1.201$, $p = .304$, partial $\eta^2 = .017$, supporting $H_{2b}$. In the high-to-high condition anxiety increased from baseline to Trial 1 to Trial 2 ($M_{\text{Baseline}} = 1.75$, $SE_{\text{Baseline}} = 0.20$; $M_{\text{Trial 1}} = 2.05$, $SE_{\text{Trial 1}} = 0.25$; $M_{\text{Trial 2}} = 2.67$, $SE_{\text{Trial 2}} = 0.24$), $F(2, 136) = 7.043$, $p = .001$, partial $\eta^2 = .094$, supporting $H_{2a}$.

Contrary to expectations, anxiety significantly decreased in the low-to-high condition from Trial 1 to Trial 2 ($M_{\text{Trial 1}} = 2.58$, $SE_{\text{Trial 1}} = 0.22$; $M_{\text{Trial 2}} = 2.00$, $SE_{\text{Trial 2}} = 0.22$; $p = .007$), and did not decrease significantly in the high-to-low condition from Trial 1 to Trial 2 ($M_{\text{Trial 1}} = 2.35$, $SE_{\text{Trial 1}} = 0.24$; $M_{\text{Trial 2}} = 2.00$, $SE_{\text{Trial 2}} = 0.23$; $p = .133$, *ns*). Interestingly, for individuals high in non-self-determination, unlike those low in this trait, anxiety did not return to baseline by the end of Trial 2 in the low-to-high ($M_{\text{Baseline}} = 1.54$, $SE_{\text{Baseline}} = 0.17$; $M_{\text{Trial 2}} = 2.00$, $SE_{\text{Trial 2}} = 0.22$; $p = .037$) and high-to-low ($M_{\text{Baseline}} = 1.42$, $SE_{\text{Baseline}} = 0.23$; $M_{\text{Trial 2}} = 2.01$, $SE_{\text{Trial 2}} = 0.23$; $p = .012$) conditions. It is possible that participants had elevated anxiety in response to the need to adapt to changes in work control, regardless of the direction of work control change; however, for those high in non-self-determination, this generated longer lasting stress reactivity, re-

Table 2
*ANCOVA Summary Table*

| Source | Anxiety ($F$) | Positive reappraisal ($F$) | Intrinsic motivation ($F$) | Quantitative performance ($F$) | Qualitative performance ($F$) |
|---|---|---|---|---|---|
| Main effects | | | | | |
| Trials[a] | .020 | .542 | 1.246 | 14.698** | 10.369** |
| Control-change condition | .492 | .412 | 1.878 | .406 | 1.150 |
| Self-determination | .001 | .068 | 1.880 | .268 | 2.261 |
| Non-self-determination | 8.897* | 1.414 | .455 | .561 | .057 |
| Two-way interactions | | | | | |
| Trials × Control-Change Condition[a] | 2.836* | .534 | 1.484 | 1.489 | 1.012 |
| Trials × Self-Determination[a] | 1.358 | 9.109* | 3.145 | .536 | .645 |
| Trials × Non-Self-Determination[a] | 2.752 | .013 | 1.615 | 2.213 | 1.417 |
| Control-Change Condition × Self-Determination | 1.231 | .500 | .682 | 1.076 | 2.039 |
| Control-Change Condition × Non-Self-Determination | .430 | .533 | .834 | .150 | .587 |
| Self-Determination × Non-Self-Determination | .016 | 1.264 | .480 | .576 | .009 |
| Three-way interactions | | | | | |
| Trials × Control-Change Condition × Self-Determination[a] | 1.464 | 2.798* | .848 | .045 | .428 |
| Trials × Control-Change Condition × Non-Self-Determination[a] | 2.781* | .346 | 1.289 | 1.352 | .805 |
| Trials × Self-Determination × Non-Self-Determination[a] | 2.271 | .003 | .911 | .072 | 1.588 |
| Control-Change Condition × Self-Determination × Non-Self-Determination | 1.558 | 1.431 | .273 | .127 | 1.160 |
| Four-way interaction | | | | | |
| Trials × Control-Change Condition × Self-Determination × Non-Self-Determination[a] | 1.876 | 2.572 | .994 | .976 | .565 |

*Note*. $N = 156$. ANCOVA = analysis of covariance. *MSE* for within-participants effects on anxiety = .385, positive reappraisal = .291, intrinsic motivation = .571; quantitative performance = .869, and qualitative performance = .98; *MSE* for between-participants effects on anxiety = 1.295, positive reappraisal = 1.077, intrinsic motivation = 3.938; quantitative performance = 4.595 and qualitative performance = .197.
[a] Within-participants effects.
* $p < .05$. ** $p < .01$.

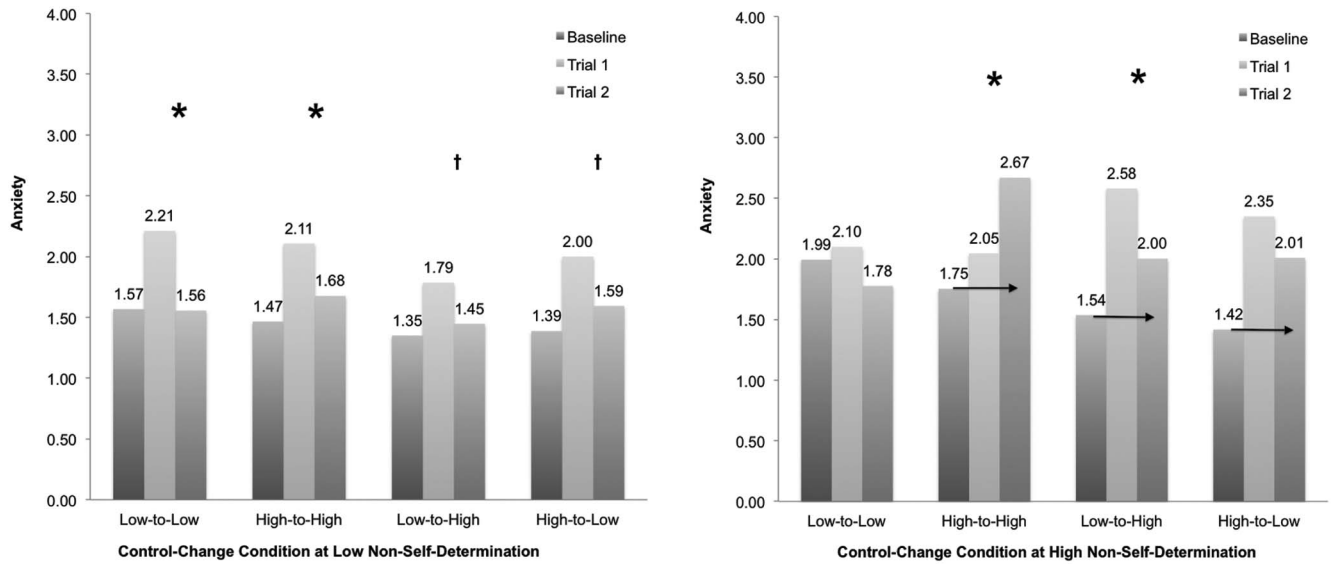


*Figure 1.* Three-way interaction of Trials × Control-Change Condition × Non-Self-Determination on anxiety. *Note.* * Change from Trial 1 to Trial 2 at $p < .05$ level; t $p < .075$ level; → change from baseline to Trial 2 at $p < .05$.

sulting in elevated anxiety at the end of the activity compared with baseline levels.

***Positive reappraisal.*** A two-way interaction of trials and self-determination emerged on positive reappraisal, $F(1, 137) = 9.109$, $p = .003$, partial $\eta^2 = .062$ (see Table 2). This effect was qualified by a significant higher-order three-way interaction of Trials × Work Control-Change Condition × Self-Determination, $F(3, 137) = 2.798$, $p = .042$, partial $\eta^2 = .058$ (Figure 2). The simple effects of trials were examined via pairwise comparisons. There were no differences across trials or control-change conditions for individuals low in self-determination (*p*s > .256). However, in support of $H_{1a}$, individuals high in self-determination in the high-to-high $M_{\text{Trial 1}} = 2.23$, $SE_{\text{Trial 1}} = 0.19$; $M_{\text{Trial 2}} = 2.88$, $SE_{\text{Trial 2}} = 0.22$), $F(1, 137) = 11.454$, $p = .001$, partial $\eta^2 = .077$, and low-to-high conditions $M_{\text{Trial 1}} = 2.18$, $SE_{\text{Trial 1}} = 0.18$; $M_{\text{Trial 2}} = 2.68$, $SE_{\text{Trial 2}} = 0.21$), $F(1, 137) = 7.693$, $p = .006$, partial $\eta^2 = .053$, reported significant increases in positive reappraisal (see Figure 2). Positive reappraisal did not decrease in the

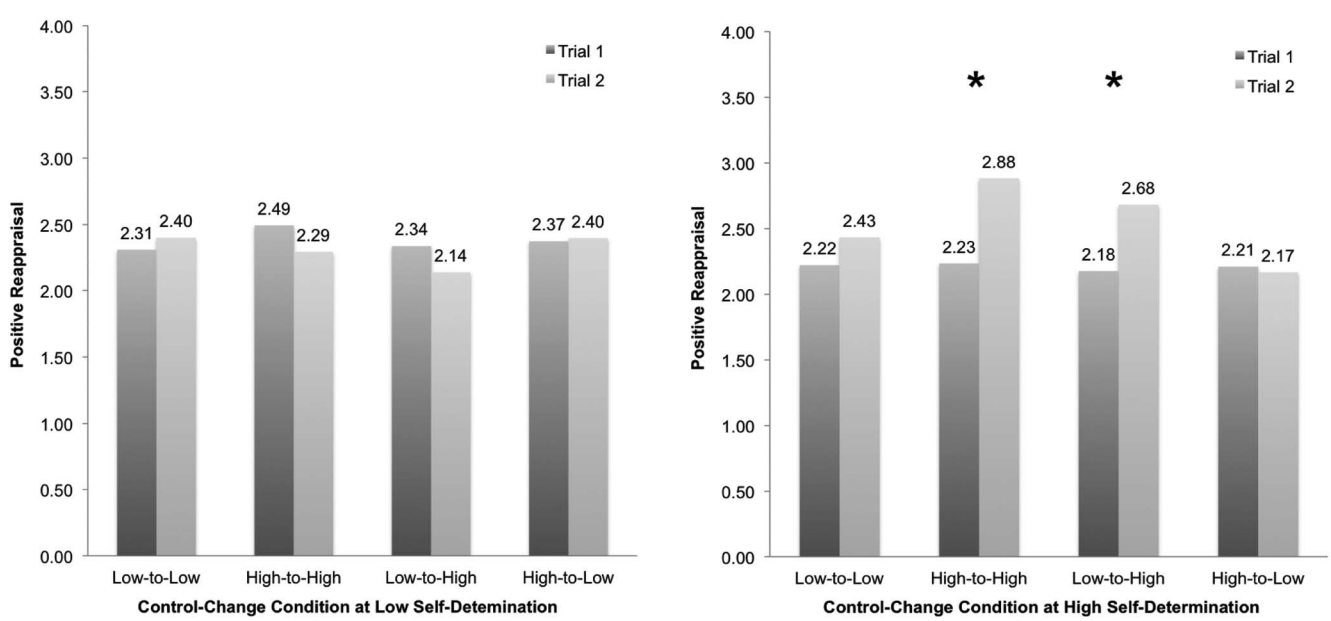


*Figure 2.* Three-way interaction of Trials × Control-Change Condition × Self-Determination on positive reappraisal. *Note.* * Change from Trial 1 to Trial 2 at $p < .05$ level.

condition of nonchanging low work control or in the high-to-low condition ($ps < .233$); as such there was no support for a "P-E Misfit" for individuals high in self-determination ($H_{1b}$).

**Engagement outcomes.**

***Intrinsic motivation.*** There were no main or interactive effects on intrinsic motivation.

***Task performance.*** There was a main effect of trials on quantitative performance, $F(1, 137) = 14.698$, $p < .001$, partial $\eta^2 = .097$ (see Table 2), such that the number of emails completed increased from Trial 1 ($M = 4.65$; $SE = 0.15$) to Trial 2 ($M = 6.31$; $SE = 0.14$). There was a main effect of trials on qualitative performance, $F(1, 137) = 10.369$, $p < .001$, partial $\eta^2 = .07$ (see Table 2), such that the quality of responses decreased from Trial 1 ($M = 2.00$; $SE = 0.04$) to Trial 2 ($M = 1.95$; $SE = 0.03$). It seems participants attempted to increase the number of emails they completed at the expense of the quality of their response during the second trial.

Table 3
*Conditional Indirect Effects of Non-Self-Determined Motivation on Changes in Qualitative Performance Through Changes in Anxiety From Trial 1 to Trial 2*

| | Conditional indirect effect at control-change condition | | | |
|---|---|---|---|---|
| Moderator value | Boot indirect effect | Boot *SE* | L95 | U95 |
| High-to-high control | −.037* | .022 | −.097 | −.007 |
| Other conditions | −.001 | .008 | −.019 | .013 |

*Note.* $n = 156$. Bootstrap $N = 10{,}000$. Unstandardized coefficients are shown. L95 = 95% confidence interval lower limit. U95 = 95% confidence interval upper limit. Bias corrected confidence intervals are reported. Moderator values were dummy-coded levels of control-change manipulation (i.e., 1 = high-to-high; 2 = other three control-change conditions).

## Post Hoc Conditional Indirect Effects

Because there was a lack of support for $H_3$ and $H_4$, we explored the possibility of conditional indirect effects. First, we posited that changes in anxiety (from Trial 1 to Trial 2) would mediate a negative relationship between non-self-determination and changes in intrinsic motivation and task performance, but only in the high-to-high control condition (where an increase in anxiety for individuals high in non-self-determination was observed). Second, we posited that changes in positive reappraisal (from Trial 1 to Trial 2) would mediate a positive relationship between self-determination and changes in intrinsic motivation and task performance, but only in the high-to-high and low-to-high control-change conditions (where an increase in positive reappraisal for individuals high in self-determination was observed). As such, these follow-up tests involved moderated mediation (see first stage moderation as described by Edwards & Lambert, 2007; see also MacKinnon et al., 2012). To test conditional indirect effects, we used Model 7 of PROCESS and bootstrapping analysis (Hayes, 2013a, 2013b). Because PROCESS is regression-based and cannot accommodate repeated measures, we computed change scores for the mediators and outcome variables, where Trial 2 scores were subtracted from Trial 1 scores, such that positive scores reflected an increase and negative scores a decrease in these variables.

The moderated mediation analyses revealed support for a conditional indirect effect of non-self-determined motivation on qualitative performance (Table 3). In the high-to-high condition (and not in the other 3 control-change conditions), higher non-self-determination is indirectly associated with decreased qualitative performance (from Trial 1 to Trial 2), due to increased anxiety. In addition, there was support for a conditional indirect effect of self-determined motivation on intrinsic motivation (Table 4). In the high-to-high and low-to-high conditions (and not the other 2 control-change conditions), higher self-determination was indirectly associated with increased intrinsic motivation (from Trial 1 to Trial 2) due to increased positive reappraisal. Importantly, these two conditional indirect effects were the same when models were tested separately for each possible pair of dummy-coded control-change comparisons. Moreover, when using continuous measures of motivation in the PROCESS analysis, the interaction term of non-self-determination by control-change comparison (high-to-high vs. other conditions) on anxiety change scores was significant, $\beta = .391$, $SE = .159$, $t(155) = 2.459$, $p = .015$, as was the interaction term of self-determination by control-change comparison (high-to-high and low-to-high vs. other conditions) on positive reappraisal change scores, $\beta = .399$, $SE = .183$, $t(155) = 2.180$, $p = .031$, thus replicating the findings of ANCOVAs in which dichotomized motivations were used.

Finally, given the propositions of Gross (2002), we tested the conditional indirect effect of self-determination, depending on control-change condition (i.e., moderator), through changes in positive reappraisal (i.e., mediator) onto anxiety. We expected self-determined individuals' use of positive reappraisal would inhibit stress reactivity in the high work control trials. However, there was no support for this effect.

## Discussion

The overall pattern of findings indicate that high self-determined individuals implemented an adaptive strategy (i.e., positive reappraisal) to deal with the demands of the task when they had access to high work control (supporting $H_{1a}$). Follow-up moderated mediation analyses revealed this enhanced positive reappraisal increased intrinsic motivation by the end of Trial 2. In contrast, high non-self-determined individuals found continuous high work control anxiety-provoking (supporting $H_{2b}$), while continuous low work control inhibited anxiety (supporting $H_{2a}$). Follow-up moderated mediation analyses revealed this elevated anxiety in the high-to-high control condition reduced their task performance by Trial 2, specifically the quality of email responses. Although not hypothesized, it was revealed high non-self-determined individuals had elevated anxiety by the end of Trial 2 (compared to baseline) in conditions where work control changed.

Importantly, the post hoc moderated mediation results suggest that one reason we might not have observed support for $H_3$ and $H_4$ is because there is no direct effect of P-E Fit and P-E Misfit on engagement (i.e., intrinsic motivation and task performance). More specifically, the effect of "fit" on engagement is indirect (i.e., through changes in anxiety and positive reappraisal). In this way, adjustment is a proximal outcome of P-E interactions, and only through adjustment, or a lack thereof, do we observe changes in engagement.

Table 4
*Conditional Indirect Effects of Self-Determined Motivation on Changes in Intrinsic Motivation Through Changes in Positive Reappraisal From Trial 1 to Trial 2*

| Moderator value | Conditional indirect effect at control-change condition | | | |
|---|---|---|---|---|
| | Boot indirect effect | Boot *SE* | L95 | U95 |
| High-to-high control and low-to-high control | .078* | .043 | .017 | .194 |
| Low-to-low control and high-to-low control | .007 | .025 | −.035 | .070 |

*Note*. $n = 156$. Bootstrap $N = 10{,}000$. Unstandardized coefficients are shown. L95 = 95% confidence interval lower limit. U95 = 95% confidence interval upper limit. Bias corrected confidence intervals are reported. Moderator values were dummy-coded levels of control-change manipulation (i.e., 1 = high-to-high and low-to-high; 2 = low-to-low and high-to-low).

## Effects of Self-Determination

Individuals who are self-determined are highly reflective and seek to derive importance or pleasure from the activities they undertake (Ryan & Deci, 2000). According to Knee and Zuckerman (1998), a self-determined type of personality evolves from contexts that promote and support autonomy and choice, providing the necessary ingredients for psychological growth and development. The increases in positive reappraisal found for individuals high in self-determination under high work control supports this notion and a P-E Fit perspective on adjustment (French et al., 1982; Kristof-Brown et al., 2005). This finding also supports the results reported by Parker, Jimmieson, & Amiot (2013) who found that high self-determined individuals under high work control were able to adapt planning coping efforts in response to changes in workload. Our moderated mediation analyses further revealed that increases in positive reappraisal had positive consequences for intrinsic motivation, which is in line with prior field research where managers' autonomy support (i.e., efforts to enable self-awareness and discretion) increased autonomous employees' need satisfaction which, in turn, related to better performance evaluations and psychological well-being (Baard et al., 2004). Positive reappraisal did not increase during the second trial: (a) when work control was held at a low level in both trials, (b) when work control was reduced from Trial 1 to Trial 2, and (c) when individuals reported low self-determination. It is possible that low autonomy, in the form of either a low autonomy-supportive environment (i.e., low work control) or low global self-determination, inhibits positive reappraisal of a demanding task.

Self-determined individuals' resilience to low work control was contrary to hypotheses (and contrary to prior field research; see Fernet et al., 2004). According to *needs as motives* research (Deci & Ryan, 2000; Moller, Deci, & Elliot, 2010; Radel, Pelletier, Sarrazin, & Milyavskaya, 2011; Sheldon & Gunz, 2009), although self-determined individuals have had their need for autonomy satisfied over the course of development, this need still requires continued nourishment in new contexts. Theoretically, it is possible there were no interactive effects of self-determination and work control-change on anxiety because of enhanced positive reappraisal, which inhibited the emotion generation process that would normally lead to negative emotions (Gross, 2002). However, we found no support for this in our post hoc analyses. Further research is needed to investigate the mechanisms through which self-determined individuals have greater capacity to cope with demanding work, potentially at the neural level (Legault & Inzlicht, 2013), or investigation of proactive coping strategies (Sohl & Moyer, 2009). It is important to highlight that the absence of self-determination might not be necessarily a source of vulnerability, at least not in the context of a novel and demanding work task. However, our findings do indicate high non-self-determination might act as a source of vulnerability during stressful work.

## Effects of Non-Self-Determination

A main effect was revealed on anxiety, whereby participants with high non-self-determination (compared to low non-self-determination) experienced higher anxiety during the work simulation. In employee samples, non-self-determined work motivation is associated with higher anxiety and depression (Parker et al., 2010). However, this main effect was qualified by an interaction. The three-way interaction on anxiety revealed that individuals with low non-self-determination—regardless of the work control-change condition—reported reduced anxiety levels when they experienced the task a second time. In contrast, for participants with high non-self-determination, experiencing low work control was beneficial for anxiety when held constant (supporting $H_{2b}$). In contrast, high non-self-determined individuals experienced increased anxiety in the nonchanging high work control condition (supporting $H_{2a}$), and our post hoc moderated mediation analyses revealed negative consequences of this elevated anxiety for task performance by Trial 2. Again, these findings support a P-E Fit perspective as individuals with high non-self-determination seem to find a degree of comfort in the structure afforded by low work control while also experiencing discomfort with conditions of high work control (when these levels of control remain stable over trials). According to the needs-as-motives hypothesis (Sheldon & Gunz, 2009), individuals who have had their need for autonomy thwarted should hold a stronger desire for opportunities to be autonomous. Although non-self-determined individuals might desire to be autonomous, they lack the concrete capacities to take advantage of the work control opportunities made available to them.

Our results provided only partial support for $H_{2a}$ and $H_{2b}$ in that the anxiety of high non-self-determined individuals did not significantly decrease when low work control was introduced in Trial 2 (after having high control for Trial 1) and their anxiety decreased in the low-to-high condition. The latter finding suggests that high non-self-determined individuals can benefit from high work control after some practice on a task under low work control (see Radel et al., 2011; Deci & Ryan, 2000). For these individuals, becoming acquainted with a new task in a highly structured manner (i.e., under the rules and procedures of low work control) is preferred. Anxiety was elevated at the end of Trial 2 (compared to baseline) for high non-self-determined individuals when work control changed (i.e., either going from low-to-high or from high-to-low). A prior work simulation experiment by Parker, Jimmieson, & Amiot (2013) supports this finding, as it was demon-

strated that individuals high in non-self-determination under high work control experience stress reactivity to fluctuations in workload (whether the workload increased or decreased). These findings demonstrate individuals high in non-self-determination might be more reactive to changes in their external environment.

## Theoretical and Practical Implications

Recent research examining motivation profiles lends support for the differential effects of self-determined and non-self-determined motivation observed in the current study (Moran, Diefendorff, Kim, & Liu, 2012; Van den Broeck, Lens, De Witte, & Van Coillie, 2013). Seemingly, it is not necessary for someone to be high in self-determination to experience less anxiety on a stressful task. Although high self-determination might enable more adaptive reactions when the conditions suit (i.e., increased positive reappraisal under high work control), it seems it is the presence or absence of non-self-determination that is crucial in determining stress reactivity to levels of and changes in work control.

Although most individuals desire to have control over themselves and their world (Greenberger et al., 1986; Deci & Ryan, 2000), not all individuals will be equipped to take full advantage of control opportunities when these are afforded. Research indicates that non-self-determination is associated with more reactivity to environments, whereas self-determination is associated with greater self-awareness and reflectivity (Hodgins & Knee, 2002; Hodgins et al., 2010; Hodgins et al., 2006; Knee & Zuckerman, 1998; Koestner & Zuckerman, 1994; Soenens et al., 2005). It is likely that self-determined individuals are better able to accurately identify control opportunities in the environment and also hold more positive expectations about these opportunities. In turn, being aware and nondefensive equips them to use emotion regulation strategies that are antecedent-focused (e.g., positive reappraisal in this study and planning coping in Parker, Jimmieson, & Amiot, 2013). In contrast, non-self-determined individuals' lack of control awareness and capability makes low control more acceptable and high control more stress-exacerbating. Acceptance of low control environments is possibly due to system justification. Only when attention is cued to the restrictive nature of policies does psychological reactance occur, and in the absence of such cues the fairly automatic process of system justification ensues (Laurin, Kay, Proudfoot, & Fitzsimons, 2013).

Meta-analytic findings demonstrate person-job fit (i.e., compatibility of abilities to job demands) is particularly important for alleviating strain and fostering performance (Kristof-Brown et al., 2005). Job enrichment and employee participation can foster person-job fit by taking into account individuals' motivation. For example, providing more support around autonomy-related interventions for individuals with high non-self-determination. However, it is possible that the importance of person-job fit lessens as employees gain experience and learn new strategies to deal with demanding work. That being said, our findings indicate non-self-determined employees could benefit from: (a) initial practice at novel tasks under high task structure, as well as training/development on how to (b) adapt to changing conditions (see also Parker, Jimmieson, & Amiot, 2013), (c) be proactive (i.e., how to take advantage of work control opportunities; Searle, 2008), and (d) positively reappraise (Jamieson et al., 2010, 2012; Gross, 2002).

## Limitations and Future Research

The inbox activity was designed to maximize the realism of the experimental task and although we used a student sample, the vast majority of our participants had work experience. Experimental research is useful for identifying and isolating the essential features of employee behavior to guide future research in the field setting (Locke, 1986). Nonetheless, our findings are limited to short-term simulated work with an undergraduate sample. While it is important to understand how employees respond to the objective conditions of their work, previous research suggests the perception of work control drives interventions targeted at enhancing autonomy (Bond, Flaxman, & Bunce, 2008; Holman, Axtell, Sprigg, Totterdell, & Wall, 2010; Logan & Ganster, 2005). To this end, experience-sampling methodologies with employee samples would be worthwhile.

Although it is possible that individuals with high non-self-determination initially find comfort in low work control but can adapt to high work control, an alternative explanation is that the strategies developed under low work control (or indeed the comforts garnered from this) were retained in Trial 2—even after the opportunity for high work control was provided (see also Niessen & Volmer, 2010). To address this issue, future experiments could examine how behavioral strategies change in response to changes in work control. Future experiments also would benefit from inclusion of more trials to further examine adaptation.

## Concluding Remarks

During a demanding work task, high work control is not always useful for adjustment and engagement; it depends on individuals' motivation. For high non-self-determined individuals, high work control increased stress reactivity (i.e., as reflected in higher scores on anxiety), which had negative consequences for task performance. In contrast, for high self-determined individuals, high work control fostered positive reappraisal, which had positive implications for intrinsic motivation. It also was revealed that those high in non-self-determination had elevated anxiety overall, and that changes in work control resulted in elevated anxiety (compared to baseline) for these individuals. These findings highlight that it is non-self-determination that is an important determinant of stress reactivity during demanding work. Further research adopting a within-participants perspective on the stressor-strain process is needed to understand the dynamic effects of work control on individuals' experience of stress, successful regulation of it, and the consequences for motivation and performance.

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