Getting Back to the "New Normal":

Autonomy Restoration during a Global Pandemic

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Abstract

We investigate the psychological recovery process of full-time employees during the two-week period at the onset of the Coronavirus pandemic (COVID-19). Past research suggests that recovery processes start *after* stressors abate and can take months or years to unfold. In contrast, we build on autonomy restoration theory to suggest that recovery of impaired autonomy starts immediately even as a stressor is ongoing. Using growth curve modeling, we examined the temporal trajectories of two manifestations of impaired autonomy—powerlessness and (lack of) authenticity—to test whether recovery began as the pandemic unfolded. We tested our predictions using a unique experience-sampling dataset collected over a two-week period beginning on the Monday after COVID-19 was declared a "global pandemic" by the WHO and a "national emergency" by the U.S. Government (March 16-27, 2020). Results suggest that autonomy restoration was activated even as the pandemic worsened. Employees reported decreasing powerlessness and increasing authenticity during this period, despite their subjective stress-levels not improving. Further, the trajectories of recovery for both powerlessness and authenticity were steeper for employees higher (vs. lower) in neuroticism, a personality characteristic central to stress reactions. Importantly, these patterns do not emerge in a second experience-sampling study collected prior to the COVID-19 crisis (September 9-20, 2019), highlighting how the pandemic initially threatened employee autonomy, but also how employees began to recover their sense of autonomy almost immediately. The present research provides novel insights into employee well-being during the COVID-19 pandemic and suggests that psychological recovery can begin *during* a stressful experience.

Keywords: autonomy; psychological recovery; stress; neuroticism; COVID-19

The COVID-19 pandemic is already considered a generation-defining public health and economic crisis, the full consequences of which will likely take years to be fully realized. Globally, there are over 10 million confirmed COVID-19 cases and more than 500,000 deaths (Dong, Du, & Gardner, 2020)[1], while in the U.S., the pandemic has led to record unemployment rates and trillions of dollars in government-sponsored economic stimulus aimed at stabilizing the reeling economy after entire industries have come to a halt. Consequently, nearly all employees have had to abruptly embrace fundamental changes to their work routines. Consequently, in a recent survey of U.S. workers, 69% indicated that COVID-19 was the most stressful time of their entire professional careers (Glass, 2020, April 11).

Stressful circumstances like the COVID-19 crisis can damage employees' well-being in general (for a review, see Bliese, Edwards & Sonnentag, 2017), but can be specifically harmful to employees' sense of autonomy (Deci & Ryan, 2008; Ryan & Deci, 2000, 2017). Indeed, the uncontrollability of one's economic future (e.g., layoffs, furloughs), looming threats to physical health (e.g., infection risk, inadequacy of medical resources), constraints on physical movement (e.g., stay at home orders, social distancing), and mandatory telecommuting arrangements all serve to threaten employees' sense of autonomy. Furthermore, while prior work has shown that *voluntary* telecommuting can have positive outcomes for employees (Gajendran & Harrison, 2007), this work also recognizes that *mandatory* telecommuting can have detrimental effects on employees (Lapierre, Van Steenbergen, Peeters, & Kluwer, 2015). Thus, determining if employees recover their sense of autonomy, over what time period, and which employees are better/worse equipped to recover, is crucial for understanding the impact of COVID-19 because

[1] As of June 29, 2020.

"being able to satisfy the need for autonomy is essential" for employees to flourish (Deci & Ryan, 2000, p. 242).

To examine these questions, we conducted a 10-day experience-sampling (ESM) study involving working professionals from a variety of organizations who were thrust into a stressful state during the initial days of the COVID-19 pandemic. Our data collection window (March 16-27, 2020) was uniquely positioned to observe employees' experiences in the early stages of the pandemic as our first daily survey started almost immediately after the U.S. President declared the pandemic a "national emergency" (March 13), the U.S. Government issued formal stay-at-home and social distancing guidelines (March 16), and the Dow Jones Index recorded its largest point drop in history (March 16; see Figure 1). Focusing on this unique time period provides novel insights into how employees recover their autonomy from stressful and traumatic events. While prior work largely focuses on recovery after stressors have ended and generally conceptualizes recovery as a long term process, our model predicts and finds that employees begin to recover their sense of autonomy (indicated as reduced powerlessness and increased authenticity) immediately following the onset of a stressor, even while the stressor is ongoing. In supplemental analyses, we examine the moderating role of neuroticism and show that while employees higher (vs. lower) in neuroticism have more extreme initial negative reactions to the pandemic, consistent with the person-environment (P-E) fit theory of job stress (Camacho et al., 2003; French et al., 1982; Shah et al., 1998), they recover their autonomy at a faster rate.

Theory and Hypotheses

Past work seeking to understand how people recover from stressful or traumatic events has demonstrated that human beings are remarkably resilient in the face of stress, as they are equipped with psychological tools that facilitate recovery (Bonanno, 2004; Gilbert et al., 1998;

Martin, 1917). However, past work on psychological recovery is ill-equipped to explain how employees react to and recover from sudden and ongoing stressors such as the COVID-19 pandemic for several reasons.

First, the majority of work studying recovery after traumas documents a recovery process after the stressor has abated (Bonanno et al., 2002; Horgan & MacLachlan, 2004; Shepherd & Haynie, 2011; Updegraff & Taylor, 2000), and even then, studies rarely begin assessing recovery processes until months or years after the end of the stressor (Norris, 2006). This research has provided valuable insights into recovery processes that occur *after* discrete stressor events end (Bonanno et al., 2002; Horgan & MacLachlan, 2004; Shepherd & Haynie, 2011; Updegraff & Taylor, 2000) and stressors that abate over time (Farber & Egeland, 1987; Masten & Gewirtz, 2006; Miller et al., 2007). However, not all stressors are experienced as less stressful over time. Some stressors (such as COVID-19) are characterized by both an immediate onset of acute stress (e.g., sudden work from home and social distancing orders) as well as a sustained or increasing level of chronic stress due to deteriorating circumstances (e.g., exponential increase in infections and deaths), but prior work is ill-equipped to speak to how employees may recover from such stressors. Speaking to this point, scholars have recognized that "undeniably, the field as a whole has not done very well in capturing the element of time" (Norris, 2006, p. 182). Building on autonomy restoration theory (Radel et al., 2011), we provide evidence that employees begin recovering *immediately* following the onset of a stressor, even while the stressor is ongoing.

Second, our work departs from past work that has tended to conceptualize recovery as a slow process (Karstoft et al., 2013; Lauterbach & Armour, 2016; Maslow et al., 2015). Indeed, prior work has primarily focused on *long-term* recovery assessed at *infrequent* intervals (for a review see Galatzer-Levy, Hunag, & Bonanno, 2018), indicating that recovery unfolds slowly,

and that changes are observed over months and years. Our work, however, demonstrates that recovery is observable in as little as two weeks following the onset of a stressor. This is an important insight, as scholars have emphasized the need to better understand the way individuals "experience the crucial early weeks after an extreme stressor event" (Bonanno, 2005, p. 138).

Finally, past work on recovery processes has prioritized studying indicators of psychological well-being that are relevant to diagnosing recognized mental disorders (e.g., PTSD, depression, anxiety, see Galatzer-Levy et al., 2018). Building on autonomy restoration theory (Radel et al., 2011), we focus on how employees recover indicators of autonomy (e.g., powerlessness, authenticity) and demonstrate that these indicators exhibit fundamentally different patterns of recovery compared to more commonly studied recovery outcomes. Overall, the current work offers novel insights into the nature and timing of the psychological recovery process that past work is unable to address.

Autonomy Restoration during an Ongoing Crisis

In the present work, we propose that when employees' autonomy is threatened by an exogenous stressor (i.e., the COVID-19 pandemic), they will immediately begin to restore their autonomy even as the stressor is ongoing and objectively intensifying. In developing our hypotheses, we build on autonomy restoration theory (Radel et al., 2011), which specifies that the need to restore one's autonomy is so fundamental for employees that the process of restoring autonomy begins "immediately following the experience of an autonomy-depriving event" (Radel et al., 2011, p. 930).

Autonomy is a multi-dimensional construct (Deci & Ryan, 2012), as it relates to both "issues of freedom and authenticity" (p. 2). Indeed, scholars have recently suggested that autonomy is comprised of "the need to experience one's self as the author of one's actions" as

well as the need for the self "to be aligned with one's personal values and goals" (Ryan & Ryan, 2018, p. 2). In the present work, we explore two manifestations of threatened autonomy – powerlessness (defined as lack of freedom from external constraints, Ashforth & Mael, 1989; De Cremer et al., 2011; Mirowsky & Ross, 1983; Seeman, 1972), and reduced authenticity (defined as the belief that one's "behaviors are authored by the self, internally caused, and reflect choice and self-expression", McConnell et al., 2005, p. 3; Sheldon et al., 1997). Importantly, both power experiences (Smith & Hofmann, 2016) and authenticity (Lenton et al., 2016; Lopez & Rice, 2006; Sedikides et al., 2017) exhibit substantial day-to-day variance, highlighting the appropriateness of the experience sampling methodology used in the current work.

Despite the existence of a vast literature highlighting the importance of autonomy as a fundamental psychological need, comparatively little work has examined how employees respond over time when confronted with threats to autonomy. According to autonomy restoration theory (Radel et al., 2011), unmet autonomy needs can generate a restorative motive whereby individuals react to autonomy threats by increasing their concern with and efforts to satisfy their autonomy needs. Specifically, when an individual is deprived of autonomy, the behavioral schema needed to restore autonomy becomes increasingly accessible (Aarts et al., 2001; Seibt et al., 2007; Strack & Deutsch, 2004). For example, employees may respond to the experience of powerlessness by engaging in learning activities to extend their skills (e.g., learning how to use virtual conferencing software such as Zoom) and finding new ways to exert control over their environment (e.g., by arranging a home-work space and a new work routine). Similarly, employees may look for ways to increase their sense of authenticity by, for example, wearing more comfortable clothing while working or finding new ways to express one's personality in a virtual work environment.

These predictions are consistent with work suggesting that when confronted with constraints and restrictions on freedom, individuals react strongly and work to regain their lost freedom (Bensley & Wu, 1991; Brehm, 1966; Brehm & Brehm, 1981). However, one limitation of this work is that "it is hard to say whether the autonomy restorative response would occur in the same way in real life settings" as the majority of studies on autonomy restoration have been conducted in controlled laboratory environments (Radel et al., 2011, p. 929). In the present research, we are able to answer this question at the onset of a global pandemic. To that end, we extend work on the autonomy restoration process to a real-life context involving a strong threat to employees' autonomy by proposing the following hypotheses:

H1: After exposure to an ongoing stressor, powerlessness will decrease over time.

H2: After exposure to an ongoing stressor, authenticity will increase over time.

Methods

Participants

We invited all of the employees with publicly available email addresses and job titles from 41 community colleges across a large state on the West Coast of the U.S. to participate in this study via email in exchange for an Amazon.com gift card. [2] This study was conducted under IRB Protocol #UP-20-00098 at the University of Southern California (Project Title: "ESM Study of Daily Work Experiences"). A total of two-hundred sixty-seven employees accessed and at least partially completed the background survey and a total of one hundred ninety-eight

[2] We used a tiered payment schedule to incentivize maximum participation. Specifically, participants received $5.00 for completing the background survey and at least one daily survey, an additional $0.25 for each unique survey completed, a $1.50 bonus each day for which they completed all of the daily surveys, and an additional $10.00 bonus at the end of the study if they fully participated in at least seven out of the ten days of the study. Finally, we awarded a $250 bonus payment to one randomly selected participant at the end of the study who fully participated in at least seven of the ten study days. We paid participants in the form of an Amazon.com gift card code that we emailed to participants at the conclusion of the study.

employees completed the entire background survey (described below). Of those 198 employees, 142 participated in the daily portion of the study (described below). Employees held positions such as accounting specialist, director of admissions, and IT manager. Consistent with prior studies using similar designs, we removed participants who did not participate fully in at least 3 (out of 10) of the daily surveys (Barnes et al., 2015; Rosen et al., 2016), which resulted in an effective sample size of 117 employees (24.6% male; age $M = 44.39$, $SD = 11.64$, 44% response rate). Participants reported having an average of 22.85 years of work experience ($SD = 12.64$) and working an average of 40.20 hours per week ($SD = 5.17$). During the time period of our data collection, participants reported working an average of 8.00 hours per day ($SD = 1.25$).

Participants completed a one-time background survey the week prior to the daily surveys (March 9-15, 2020), which included the informed consent release, a measure of neuroticism, as well as demographic information. The daily surveys were completed over the course of two consecutive work weeks (March 16-27, 2020) and were collected as part of a broader data collection effort. Participants received three surveys (via email) each work-day (Monday-Friday). The first day of the daily portion of our study (March 16) was the first work day after the bulk of the closures and shut downs associated with the COVID-19 outbreak in the United States[3]. Each daily survey captured participants' momentary powerlessness, momentary authenticity, and momentary stress about the COVID-19 situation. To minimize retrospective bias (Beal & Weiss, 2003; Gabriel et al., 2019), the surveys were spaced out throughout the work-day and sent in the morning (9:30am), early afternoon (1:00pm), and late afternoon

[3] From the week ending March 14, 2020 to the week ending March 28, 2020 in the U.S., the number of COVID-19 related deaths increased by 5,217% and number of confirmed COVID-19 cases increased by 5,390%. Additionally, initial unemployment claims increased by 1,964% when comparing our data collection window to the two-week period immediately preceding our data collection window, which was the greatest increase in initial unemployment claims from one two-week period to the next since the Labor Department began tracking this information in 1967.

(4:30pm). Because each survey was designed to capture momentary observations of each focal construct at a specific point in the workday, we removed daily observations where participants completed the surveys out of sequence (N =31). Additionally, to ensure that our results were focused on working employees, we removed daily observations where participants reported not working the majority of the work day (i.e., at least 5 hours; N = 147),[4] as this threshold has been used in past research to designate full-time employees (Ehrhardt & Ragins, 2019). Our final sample size included 735 person-day observations (62.8% participation rate).

Measures

Daily Constructs. To minimize response fatigue associated with responding to 3 daily surveys over 10 work-days, following recent recommendations for ESM research (Gabriel et al., 2019; Ohly et al., 2010), we assessed our focal daily constructs (powerlessness, authenticity, COVID-19 stress) using single-items in the morning, early afternoon, and late afternoon of each survey day. [5] Single-item measures can be appropriate when the burden on respondents is high and the item is face valid and not subject to idiosyncratic interpretations (Fisher & To, 2012; Gabriel et al., 2019).

To assess powerlessness, participants responded to the statement, "Right now, I feel powerless" (from *1 = Strongly Disagree* to *5 = Strongly Agree*). To assess authenticity, participants responded to the statement, "I feel like I am able to truly be myself right now" (from

[4] As a robustness test, we also estimated our model without removing participants who reported not working the majority of the work day, and the interpretation of our focal relationships remained unchanged.

[5] Following the recommendations of Gabriel et al. (2019), we conducted a validation study on Mechanical Turk to establish the validity off our single-item measures (N=201, 68.2% male, age M = 36.17, SD = 10.58). Our single-item measure of powerlessness correlated significantly with the low-power subscale of the sense of power scale (r = .85, p < .01, Anderson, John, & Keltner, 2012) and our single-item measure of authenticity correlated significantly with the state authenticity scale (r = .78, p < .01, Fleeson & Wilt, 2010). Additionally, a CFA revealed that a two-factor model (df = 13, χ^2 = 34.75, CFI = .98, TLI = .97, SRMR = .03, RMSEA = .09) fit the data significantly better than a one-factor model (df = 14, χ^2 = 349.64, CFI = .72, TLI = .57, SRMR = .19, RMSEA = .35), Δdf = 1, $\Delta\chi^2$ = 314.89.

1 = Strongly Disagree to *5 = Strongly Agree*). To assess COVID-19 stress, participants responded to the question, "What is your current stress level regarding the COVID-19 situation?" (from *1 = Not Stressed at All* to *5 = Very Stressed*). Because we expected day-level variance in these constructs, following the recommendation of Chan (1998) we employed an additive model and calculated the simple day-level mean for each construct.

Results

Descriptive statistics for and correlations among all variables are presented in Table 1. Given our theoretical interest in exploring trends over time in powerlessness and authenticity, as well as whether these trends are different for employees who are higher (vs. lower) in neuroticism, we tested our hypotheses by estimating growth curves using Random Coefficient Modeling (RCM; Bliese & Ployhart, 2002). RCM uses a multilevel approach, with daily observations nested within employees, and calls for regressing level-1 (within-person) variables on time to estimate a slope for the trajectory of that variable over time. Since our study took place over 10 consecutive work-days, we included a Study Day variable in our model, which took the value of 1-10 and indicated the study day. RCM allows testing for individual differences in trajectories over time by regressing the level-2 (between-person) slope over time on individual difference variables (Bliese & Ployhart, 2002). Therefore, following the recommendations of the RCM procedure, at level-1 (within-person) we estimated random slopes regressing our focal constructs (powerlessness and authenticity) on time (study day), and then at level-2 (between-

person), we regressed these random slopes on neuroticism.[6,7,8] We estimated a model in Mplus 8.0 (Muthén & Muthén, 2017), in which we simultaneously estimated the random slopes for powerlessness and authenticity over time, and the influence of neuroticism on these trajectories.

Hypothesis 1 predicted that powerlessness would decrease over time. As predicted, time had a negative influence on powerlessness ($\gamma = -.04$, $p < .01$), suggesting that employees felt less powerless over the 10 days (see Figure 2). Hypothesis 2 predicted that authenticity would increase over this same time period. As predicted, time had a positive influence on authenticity ($\gamma = .02$, $p < .05$), suggesting that employees felt more authentic over the 10 days (see Figure 2).[9,10] We followed the procedure described by Lang, Bliese, and Runge (*in press*) to calculate likelihood-based R2 statistics, and these analyses indicated that these trends over time accounted for 10.5% of the variance in powerlessness and 11.1% of the variance in authenticity.

While our arguments suggest that the downward trend in powerlessness and the upward trend in authenticity we observed are unique to the time period of our data collection during the

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[6] The multilevel equations for these models are as follows:
$Y_{ij} = \pi_{0j} + \pi_{1j(}\text{Time}_{ij)} + r_{ij}$
$\pi_{0j} = \beta_{00} + \beta_{01}\text{Neuroticism}_{ij} + u_{0j}$
$\pi_{1j} = \beta_{10} + \beta_{11}\text{Neuroticism}_{ij} + u_{1j}$

[7] As a robustness test, we ran supplemental models following the steps outlined by Bliese and Ployhart (2002) to account for autocorrelation and heteroscedasticity. The interpretation of all focal relationships remained unchanged in these models, suggesting that autocorrelation and heteroscedasticity are not exerting a meaningful influence on our results.

[8] According to Bliese and Ployhart (2002), one of the prerequisites for using RCM to explore growth curves is that there must be significant level-2 variance to necessitate multilevel modeling. Therefore, following these recommendations, prior to estimating our models we calculated ICCs for each of our daily variables to ensure that the assumptions of the RCM procedure were met. These results indicated that for powerlessness (ICC1=.59), authenticity (ICC1=.73), and COVID-19 stress (ICC1=.76), there was substantial between-person variance to necessitate multilevel modeling.

[9] According to Bliese and Ployhart (2002) additional validity for support of a linear temporal trend can be found by also testing curvilinear effects to ensure that the linear trend is not mis-specified. Therefore, we estimated a supplemental model where we included time as well as a fixed slope for time squared as predictors of both powerlessness and authenticity. In these supplemental analyses the square term was non-significant for both powerlessness and authenticity, providing additional confidence in the conclusion that there is a linear trend in both over time.

[10] The Mplus syntax and output used in this study are available to download by accessing the following OSF registered project link: https://osf.io/dptku.

COVID-19 crisis, an alternative explanation is that employees always experience these linear trends independent of the exogenous COVID-19 situation. Additionally, an assumption of our model is that employees living through the COVID-19 pandemic (vs. employees not living through the pandemic) initially felt more powerless and less authentic. Therefore, to rule out this alternative explanation and test the underlying assumptions of our model, we compared the results of our model to an identical model using data collected as part of a broader data collection effort well before the COVID-19 outbreak (i.e., September 9–20, 2019, see Appendix for details). We used multigroup analysis in Mplus 8.0 (Muthén & Muthén, 2017) to fit our model onto both datasets, and then used the model constraint feature to compare the parameters from the two models. Thus, we were able to approximate a discontinuous growth model (DGM; Bliese & Lang 2016, Singer & Willett 2003) which can "enhance our theoretical understanding of meta-concepts such as adaptability and resilience" (Bliese, Adler, & Flynn, 2017, p. 264).

Results indicated that the intercept of powerlessness in the post-COVID-19 onset data was significantly greater than that in the pre-COVID-19 onset data ($\Delta\gamma = .86$, $p < .01$), and that the intercept for authenticity in the post-COVID-19 onset data was significantly lower than that in the pre-COVID-19 onset data ($\Delta\gamma = -.49$, $p < .01$), providing evidence for our assumption that the crisis caused employees to initially feel more powerless and less authentic. Next, we compared the trajectories over time for powerlessness and authenticity between the two datasets. There was no significant temporal trend in either powerlessness ($\gamma = .01$, ns) or authenticity ($\gamma = -.01$, ns) in the pre-COVID-19 onset dataset, and the temporal trajectories in both powerlessness ($\Delta\gamma = -.05$, $p < .01$) and authenticity ($\Delta\gamma = .03$, $p < .05$) were significantly stronger in the post-COVID-19 onset dataset compared to the pre-COVID-19 onset dataset (see Figure 2). Consistent with our theorizing, these results provide additional evidence that the temporal trajectories of

powerlessness and authenticity observed in our focal dataset are unique to the time period associated with the COVID-19 outbreak.

Supplemental Analysis

An alternative explanation for our findings is that employees' stress was *decreasing* over time in a way that made them feel less powerless and more authentic. To test this possibility, we used the RCM procedure (Bliese & Ployhart, 2002) to estimate a growth curve for COVID-19 stress over the 10 days of our study. Results suggested that COVID-19 stress was not decreasing over the course of the 10 days of our study, as the linear trend was positive and significant (γ = .09, $p < .01$)[11]. The daily values of COVID-19 stress, as well as the daily values of powerlessness and authenticity, are presented in Figure 2, and demonstrate that although powerlessness was decreasing and authenticity was increasing over time, employees' stress was not decreasing. Additionally, as presented in Figure 1, the objective situation was worsening over the time frame of our study, yet employees were feeling less powerless and more authentic during this time. These results indicate that both subjectively and objectively the COVID-19 situation was not improving during the time frame of our data collection.

To provide additional insights into the way employees recovered during the COVID-19 crisis, we also explored how employees' neuroticism influenced their powerlessness and authenticity during this time period. Neuroticism reflects the extent to which individuals tend to be nervous, anxious, depressed, self-conscious, and vulnerable (Gosling et al., 2003; John & Srivastava, 1999; McCrae & Costa, 1991) and has been linked to a wide range of negative psychological (Clark et al., 1994; Spijker et al., 2008) and physical health outcomes (Neeleman et al., 2001; Rosmalen et al., 2007). Despite these apparent drawbacks of neuroticism, scholars

[11] Following the recommendation of Bliese & Ployhart (2002), we also estimated a curvilinear term by including time squared as a predictor of COVID stress, and this parameter was significant (γ = -.01, $p < .01$).

also acknowledge conditions under which neuroticism can be adaptive. Friedman (2000) proposed the concept of "healthy neuroticism," which emphasizes the functional benefits associated with vigilance and worrying in dangerous environments (Craske, 1999; Janis, 1958; Lahey, 2009; Matthews et al., 2003). However, the benefits of neuroticism likely accrue over time as a stressful situation plays out and vigilance becomes increasingly valued and rewarded. Thus, it is "also important to consider neuroticism in terms of what occurs after a disease or special challenge" (Friedman, 2019, p. 27).

According to the P–E fit theory of job stress (French et al., 1982), an individual's level of psychological, physiological, and behavioral strain following exposure to a stressor is determined by the fit between personal characteristics (e.g., traits, values, abilities) and their environment (Edwards & Cooper, 1990). Indeed, Tamir (2005) suggested that "despite their unpleasant nature, negative states may be beneficial for individuals high in neuroticism" (p. 450). This is because neurotic individuals in particular are able to recognize and leverage the instrumental benefits of experiencing trait-consistent negative affect (Tamir, 2005), allowing them to resolve confusion and make evaluative distinctions more efficiently (Tamir & Robinson, 2004). For these reasons, we propose that employees who are higher (vs. lower) in neuroticism will be better psychologically equipped to navigate an inherently stressful environment and thus recover their sense of autonomy at a faster rate over time.

We measured employees' neuroticism in the background survey using the two neuroticism items from the ten-item personality inventory (TIPI, Gosling et al., 2003). Items included "I am anxious, easily upset" and "I am calm, emotionally stable" (reverse coded). The scale ranged from 1 = *Strongly Disagree* to 5 = *Strongly Agree*. The correlation coefficient for these two items was 0.48 ($p < .01$). Past work has demonstrated convergent validity between the

TIPI and the other established measures of neuroticism (Ehrhart et al., 2009; Furnham, 2008; Goldberg et al., 2006, see also Jonason, Teicher, & Schmitt, 2011).

Results indicated that neuroticism had a significant moderating effect on the trajectory of powerlessness over time ($\gamma = -.03$, $p < .05$). Following the recommendation of Cohen et al. (2003) we plotted this temporal trajectory at higher (+1SD) and lower (-1SD) levels of neuroticism. Figure 3 demonstrates that the downward trend in powerlessness over time was stronger for employees higher (vs. lower) in neuroticism. Neuroticism also had a significant effect on the intercept of powerlessness ($\gamma = .43$, $p < .01$), meaning that on Day 1 of the study employees higher (vs. lower) in neuroticism felt more powerless. Overall, while employees higher (vs. lower) in neuroticism initially felt more powerless, over time their feelings of powerlessness abated at a faster rate.

Results indicated that neuroticism also had a significant moderating effect on the trajectory of authenticity over time ($\gamma = .03$, $p < .01$). Figure 4 depicts this temporal trajectory plotted at higher (+1SD) and lower (-1SD) levels of neuroticism and demonstrates that the upward trend in authenticity over time was stronger for employees higher (vs. lower) in neuroticism. Additionally, neuroticism had a significant effect on the intercept of authenticity ($\gamma = -.41$, $p < .01$), indicating that while employees higher (vs. lower) in neuroticism initially felt less authentic, over time their sense of authenticity increased at faster rate[12].

General Discussion

The COVID-19 pandemic is a crisis of unprecedented severity and scope. In the present work, we leveraged a unique empirical context and historical moment in time to offer insights into the psychological recovery process during an ongoing crisis. Our 10-day experience

[12] In a supplemental model, we also estimated the effect of neuroticism on the trajectory of COVID stress over time. Results indicated that neuroticism did not have a significant effect on the trajectory ($\gamma = -.03$, *ns*) of COVID stress.

sampling study, spanning arguably the most physically, economically, and psychologically threatening period in recent memory, revealed that employees experienced a decreased sense of powerlessness and an increased sense of authenticity over time, and that this recovery process was stronger for employees higher (vs. lower) in neuroticism. Interestingly, these effects emerged while neither the objective situation nor the subjective stress reactions to it were improving. This pattern of results highlights the possibility that psychological recovery may begin even before an ongoing stressful experience abates. Additionally, comparing the temporal trends observed for powerlessness and authenticity to the trajectory of COVID-19 stress during this initial time period highlights the uniqueness of the recovery patterns associated with manifestations of autonomy, and demonstrates that not all manifestations of well-being recover in the same way.

Our findings make several important contributions to the stress, power, and authenticity literatures in general and to the field's understanding of reactions to the COVID-19 pandemic in particular. First, we are among the first to consider the psychological impact of COVID-19 on employees and, to our knowledge, the first to do so in the context of a rigorous ESM study involving working professionals living through the early days of the pandemic. In doing so, our findings answer recent calls for more organizational research on natural disasters since "contagious disease outbreaks have been given short shrift" (Rao & Greve, 2018, p. 20).

Second, we contribute to research on the psychological recovery process (e.g., Barling, Bluen & Fain, 1987; Hulme & Shepherd, 2003; Pratt & Barling, 1987; Harkness & Monroe, 2016), which has primarily assumed that individuals start to recover from stressful events and traumatic experiences after the stressor abates or disappears altogether. In contrast, our findings suggest that individuals start to recover before the traumatic conditions associated with a stressor

begin to abate. In doing so, we are among the first to provide field data in support of Radel and colleagues' (2011) autonomy restoration theory. Understanding the nature and timing of psychological recovery exhibited by employees is important because society's capacity and willingness to return to normal is partially dependent on employees across a wide range of roles and organizations feeling sufficiently autonomous and empowered to carry out their job functions effectively (Deci & Ryan, 2000).

Third, our findings contribute to the field's understanding of the psychology of powerlessness (Schaerer et al., 2018). Scholars have noted that the study of power(lessness) has been limited to context-deprived experiments or static survey research (Antonakis & Sturm, 2015; Schaerer et al., 2018) and that "it is unclear how power is experienced by individuals on a daily basis […] and to what extent individuals fluctuate in their level of power" over time (Smith & Hofmann, 2016, p. 10043). We address these issues by assessing how employees' experienced powerlessness evolves over time after a sudden loss of autonomy.

Finally, our finding that neuroticism moderates the effect of time on feelings of powerlessness and authenticity cautions against endorsing a universally negative view of neuroticism which "ignore[s] the situational contexts and longitudinal trajectories" that are relevant to complex stressors (Friedman, 2019, p. 27). In addition, our study empirically responds to Sedikides et al.'s (2017, p. 524) question posed to future researchers: "Are some people more likely than others to experience authenticity in the face of adversity?" Specifically, by showing that more (vs. less) neurotic people recover from thwarted autonomy at a faster rate, we provide an initial temporal perspective on how personality traits affect the psychological recovery process.

We also note several limitations of the current work. One limitation of our study is the uniqueness of the context within which we observed our findings. Although a global pandemic is not characteristic of a typical work environment, this extraordinary event allowed us to uncover novel insights into the functioning of employees' psychological immune system that are hard to study under normal circumstances. Indeed, organizational scholars have suggested that extreme situations and critical incidents are ideal research settings as psychological processes become "transparently observable" (Pettigrew, 1988, cited in Eisenhardt, 1989, p. 537) and tend to be "more visible than they might be in other contexts" (Pratt, 2000, p. 458). In addition, employees may experience (milder) ongoing stressful situations that limit their autonomy on a regular basis (e.g., ongoing rounds of layoffs, economic recessions, difficult interpersonal relationships) in which case the present effects may play out in a similar, but less pronounced way.

Second, while our supplemental analyses provide evidence that the patterns observed in the post-COVID-19 onset dataset were unique compared to the patterns observed in the pre-COVID-19 onset dataset, we acknowledge that these samples were comprised of different employees and not all measures in the two datasets were identical. The unexpected emergence of the virus limited our ability to design a study to directly compare pre- and post-COVID data collected from the same employees, but we feel that the comparison between the two datasets provides some benefits in interpreting the results of our model. That said, we recognize this limitation, and encourage future research to extend our findings using a pre/post design in the context of other complex stressors. Relatedly, our 10-day study prevents us from drawing inferences over longer periods of time, and we encourage future work to extend our findings in this way, and to explore recovery over more granular time periods (e.g., minutes, hours).

Third, while our work demonstrates that employees recover autonomy immediately following the onset of an ongoing stressor, our work is not able to provide insights into the specific behaviors that employees engaged in to do so. Prior research has indicated that there are a variety of behaviors employees may engage in following stressful work situations, including detachment, relaxation, fostering a sense of mastery, and re-establishing control (Sonnentag & Fritz, 2007), and we encourage future research to build upon these insights to better understand what employees do to recover autonomy. More generally, building on our findings related to the moderating role of neuroticism, future work could examine how reactions to stress can be influenced by personal dispositions, features of the event, and characteristics of the environment (Harvey, 1996). Finally, it would be useful to examine the consequences of recovering from an impaired sense of autonomy. For example, feeling less powerless and more authentic may eventually reduce employees' subjective stress levels relating to the stressor.

The current historical moment may be poised to give way to the emergence of a new psychology of COVID-19 stress in the same way that Hall (1917, p. 12) noted that "we shall surely have a new and larger psychology of war" following WWI. We hope that our early exploration can contribute to this endeavor and spur additional work in this important and timely area of inquiry.

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Table 1 – Correlations and Descriptive Statistics

	M	*Within-SD*	*Between-SD*	1	2	3	4	5	6	7	8
1) Study Day	5.47	2.80	1.40		-.17	.22*	.01	-.02	.05	-.02	-.08
2) Powerlessness	2.52	.97	.82	-.14**		-.73**	.41**	.22*	-.05	-.03	-.07
3) Authenticity	3.80	.96	.87	.10**	-.65**		-.37**	-.19*	.03	.04	.07
4) COVID Stress	3.69	.96	.87	.03	.39**	-.21**		.07	-.06	-.04	-.04
5) Neuroticism	2.08		.76					(.48**)	-.01	-.33**	-.34**
6) Gender	.74		.44							-.02	-.03
7) Age	44.74		11.58								.90**
8) Work Experience (Years)	23.58		12.70								

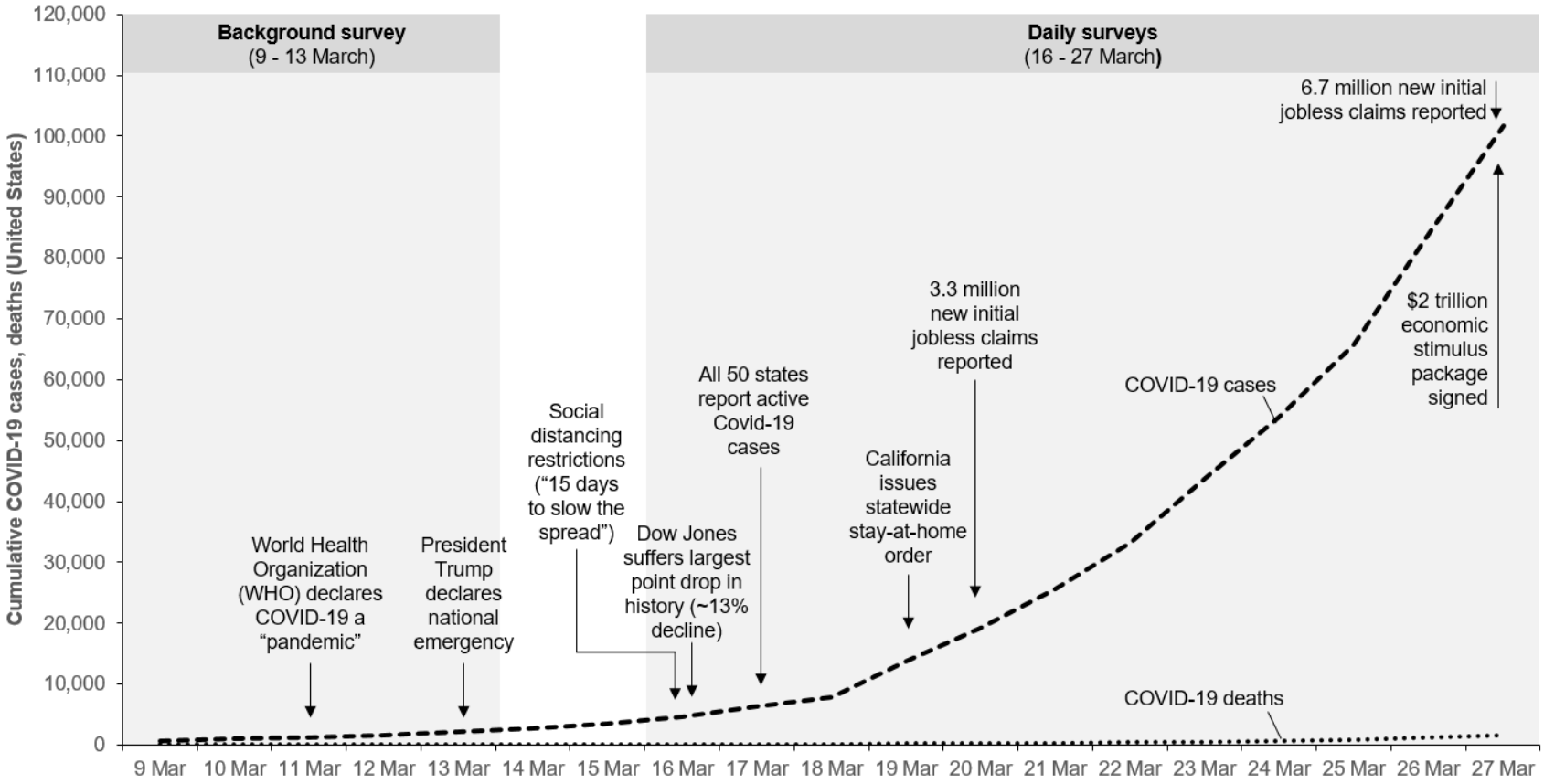
Note: Within-person correlations are displayed below the diagonal and are based on within-person values (N = 735). Between-person correlations are displayed above the diagonal and are based on between-person values (N = 117). Correlational coefficient of 2-item neuroticism measure is reported in parentheses along the diagonal. For gender 0 = man, 1 = woman. * $p < .05$; ** $p < .01$.

Table 2 – RCM Model Results

	Powerlessness				Authenticity			
	B	SE	*t*-value	95% CI	B	SE	*t*-value	95% CI
Intercept	2.78**	.08	33.94	[2.62, 2.94]	3.65**	.09	40.88	[3.48, 3.83]
Time (Study Day)	-.04**	.01	-3.57	[-.07, -.02]	.02*	.01	2.12	[.00, .05]
Neuroticism	.43**	.09	4.76	[.25, .60]	-.41**	.11	-3.67	[-.62, -.19]
Neuroticism X Time	-.03*	.01	-2.26	[-.06, -.00]	.03**	.01	2.91	[.01, .06]
Likelihood based R^2	.11				.11			

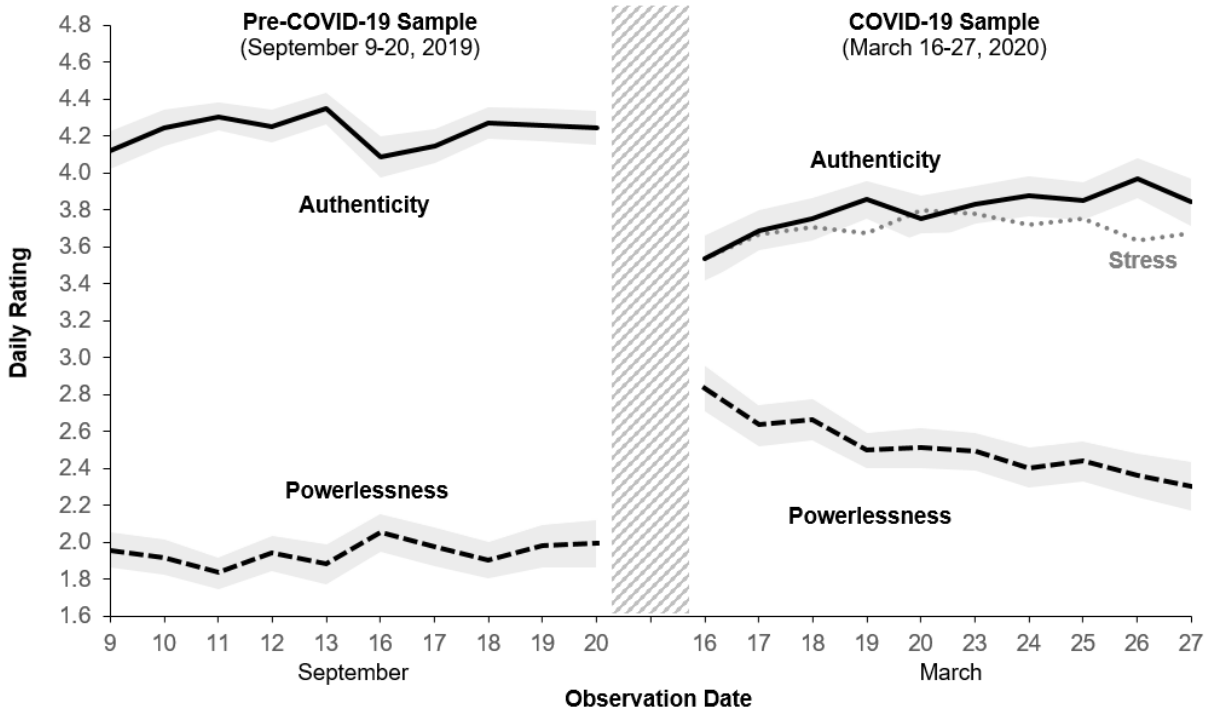
Note: Level 1 N = 735. Level 2 N = 117. * $p < .05$, ** $p < .01$.

Figure 1 – Study Timeline in the Context of Important COVID-19 Events



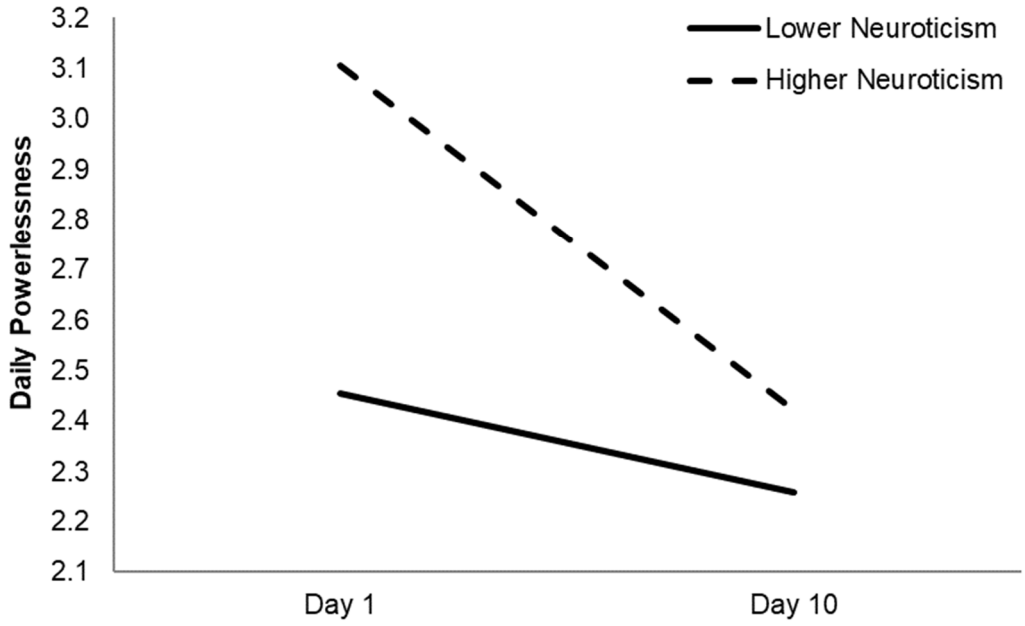
Source: Covid-19 cases and deaths (Johns Hopkins University), timeline (New York Times, ABC News, USA Today)

Figure 2 – Daily Employee Ratings of Authenticity, Powerlessness, and COVID-19-related Stress (COVID-19 sample only) from the two samples used in the current study.



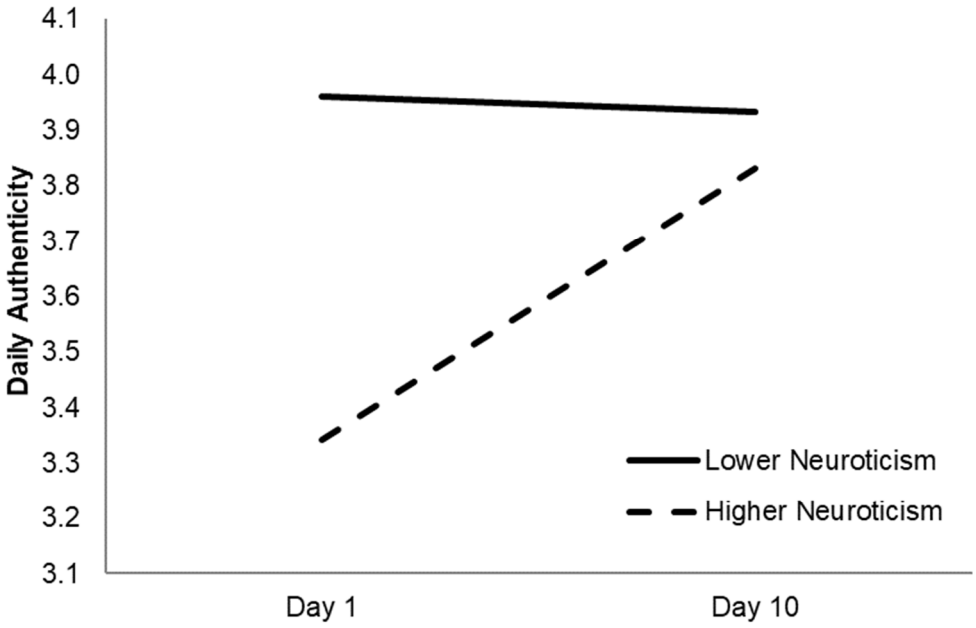
Note: Error bands for authenticity and powerlessness represent +/- 1SEs of the daily mean.

Figure 3 – Moderating Effect of Neuroticism on the Trajectory of Powerlessness Over Time



Note: Higher Neuroticism is +1SD and Lower Neuroticism is -1SD.

Figure 4 – Moderating Effect of Neuroticism on the Trajectory of Authenticity Over Time



Note: Higher Neuroticism is +1SD and Lower Neuroticism is -1SD.

Appendix

Methods description for the pre-COVID-19 onset dataset

Sample

We invited full-time working adults enrolled in a part-time MBA program at a large Mid Atlantic University to participate in the study, and participants were offered extra credit in their course as well as a personalized feedback report for their participation. Participants were informed about the study by their instructors during class time, and then emailed a link to the background survey and instructed to complete the background survey to opt into the study. This study was conducted under IRB Protocol #1471635-2 at the University of Maryland (Project Title: "Daily Work Perceptions and Behaviors"). 105 individuals expressed interest in the study by completing the background survey, and 101 individuals completed the daily portion of the study. Similar to our main study, and consistent with prior research using designs similar to ours (Barnes et al., 2015; Rosen et al., 2016) we removed participants who did not participate fully in at least 3 (out of 10) days of the daily portion of the study, which resulted in an effective sample size of 95 employees (57.9% male; age M = 31.56, SD = 6.58, 90.5% response rate). Participants reported having an average of 9.68 years of work experience (SD = 6.36) and working an average of 42.52 hours per week (SD = 7.84). During the time period of our data collection, participants reported working an average of 8.67 hours per day (SD = 1.97).

Participants completed the one-time background survey the week prior to completing the daily surveys (September 2–8, 2019), which included the informed consent release, a measure of neuroticism, as well as demographic information. The daily surveys were completed over the course of two consecutive work weeks (September 9–20, 2019). Participants received three surveys (via email) each work-day (Monday-Friday). The morning survey was sent at 8:00am,

the early afternoon survey was sent at 1:30pm, and the late afternoon survey was sent at 4:00pm. Each survey captured participants' momentary powerlessness, and the late afternoon survey captured participants' daily authenticity. Similar to our focal study, we removed day-level observations where participants took surveys out of sequence or reported not working the majority of the work-day (i.e., at least 5 hours), resulting in a final sample size of 656 person-day observations (69.1% participation rate).

Measures

Daily Powerlessness. To assess powerlessness, participants were asked to respond to the question "Right now, I feel powerless" (from *1 = Strongly Disagree* to *5 = Strongly Agree*), 3 times during the workday (morning, early afternoon, and late afternoon) (ICC1 = .69).

Daily Authenticity. We measured daily authenticity in the late afternoon survey using three items adapted from the scale developed by Fleeson & Wilt (2010). Participants responded to each item on a scale ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree*, and items included "Today at work, I felt true to myself", "Today at work, I felt authentic", and "Today at work, I felt like I was really being me" (α = .96; ICC1 = .53).

Dispositional Neuroticism. We measured employees' neuroticism in the background survey using the two-item TIPI scale (Gosling et al., 2003). The scale ranged from 1 = *Strongly Disagree* to 5 = *Strongly Agree*. Items included "I am anxious, easily upset" and "I am calm, emotionally stable" (reverse coded). The correlation coefficient for these two items was .52 ($p <$ .01).

Table A1 – Correlations and Descriptive Statistics for Supplemental Study

	M	*Within-SD*	*Between-SD*	1	2	3	4	5	6	7
1) Study Day	5.26	2.85	1.08		-.01	.13	.01	.09	.07	.05
2) Powerlessness	1.94	.83	.73	.03		-.63**	-.05	-.22*	-.05	-.10
3) Authenticity	4.22	.75	.65	.01	-.55**	(.96)	.06	.05	.21*	.20
4) Neuroticism	2.83		1.18				(.52)	-.04	-.01	.06
5) Gender	.42		.50						-.13	-.05
6) Age	31.56		6.58							.80**
7) Work Experience (Years)	9.68		6.36							

Note: Within-person correlations are shown below the diagonal and are based on within-person scores (N = 656). Between-person correlations are shown above the diagonal and are based on between-person scores (N = 95). For gender 0 = man, 1 = woman. Alpha reliability of the 3-item authenticity measure and the correlation coefficient of the 2-item neuroticism measure are reported in parentheses along the diagonal. * $p < .05$; ** $p < .01$.

Table A2 – RCM Model Results for Supplemental Study

	Powerlessness				Authenticity			
	B	SE	*t*-value	95% CI	B	SE	*t*-value	95% CI
Intercept	1.92**	.08	23.85	[1.76, 2.08]	4.14**	.09	48.49	[3.98, 4.31]
Time (Study Day)	.01	.01	.63	[-.01, .02]	-.01	.01	-.73	[-.03, .01]
Neuroticism	-.21**	.08	-2.62	[-.38, -.05]	.18	.10	1.71	[-.03, .38]
Neuroticism X Time	.00	.01	.25	[-.02, .02]	.01	.01	.53	[-.02. .03]
Likelihood based R^2	.04				.02			

Note: Level 1 $N = 656$. Level 2 $N = 95$. * $p < .05$, ** $p < .01$.