State Boredom and Workplace Behaviours: Does Feeling Bored Lead to Increases in Daily Counterproductive Work Behaviour, Organizational Citizenship Behaviour, and Job Crafting?

by

Patricia Baratta

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ABSTRACT
STATE BOREDOM AND WORKPLACE BEHAVIOURS: DOES FEELING BORED LEAD TO INCREASES IN DAILY COUNTERPRODUCTIVE WORK BEHAVIOUR, ORGANIZATIONAL CITIZENSHIP BEHAVIOUR, AND JOB CRAFTING?

Patricia Baratta
Advisor:
University of Guelph, 2019

Previous research suggests that state boredom’s aversive and distracting properties prompt employees to engage in destructive and harmful workplace behaviours. This limited scope has ignored the possibility that boredom’s distracting properties could lead employees to engage in a range of workplace behaviours – some of which may benefit the organization. In the present research, I examined the extent to which feeling bored was positively related to subsequently performing counterproductive work behaviour (CWB), organizational citizenship behaviour (OCB), and job crafting. I also considered whether being conscientious or agreeable moderated the relation between state boredom and its potential outcomes as these traits may predispose employees to engage in certain behaviours when bored. Two-hundred-and-thirty-eight full-time workers participated in a 10-day daily diary study wherein state boredom was measured in the morning; CWB, OCB, and job crafting in the afternoon; and conscientiousness and agreeableness at baseline. The results indicated that state boredom was positively related to CWB directed at the organization, negatively related to job crafting, and unrelated to CWB directed at individuals or OCB. Moreover, only agreeableness moderated one of the effects such that less agreeable employees were more likely to engage in CWB directed at individuals compared to more agreeable employees. The implications of these findings are discussed.
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Liberated.
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State boredom and workplace behaviours: Does feeling bored lead to increases in daily counterproductive work behaviour, organizational citizenship behaviour, and job crafting?

Boredom is an inextricable part of the human experience. Individuals who feel bored are easily distracted, experience boredom as unpleasant and lethargic, and long to do something more interesting (Baratta & Spence, 2018; Fahlman, Mercer-Lynn, Flora, & Eastwood, 2013; Fisher, 1993). This contemporary definition of state boredom originates from the Greek word *acedia* (ἀκηδία), which translates to “without care” and was used to describe idleness with respect to religious duties beginning in the fourth century C.E. (Peters, 1975; Wenzel, 1967). Evagrius Ponticus (345–399 AD), a Catholic monk, considered *acedia* to be one of eight vices alongside greed and lust and emphasized that acedia was “the most serious trouble of all” (Ponticus, 2006, p. 18). Nicknamed the “noonday demon”, acedia was thought to strike around midday, distracting monks from their duties and tempting them to flee the monastery in search of something more meaningful and stimulating (Cassian, 2000; Ponticus, 2006; Wenzel, 1967). Although the experience of what it meant to feel bored underwent several transformations in the centuries that followed (Jackson, 1981; Wenzel, 1967), it retained the aversive and distracting qualities that characterized acedia.

These qualities are found in contemporary organizational psychology wherein researchers have treated boredom as a “dark” construct that impedes organizational effectiveness and productivity through its association with negative outcomes. Most organizational research deviates from *acedia* in that it focuses on trait boredom, which refers to individual differences in the general likelihood to feel bored (Culp, 2006; Farmer & Sundberg, 1986) rather than the experience of feeling bored in a given moment. Individuals high in trait boredom experience chronic difficulties with attention regulation and impulse control, perceive simple tasks as
requiring significant effort, and are unmotivated and dissatisfied with work (Farmer & Sundberg, 1986; Vodanovich, 2003b). Research on trait boredom demonstrates that it is related to absenteeism, turnover, withdrawal, and stress as well as lower performance, job satisfaction, and perceived organizational support (Bruursema, Kessler, Spector, 2011; Kass, Vodanovich, & Callender, 2001; Wan, Downey, & Stough, 2014; Watt & Hargis, 2010). Trait boredom’s associations with undesirable outcomes at work has led some researchers to conclude that boredom is harmful to organizational productivity (e.g., Bruursema et al., 2011; Loukidou, Loan-Clarke, & Daniels, 2009). This conclusion, however, may be premature as acedia’s aversive and distracting qualities point to the possibility that individuals will do anything to escape boredom so long as this activity satisfies the need for meaning and stimulation.

Recently, researchers have begun to differentiate between trait and state boredom (Bruursema et al., 2011; Fahlman et al., 2013; Hunter & Eastwood, 2018; Vodanovich, 2003b). Whereas the former is dispositional and stable over time, the latter is a momentary state that fluctuates in response to situational factors (Baratta & Spence, 2018; Elpidorou, 2018a; Fahlman et al., 2013; Farmer & Sundberg, 1986). Functional theories of emotions posit that discrete emotions serve an informative and regulatory function that direct individuals towards goal-relevant behaviour (see Bagozzi, Baumgartner, Pieters, & Zeelenberg, 2000, for a review). State boredom functions to inform individuals that their current goal is no longer fulfilling, directing them to a new goal with the potential to yield greater value (Bench & Lench, 2013; Elpidorou, 2018a, 2018b; Pekrun, Hall, Goetz, & Perry, 2014). Unlike trait boredom, which may represent a dysfunctional and chronic inability to self-regulate, state boredom may help individuals regulate toward purposeful, goal-directed behaviour (Elpidorou, 2018b; Pekrun et al., 2014; Struk, Scholer, & Danckert, 2016). This different functionality suggests that trait and state levels of
boredom may be associated with different outcomes as individuals who feel bored may succeed at re-engaging with their goals, but those with chronic boredom may not (Blunt & Pychyl, 1998; Struk et al., 2016). In light of this distinction, researchers have considered the potential for state boredom to benefit organizations by leading to behaviours that contribute to organizational productivity and functioning (de Vries, 2014; Skowronski, 2012; Spector & Fox, 2010).

Although there has been a call in the literature to examine the possible benefits of feeling bored (Elpidorou, 2018b; Vodanovich, 2003a), there have been few empirical studies testing these claims. Instead, most academic writings on the possible benefits of boredom are theoretical or philosophical in nature (Vodanovich, 2003a). Despite a lack of evidence, it is increasingly recognized among boredom researchers that boredom may lead to desirable outcomes and therefore should be encouraged among individuals and by organizations (e.g., Elpidorou, 2018a; Skowronski, 2012; Spector & Fox, 2010). As an example, a telemarketer who feels bored as a result of making repetitive phone calls might vary how s/he performs the task by using different sales techniques with each customer and evaluating which are the most effective. S/he also could set more ambitious sales targets to create a sense of challenge. In addition to reducing his/her bored state, the telemarketer’s actions could result in increased sales and better outcomes for the organization.

As the above example suggests, job crafting and organizational citizenship behavior (OCB) could be potential benefits of feeling bored at work. Job crafting involves task-oriented behaviours in which individuals actively change aspects of their work characteristics or tasks to create alignment with their needs, preferences, and abilities (Tims & Bakker, 2010; Tims, Bakker, & Derks, 2012; Tims, Bakker, & Derks, 2013; Wrzesniewski & Dutton, 2001). Job crafting is beneficial to organizations because it enhances employee well-being as well as
individual and organizational performance (Berg, Dutton, & Wrzesniewski, 2008). Many work characteristics, such as low task variety, work underload, a lack of challenge, and the absence of social support, are thought to produce state boredom, suggesting that increasing levels of these work characteristics through job crafting may be an effective means of reducing it (Csikszentmihalyi & Nakamura, 1989; Demerouti, Bakker, & Halbesleben, 2015; Fisher, 1987; Guglielmi, Simbula, Mazzetti, Tabenelli, & Bonfliglioli, 2013; Reijseger, Schaufeli, Peeters, Taris, van Beek, & Ouweneel, 2013). OCB are discretionary helpful behaviours that involve going above and beyond one’s job description and contribute to organizational effectiveness (Lee & Allen, 2002; Organ, 1997). OCB involve attending to off-task demands and may satisfy individuals’ need to adopt an alternative, more satisfactory goal when bored. For instance, OCB involve taking on additional work, making improvements to how work is done, and helping co-workers with a work or personal problem. As such, performing OCB may provide employees with an opportunity for challenge, stimulation, or a different activity. In addition to these possible benefits, research has shown that boredom is likely to lead to undesirable outcomes at work. Another off-task demand, but undesirable outcome, is counterproductive work behaviour (CWB). CWB are harmful acts that violate organizational norms and are intended to hurt the organization and/or its members (Robinson & Bennett, 1995; Spector, Fox, Penney, Bruursema, Goh, & Kessler, 2006). Because CWB involve attending to off-task demands, these behaviours may enable individuals to engage in alternate and satisfying activities when bored.

In the present research, I consider CWB, OCB, and job crafting as potential outcomes of feeling bored (Csikszentmihalyi & Nakamura, 1989; Demerouti et al., 2015; Fisher, 1993; Gordon, Demerouti, Le Blanc, & Bipp, 2015; Skowronski, 2012; Spector & Fox, 2010). I propose that the distracting and aversive properties of feeling bored are likely to push individuals
away from their current tasks and pull them towards a range of behaviours that could detract from or contribute to productivity. In addition, although state boredom may reorient individuals towards an alternative goal, it does not necessarily provide direction on what that goal should be (Elpidorou, 2018b). Trait-based theories of personality affirm that there is consistency with respect to what people value and how they think, act, and feel across situations (McCrae & John, 1992). As such, personality may predispose individuals to gravitate toward certain behaviours when bored. Thus, in addition to considering CWB, OCB, and job crafting as outcomes of state boredom, I test the extent to which the personality traits of conscientiousness and agreeableness moderate these relations.

To test these ideas, I sought to examine how the experience of feeling bored relates to the discrete behavioural episodes of CWB (e.g., taking an additional work break), OCB (e.g., providing a suggestion to improve how work is done), and job crafting (e.g., taking on a more complex work task), which is consistent with defining boredom as a state. Examining the experience of feeling bored differs from existing organizational research, which is dominated by studies on trait boredom (e.g., Bruursema et al., 2011; Kass & Vodanovich, 1990; Vodanovich, Weddle, & Piotrowski, 1997; Wan et al., 2014). Although individuals high in trait boredom are likely to feel bored more frequently at work, knowing one’s level of trait boredom provides little insight into the experience of feeling bored in the moment (Elpidorou, 2018a; van Hooff & van Hooft, 2014). Moreover, trait boredom is concerned with only a small proportion of the population (i.e., only those who are highly boredom prone), suggesting that conclusions about trait boredom may not generalize to experiences of state boredom, which are more pervasive and experienced by nearly everyone (Moynihan, Igou, & van Tilburg, 2017).
Although studies have begun to emphasize the importance of state boredom, much of this research uses cross-sectional or between-person designs to test the relation between boredom and its correlates (e.g., Bauer & Spector, 2015; Guglielmi et al., 2013; Pindek, Krajcevska, & Spector, 2018; Reijseger et al., 2013; van Hooff & van Hooft, 2014; see van Hooff & van Hooft, 2016, 2017, for exceptions). Between-person approaches examine how individuals’ typical levels of boredom relate to other characteristic traits or behaviours (Dalal, Dhve, & Fiset, 2014; Matta, Erol-Korkmaz, Johnson, & Biçaksız, 2014; Tanaka & Murayama, 2014). In contrast, a within-person approach would address whether individuals who feel bored on a particular occasion engage in CWB, OCB, or job crafting on that same occasion (Dalal et al., 2014). Thus, in the present study, I used within-person experience sampling methodology to test the expectation that feeling bored is related to CWB, OCB, and job crafting at work.

Extant organizational research on state boredom also often fails to measure it as such. For instance, some studies use the Dutch Boredom Scale (DUBS; Reijseger et al., 2013; e.g., Harju, Hakanen, & Schaufeli, 2016; van Wyk, de Beer, Pienaar, & Schaufeli, 2016), which includes items that tap into antecedents like work underload (“At my work, there is not too much to do”) and consequences like CWBO (“I tend to do other things during my work”). Similarly, Guglielmi et al.’s (2013) measure more closely reflects work characteristics like skill underutilization (e.g., “I feel that I am working below my abilities most of the time”). Overall, these scales have limitations in research linking state boredom to organizational variables, such as CWB, as overlapping items between measures of distinct constructs can lead to inflated correlations between variables (Bozeman & Perrewé, 2001). In the present research, I sought to address these issues by using the State Boredom Inventory (SBI; Baratta & Spence, 2018), which operationalizes boredom as a transient affect state and does not confound it with other variables.
In the sections below, I explain how functional accounts of emotions account for why CWB, OCB, and job crafting may satisfy the need to pursue an alternate goal when bored. I also draw on the Five Factor Model of personality (McCrae & Costa, 1997) to explain why conscientiousness and agreeableness may moderate the relations between feeling bored and CWB, OCB, and job crafting.
Defining State Boredom

State boredom has three distinct components: disengagement, unpleasant low arousal, and inattention. When experiencing higher levels of boredom, individuals long to engage in more satisfying activity, but are unable to specify what they want to do (disengagement); experience boredom as unpleasant and under-simulating (unpleasant low arousal); and have difficulty focusing their attention (inattention; see Baratta & Spence, 2018; Elpidorou, 2018a, 2018b; Raffaelli, Mills, & Christoff, 2017; Vogel-Walcutt, Fiorella, Carper, & Schatz, 2012, for reviews). Below, I expand on these characteristics and the theoretical perspectives associated with each.

**Disengagement.** State boredom involves a strong desire to engage in activity that is more satisfying than what one is currently doing (Elpidorou, 2018b; Eastwood, Frischen, Fenske, & Smilek, 2012; Fahlman et al., 2013). Psychodynamic theory posits that bored individuals have an intense need for psychic stimulation but are unable to specify what they want because they have unconsciously repressed their urge (Fenichel, 1951; Gabriel, 1988; Greenson, 1953; Lewinsky, 1943). As a result, they feel dissatisfied with their current situation and experience an aimless tension to engage in rewarding activity (Fenichel, 1951; Lewinsky, 1943). Recently, Eastwood and colleagues (e.g., Eastwood et al., 2012; Fahlman et al., 2013) defined state boredom as “the aversive experience of wanting, but being unable to engage in stimulating and satisfying activity” (p. 482) and, consistent with psychodynamic theory, specified that the bored individual is “unaware of what it is that one desires” (Eastwood et al., 2012, p. 484).

**Unpleasant low arousal.** Boredom is an unpleasant state characterized by low arousal (Baratta & Spence, 2018; Geiwitz, 1966; Greenson, 1953; Levy, 1984; Marsh, 1983; Mikulas &
Arousal theory suggests that individuals feel bored when their physiological arousal falls below an optimal level (Fiske & Maddi, 1961; Hebb, 1955; O’Hanlon, 1981), which leads to a mismatch between their current and desired level of arousal. Because individuals are motivated to maintain an optimal level of stimulation, individuals who experience arousal below this level perceive it to be unpleasant (Berlyne, 1960; Fiske & Maddi, 1961; Hebb, 1955; O’Hanlon, 1981). This description is consistent with circumplex models of affect in which affective states load onto two orthogonal continuums of valence and activation (Russell, 1980). In this circumplex, state boredom is a negatively valenced, deactivating emotion (Reijseger et al., 2013; Schaufeli & Salanova, 2014; Vogel-Walcutt et al., 2012) and is plotted alongside similar affective states like drowsiness, sluggishness, and tiredness (Russell, 1980; Yik, Russell, & Steiger, 2011).

**Inattention.** Individuals who experience higher levels of boredom also have difficulty focusing their attention and, as a result, mind-wander and have task-unrelated thoughts (Game, 2007; Harris, 2000; Marsh, 1983; Martin, Sadlo, & Stew, 2006). Attentional theories suggest that individuals feel bored when sustaining attention is effortful (Culp, 2006; Eastwood et al., 2012; Fahlman et al., 2013; Hunter & Eastwood, 2018; Leary, Rogers, Canfield, & Coe, 1986) and research indicates that feeling bored is a consequence of attentional failures (Hunter & Eastwood, 2018). Boredom occurs when individuals fail to engage attention with external or internal stimuli required for participating in satisfying activity or when they need to exert conscious effort to maintain attention to increase task engagement (Eastwood et al., 2012). Experimental brain research has found that boredom results from a failure to engage executive control networks, which are necessary for attending to external stimuli and engaging oneself in a task (Danckert & Merrifield, 2018). The role of attention in boredom is further evidenced by
research on individuals with brain injury to areas implicated in attention. These individuals report feeling bored more frequently and have higher levels of trait boredom (Goldberg & Danckert, 2013; Kreutzer, Seel, & Gourley, 2001; as cited in Hunter & Eastwood, 2018).

Functional Accounts of Emotion

Emotions are discrete, transient reactions to an event that prompt individuals to reorganize or redirect behaviour in response to that event (Briner, 1999; Frijda, 1998, 2016; Plutchik, 2001; Weiss & Cropanzano, 1996). Many theories of emotions converge on the idea that emotions are functional in that they provide information about goal progress and direct individuals toward goal-relevant behaviour (see Bagozzi et al., 2000, for a review; Frijda, 1998, 2016; Oatley & Johnson-Laird, 1987; Plutchik, 2001; Stein, Trabasso, & Liwag, 1993). Oately and Johnson-Laird (1987) stated that emotions occur “when the evaluation (conscious or unconscious) of the likely success of a plan changes” (p. 87). For example, anger signals that a goal is blocked but is still attainable and sadness signals that a goal is irrevocably lost (Gross & Levenson, 1995; Lazarus, 1991; Lench, Flores, & Bench, 2011; Stein et al., 1993; Stein, Liwag, & Wade, 1996). Additionally, emotions can activate specific action tendencies that motivate individuals toward goal-relevant behaviour (Fredrickson, 2001; Frijda, 1998, 2016; Plutchik, 2001; Stein et al., 1993, 1996). For example, anger facilitates removing obstacles to achieve goals and sadness elicits coping behaviour to manage the loss of a goal (Lench, Tibbett, & Bench, 2016).

Functional accounts of emotions are well-aligned with the boredom literature wherein boredom is seen as serving an informative and regulatory function (Bench & Lench, 2013, 2018; Burn, 2017; de Vries, 2014; Elpidorou, 2018a, 2018b; Pekrun et al., 2014; Struk, Carriere, Cheyne, & Danckert, 2017). Pekrun et al. (2014) asserted that state boredom “serves to limit engagement in activities that lack consummatory value [and] that do not promise to yield any
reinforcement” (p. 697; goal information), “making it possible to redirect attention toward more rewarding activities” (p. 697; goal-directed behaviour). Several other researchers have made similar claims. For instance, Elpidorou (2018a, 2018b) posits that boredom signals that one’s current goal is no longer satisfactory, attractive, or meaningful and subsequently prompts individuals to pursue a new goal to restore “the perception that one’s activities are meaningful and congruent with one’s interests and desires” (Elpidorou, 2018b, p. 456). Similarly, van Tilburg and Igou (2017) assert that boredom indicates a lack of purpose and directs individuals toward activities that restore a sense of meaning and Bench and Lench (2013) maintain that boredom occurs when the environment is under-simulating, prompting individuals to engage in alternative, stimulating behaviours. In sum, theory suggests that boredom provides information that the current goal is no longer valuable or satisfactory and signals that an alternative goal has the potential to yield greater value.

The idea that boredom provides information about the value of one’s current goal (i.e., goal information) is supported by research demonstrating that individuals are more likely to feel bored in meaningless, unchallenging, or under-stimulating situations. An experiment by Fahlman, Mercer, Gaskovski, Eastwood, and Eastwood (2009; Study 2) found that participants who were asked to recall a meaningless life event reported greater feelings of boredom than those asked to recall a meaningful, happy, or sad life event. Similarly, Chan et al. (2018; Study 1) found that participants asked to recall a situation characterized by state boredom evaluated that situation as significantly higher in meaninglessness than those asked to recall a situation with sadness, engagement, or no boredom. Other research has established a link between boredom and lack of challenge and stimulation. In an observational study, Harris and Segal (1985) found that feeling bored was common among military personnel stationed in remote
locations for reasons such as skill underutilization and isolation, suggesting that lack of challenge and stimulation were primary drivers of boredom. Cross-sectional studies indicate that boredom is associated with unchallenging or under-stimulating jobs, such as those with work underload, low cognitive demands, or a lack of positive social interactions (Metin, Taris, & Peeters, 2016; Pindek et al., 2018; Reijseger et al., 2013; van Wyk et al., 2016).

Research also suggests that individuals pursue alternative goals when bored (i.e., goal-directed behaviour). van Tilburg and Igou (2012) found that, compared to other negative emotions, feeling bored was uniquely associated with a desire to engage in a completely different, meaningful, or challenging activity. With respect to meaning, several experiments by van Tilburg, Igou, and colleagues found that search for meaning mediated the relation between state boredom and purposeful behaviours, such as indulging in nostalgic memories, strengthening connections with one’s in-group, and donating to charitable causes (van Tilburg & Igou, 2011, 2016, 2017; van Tilburg, Igou, & Sedikides, 2013). Within an organizational context, a parallel of purposeful behaviour could be OCB or job crafting. Research also suggests a link between boredom and need for stimulation as individuals with a chronic propensity to feel bored or who feel bored in the moment are more likely to engage in impulsive and risk-taking behaviours (Dahlen, Martin, Ragan, & Kuhlman, 2004; Moynihan et al., 2017). In this case, an organizational parallel of impulsive, potentially deviant behaviours, could be CWB.

Elpidorou (2018b) emphasizes that, although state boredom pushes individuals toward potentially more interesting, stimulating, and meaningful activities, the outcome is not always beneficial or successful in reducing boredom. Research has shown that individuals also will switch to a completely different activity even if they anticipate that it will elicit negative emotions in order to reduce boredom. For instance, Bench and Lench (2018; Study 2) found that
when state boredom was induced using repetitive positive stimuli, individuals were more likely to expose themselves to negative stimuli and vice versa. Another study found that individuals who were left in a barren room with nothing to do chose to self-administer an electric shock (Wilson et al., 2014). This finding was replicated by Nederkoorn, Vancleef, Wilkenhöner, Claes, and Havermans (2016) who further demonstrated that individuals were more likely to self-administer electric shocks when assigned to watch a boring video compared to those watching a sad or neutral video. These latter findings are consistent with the idea that individuals seeking to escape boredom will “experience almost anything different or more arousing than the behaviours and sensations currently possible” (Burn, 2017, p. 141).

The above research suggests that feeling bored motivates a range of behaviours as many activities have the potential to satisfy the need for something different, meaningful, challenging, or stimulating (Elpidorou, 2018b; van Tilburg & Igou, 2012). This is consistent with arousal, attentional, and psychodynamic theories of boredom in which state boredom is defined as an unpleasant, deactivating state in which one experiences inattention and a vague longing to engage in more satisfying activity (Baratta & Spence, 2018). Arousal theory suggests that individuals are motivated to maintain an optimal level of arousal and that arousal below this level is perceived as unpleasant (Fiske & Maddi, 1961). Because boredom is characterized by arousal below this customary level (i.e., unpleasant low arousal) and individuals are motivated to maintain an optimal level of arousal, individuals should make efforts to increase their arousal when bored, such as by switching to an alternative goal (Fisher, 1993; Mikulas & Vodanovich, 1993). Attentional theories suggest that individuals experience boredom when sustaining attention is effortful (Culp, 2006; Eastwood et al., 2012; Leary et al., 1986); thus, individuals may attempt to alleviate boredom by seeking activities that easily re-engage their attention.
(Fisher, 1993). Finally, psychodynamic theory proposes that bored individuals are dissatisfied with their current situation and experience a vague longing to do something other than what they are currently doing (Fenichel, 1951; Greenson, 1953), which may prompt them to switch to an alternative task.

Taken together, functional accounts of emotion and theoretical perspectives tied to boredom’s disengagement, unpleasant low arousal, and inattention components suggest that feeling bored is associated with a broad behavioural repertoire. At work, state boredom may signal that one’s current work task is no longer satisfactory or valuable. Feeling bored may push individuals away from their current goal, instead pulling them towards discretionary activities with the potential to satisfy their need to do something different. One possibility is that state boredom prompts individuals to re-orient themselves towards off-task demands in the form of CWB and OCB. Another possible result is that individuals will actively change aspects of their work to re-align them with their needs, preferences and abilities through job crafting. Overall, to the extent to which individuals perceive CWB, OCB, and job crafting as satisfying the need for a different, meaningful, challenging, and/or stimulating activity, they should be more likely to perform these behaviours when bored at work. In the following sections, I review existing theory and research linking boredom to each of these behaviours.

**Outcomes of Boredom**

**Counterproductive Work Behaviour**

CWB are harmful voluntary behaviours that violate organizational norms and are intended to hurt the organization and/or its members (Robinson & Bennett, 1995; Spector et al., 2006). CWBO are directed at the organization, such as when an employee takes additional work breaks, and CWBI are directed at organizational members, such as when someone spreads a rumour or
gossips about a colleague (Robinson & Bennett, 1995). Boredom researchers have proposed that employees may cope with boredom by attending to off-task demands like CWB as a means of increasing their stimulation (Game, 2007; Skowronski, 2012; Spector & Fox, 2010). By definition, CWB involve breaking rules or violating norms and, as a result, may be novel and stimulating (Diefendorff & Mehta, 2007). In support of this definition, research has shown that individuals who are chronically under-aroused, such as those high in sensation-seeking, are more likely to engage in deviant behaviours, such as drug use (Newcomb & McGee, 1991) or workplace deviance (O’Neill & Hastings, 2011). Qualitative research has shown that employees often react to feeling bored by engaging in rule-breaking behaviours and perceive the act of violating norms or the potential to get caught as stimulating (Fisher, 1987). Consistent with functional accounts of boredom, CWB may be a viable alternative when bored as it has the potential to satisfy the need to do something different or stimulating.

Several studies have shown that individuals sometimes cope with feeling bored by engaging in CWBO. Qualitative studies have shown that bored workers cope by taking additional breaks, daydreaming, performing personal tasks, disrupting production processes, or destroying property (Charlton & Hertz, 1989; Game, 2007; Runcie, 1980, as cited in Game, 2007). Cross-sectional studies have found positive relations between boredom and minor forms of CWBO, such as withdrawal and production deviance, as well as more severe forms, such as sabotage and theft (Bruursema et al., 2011; Joe-Akunne Chiamaka, Oguegbe Tochukwu, & Okonkwo Kizito, 2015; Metin et al., 2016; Pindek et al., 2018; van der Heijden, Schepers, & Nijssen, 2012; van Hooff & van Hooft, 2014; Wan et al., 2014). Bauer and Spector (2015) found that feeling bored predicted unique variance in facets of CWBO, including withdrawal,
production deviance, and sabotage, when controlling for the effects of other discrete emotions (e.g., anxiety, sadness).

Additionally, employees may engage in CWBI when bored. Bauer and Spector (2015) found that feeling bored at work was positively related to social undermining behaviours, which consist of behaviours intended to harm others’ reputation or success (Duffy, Ganster, & Pagon, 2002). Similarly, another study found that individuals high in trait boredom reported instigating more incivility at work (Gray, Carter, & Sears, 2017). Additional research suggests that individuals may attempt to alleviate boredom by gossiping about co-workers or playing practical jokes (Brady, Brown, & Liang, 2017; Bruursema et al., 2011; Collinson, 1988). One exception to these findings is that Spector et al. (2006) found that boredom was positively related to CWBO, but not to CWBI. Based on the consistency of prior research demonstrating a positive relation between boredom and CWB and theory that state boredom serves a regulatory function, I hypothesize that:

**H1:** Daily state boredom will be positively and statistically significantly related to daily CWBO.

**H2:** Daily state boredom will be positively and statistically significantly related to daily CWBI.

**Organizational Citizenship Behaviour**

In contrast to CWB, OCB are helpful, voluntary behaviours that go above and beyond one’s job description and contribute to organizational effectiveness (Lee & Allen, 2002; Organ, 1988, 1997). OCB may be intended to benefit the organization as a whole (OCBO), such as when someone makes a suggestion to improve how work is done or may be directed at organizational members (OCBI), such as when someone offers to help a colleague (McNeely &
Meglino, 1994; Organ, 1997). Like CWB, OCB represent off-task demands, but involve helpful behaviours that contribute to organizational goals and/or benefit other organizational members (Organ, 1988; Organ, 1997). Fisher (1993) proposed that OCB may be effective at reducing boredom as these behaviours “allow for a change of activity and are directly satisfying” (Fisher, 1993, p. 411). For instance, taking on additional work or assisting a colleague with a task may reduce boredom by enabling employees to feel challenged or simply allow them to engage in a more interesting or novel activity. Other researchers (e.g., Skowronski, 2012; Spector & Fox, 2010) also have suggested that OCB may be a common response to feeling bored given that these behaviours offer stimulation. Consistent with theory on the functional value of boredom, OCB may be a viable behaviour to engage in when bored as it may satisfy the need to do something different, stimulating, interesting, or challenging.

Very little research has been conducted on the possible relation between state boredom and OCB. A qualitative study of undergraduate and graduate students found that most participants perceived boredom as positive because it provided them with an opportunity for reflection. A few participants stated that boredom enabled them to try new things, plan and organize, and accomplish tasks (Harris, 2000). Similarly, qualitative studies using employee samples have shown that bored employees perform additional work tasks, work faster, take a greater interest in clients, and help co-workers (Baker, 1992; Fisher, 1987; Game, 2007; Phillips, 2016, Runcie, 1980, as cited in Fisher, 1987). van Tilburg and Igou (2017) found that feeling bored was associated with behavioural intentions to engage in purposeful, prosocial behaviour, such as donating to charity. Taken together, these findings suggest that bored employees may choose to engage in prosocial behaviours that benefit the organization or individuals. Thus, consistent with
theory that state boredom serves a regulatory function and previous research linking boredom to OCB, I expect that:

\[ H3: \text{Daily state boredom will be positively and statistically significantly related to daily OCB}. \]

\[ H4: \text{Daily state boredom will be positively and statistically significantly related to daily OCB}. \]

**Job Crafting**

Another potential beneficial outcome of state boredom is job crafting. Individuals who are dissatisfied with their work tasks or environment as a result of feeling bored can actively craft their jobs to create alignment with their needs, preferences, and abilities (Tims & Bakker, 2010; Tims et al., 2012; Tims et al., 2013; Wrzesniewski & Dutton, 2001). Employees who engage in expansive job crafting proactively enrich their job by increasing their levels of job resources and challenging demands (Vogt, Hakanen, Brauchli, Jenny, & Bauer, 2016). Jobs resources are aspects of the work that are energizing and possess motivational qualities. Job resources enable individuals to cope with job demands, are instrumental in the attainment of work goals, and/or stimulate learning and development (Schaufeli & Bakker, 2004). Employees can job craft by increasing structural resources like task variety and autonomy or social resources like social support and performance feedback from others (Demerouti, 2014; Demerouti, Bakker, & Gevers, 2015; Tims et al., 2012). Seeking resources may involve learning new skills, asking colleagues for advice, or seeking information from others (Bipp & Demerouti, 2015). Challenge demands are aspects of the work that cause strain and require sustained effort. Unlike hindrance demands, which are draining and depleting, challenge demands are appraised positively because they have the potential to lead to mastery and growth (Crawford, LePine, & Rich, 2010; Schaufeli &
Bakker, 2004). Increasing challenge demands through job crafting may involve pursuing growth and mastery opportunities, such as starting new projects, asking for more responsibilities, and analyzing tasks in a more complex way (Demerouti, 2014; Tims et al., 2012). Expansive job crafting is considered purposeful because both seeking resources and challenge demands are linked to greater well-being, possess motivational properties, and provide opportunities for learning, mastery, and growth (Boswell, Olson-Buchanan, & LePine, 2004; Crawford et al., 2010; Schaufeli & Bakker, 2004; Schaufeli & Salanova, 2014).

Given that expansive job crafting provides opportunities for stimulation, challenge, and meaning, it may be a likely response for individuals looking to escape boredom (Cummings, Gao, & Thornburg, 2016; Demerouti, 2014; Tims et al., 2012). Seeking resources provides individuals with a means of creating a more stimulating work environment, such as by increasing task variety or task complexity (Tims et al., 2012; Tims et al., 2013; Tims, Derks, & Bakker, 2016). Similarly, seeking more challenging demands enables employees to work on more interesting and challenging projects, which may yield more reward and stimulation than their current work tasks (Csikszentmihalyi & Nakamura, 1989; Demerouti, 2014; Tims et al., 2012). Job crafting also enables employees to experience greater meaning in their work (Demerouti, 2014; Petrou, Bakker, & van den Heuvel, 2017; Wrzesniewski & Dutton, 2001). van Wingerden, Bakker, and Derks (2017) stated that “employees who proactively craft their job give direction and meaning to their work life” (p. 109) and studies have found a positive relation between episodic job crafting and meaning (Petrou et al., 2017; Tims et al., 2016). These findings are consistent with functional accounts of boredom wherein state boredom pulls individuals away from their current task to pursue more meaningful goals (van Tilburg & Igou, 2017).
Research on boredom and job crafting provides some support for these ideas. Studies relating boredom to seeking resources suggest that accumulating more resources at work should reduce feelings of boredom. For example, Tsai (2016) conducted a qualitative study of service workers in the catering industry and found that management used job rotation as a strategy to prevent state boredom as a result of monotonous tasks. Employees changed job roles each day to fill one of six jobs, which increased their task variety and provided them with more opportunities to learn skills. Managers and workers attributed low levels of state boredom in their organization to the accumulation of resources, such as task variety and learning opportunities, associated with the job rotation system. An experiment by Sansone, Weir, Harpster, and Morgan (1992) found that individuals working on a boring task varied the way in which they performed the task to increase task variety and make it more interesting. Research also suggests that increasing challenge demands is a common strategy for coping with boredom. Qualitative research using applied samples of workers has shown that bored individuals take on additional work, ask for training, or improve their skills (Carroll, Parker, & Inkson, 2010; Fisher, 1987; Game, 2007; Whiteoak, 2014). Overall, these results suggest that bored individuals may re-direct their efforts towards seeking resources and challenge demands.

van Hooff and van Hooft (2014) explored these ideas using a between-person design examining the relation between job crafting and work-related boredom (boredom associated with the job; e.g., “I think my work is boring”). The results of their study indicated that perceptions of boring work were negatively correlated with job crafting resources and challenge demands (controlling for age and trait boredom). Similarly, Harju, Schaufeli, and Hakanen (2018) found that work-related boredom was negatively related to job crafting. In these studies, boredom and job crafting were measured at the same time, leaving open the possibility that the results will not
generalize to within-person methodologies. At the between-person level, one might expect a negative relation between boredom and job crafting as individuals who proactively and regularly job craft may effectively prevent boredom (Harju et al., 2018). At the within-person level, when boredom is positioned as a cause, one might expect a positive relation between feeling bored and job crafting as individuals who feel bored in one moment may subsequently job craft to relieve their boredom. In another study, Harju et al. (2016) conducted a two-wave study across three years examining the relation between job crafting and work-related boredom. They found that work-related boredom at Time 1 was negatively related to increasing structural resources at Time 2, suggesting that characteristically bored individuals are less likely to engage in these types of behaviours. Moreover, Time 1 boredom was not statistically significantly related to increasing social resources or challenge demands at Time 2.\(^1\) However, the three-year time lag used by Harju et al. (2016) may have been too long to capture the dynamic and time-sensitive relation between feeling bored and job crafting (Ployhart & Vandenberg, 2010). As a result, further exploration of these relations may be warranted at the within-person level. Based on the above theory, I hypothesize that individuals will be more likely to seek resources and challenge demands when bored.

\[ H5: \text{Daily state boredom will be positively and statistically significantly related to daily seeking resources.} \]

\[ H6: \text{Daily state boredom will be positively and statistically significantly related to daily seeking challenge demands.} \]

\(^1\) The results reported here are based on the full model that included all lagged effects.
**Dispositional Moderators**

Although state boredom is thought to signal individuals to abandon their current goal in lieu of a more favourable one, it does not necessarily provide information on what that goal should be (Elpidorou, 2018b). The disengagement component of state boredom highlights that although bored individuals long to engage in more satisfying activity, they may have difficulty articulating what that is (Eastwood et al., 2012; Fahlman et al., 2013). The disengagement component of state boredom suggests that it is somewhat directionless, which is apparent in research demonstrating that it is associated with a broad range of behavioural responses (e.g., Bench & Lench, 2018). In the present research, I hypothesize that bored individuals may engage in a range of behaviours – namely, CWB, OCB, and job crafting. One framework for classifying these behaviours is to categorize them as either impersonal (i.e., task-focused behaviours directed at “things”) or interpersonal (i.e., people-focused, affiliative behaviours directed at others). This framework for classifying behaviours often has been invoked in organizational behaviour research. For instance, leadership scholars routinely distinguish between task-oriented and relationship-oriented leadership behaviours (Judge, Piccolo, & Ilies, 2004; Wang, Tsui, & Xin, 2011). Whereas the former is concerned with clear standards of performance and involves engaging in task-oriented behaviours like setting goals, allocating resources, and delegating responsibilities, the latter is concerned with group welfare and involves emphasizing empathy, listening, appreciation, and respect in communications with others (Cohen, Solomon, Maxfield, Pyszczynski, & Greenberg, 2004; Derue, Nahrgang, Wellman, & Humphrey, 2011).

A similar classification of behaviours is apparent in research on discretionary workplace behaviours. CWB and OCB are routinely categorized based on the intended target: CWBO and OCBO are considered impersonal behaviours as they are directed at the organization whereas
CWBI and OCBI are considered interpersonal as they are directed at other people (McNeely & Meglino, 1994). More specifically, CWBO consist of task-oriented behaviours directed at things, such as withdrawing from one’s task, intentionally performing one’s task incorrectly, or destroying company property. Likewise, OCBO may involve taking on an additional task or making a suggestion to improve how work is done. In contrast, CWBI and OCBI represent interpersonal, relationship-oriented behaviours that are either divisive or affiliative in nature, respectively. CWBI involve attempts to harm others, such as by insulting or making fun of others, whereas OCBI involve affiliative efforts to help others, such as by providing support to a colleague. Additionally, job crafting can be classified as an impersonal form of behaviour as it directed towards work characteristics (i.e., things; Tims, Bakker, & Derks, 2015). Seeking challenge demands involves increasing one’s job responsibilities and workload, such as by taking over a supervisor’s task or joining a new work project, and seeking resources involves attaining task variety, job autonomy, and performance feedback for the purpose of improving person-job fit (Rudolph, Katz, Lavigne, & Zacher, 2017; Tims & Bakker, 2010; Tims et al., 2012).

The extent to which individuals gravitate toward impersonal and/or interpersonal behaviours as they become bored may vary depending on their personality. According to trait-based theories of personality, there is consistency with respect to what people value and how they think, act, and feel across situations (McCrae & John, 1992). As a result of their dispositions, individuals may gravitate toward certain types of behaviours when bored. The Five Factor Model posits that there are five broad traits that form the highest-order of personality constructs (McCrae & Costa, 1997). In the present paper, I focus on conscientiousness and agreeableness as these align with impersonal and interpersonal forms of behaviour, respectively.
Conscientiousness is a personality trait characterized by self-discipline, self-regulation, achievement-orientation, and responsibility (Costa, McCrae, & Dye, 1991; McCrae & Costa, 1997). Those who score higher in conscientiousness are perceived as hard working, disciplined, and rule-oriented, and are able to regulate their impulses. High scorers tend to be more planful and achievement-oriented and are more likely to persist in their efforts towards goals. In contrast, individuals who score low on conscientious may appear to be unreliable and unambitious and to give up easily and act on their impulses. They tend to be unconcerned about the consequences of their actions and may have little respect for rules (Costa et al., 1991; DeYoung, Quilty, & Peterson, 2007; Goldberg, 1992). Compared to the other traits in the Five Factor model, conscientiousness has been shown to be the strongest predictor of job performance at work across different jobs types (see Barrick, Mount, & Judge, 2001, for a review; see van Aarde, Meiring, & Wiernik, 2017; Vinchur, Schippmann, Switzer III, & Roth, 1998, for meta-analyses). Given the task-oriented nature of conscientiousness, it should be more strongly related to impersonal forms of behaviour. In fact, leadership research has found a positive relation between conscientiousness and task-oriented leadership behaviours (de Vries, 2012; Francoeur, 2008), emphasizing the relevance of conscientiousness to impersonal behaviours at work. Indeed, Organ and Lingl (1995) described conscientiousness as “a generalized work-involvement tendency” (p. 341) and researchers have argued that conscientiousness is more theoretically related to organization-directed facets of CWB and OCB (i.e., CWBO and OCBO; Chiaburu, Oh, Berry, Li, & Gardener, 2011; Guay, Choi, Mitchell, Mount, & Shin, 2016; Morse & Cohen, 2015). In support of this claim, meta-analyses have found that conscientiousness is the strongest predictor of CWBO and OCBO (Organ & Ryan, 1995; Salgado, 2002; Sulea, Maricutoiu, Dumitru, & Pitariu, 2015). Similarly, the task-oriented nature of job crafting is apparent as it involves
altering levels of one’s work characteristics or tasks, such as by taking over a supervisor’s task or seeking performance feedback (Rudolph et al., 2017; Tims & Bakker, 2010). A recent meta-analysis found that conscientiousness predicted job crafting behaviour, particularly seeking structural resources (e.g., task variety) and challenge demands (e.g., increased job scope; Rudolph et al., 2017). Given the task-focused nature of these behaviours, I expected that CWBO, OCBO, and job crafting would be relevant to conscientiousness.

Agreeableness is a personality trait characterized by altruistic, cooperative, caring, and trusting tendencies (Costa et al., 1991; John & Srivastava, 1999). Individuals who score high on agreeableness are more inclined to consider others’ needs, be altruistic and cooperative, and to treat others fairly and respectfully. High scorers tend to have a strong desire to get along with others and strive to maintain harmonious relationships. In contrast, those who score low in agreeableness are perceived as cold, aloof, and self-interested. They also tend to be less trusting of others and perceive helping others as a burden (Costa et al., 1991; Goldberg, 1992).

Thematically, agreeableness is related to interpersonally-sensitive and affiliative behaviours (e.g., altruism, cooperation), suggesting that agreeableness should be relevant when considering interpersonal forms of behaviour (Chiaburu et al., 2011). In fact, leadership studies have found a positive relation between agreeableness and relationship-oriented leadership behaviours (de Vries, 2012; Francoeur, 2008) and meta-analyses demonstrate that agreeableness is predictive of CWBI and OCBI (Berry, Ones, & Sackett, 2007; Hurtz & Donovan, 2000; Organ & Ryan, 1995). Given that CWBI and OCBI are behaviours that are intended to either harm or help individuals in the organization, I expected these to be highly relevant to agreeableness.
Conscientiousness and CWBO

Conscientiousness is a task-oriented construct that may be associated with CWBO given the impersonal nature of this behaviour. More conscientious individuals are thought to be disciplined and goal-oriented, can easily focus their attention, and are able to control their impulses (Costa et al., 1991; Costa & McCrae, 1992; Goldberg, 1992). They also tend to persevere while completing arduous and unpleasant tasks and are unlikely to procrastinate (Costa et al., 1991; Steel, 2007). As a result, more conscientious employees may be more likely to persist on boring and uninteresting tasks and control impulses to engage in task-unrelated behaviours (Skowronski, 2012). In fact, Costa et al. (1991) defined the self-discipline facet of conscientiousness as “the ability to continue with a task despite boredom or other distractions” (p. 889). Moreover, because high scorers have a tendency to be rule-oriented, they are unlikely to attend to off-task demands that involve violating norms (Thomas, Whitman, & Viswesvaran, 2010). In contrast to highly conscientious people, less conscientious individuals are seen to be unreliable, put little effort into their work, care less about achievement outcomes, break rules, and act on their impulses (Gore, Kiefner, & Combs, 2012). These individuals may submit to urges to engage in more satisfying activity and may choose to engage in CWB as these are effortless behaviours that provide an opportunity to self-stimulate. Several meta-analyses have found that conscientiousness is negatively related to deviant behaviours directed at the organization (Berry et al., 2007; Salgado, 2002) as well as overall CWB (Berry, Carpenter, & Barratt, 2012; Dalal, 2005; Grijalva & Newman, 2015; Sulea et al., 2015).

Research provides preliminary support for the idea that highly conscientious employees may be likely to persist on boring tasks. For instance, Sansone, Wiebe, & Morgan (1999) found that conscientious individuals were more likely to persist in their efforts to complete a boring,
repetitive task compared to low conscientious individuals. Other research suggests that individuals low in conscientiousness are likely to avoid work or seek stimulation when bored.

For instance, a qualitative study of workers in routine, boring jobs indicated that less conscientious employees often avoided the repetitive, monotonous work, intending for someone else to complete it (Whiteoak, 2014). In addition, Nett, Goetz, and Hall (2011) found that students who coped with boredom by avoiding the boring task (i.e., engaging in task-unrelated thoughts or behaviours) were less conscientious than students who coped by using cognitive-approach strategies that involved changing their perceptions of the task (e.g., focusing on its value).

Although there are few studies on conscientiousness and boredom, research on traits that overlap with conscientiousness provides additional insight into whether conscientious employees engage in CWBO when bored. First, boredom coping is an individual difference variable that involves easily focusing attention and maintaining task engagement and being less bored in general (Game, 2007). Like high boredom copers, highly conscientious individuals are not easily distracted, persist in their efforts toward goals, and feel bored less often (Costa et al., 1991; Culp, 2006; Sulea, van Beek, Sarbescu, Virga, & Schaufeli, 2015), suggesting that these traits have some similarities. In a qualitative study, Game (2007) found that low boredom copers reported avoiding the task or seeking stimulation from non-task related activities, such as taking a break, daydreaming, and performing non-work tasks, whereas high boredom copers did not. In addition, a cross-sectional study of white collar workers found that time management moderated the relation between work-related boredom and performing non-work tasks (e.g., doing personal tasks, cybersurfing; van der Heijden et al., 2012). Time management is a skill that enables self-regulation of goal-directed behaviour by prioritizing goals, planning tasks, and monitoring goal
progress (van der Heijden et al., 2012) and is similar to the planful and goal-oriented aspects of conscientiousness (Costa & McCrae, 1998; Costa et al., 1991). The results indicated that, at high levels of boredom, individuals with strong time management skills were less likely to engage in non-work tasks than individuals who lacked this skill. Based on the above evidence, I hypothesize that:

**H7: Conscientiousness moderates the relation between state boredom and CWBO such that the relation is weaker for those high in conscientiousness.**

**Conscientiousness and OCBO**

The discipline, impulse control, and persistence associated with conscientiousness suggest that individuals who are more conscientious may persist when completing a boring task (Costa & McCrae, 1992; Costa et al., 1991). These individuals also need to feel a sense of accomplishment when at work, which prompts them to engage in ambitious and achievement-related behaviours (Barrick, Stewart, & Piotrowski, 2002; Costa & McCrae, 1992, 1998; Fischer & Boer, 2015). OCB are instrumental in satisfying this need as they involve going above and beyond one’s job description and include taking on additional tasks, working extra hours, going beyond what is required for a task, providing helpful suggestions to improve organizational functioning, and completing tasks with a positive attitude (Dalal, Lam, Weiss, Welch, & Hulin, 2009; Fox, Spector, Goh, Bruursema, & Kessler, 2012; Lee & Allen, 2002). Given that boredom is thought to signal that one’s goals yield little value, bored individuals who tend to score high in conscientiousness may engage in OCBO as an opportunity for reward as these behaviours could enable them to satisfy their need for achievement. Thus, although individuals who score high in conscientiousness are likely to stay on task, if they were to deviate from their tasks, OCBO could be a viable alternative. When bored, highly conscientious individuals may increase the scope of
the task to create a sense of challenge, make a suggestion to improve the task to reduce future job boredom, or persist on the task with a positive attitude. In contrast, individuals who score low in conscientiousness lack discipline, self-direction, and ambition and are less willing to exert effort (Costa & McCrae, 1992; Costa et al., 1991). These individuals may not find performing OCBO to provide them with satisfactory stimulation when bored. Meta-analytic results have shown a positive relation between conscientiousness and OCBO, job dedication, generalized compliance, and overall OCB (Chiaburu et al., 2011; Dalal, 2005; Gonzalez-Mulé, Mount, & Oh, 2014; Hurtz & Donovan, 2000; Ilies, Fulmer, Spitzmuller, & Johnson, 2009; Organ & Ryan, 1995).

There is some preliminary evidence supporting these assertions. For example, in Game’s (2007) qualitative study, high boredom copers (who share characteristics with conscientiousness) who did not have the autonomy to change how they completed their tasks made suggestions on how these tasks could be improved. Moreover, Whiteoak’s (2014) qualitative study suggested that conscientious individuals in repetitive, boring jobs persisted with a positive attitude. Overall, I expect that individuals higher in conscientious will extend their personal sense of accomplishment to non-work tasks when bored.

\[ H8: \text{Conscientiousness moderates the relation between state boredom and OCBO such that the relation is stronger for those high in conscientiousness.} \]

**Conscientiousness and Job Crafting**

Job crafting is a form of proactive job enrichment wherein employees alter aspects of their job to increase alignment with their needs, preferences and abilities (Tims & Bakker, 2010; Tims et al., 2012; Wrzesniewski & Dutton, 2001). Individuals who score high in conscientious are more likely to seek personal control in their jobs, take action to improve their work situation, make plans to improve procedures, and persist in these efforts (Avery, 2003; Crant, Kim, &
Wang, 2011; Thomas et al., 2010; Tornau & Frese, 2013). Task-oriented and goal-driven conscientiousness individuals may actively restructure their work environment or task to maintain task engagement when bored and to reduce future boredom (Huang, Ryan, Zabel, & Palmer, 2014). Moreover, the seeking resources and challenge demands dimensions of job crafting constitute achievement-oriented actions as they are instrumental for attaining work goals and provide mastery and growth opportunities, respectively, and may enable high-scoring conscientious employees to perform at a higher level (Avery, 2003; Huang et al., 2014).

Research has shown that conscientious individuals tend to seek information (Butler, 1993, as cited in Grant & Ashford, 2008) and pursue learning opportunities at work (Colquitt & Simmering, 1998, as cited in Grant & Ashford, 2008), corresponding to the seeking resources dimension of job crafting (Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012). Other research has shown that conscientiousness is positively related to job scope (Raja & Johns, 2010), relating to the seeking challenge demands dimension of job crafting (Petrou et al., 2012).

In contrast, individuals who score low in conscientiousness tend to be unconcerned about performance outcomes, put little effort into their work, and are easily distracted (Costa & McCrae, 1998; John & Srivastava, 1999). They may be less likely to identify opportunities to improve their job and be less willing to persist in these efforts (Avery, 2003; Huang et al., 2014).

Meta-analytic evidence has shown positive relations between conscientiousness and proactive personality constructs, such as personal initiative and proactive personality, in addition to change-related behaviours, such as taking charge and employee voice (Thomas et al., 2010; Tornau & Frese, 2013). Moreover, a recent meta-analysis demonstrated that conscientiousness was positively related to increasing structural job resources (e.g., task variety, learning opportunities) and challenge demands (e.g., job responsibility; Rudolph et al., 2017).
Research on boredom and job crafting provides some evidence that high-scoring conscientious employees job craft when bored. In a qualitative study, participants indicated that responsible, hardworking, and conscientious workers were able to enjoy the repetitive, monotonous work by finding interest and challenge in their work (Whiteoak, 2014). One individual commented that the only way to manage the repetition was “to keep trying to improve” (p. 750). Similarly, Game’s (2007) qualitative study found that high boredom copers sought to improve the task, make changes, or do additional, related work. Boredom coping and conscientiousness overlap somewhat in that they are both involve a tendency to persevere on boring tasks as a result of being able to easily focus attention and feeling bored less often (Costa et al., 1991; Culp, 2006; Sulea et al., 2015). In Game’s (2007) study, for example, one individual said that they tried to “make it [the task] seem a bigger or more involved job” (p. 713). Game (2007) concluded that high boredom copers “were able to implement a personalised form of job enrichment to prevent or counteract boredom” (p. 714). In the present research, I hypothesize:

\[ H9: \text{Conscientiousness moderates the relation between state boredom and seeking resources such that the relation is stronger for those high in conscientiousness.} \]

\[ H10: \text{Conscientiousness moderates the relation between state boredom and seeking challenge demands such that the relation is stronger for those high in conscientiousness.} \]

**Agreeableness and CWBI**

Individuals who score high on agreeableness are thought to strive to maintain harmonious interpersonal relationships and care about the well-being of others. They are perceived as warm, courteous, cooperative, and tolerant (Chiaburu et al., 2011; Costa & McCrae, 1992; Fischer & Boer, 2015; John & Srivastava, 1999). They tend to treat others respectfully and are unlikely to provoke conflict from others due to their tolerant and forgiving disposition (Costa & McCrae,
CWBI consists of behaviours like making hurtful, rude, or insulting comments, intimidating others, spreading hurtful rumours, and performing hostile and physically aggressive acts (Spector & Fox, 2010; Robinson & Bennett, 1995), making it unlikely that highly agreeable individuals will find these actions gratifying. Moreover, given that more agreeable individuals tend to be high in trust and may look for opportunities to strengthen relations, they may be less likely to perceive opportunities to engage in CWBI, such as gossiping about a colleague (Graziano, Jensen-Campbell, & Hair, 1996). Meta-analytic evidence has shown that agreeableness negatively predicts interpersonal forms of deviance (Berry et al., 2007), overall CWB (Berry et al., 2012; Grijalva & Newman, 2015; Salgado, 2002; Sulea, Maricutoiu, Dumitru, & Pitariu, 2015), and antisocial tendencies (Decuyper, De Pauw, De Fruyt, De Bolle, & De Clercq, 2009; Miller & Lynam, 2001).

Disagreeable individuals are thought to be unconcerned about others’ welfare and are perceived as callous and aggressive (Costa & McCrae, 1992; John & Srivastava, 1999; Taylor & Kluemper, 2012). Research suggests that individuals may attempt to alleviate boredom by gossiping, playing pranks, or bullying (Brady et al., 2017; Bruursema et al., 2011; Collinson, 1988; Hamarus & Kaikkonen, 2008) even though the targets of these behaviours experience these acts as negative (Collinson, 1988). Because more disagreeable people are unlikely to consider the potential for their actions to harm others (Goldberg, 1992), the “fun” and “playful” aspects of these behaviours may appeal to their immediate need for stimulation (Hamarus & Kaikkonen, 2008). As a result, I hypothesize:

**H11:** Agreeableness moderates the relation between state boredom and CWBI such that the relation is weaker for those high in agreeableness.
Agreeableness and OCBI

Highly agreeable individuals are inclined to strive to maintain harmonious relationships, care about others, and are cooperative and helpful (Barrick et al., 2002; Chiaburu et al., 2011; Costa & McCrae, 1992; Fischer & Boer, 2015; John & Srivastava, 1999). These individuals tend to be drawn toward quality social interactions and view helping others as fulfilling (Goldberg, 1992). Research has demonstrated a link between agreeableness and communion-striving (e.g., Barrick et al., 2002), re-affirming the idea that agreeable individuals have a fundamental motivation to get along with others and establish harmonious relationships. Ilies et al. (2009) suggested that agreeable employees may perceive OCBI as an opportunity to maintain harmonious relationships with others at work. Given that more agreeable individuals tend to feel fulfilled when helping others, engaging in OCBI when bored may satisfy their need for a rewarding and meaningful alternative goal. In contrast, disagreeable individuals are thought to view others as inferior, selfish, and potentially dangerous and perceive opportunities to help others as a burden (Goldberg, 1992). As a result, they may be unlikely to help others when bored at work as they may view helpful behaviours as equally aversive to their boring task. Several meta-analyses have found a positive relation between agreeableness and OCBI, altruism, and interpersonal facilitation (Chiaburu et al., 2011; Hurtz & Donovan, 2000; Ilies et al., 2009; Organ & Ryan, 1995).

\[ H12: \text{Agreeableness moderates the relation between state boredom and OCBI such that the relation is stronger for those high in agreeableness.} \]
The Present Research

To test the idea that state boredom is positively related to CWBO and CWBI (Hypotheses 1–2), OCBO and OCBI (Hypotheses 3–4), and job crafting resources and job crafting challenge demands (Hypotheses 5–6) and that the personality traits of conscientiousness and agreeableness would predict variance in these slopes (Hypotheses 7–12), I used a daily diary study. Daily diary studies enable researchers to examine within-day relations between variables, which was appropriate given that I was interested in how feeling bored in one moment would relate to enacted behaviours in the next moment. Moreover, because I expected feelings of boredom to precede enacted behaviours, I temporally separated the measurement of state boredom and its potential outcomes. Participants completed two surveys each day, which allowed them to indicate their boredom levels prior to indicating which workplace behaviours they performed. Although temporally separating predictor and criterion variables does not remove the possibility of reverse causation, it is considered a more rigorous study design than when constructs are measured simultaneously as it can remove sources of common method variance (CMV; Ohly, Sonnentag, Niessen, & Zapf, 2010).
Methods

Participants and Procedure

I recruited participants by posting online advertisements on Kijiji and Craigslist inviting them to take part in a study on daily thoughts, feelings, and behaviours. Both Kijiji and Craigslist are popular sites that are used regularly by a sizeable portion of the Canadian population. For instance, one in three Canadians use Kijiji on a monthly basis and the site has over nine million unique visitors each month (Kijiji Customer Support, personal communication, March 1, 2019). The advertisements contained a link to a prescreen survey that included questions related to demographic information and inclusion criteria. To qualify, individuals needed to reside in either Canada or the United States and work full-time, regular hours (e.g., 9 to 5) Monday to Friday. Participants also needed to interact with others at their workplace at least 10% of the time so that they had an opportunity to engage in other-oriented behaviours, such as OCBI. In fact, in the final sample, the vast majority of respondents interacted with others at least 25% of the time. Specifically, approximately, 42% of respondents indicated that they interacted with others in their organization almost all of the time (i.e., more than 76% of the time), 32% indicated often (i.e., 51-75% of the time), 19% indicated sometimes (i.e., 25-50% of the time), and 6% indicated rarely (i.e., 10-24% of the time). The study recruitment materials and pre-screen did not reference the constructs of interests nor the hypotheses and participants were not aware of the study inclusion criteria. Of the 1816 individuals who completed the prescreen survey, 417 qualified to participate in the study (see Appendix A for the prescreen questions).

I e-mailed individuals who met the inclusion criteria and invited them to complete a baseline survey, which included measures of conscientiousness and agreeableness, before they began the daily portion of the study. In total, 287 of the 417 qualified individuals completed the
baseline questionnaire, indicating a response rate of 68.82%. Subsequently, I scheduled participants to begin the daily diary study on the nearest Monday (excluding holidays) that was convenient for them. To complete the daily surveys, they were e-mailed a link to a morning survey at 9 AM (survey closed at 12:00 PM) and a link to an afternoon survey at 4 PM (survey closed at 11:59 PM) for 10 consecutive work days. The morning survey included a measure of state boredom and the afternoon survey contained measures of CWB, OCB, and job crafting. Participants completed these measures alongside others as part of a larger study. I compensated participants with $1 for each daily survey and $5 for completing the baseline survey. Thus, participants could earn up to $25 in exchange for their participation.

Although participants were informed that the morning and afternoon surveys closed at 12 PM and 11:59 PM, respectively, some individuals completed it after this time. Instead of excluding all of the surveys that did not meet the deadline for completion, I chose to retain morning surveys that were completed between 12 PM and 12:30 PM and afternoon surveys that were completed between midnight and 2 AM. This resulted in retaining 53 morning surveys (77 were excluded for completing the morning survey after 12:30 PM) and 19 afternoon surveys (seven were excluded for completing the survey after 2:00 AM) that would have otherwise been excluded. To identify careless responding in the daily diary data, I used response time guidelines. Researchers suggest that participants who take less than two seconds per item to respond are likely not paying attention to the item instructions, item stem, and/or response options (Desimone, Harms, & Desimone, 2015; Meade & Craig, 2012). I excluded participants who responded faster than two seconds per item (on average), which resulted in 15 exclusions for the morning surveys and 36 for the afternoon. I excluded an additional 13 participants as they only completed one survey out of a possible 20 and therefore did not have enough data points to
warrant inclusion in multilevel modelling (i.e., because it requires multiple days nested within individuals). After exclusions, a total of 238 individuals were included in the 10-day daily diary study, yielding a response rate of 82.93%. Had each participant completed every daily survey, there would have been 2380 data points. Due to non-response and exclusions, there were only 1973, indicating a response rate of 82.9% across time and participants.

There were 238 Canadian (97.9%) and American (2.1%) full-time workers with different occupations (e.g., administrative assistant, occupational therapist, registered dietician, teacher, underwriter) across many industries (e.g., education, healthcare, insurance, manufacturing, real estate, social services). The majority were female (80.25%) and identified as only Caucasian (71.85%) and the mean age was 32.36 years ($SD = 8.78$). On average, they worked at their organization for 3.39 years ($SD = 4.44$), held their current position for 2.15 years ($SD = 3.06$), and worked 39.36 hours per week ($SD = 5.47$). Approximately, 28% had a post-graduate degree ($n = 66$), 34% had an undergraduate degree ($n = 81$), 27% had a college diploma ($n = 65$), and 11% had a high school diploma or less ($n = 25$).

**Measures**

**Conscientiousness (baseline).** Participants completed the 9-item conscientiousness subscale of The Big Five Inventory (John, Naumann, & Soto, 2008; Appendix B). Participants responded to items, such as “Tends to be lazy” (reverse-scored) and “Is easily distracted” (reverse-scored), using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach’s alpha was .77.

**Agreeableness (baseline).** Participants completed the agreeableness subscale of The Big Five Inventory (John et al., 2008; Appendix C). Participants responded to items, such as “Is considerate and kind to almost everyone” and “Is helpful and unselfish with others”, using a 5-
point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach’s alpha was .80.

**State boredom (morning survey – daily).** Participants completed the 11-item SBI (Baratta & Spence, 2018; Appendix D) based on how they felt at that moment using a 7-point scale ranging from 1 (strongly disagree) and 7 (strongly agree). Sample items are “I want something to happen but I’m not sure what” and “It is difficult to focus my attention.” The within-person reliability of the scale was .88.

**Counterproductive work behaviour (afternoon survey – daily).** Participants responded to 11 CWB items from Bennett and Robinson’s (2000) measure of workplace deviance (Appendix E). They indicated the number of times they performed each behaviour that day using a 5-point scale ranging from 0 (none) to 4 (four or more times). Sample CWBO and CWBI items are “Taken an additional or a longer break than is acceptable at your workplace” and “Made fun of someone at work”, respectively. The within-person reliability for both scales was .92.

**Organizational citizenship behaviour (afternoon survey – daily).** Participants responded to 10 items from the OCB Checklist (Fox et al., 2012; Appendix F). Participants indicated the number of times they engaged in each behaviour that day using a 5-point scale ranging from 0 (none) to 4 (four or more times). Sample OCBO and OCBI items are “Offered suggestions to improve how work is done” and “Lent a compassionate ear to someone who had a work problem”, respectively. The within-person reliability for both scales was .92.

**Job crafting (afternoon survey – daily).** Participants completed the daily Job Crafting Scale (Petrou et al., 2012; Appendix G), which includes four items for seeking resources (e.g., “Today, I have asked others for feedback on my job performance”) and three items for increasing challenging demands (e.g., “Today, I have asked for more responsibilities”). Participants
indicated how representative each item was of their work day using a 5-point scale ranging from 1 (not at all true) to 5 (completely true). The within-person reliability was .92 for the seeking resources scale and .91 for the seeking challenging demands scale.
Statistical Analyses

Given that daily diary data have a multilevel structure with repeated measures nested within individuals, I used multilevel modelling in Mplus v. 7 (Muthén & Muthén, 1998–2012). Mplus enables users to examine data at the within-person (i.e., intraindividual or state-like) and between-person (i.e., interindividual or trait-like) level of analysis. In these data, the Level 1 variables are state boredom, CWB, OCB, and job crafting and the Level 2 variables are conscientiousness and agreeableness. At the within-person level, multilevel modelling estimates the intercepts and random slopes across measurement occasions for each individual and, at the between-person level, it estimates the pooled values of the Level 1 parameters (Yang & Diefendorff, 2009). I centered each daily variable at the person-mean to remove between-person variance from the within-person effects. This ensures that the observed effects are a “pure” estimate of intraindividual differences such that the predictor (i.e., state boredom) is uninfluenced by potentially confounding Level 2 individual difference variables (Enders & Tofighi, 2007; Ohly et al., 2010). I grand mean centred the Level 2 variables to ease the interpretation of findings (Hofmann & Gavin, 1998).

To tests the hypotheses, I used random coefficient multilevel modelling, which allows the slope between the predictor and outcome variable to vary across individuals (Hofmann, 1997). When testing the main effects (Hypotheses 1 to 6), I examined the statistical significance of the fixed slope (average of each individual’s random slope; Hofmann, 1997). In Mplus, I specified the CWBO, CWBI, OCBO, and OCBI constructs as count variables using a poisson regression to account for the fact that the scores are not normally distributed and are bounded at zero (Cohen, Panter, Turan, Morse, & Kim, 2014; Muthén & Muthén, 1998–2012). The results of the Level 1 or within-person analyses can be interpreted as follows: a significant positive relation between
state boredom and CWBO, for instance, means that on days when participants reported higher levels of state boredom compared to their average state boredom score across the 10-day study period, they reported engaging in more CWBO.

To test the cross-level interactions (Hypotheses 7 to 12), I first examined the statistical significance of the variance of the Level 1 slopes at the between-person level of the model as this suggests the presence of Level 2 moderators (Aguinis, Gottfredson, & Culpepper, 2013; Hofmann, 1997; Yang & Diefendorff, 2009). I then regressed the Level 1 slope and intercept on the Level 2 moderator. The results of the cross-level interactions can be interpreted as follows: a significant negative effect of conscientiousness on the slope for state boredom and CWBO, for example, means that the daily relation between state boredom and CWBO is stronger for those lower in conscientiousness.

**Power Analysis**

Based on conventional standards, my intention was to choose a sample size that provided me with power close to .80 (Muthén & Muthén, 2002). I explain the methodology I used to estimate power for the main effects and cross-level interactions below.

**Main effects.** To determine what sample size I would need to detect a main effect for Hypotheses 1 to 6, I ran Monte Carlo simulations in Mplus v. 7 (Muthén & Muthén, 1998-2012). Monte Carlo simulations in Mplus require researchers to create a model for each hypothesis and to specify the parameter values they expect at the population level. Data are generated from this population and the estimated parameter values are averaged across multiple replications (i.e., samples). A power estimate for each estimated parameter value is given (Muthén & Muthén, 2002).
I needed to estimate the slope for the relation between state boredom and each outcome variable: CWBO, CWBI, OCBO, OCBI, job crafting demands, and job crafting resources. To determine the regression coefficients that I would include in the model, I relied on previous research and theory when possible (Muthén & Muthén, 2002). It is important to note that there are no studies examining the effect of state boredom on these outcomes at the day-level. Although there are some cross-sectional studies that look at the relation between state boredom and CWB and job crafting, the effects from between-person research cannot be used to estimate those for within-person research (Dalal et al., 2014.) This is because relations at the between-person level may differ in magnitude, direction, or type from those at the within-person level (Dalal et al., 2014). As such, I did not rely on state boredom research when estimating the parameter values for the Monte Carlo simulations. Instead, I conducted a comprehensive literature search using PsycInfo to identify studies that looked at the relation between the outcome variables and constructs similar to state boredom, such as negative affect, low arousal, and lack of engagement (see Appendix H for a comprehensive list of the search terms). However, because these variables are not equivalent to state boredom, I used the results of this literature review as a rough guideline for determining the estimated slopes I would include in the power analysis. Further, I only examined longitudinal studies where the researchers used an applied sample and measured the predictor and outcome variables at the day or weekly level. For one of the search fields, I specified “multilevel model*” or “hierarchical linear*” or daily or diary or “experience sampling” or “repeated measure*”.

I identified six studies from daily diary research that included CWB as an outcome variable (Chi, Chang, & Huang, 2015; Christian, Eisenkraft, & Kapadia, 2015; Dalal et al., 2009; Ferris, Spence, Brown, & Heller, 2012; Scott & Barnes, 2011; Yang & Diefendorff, 2009). Each study
used negative affect as a predictor, but one study also included interest (Christian et al., 2015). For each study, I recorded the within-person relation between the predictor and outcome variables and calculated overall average within-person correlations for CWBO and CWBI, which were .19 and .21, respectively.

I identified five studies with constructs related to OCB. Four of these studies included negative affect as a predictor (Christian et al., 2015; Dalal et al., 2009; Spence, Ferris, Brown, & Hellar, 2011; Yang, Simon, Wang, & Zheng, 2016), one included depletion (Lanaj, Johnson, & Wang, 2016), and one included interest (Christian et al., 2015). The average within-person correlations for OCBO and OCBI were .03 and -.05, respectively.

I identified four studies relevant to job crafting. Three of these studies included negative affect as a predictor (Fay & Hüttges, 2016; Fay & Sonnentag, 2012; Sonnentag & Starzyk, 2015) and one included low-activation negative affect (Madrid, Patterson, & Leiva, 2015). The proactivity constructs included measures of personal initiative, employee voice, proactive behaviour, and issue identification and implementation. Across these four studies, the average within-person correlations between negative affect and proactivity was .11.

In order to capture a range of effects that reflected most of the values in the studies described above, I ran Monte Carlo simulations with slopes of .10, .15, and .20. I also varied the sample sizes for each simulation. The Level 2 sample size (i.e., number of participants) ranged from 150 to 250 in increments of 20 and the Level 1 sample size was fixed at 10 days. In total, I ran 18 Monte Carlo simulations, each of which involved 5,000 replications. The results indicated that when the Level 1 sample size was specified as 10 days, a Level 2 sample size ranging from 150 participants to 250 participants produced sufficient power for a population slope of .15 and
.20. However, when the population slope was .10, a Level 2 sample size of 230 or 250 was necessary to produce power close to .80 (see Table 1).

**Cross-level interactions.** To determine what sample size I needed to detect a cross-level interaction for Hypotheses 8 to 12, I ran Monte Carlo simulations in R (R Development Core Team, 2013) using a Multilevel Power Tool for cross-level interactions developed by Mathieu, Aguinis, Culpepper, and Chen (2012). This tool requires researchers to estimate several parameter values, including the Level 1 direct effect, the cross-level interaction, the intra-class correlation for the daily variables, and the standard deviation of Level 1 slopes. It is extremely difficult to estimate these values using extant research as many researchers fail to report these values (Mathieu et al., 2012). To address this issue, Mathieu et al. (2012) provide researchers with a range of values that can be used in the Monte Carlo simulation, which they derived from a large-scale simulation study.

Consistent with the Monte Carlo simulations for the main effects, I fixed the Level 1 sample size to 10 and selected a range of sample sizes for Level 2 (i.e., 150 to 250). Also consistent with the previous Monte Carlo simulations, I fixed the slope of state boredom on the outcome (e.g., state boredom on CWBO) to .10 to represent a conservative estimate of this effect. When estimating the effect for the cross-level interaction, I selected a range of values (.15, .30, and .45) based on Mathieu et al.’s (2012) recommendations. For each of the other estimated values, I opted for the most conservative estimates recommend by Mathieu et al. (2012). However, because the authors did not provide recommendations for the variances, I used the values included in their example simulation. In total, I ran 18 Monte Carlo simulations and conducted 5,000 replications for each simulation.
The results of the Monte Carlo simulations are displayed in Table 2. The results indicated that when the Level 1 sample size was specified as 10 days, a Level 2 sample size ranging from 150 participants to 250 participants produced sufficient power to detect a cross-level interaction effect of .15, .30, and .45.

**Conclusion.** The results of both Monte Carlo simulations suggested that a Level 2 sample size greater than 150 was sufficient to detect a Level 1 main effect and cross-level interaction effect equal to or greater than .15. However, to detect a Level 1 main effect of .10, a sample size of 230 to 250 participants was needed. Because the results of the literature search suggested slopes for OCB and job crafting, my intention was to recruit a sample of approximately 230 to 250 participants so that I would have enough power to detect a small effect using a 10-day diary study. After exclusions, the final sample in the present study included 238 participants.

**Preliminary Analyses**

Before testing the hypotheses, I examined the systematic within- and between-person variance in each daily variable to ensure there was enough within-person variance to warrant multilevel analyses. I ran a null model (i.e., no predictors) on each of the daily variables to partition the total variance into within- and between-person components. The absence of within-person variance negates the use of multilevel modelling as there is only one level of analysis (i.e., between-person; Judge, Scott, & Ilies, 2006). Though there are no stringent criteria for how much variance should be within-person to warrant the use of multilevel modelling, researchers recommend that it exceed 10% (Dedrick & Greenbaum, 2010). In these data, the per cent of within-person variances were 49% for state boredom, 36% for CWBO, 33% for CWBI, 38% for OCBO and OCBI, 41% for job crafting resources, and 42% for job crafting demands (see Table 3).
Results

The descriptive statistics and correlations are displayed in Table 4. Hypotheses 1 to 6 specified a main effect of feeling bored on the daily outcome variables. In Mplus, I specified the CWBO, CWBI, OCBO, and OCBI constructs as count variables using a poisson regression to account for the fact that the scores are not normally distributed and are bounded at zero (Cohen et al., 2014; Muthén & Muthén, 1998–2012). Moreover, because I used random coefficient modelling, the results presented below are the unstandardized coefficients.

Main Effects

Counterproductive work behaviour. Hypothesis 1 predicted that daily state boredom would be statistically significantly and positively related to daily CWBO. Consistent with my expectations, individuals engaged in more CWBO on days when they reported higher levels of state boredom ($\gamma = .16, SE = .03, t = 4.99, 95\% \text{ CI [.11, .22]}, p = .00$). For Hypothesis 2, I tested the extent to which feeling bored was statistically significantly and positively related to daily CWBI. The results indicated that state boredom was not statistically significantly related to CWBI ($\gamma =.01, SE = .12, t = .11, 95\% \text{ CI [-.18, .21]}, p = .91$); thus, Hypothesis 2 was not supported.

Organizational citizenship behaviour. Hypotheses 3 and 4 predicted that daily state boredom would be statistically significantly and positively related to daily OCBO and OCBI, respectively. Neither of these hypotheses was supported as I failed to find a statistically significant relation between state boredom and OCBO ($\gamma = -.03, SE = .03, t = -.02, 95\% \text{ CI [-.08, .02]}, p = .31$) or OCBI ($\gamma = -.01, SE = .03, t = -.46, 95\% \text{ CI [-.07, .04]}, p = .65$).

Job crafting. Hypotheses 5 and 6 stated that individuals would seek more resources and challenge demands, respectively, on days when they reported higher levels of state boredom.
Unexpectedly, the results indicated that individuals sought fewer resources on days when they reported higher levels of state boredom ($\gamma = -0.04$, $SE = 0.02$, $t = -2.03$, 95% CI [-0.08, -0.01], $p = 0.04$) as well as fewer demands ($\gamma = -0.07$, $SE = 0.02$, $t = -3.20$, 95% CI [-0.10, -0.03], $p = 0.00$). Thus, neither Hypothesis 5 nor Hypothesis 6 was supported.

**Cross-Level Interactions**

Before testing the cross-level interactions, I examined whether there was significant variance in the slopes. Specifically, I conducted a $-2$ log likelihood ratio test between the estimated model (i.e., model with a random slope) and an alternative model (i.e., model with a fixed slope). This enabled me to test whether a model with a random slope provides a significantly better fit to the data than a model with a fixed slope. If the variability in the slope is statistically significant, a Level 2 variable can be used to explain this variability (Aguinis et al., 2013). The $-2$ log likelihood ratio between the model with a random slope and the model with a fixed slope was statistically significant for CWBO, $t(2) = 39.27$, $p < .01$, CWBI, $t(2) = 24.65$, $p < .01$, OCB, $t(2) = 36.27$, $p < .01$, and seeking challenge demands, $t(2) = 6.66$, $p < .05$. However, the results for OCBO $t(2) = 5.05$, $ns$, and seeking resources $t(2) = 2.47$, $ns$, were not statistically significant.

The absence of slope variance means that the strength of the relation between $x$ and $y$ is comparable across participants. Logically, it does not make sense to examine the possibility of a Level 2 moderator in these instances since there is no slope variance to explain. However, given the potential for Type II error, researchers still recommend testing for cross-level interactions when there is a theoretical rationale for doing so (Aguinis et al., 2013). As such, after testing for significant slope variability, I proceeded to conduct the cross-level interactions.
**Conscientiousness.** Hypothesis 7 predicted a cross-level interaction effect of conscientiousness on the within-person relation between state boredom and CWBO. I did not find support for this hypothesis as conscientiousness did not statistically significantly predict variance in the slope between state boredom and CWBO ($\gamma = .03, SE = .05, t = .49, 95\% \text{ CI } [-.06, .11], p = .62$). Hypotheses 8 and 9 predicted a cross-level interaction effect of conscientiousness on the within-person relation between state boredom and OCBO and seeking resources, respectively. The data did not support Hypothesis 8 ($\gamma = -.03, SE = .04, t = -.69, 95\% \text{ CI } [-.10, .04], p = .49$) or Hypothesis 9 ($\gamma = -.00, SE = .05, t = -.05, 95\% \text{ CI } [-.08, .07], p = .96$), potentially because of lack of significant variance in the slopes identified earlier. Hypothesis 10 stated that conscientiousness would moderate the within-person relation between state boredom and seeking demands, but this hypothesis was not supported ($\gamma = .00, SE = .04, t = .05, 95\% \text{ CI } [-.06, .06], p = .96$). Taken together, these results indicate that the within-person relations between state boredom and these behavioural outcomes did not differ significantly across levels of conscientiousness.

**Agreeableness.** Hypothesis 11 predicted a cross-level interaction effect of agreeableness on the within-person relation between state boredom and CWBI. In support of this hypothesis, agreeableness predicted statistically significant variance in the slope between state boredom and CWBI ($\gamma = -.22, SE = .09, t = -2.39, 95\% \text{ CI } [-.36, -.07], p = .02$). The negative interaction term suggests that the daily relation between state boredom and CWBI is stronger for those low in agreeableness.

To explore the interaction, I plotted the “high” and “low” values at one standard deviation above and below the mean, respectively, for state boredom and agreeableness (Cohen, Cohen, West, & Aiken, 2003; Dawson, 2014). Because CWBI is a count variable modelled using
a poisson regression, I plotted the interaction according to conventions for poisson regressions. Rather than drawing a straight line between high and low values of boredom at low agreeableness and high agreeableness, it is necessary to choose “regular intervals between low and high values” (p. 10) of boredom and to plot “the lines between each pair of values” (p. 10). This results in “an entire curve [that is]…plotted for each chosen value of [the moderator]” (Dawson, 2014, p. 10). In line with these recommendations, I plotted a curve for high agreeableness (one standard deviation above the mean of agreeableness) and a curve for low agreeableness (one standard deviation below the mean of agreeableness) across different levels of state boredom (ranging from one standard deviation below the mean to one standard deviation above the mean). As can be seen in the interaction plot displayed in Figure 1, the curve for low agreeableness is curved upward, suggesting that individuals low in agreeableness engage in more CWBI as they become more bored. In contrast, the curve for high agreeableness is quite flat, suggesting that there is no relation between state boredom and CWBI for individuals high in agreeableness. After including agreeableness as a moderator, the residual variance of the daily state boredom and CWBI slope remained statistically significant, $\mu = .22, p < .01$, suggesting the presence of additional Level 2 moderators.

Finally, although Hypothesis 12 predicted a cross-level interaction effect of agreeableness on the within-person relation between state boredom and OCBI, the data did not support this hypothesis ($\gamma = .01, SE = .04, t = .34, 95\% CI [-.05, .08], p = .73$). In sum, the relation between state boredom and these behavioural outcomes differed significantly across levels of agreeableness for CWBI, but not for OCBI.
Supplemental Analyses

After testing my hypotheses, I conducted additional analyses to gain a better understanding of the proposed relations and to provide additional insight into why some of the hypotheses were not supported. First, I explored the extent to which an alternate method of measuring boredom would affect the proposed relations. Second, I re-examined the data to better understand why all but one of the cross-level interaction hypotheses were not supported. In addition, although tangential to the central hypotheses, I conducted additional analyses using a between-person operationalization of boredom to illustrate the importance of using within-person study designs when examining within-person research questions as this has often been overlooked in the boredom literature.

An Alternate Method: Experiences of State Boredom Throughout the Work Day

In the present research, I decided to capture the relation between feeling bored and its outcomes by measuring state boredom in the morning and the outcomes in the afternoon. I believed that this temporal separation was necessary as I was interested in operationalizing boredom as a momentary experience and studying its subsequent behaviours. Measuring momentary boredom and these behaviours simultaneously would have been theoretically inconsistent as the temporal order of these constructs would have been less clear. This approach enabled me to test the extent to which feeling bored at a discrete moment in time was associated with CWB, OCB, and job crafting at a subsequent moment in time. An alternative approach to studying discrete emotions is to capture an overall experience of that emotion across the work day rather than what is felt at one point in time (e.g., Ford, Wang, Jin, & Eisenberger, 2018). In the present research, in addition to including my state boredom measure in the morning survey, I had included it in the afternoon survey. This enabled me to test my hypotheses using an
afternoon measure of the SBI (Baratta & Spence, 2018; Appendix I) in which participants responded based on the extent to which they felt that way at work that day. This approach enabled me to test the extent to which overall evaluations of a bored state within a longer time frame were associated with reports of CWB, OCB, and job crafting in the same time frame. Given that this is another viable approach to the study of discrete emotions, I decided to test my hypotheses using this alternate approach.

The descriptive statistics and correlations using the SBI afternoon measure are displayed in Table 5. The per cent of within-person variance of the afternoon SBI was 45% and the within-person reliability was .90. The correlation between the morning and afternoon SBI was .56, \( p = .00 \). Below, I report the results of these supplemental analyses and compare them to the analyses based on the morning SBI.

**Counterproductive work behaviour.** The results using the afternoon SBI indicated that individuals engaged in more CWBO on days when they reported higher levels of boredom across the work day (\( \gamma = .29, \ SE = .03, \ t = 9.35, \ 95\% \ CI \ [.24, .35], \ p = .00; \) Hypothesis 1). However, boredom across the work day was not statistically significantly related to CWBI (\( \gamma = .15, \ SE = .11, \ t = 1.30, \ 95\% \ CI \ [-.04, .38], \ p = .19; \) Hypothesis 2).

**Organizational citizenship behaviour.** The afternoon SBI was statistically significantly related to OCBO, but in the opposite direction than expected (\( \gamma = -.07, \ SE = .03, \ t = -2.33, \ 95\% \ CI \ [-.11, -.02], \ p = .02; \) Hypothesis 3). Thus, individuals engaged in fewer OCBO on days when they reported feeling more bored across the work day. Additionally, I failed to find support for the idea that boredom was statistically significantly related to OCBI (\( \gamma = -.03, \ SE = .03, \ t = -1.07, \ 95\% \ CI \ [-.08, .02], \ p = .29; \) Hypothesis 4).
**Job crafting.** The afternoon SBI was negatively related to both forms of job crafting. Specifically, individuals sought fewer resources on days when they reported higher levels of boredom across the work day ($\gamma = -.06, SE = .02, t = -2.39, 95\% \text{ CI} [-.09, -.02], p = .02$; Hypothesis 5) in addition to fewer challenge demands ($\gamma = -.05, SE = .02, t = -2.22, 95\% \text{ CI} [-.09, -.01], p = .03$; Hypothesis 6).

**Cross-level interactions.** Before testing the cross-level interactions, I examined whether there was significant variance in the slopes. Specifically, I conducted a $-2$ log likelihood ratio test between the estimated model (i.e., model with a random slope) and an alternative model (i.e., model with a fixed slope). This enabled me to test whether a model with a random slope provides a significantly better fit to the data than a model with a fixed slope. If the variability in the slope is statistically significant, a Level 2 variable can be used to explain this variability (Aguinis et al., 2013). The $-2$ log likelihood ratio between the model with a random slope and the model with a fixed slope was statistically significant for CWBO, $t(2) = 134.89, p < .001$, CWBI, $t(2) = 59.08, p < .001$, OCBO, $t(2) = 20.79, p < .001$, OCBI, $t(2) = 54.40, p < .001$, seeking resources $t(2) = 27.44, p < .001$, and seeking challenge demands, $t(2) = 7.01, p < .05$. After testing for significant slope variability, I proceeded to conduct the cross-level interactions.

**Conscientiousness.** None of the cross-level interactions for conscientiousness was statistically significant. I had explored whether conscientiousness would moderate the within-person relation between the afternoon SBI and CWBO, OCBO, job crafting resources, and job crafting demands. However, there was no evidence of moderation for CWBO ($\gamma = .04, SE = .06, t = .69, 95\% \text{ CI} [.06, .15], p = .49$; Hypothesis 7), OCBO ($\gamma = -.05, SE = .04, t = -1.24, 95\% \text{ CI} [-.11, .02], p = .22$; Hypothesis 8), job crafting resources ($\gamma = -.02, SE = .04, t = -.53, 95\% \text{ CI} [-
.09, .05], \( p = .60 \); Hypothesis 9), or job crafting demands (\( \gamma = -.01, SE = .04, t = -.16, 95\% CI [-.08, .06], p = .88 \); Hypothesis 10).

**Agreeableness.** I also explored whether agreeableness would moderate the within-person relation between the afternoon SBI and CWBI and OCBI, respectively. However, I failed to evidence of an interaction for CWBI (\( \gamma = -.02, SE = .09, t = -.22, 95\% CI [-.17, .13], p = .83 \); Hypothesis 11) or OCBI (\( \gamma = -.01, SE = .04, t = -.14, 95\% CI [-.07, .06], p = .89 \); Hypothesis 12).

**Summary.** Overall, the results using the morning and afternoon SBI were comparable. In both instances, boredom was positively related to CWBO and negatively related to job crafting resources and demands; it was also unrelated to both CWBI and OCBI. This suggests that, in this specific instance, there were no apparent implications for choosing one method over the other. This may not be surprising as both approaches are viable and commonly used in organizational behaviour research. The post-hoc decision to include the alternate approach as part of the supplemental analyses serves to add to the thoroughness of the research and address any speculative questions readers may have about the chosen methodology.

One difference in the results using the morning versus afternoon SBI was that whereas the relation between feeling bored and OCBO was non-significant using the morning survey, it was statistically significant and negative using the afternoon survey. One possible explanation for this finding is that CMV systematically biased the relation between the two variables as they were measured at the same time, resulting in a strengthened correlation (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). CMV, however, does not necessarily result in systematic bias or inflated correlations (Doty & Glick, 1998; Spector, 2006) and the decision to use different response formats and scales would have helped protect against common method bias. In fact, the slopes
for the afternoon SBI and the “positive” constructs like OCBO, OCBI, job crafting resources, and job crafting demands were not too different from those using the morning survey (e.g., $\gamma = -0.06$ vs. $\gamma = -0.04$, for the afternoon and morning SBI, respectively, job crafting resources; and $\gamma = -0.05$ vs. $\gamma = -0.07$, for the afternoon and morning SBI, respectively, job crafting demands), indicating that the correlations were not inflated. Moreover, the strong correlation between the morning and afternoon SBI, $\gamma = .56$, indicates that how bored one was at one point in time in the morning was highly predictive of how bored one felt throughout the workday. In other words, both measures were tapping into the same experience of boredom. The crucial difference between the analyses using the morning and afternoon SBI then may have been that the analyses using the morning SBI had less power than those using the afternoon SBI. This is because the former analyses required matching data across the morning and afternoon surveys whereas the latter only relied on the afternoon surveys, resulting in less missing data. If this is the case, it would suggest that greater meaning should be attributed to the finding that feeling bored negatively predicts OCBO.

The results for cross-level interaction effects were comparable when using the morning and afternoon SBI. In both cases, the relation between state boredom and its outcomes did not vary across levels of conscientiousness. Similarly, agreeableness did not moderate the relation between state boredom and OCBI. The only difference was that whereas agreeableness predicted significant variance in the Level 1 slope between boredom and CWBI in the morning analyses, it did not when using the afternoon SBI. To better understand this finding, I plotted both interactions. As can be seen in Figure 2, the pattern of findings for the afternoon SBI (although not statistically significant) appears similar to the significant interaction that was found using the
morning survey (see Figure 1). As a result, reconsideration of the support found for Hypothesis 11 was not warranted.

**Cross-Level Interactions: Measures of Conscientiousness and Agreeableness**

Unexpectedly, all but one of the hypotheses relating to the cross-level interactions did not receive support. To better understand why I failed to find support for these proposed relations and the underlying theory, I decided to take a closer look at the data to see if the data could provide an explanation. Specifically, I inspected the properties of the conscientiousness and agreeableness measures and conducted additional analyses in an attempt to address some problematic response patterns I noticed in the data.

I examined the distributions of the data for conscientiousness and agreeableness for skewness. Typically, researchers gauge whether a distribution is skewed by converting a skewness statistic to a standardized z score and determining its statistical significance (Field, 2009). Negative values indicate that the distribution has a long tail towards the left of the distribution (i.e., build-up of high scores) whereas positive values indicate that the distribution has a long tail towards the right of the distribution (i.e., build-up of low scores). Z scores are calculated by dividing the skewness statistic by its standard error. Because standard errors tend to be smaller in large samples, z scores derived from large sample sizes may be statistically significant even when there are minor deviations from normality (Field, 2009). For these reasons, Field (2009) cautions that significance tests for z scores should not be applied in large samples of 200 or more and that, in these cases, skewness should be determined by visually inspecting the distribution.

Based on this recommendation, I visually inspected the distributions for the conscientiousness and agreeableness items; these items were either positively-keyed (e.g., “Is
considerate and kind to almost everyone”) or negatively-keyed (e.g., “Can be cold and aloof).

After looking at the distributions for these items, I found that the distributions for the positively-keyed items were strongly negatively skewed. As an example, Figure 3 displays the distributions for two conscientiousness items – one positively-keyed item (“Is a reliable worker”, Figure 3a) and one negatively-keyed item (e.g., “Tends to be lazy”, Figure 3b). As shown in Figure 3a, the distribution for this positively-keyed item was strongly skewed with most participants responding either “strongly agree” or “agree.” In contrast, the distribution of the negatively-keyed item in Figure 3b was closer to being normally distributed (although the scores are still shifted to the right rather than the centering around the scale mean and few respondents endorsed the “strongly disagree” response option). This same pattern of findings was true of the agreeableness items. Figure 4 displays the distributions for two agreeableness items – one positively-keyed item (“Is helpful and unselfish with others”, Figure 4a) and one negatively-keyed item (e.g., “Is sometimes rude to others”, Figure 4b). Again, Figure 4a demonstrates that the distribution of this positively-keyed item is strongly negatively skewed with the majority of respondents indicating “agree” or “strongly agree.” In comparison, the distribution of the negatively-keyed item in Figure 4b is more evenly spread (albeit it still demonstrates skewness). One exception was that one of the negatively-keyed agreeableness item (“Starts quarrels with others”) also was strongly negatively skewed (see Figure 5).

These data suggest that participants were highly reluctant to indicate any form of disagreement or even neutrality when an item was positively-keyed. One interpretation of these data is that the positively-keyed items had strong social desirability in that participants may have been motivated to appear good. This bias is less evident in response to the negatively-keyed items as participants were more likely to indicate agreement to statements that highlighted
undesirable behaviours or qualities, such as being lazy or rude. The lack of variance in the positively-keyed items suggests that these items are particularly poor at discriminating between people at different latent levels of agreeableness and conscientiousness. In contrast, although the negatively-keyed items did demonstrate skewness, they had greater variance and a greater range of the responses options was used (see Table 6 for the means and standard deviations of each item).

Because the positively-keyed items may have been particularly poor at discriminating between individuals at varying levels of conscientiousness and agreeableness, it may have been more difficult to detect any moderation effects. This is because high and low levels of conscientiousness and agreeableness plotted at one standard deviation above and below the mean, respectively, likely did not capture true high and low scorers. To explore the effect that these items may have had on the findings, I decided to test Hypotheses 7 to 12 using measures of conscientiousness and agreeableness that only included the negatively-keyed items as these items had a wider response distribution. One exception was that I excluded the agreeableness item “Starts quarrels with others” as this item was quite skewed. The reliability of the conscientiousness and agreeableness scales was .68 and .72, respectively.

**Conscientiousness.** Overall, none of the hypotheses was supported using the negatively-keyed conscientiousness items, making the results comparable to those using the original conscientiousness scale. Specifically, there was no evidence of a cross-level interaction effect for CWBO ($\gamma = .00$, $SE = .04$, $t = .01$, 95% CI [-.06, .07], $p = .99$; Hypothesis 7), OCBO, ($\gamma = -.04$, $SE = .04$, $t = -1.01$, 95% CI [-.11, .03], $p = .32$; Hypothesis 8), seeking resources ($\gamma = -.02$, $SE = .03$, $t = -.71$, 95% CI [-.08, .03], $p = .47$; Hypothesis 9), or seeking demands ($\gamma = -.01$, $SE = .03$, $t = -.17$, 95% CI [-.06, .05], $p = .87$; Hypothesis 10).
Agreeableness. Similarly, neither of the hypotheses was supported using the negatively-keyed agreeableness items. Specifically, I failed to find evidence of a cross-level interaction for CWBI ($\gamma = -.07, SE = .06, t = -1.20, 95\% CI [-.16, .03], p = .23$; Hypothesis 11) or OCBI ($\gamma = .02, SE = .03, t = .76, 95\% CI [-.02, .06], p = .45$; Hypothesis 12).

Summary. I sought to explore whether a different item composition for the conscientiousness and agreeableness measures would affect the detection of a cross-level interaction. The above results highlight that the cross-level interactions remained non-significant when using the negatively-keyed items. Importantly, although the negatively-skewed items demonstrated less skewness than the positively-keyed items, few respondents endorsed the “strongly disagree” category. This suggests that, overall, the conscientiousness and agreeableness scales failed to adequately capture true low scorers. Moreover, by truncating the scales, I may have failed to capture the full construct domain of conscientiousness and agreeableness. The implications that these measures may have had on the study findings are discussed further in the General Discussion.

Using Between-Person Approaches to Address Within-Person Research Questions

Although I used a within-person study design in the present study, most existing research on boredom relies on between-person designs (e.g., cross-sectional) to test within-person questions. A between-person approach compares individuals’ boredom levels relative to the sample and is problematic as relations at the between-person level can differ in size, direction, and type than those at the within-person level (Dalal et al., 2014). As a result, conclusions about the episodic nature of boredom that are based on between-person findings can be misleading. For the supplemental analyses, I tested the relation between aggregate levels of boredom and the outcome variables to highlight the differences between within- and between-person results. A
between-person relation can be interpreted as follows: a significant positive relation between state boredom and CWBO, for instance, means that individuals who characteristically feel bored also characteristically engage in more CWBO compared to individuals who characteristically feel bored less often. Below, I report the results of these supplemental analyses and compare the results of these between-person supplemental analyses to the results of the within-person analyses reported in the results section earlier.

I reran the analyses for Hypotheses 1 to 6 using an aggregate boredom score that averaged individuals’ boredom scores across the 10-day study period. I included the aggregate boredom score at the between-person level of the model. The results indicated that, at the between-person level, boredom was statistically significantly and positively related to both CWBO (γ = .22, SE = .07, t = 3.43, 95% CI [.12, .33], p = .00) and CWBI (γ = .40, SE = .11, t = 3.57, 95% CI [.22, .59], p = .00). These results suggest that individuals who characteristically feel bored engage in more CWBO and CWBI than individuals who characteristically feel bored less often. Aggregate levels of boredom were unrelated to OCBO (γ = .03, SE = .08, t = .38, 95% CI [-.10, .16], p = .71), OCBI (γ = .04, SE = .06, t = .57, 95% CI [-.07, .14], p = .57), job crafting resources (γ = -.01, SE = .06, t = -.23, 95% CI [-.11, .09], p = .82), and job crafting demands (γ = .03, SE = .05, t = .57, 95% CI [-.06, .12], p = .57).

Summary. The results of these between-person supplemental analyses differed from those of the within-person analyses reported in the results section earlier. Whereas aggregate levels of boredom at the between-person level were positively related to both CWBO and CWBI, state levels of boredom at the within-person level were positively related to CWBO and unrelated to CWBI. In addition, whereas aggregate levels of boredom were unrelated to job crafting, state boredom was negatively related to job crafting. These findings demonstrate that between-person
estimates can differ in magnitude and direction from within-person estimates and highlight the importance of using within-person methodologies to address within-person research questions. These findings also point to the unique contribution that the present study has for organizational research on boredom. Although there have been several cross-sectional studies on boredom and CWB and a few on boredom and job crafting, the present study is unique in offering insight into the within-person relations between these variables. Given the disparate relations between state boredom and its outcomes when comparing a between-person versus a within-person analysis, my results may offer more accurate estimates of the relation between state boredom and these variables.

The divergent findings at the between-person versus the within-person level are likely because different theoretical frameworks and mechanisms can be invoked to account for between- versus within-person relations. Whereas high aggregate levels of boredom suggest that someone is chronically under-stimulated and bored compared to others (between-person), high state levels of boredom suggest that someone is more under-stimulated and bored compared to how s/he typically feels (within-person). At the between-person level, individuals who are chronically bored are more impulsive, angry, and aggressive. Because trait anger is highly predictive of CWB and trait boredom relates to anger and aggression (see Bruursema et al., 2011, for an expanded argument), individuals high in trait boredom should impulsively act in aggressive ways. Thus, as indicated in the supplemental analyses, it makes sense that aggregate boredom levels at the between-person level were only associated with destructive and retaliatory behaviours like CWB and unrelated to constructive ones like OCB and job crafting. In contrast, at the within-person level, the relation between state boredom and its outcomes is more reflective of the specific action tendencies associated with a bored state. In the General Discussion section,
I provide a more detailed explanation for why state boredom at the within-person level evidenced a positive relation with CWBO and a negative relation with job crafting.

**Overall Summary**

The findings from the supplemental analyses add to the present study in three ways. First, they provide additional insight into why one of the proposed relations was not supported. Specifically, they point to the possibility that the original study may have lacked enough power to detect a relation between feeling bored and OCBO. The additional data points from the afternoon survey provided more power, which suggests that the relation between state boredom and OCBO is negative – much like the relation between state boredom and both forms of job crafting. Second, they suggest that the non-significant findings for the cross-level interactions may have resulted from skewed data associated with the moderator scales. Because the data failed to differentiate high scorers from low scorers, it would have been quite challenging to find support for theory that anticipates that high and low scorers will react differently to boredom. This leaves open the possibility that the proposed relations still may be true although there is no data to support this. Finally, these additional findings emphasize an important contribution of the present research, which was testing a within-person research question using a within-person study. This is in stark contrast to extant organizational research on boredom and suggests that the present findings may provide a more accurate picture of the relation between state boredom and its outcomes.
General Discussion

In the present research, I examined CWB, OCB, and job crafting as potential outcomes of state boredom and tested whether the personality traits of conscientiousness and agreeableness moderated these relations. Overall, my results yielded two key findings. First, individuals are more likely to engage in undesirable workplace behaviours, including CWBO and CWBI (albeit the latter is only true for those low in agreeableness), on days when they are more bored than average. Second, contrary to what I expected, individuals are less likely to engage in desirable workplace behaviours, such as OCBO, job crafting resources, and job crafting challenge demands.

Study Findings: Within-Person Effects

The first key finding was that individuals engage in CWB when bored. I found that CWBO, which includes daydreaming and taking longer breaks, was associated with feeling bored. This finding is consistent with theory suggesting that individuals engage in alternate and potentially destructive behaviour as a means of escaping boredom and seeking adequate stimulation. I also found that individuals were more likely to engage in CWBI when bored, but only for those low in agreeableness. Given that CWBI consist of behaviours intended to harm others and include making hurtful, rude, or insulting comments and gossiping about colleagues (Robinson & Bennett, 1995; Spector & Fox, 2002), it might not be surprising that not all individuals find these acts to be self-gratifying. Instead, the “fun” aspects of these behaviours may appeal to disagreeable employees’ need for stimulation as these individuals tend to be unconcerned about the welfare of others (Goldberg, 1992). Overall, these findings suggest that employees may engage in organization-directed CWB as they feel more bored, but only disagreeable employees engage in CWB that could harm others.
The second key finding, which was contrary to my expectations, was that state boredom was not related to organization-directed or to individual-directed OCB. In addition, contrary to what I had hypothesized, the results indicated that individuals are less (and not more) likely to job craft when they experience higher levels of boredom than average. This was surprising given that functional accounts of emotion suggest that these behaviours should satisfy bored individuals’ need to engage in a more meaningful, challenging, or stimulating activity (Bench & Lench, 2013, 2018; Elpidorou, 2018b; Skowronska, 2012; Spector & Fox, 2010). One possibility for these unexpected findings is that job crafting, for example, does not constitute behaviours that are different or novel enough to satisfy the need to adopt an alternative goal when bored. The task-relevant nature of many job crafting behaviours may mean that engaging in job crafting does not enable individuals to switch tasks or adopt a new goal as they become bored. For instance, asking for performance feedback (seeking resources) or increasing one’s job responsibility (seeking challenge demands) may not necessarily require individuals to go considerably outside the scope of their current tasks. Individuals who feel bored as a result of their core tasks may be hesitant to increase their workload by engaging in these behaviours given that they will still need to complete their boring work and would have less time to do so (Bergeron, Shipp, Rosen, & Furst, 2013). Relatedly, Fisher’s (1987) qualitative research found that although some individuals engage in desirable work-related behaviours when bored, the boredom returned as soon as the individual returned to her/his original task. Thus, individuals may have learned that job crafting is ineffective at helping them cope with boredom and, as a result, are less reliant on these strategies.

Alternatively, even when engaging in alternate activities like OCB or job crafting could present a viable opportunity to switch to a more meaningful or interesting activity, state boredom
may preclude individuals from perceiving this as an opportunity to escape boredom. Mann and Cadman (2014) stated that “boredom stems from a situation where none of the possible things that a person can realistically do appeal to the person in question” (p. 1.65). This suggests that the threshold for what constitutes “interesting” or “engaging” may be greater for individuals with higher levels of boredom compared to those with lower levels. Thus, it is possible that individuals do not perceive OCB or job crafting as an opportunity to engage in a novel, meaningful, or challenging activity when bored (even when they could be) or may fail to identify these opportunities all together.

Another possibility is that individuals are less inclined to engage in effortful and purposeful behaviours when bored. That is, on average, individuals may choose to engage in CWB since these behaviours require relatively little effort and provide an easy route for alleviating boredom. Unlike CWB, which involve failing to meet minimum job requirements, OCBs demand more effort as they require individuals to go above and beyond their job description (Lee & Allen, 2002; Organ, 1997). Similarly, job crafting involves making effortful and proactive changes to one’s job, such as by learning something new or taking on added responsibility (Tims et al., 2012). The present findings challenge emerging theory claiming that state boredom provides individuals with a “readiness to act”, prompting them to engage in productive behaviours as well as destructive ones. Instead, these findings are reflective of early theorists’ supposition that feeling bored encompasses a “disinclination to action” (Greenson, 1953, p. 46). According to psychodynamic theory, although individuals long to engage in more satisfying activity when bored, they are unable to specify what they desire (Fenichel, 1951; Greenson, 1953; Lewinsky, 1943). As Fisher (1987) put it, the individual “simply doesn’t feel like doing anything in particular yet wishes to be entertained” (p. 112). Ironically, this vague
longing, which is characteristic of state boredom, may preclude individuals from engaging in more active behaviours as they are unable to solidify what these behaviours should be. At the same time, individuals who experience unpleasant low arousal for too long may eventually lack the energy to initiate changes to their situation (Burn, 2017; Harju et al., 2016). Burn (2017) argued that, initially, the low arousal component of boredom should lead to efforts to increase arousal, such as through sensation-seeking, but if experienced for too long, drowsiness and inactivity prevail. Finally, recent research suggests that attention failures are a cause of feeling bored and this inattention may prevent bored individuals from noticing changes in their environment, making it challenging for them to identify potential alternatives to their current activity (Hunter & Eastwood, 2018). Overall then, paradoxically, the present study highlights that although individuals may long to do something different when bored, their “disinclination to action” may preclude them from doing so. More specifically, the disengagement and inattention components of state boredom may make it challenging for individuals to identify opportunities for alternative activities and the unpleasant low arousal component may not provide individuals with the energy to initiate opportunities when they are identified. As a result, these individuals may be more likely to gravitate towards CWBO and less likely to job crafting as the former enables them to switch to relatively effortless tasks that could easily alleviate their boredom.

Overall, these findings diverge from past research indicating that state boredom may be positively related to OCB and job crafting at work. These differences may result from the implications of different study designs. Whereas the current research used a daily diary study, other studies supporting the link between state boredom and desirable behaviours have been qualitative or experimental in nature (e.g., Fisher, 1987; Game, 2007; van Tilburg & Igou, 2017). Although qualitative research has found that employees engage in desirable behaviours like
asking for additional work and seeking training, it is possible that the frequency of these behaviours may be low. Fisher’s (1987) qualitative study, for instance, found that only 24 percent of respondents reported engaging in desirable behaviours (compared to 53 percent for undesirable behaviour like CWB). Moreover, although experimental studies have demonstrated that participants engage in desirable behaviours after having undergone a boredom induction compared to those who have not, the contrived nature of these studies could mean that the results might not generalize to realistic settings. For instance, in an experimental setting, Moynihan et al. (2015) found that high (versus low) boredom resulted in an increase in both unhealthy and healthy foods (provided that the healthy foods were novel and exciting). However, using a daily diary study, daily boredom was only associated with daily increases in unhealthy eating behaviours (not healthy ones). This and other experimental research could suggest that, when provided with the option, bored individuals will opt for activities that are different, meaningful, stimulating, and challenging. However, the present study’s findings point to the possibility that bored individuals, although desirous of a change of activity, may not actively search for it.

**Study Findings: Cross-Level Interactions**

In the present research, I assumed that conscientiousness would moderate the within-person relations between state boredom and CWBO, OCBO, seeking resources, and seeking demands and that agreeableness would moderate the within-person relations between state boredom and CWBI and OCBI. Although the hypothesis relating to agreeableness and CWBI was supported, as discussed earlier, none of the other hypotheses was supported. This means that the within-person relation between feeling bored and these outcomes did not vary across individuals as a function of conscientiousness or agreeableness. One possibility is that, conceptually, the broad measures of personality included in this study may have been less
predictive of discrete behaviours in the context of boredom. More specifically, it is possible that conscientiousness and agreeableness are relevant moderators, but that specific facets of these constructs could have offered more precision. Conscientiousness, for example, includes a self-disciplined component, which could be suggestive of an employee persevering and resisting impulses to go off-task regardless of how boring the task is. On the other hand, the achievement-striving facet of conscientiousness may indicate that employees may be more inclined to seek additional activities when bored to satisfy their need for accomplishment. Although broader measures of the Five Factor Model are correlated with their facet scores (Johns et al., 2008), the conflicting priorities of the different facets of conscientiousness in the context of boredom suggest that more research on these moderators is warranted.

**Supplemental Analyses: Cross-Level Interactions**

The supplemental analyses suggested that one possibility for these findings is that there was range restriction in the conscientiousness and agreeableness variables. The means of conscientiousness and agreeableness in the sample were higher than the mid-point of the scale \((M = 3.85\) and 3.89, respectively, on a 5-point scale) and there was little variance around the mean \((SD = .53\) and .55, respectively). A stark majority of participants scored moderate to high in conscientiousness and agreeableness, suggesting that there may have been few “true” low scorers in the sample. Range restriction is problematic as it can bias parameter estimates and increase the probability of Type II errors (Cortina, Koehler, Keeler, & Nielsen, 2018) and could explain why the cross-level interaction in this study were not statistically significant. Other studies using the BFI have found similarly high means and small standard deviations (e.g., Anderson, Spataro, & Flynn, 2008; Bolton, Becker, & Barber, 2010; Ferris, Brown, & Heller,
indicating that the small range in scores was likely not a result of my sample. A second possible explanation is that individuals did not respond to the conscientiousness and agreeableness measures based on their underlying dispositions and instead responded to the social desirability of the measures. The supplemental analyses highlighted that individuals scored high on positively-keyed items that exemplified desirable qualities like being hardworking and considerate of others, but exhibited a greater range of responses for negatively-keyed items. This could suggest that participants may have had a strong desire to appear good (although less of a strong desire to avoid looking bad), which could have obscured their true scores on these constructs. In an effort to explore this issue further, I reran the analyses using measures based on the negatively-keyed items; however, the cross-level interactions remained statistically non-significant, possibly because the responses biases were still present. Moreover, by only using some items, I may have failed to capture the full construct domain of conscientiousness and agreeableness.

Contributions

The present research contributes to organizational research on boredom in several ways. First, this study contributes to a growing body of research examining individuals’ experience of discrete emotions at work and their subsequent behaviours. Most organizational research conceptualizes emotions as broad affective dimensions, consisting of either positive or negative affect (Spector & Fox, 2002; Watson, Clark, & Tellegen, 1988). However, researchers have shifted their attention to discrete emotions and their ability to predict employee behaviour (e.g., Bauer & Spector, 2015; Ilies, Peng, Savani, & Dimotakis, 2013; Kabat-Farr, Cortina, & Marchiondo, 2016; Spence, Brown, Keeping, & Lian, 2014). State boredom is particularly
relevant for organizational behaviour given that its specific action tendencies are linked to productivity. To date, the vast majority of boredom research has examined its relations with behaviours that capture a lack of productivity, such as absenteeism and withdrawal (e.g., Bruurserma et al., 2011; Kass et al., 2001; Watt & Hargis, 2010). In the present research, in addition to testing boredom’s relations with CWB, which indicates reduced productivity, I tested its relations with behaviours which might indicate greater productivity, including OCB and job crafting. My results challenge emerging theory that feeling bored may offer productivity benefits to the organization as I failed to find a positive relation between state boredom and OCB and job crafting. In fact, the results indicated that bored individuals are more likely to engage in organization-directed CWBO and are less likely to engage in job crafting. These results suggest that researchers may need to reconsider the advantages of boredom in the workplace without further investigation.

Moreover, in light of these unexpected findings, the present study could have implications for how researchers conceptualize state boredom moving forward. Researchers have proposed that state boredom serves a self-regulatory function such that it motivates individuals towards purposeful, goal-oriented behaviour (Bench & Lench, 2013; Elpidorou, 2018a; Pekrun et al., 2014). However, although individuals may have a desire to engage in a different, meaningful, challenging, or stimulating activity when bored (as evidenced by experimental studies; e.g., Moynihan et al., 2015; van Tilburg & Igou, 2017), it is possible that they do not necessarily actively search for these activities. Unlike extant organizational research on state boredom, which conceptualizes state boredom as a general construct (e.g., “I feel bored”), I operationalized state boredom in terms of its disengagement, unpleasant low arousal, and inattention components. Defining state boredom in terms of its dimensions could provide additional insight...
into why state boredom evidences positive or negative relations with organizational variables. For instance, the unpleasant low arousal component of state boredom may suggest that individuals who are in a low arousal state for too long may lack the energy to initiate effortful changes to their situation (Burn, 2017). This could be one explanation for why I found a negative relation between daily state boredom and effortful behaviours like job crafting. Researchers could potentially consider moving away from theorizing about state boredom as a unitary, general construct and approach it from a granular perspective (i.e., by considering its components) to better understand its effects in the workplace.

The present findings also shed light into the types of behaviours that boredom may be related to as state boredom was more closely associated with impersonal forms of behaviour opposed to interpersonal ones. Whereas impersonal behaviours are task-focused and are directed at “things”, interpersonal behaviours are people-focused and are directed at others. I found that individuals were more likely to engage in organization-directed CWB on days when they felt more bored than average and were less likely to increase their level of work characteristics by seeking resources and challenge demands. In contrast, feeling bored was unrelated to individual-directed CWB and OCB. These findings suggest that feeling bored may be especially relevant for predicting task-oriented forms of behaviour and highlights the relevance of feeling bored to productivity and performance.

Methodologically, this is one of the few studies to examine state boredom using experience sampling methodology as existing research almost exclusively relies on cross-sectional or between-person designs (e.g., Bauer & Spector, 2015; Bruursema et al., 2011; Guglielmi et al., 2013; Reijseger et al., 2013; van der Heijden et al., 2012). I used a within-person lagged design by employing a daily diary study with two daily measurement occasions. In contrast to between-
person designs, which address whether individuals who are characteristically bored also engage in CWB, OCB, and job crafting in general, a within-person design addresses whether individuals who are bored on a particular occasion will engage in CWB, OCB, and job crafting on the same occasion. Given that state boredom is a transient state that is expected to lead to these behaviours within the same performance episode (Fahlman et al., 2013; Oxtoby, King, Sheridan, & Obst, 2016; Spector & Fox, 2010), the use of daily surveys was an appropriate test of the model. The lack of within-person designs in previous research prevents researchers from understanding the dynamic interplay between feeling bored and subsequent behaviour. This is because between-person approaches only consider constructs at the aggregate level and treat daily fluctuations as error (Matta et al., 2014; Tanaka & Murayama, 2014). Dalal et al. (2014) noted that testing within-person questions at the between-person level (e.g., cross-sectional) constitutes an ecological fallacy as between-person designs address a fundamentally different question that cannot be extrapolated to the within-person level. In fact, the supplemental analyses in my research highlighted important differences between the within-person and between-person effects. Thus, my decision to use a daily diary study should provide researchers with more accurate estimates of the relations between state boredom and its potential outcomes.

Finally, from a methodological standpoint, this research builds on extant boredom research by using an affective measure of state boredom. Specifically, I used the SBI (Baratta & Spence, 2018), which assesses the momentary and affective experience of feeling bored. In contrast, previous research on boredom uses scales that confound the experience of feeling bored with its antecedents or consequences and that fail to tap into boredom’s affective components. The DUBS (Reijseger et al., 2013) for instance, confounds state boredom with potential antecedents (e.g., work underload) and consequences (e.g., CWBO). These scales are suboptimal as they
omit content from the definition of state boredom and contain items that confound the affective experience of feeling bored with other constructs. A related critical advantage of using the SBI is that this measure captures the experiential components of feeling boredom: disengagement, unpleasant low arousal, and inattention. Other research that captures the general construct of boredom does not control for other affective states that may co-occur with boredom (van Tilburg & Igou, 2012). For instance, when boredom occurs in situations of constraint, it may be accompanied by frustration and anger (Mikulas & Vodanovich, 1993). Given that the present study assessed the experiential components of state boredom, we can be more confident that the relations between feeling bored and its outcomes are attributable to feeling bored and not to co-occurring affective states like frustration, sadness, or anger (van Tilburg & Igou, 2012). Overall, I anticipate that my use of the SBI will enable researchers to make more accurate conclusions regarding the role of state boredom at work.

Limitations

Although my study has strengths, there are limitations. Notably, the use of self-report measures highlights the possibility of CMV (Podsakoff et al., 2003). My decision to use self-reports was based on the nature of my variables and methodological reasons. First, state boredom is an internal state that is unlikely to be accurately estimated using other reports. With respect to the outcome variables, previous research has identified the use of other-reports for CWB and OCB as a measurement artefact that tends to inflate negative correlations between the two because of halo error (e.g., Dalal, 2005; Spector et al., 2010). Given that I anticipated that CWB and OCB would co-occur, my ability to detect such co-variation may have been limited had I used other-reports. Research shows that self-ratings of CWB and OCB are valid indicators of these behaviours (Ilies, et al., 2009). Although other-reports of job crafting may have been
informative as many of these behaviours are observable to others (e.g., “Today, I have asked for more odd jobs”), I chose not to obtain other-reports due to the same reason outlined above. Nevertheless, the use of experience sampling methodology, the separation in time of the predictor and outcome variables, and the use of different response formats and scales for the predictor and outcome variables are known to reduce the effects of response biases (Beal & Weiss, 2003; Podsakoff et al., 2003).

A second limitation is that the study design does not provide conclusive insight into causality. For example, although I positioned state boredom as a cause of job crafting, it is plausible that job crafting negatively predicts boredom. For example, it may be that individuals who job craft throughout the day are able to effectively alleviate and/or prevent state boredom, explaining the negative relation I found between state boredom and job crafting at the within-person level. That being said, the temporal separation between state boredom and the outcome variables strengthens inferences of causality as it allows for a logical sequencing of variables. Future research could focus on disentangling the bidirectional relation between state boredom and job crafting and possibly its other outcomes through the use of a cross-lagged design with controls (Edwards, 2008).

Another important consideration is that CWB and OCB are formative constructs, meaning that individuals who engage in one type of CWB, for instance, will not necessarily engage in another type (MacKenzie, Podsakoff, & Jarvis, 2005). To provide a specific example, an employee who reacts to feeling bored by gossiping about a colleague (CWBI) is not guaranteed to also act rudely to a colleague (also CWBI). Similarly, job crafting measures have been criticized for being too restrictive in the types of resources and demands that are included (Zhang & Parker, 2018). Researchers often use concise measures of these constructs in daily diary
research due to practical considerations, such as time and participant fatigue. The trade-off in making this decision is that the full range of the construct is not captured. In the present study, it is possible that I failed to include relevant behaviours belonging to these broad constructs, which may have limited my ability to detect an effect. For example, although I failed to find a relation between state boredom and CWBI, it is possible that feeling bored is only related to specific forms of CWBI like social undermining (e.g., gossiping about others) and horseplay (e.g., playing a practical joke), which were not included in this study.

Finally, by including OCB and job crafting as outcomes of state boredom, my intention was to point to a broader range of outcomes than just CWB (as previous research almost exclusively focuses on this and other negative outcomes). In the present research, I characterized OCB and job crafting as more productive behaviours and CWB as less productive. Although many researchers have made this same assumption (e.g., Pindel et al., 2018), they also point to the possibility that CWB may not necessarily detract from productivity or that OCB may not necessarily contribute positively to the organization. For instance, with respect to the former, Fisher (1987) stated that non-work behaviours may have no effect on productivity for tasks that can be performed with automaticity and may even help performance if they increase arousal. With respect to the latter, Spector and Fox (2010) suggested that employees who choose to engage in OCB to avoid boring work could hurt organizational performance if they are not able to manage both tasks. Given that I did not evaluate the effectiveness of these strategies in reducing boredom or their impact on organizational or individual productivity, the characterization of OCB and job crafting as more productive and CWB as less productive may be too simplistic.
Future Research

As noted earlier, one potential explanation for the lack of a positive relation between state boredom and OCB/job crafting is that individuals may not perceive these behaviours as providing an opportunity for a stimulating, meaningful, or challenging activity. This is because, when bored, “none of the possible things that a person can realistically do appeal to the person in question” (Mann & Cadman, 2014, p. 165). Future research may want to test this assumption by examining the extent to which individuals’ evaluation of discrete OCB and job crafting behaviours changes as they become more or less bored. If it is the case that individuals’ perceptions preclude them from engaging in OCB or job crafting when bored, future interventions may want to target the individual-level by focusing on cognitive restructuring. For instance, an intervention might seek to train and encourage individuals to restructure how they think about their work tasks or alternative tasks to enable them to more constructively re-engage with their task or environment when bored.

Another explanation for the current findings was that individuals may possess a “disinclination to action” when bored in that they are more likely to gravitate toward effortless behaviours. In the current study, many of the CWBO behaviours were passive behaviours relating to withdrawal and production deviance that required far less effort than the OCB and job crafting behaviours (Bauer & Spector, 2015). For instance, “daydreaming instead of working” (CWB) is more effortless than providing suggestions “to improve how work is done” (OCB) or asking for more job responsibilities (job crafting). Research showing that feeling bored is related to potentially unproductive organizational behaviours has led to the conclusion that boredom is a “dark” construct that impedes organizational effectiveness. Future research may want to test the extent to which state boredom relates to a wider range of behaviours while taking effort into
account. For instance, Wrzesniewski and Dutton’s (2001) definition of job crafting includes a cognitive component in which employees cognitively alter the task boundaries of their job by viewing it in a more meaningful way. Nett et al. (2011), for example, found that some students coped with boredom by using cognitive-approach strategies that involved changing their perceptions of the task (e.g., focusing on its value). Future research may want to examine the extent to which employees use productive and less active strategies in lieu of CWBO in order to remain focused on their task and stave off boredom.

Another potential direction for future research is to investigate the effectiveness of each of these behaviours in reducing or helping employees cope with boredom. For instance, although participants in this study were even less likely to engage in job crafting when they were more bored than average, this does not mean that job crafting would not be effective at reducing boredom. Instead, it could be that the experience of boredom (e.g., being in a low arousal state for too long) is not conducive to job crafting. Thus, future research may want to design experiments to identify which strategies are the most or least effective for boredom-coping and leverage this research to design interventions that train employees to rely on more effective strategies when bored at work.

**Practical Implications**

The present findings suggest that boredom may not be desirable to organizations. Employees in this study reacted to feeling bored by engaging in counterproductive behaviours, which are costly to organizations, and were even less likely to engage in behaviours typically construed as desirable, like OCB and job crafting. One interpretation of these findings is to advise organizations to design rich work environments through a top-down process or by enabling and empowering employees to create their own. Research suggests that work
environments with high task variety, challenge and workload, and positive social interactions are effective at preventing boredom (e.g., Fisher, 1987; Tsai, 2016; Wyk et al., 2016). However, given that feeling bored is not entirely preventable, organizations may want to provide employees with resources to cope with boredom, especially since the present findings suggest that being a bored state may not be conducive to proactively seeking these resources. For instance, Harju et al. (2016) suggest that organizations could offer employees supervisor guidance, support, or encouragement to help them job craft. This support may enable employees to replace passive coping behaviours with more active and constructive ones, helping them to move out of a bored state. Moreover, Fisher’s (1987) qualitative study of bored workers found that some individuals wanted to engage in OCB and job crafting, such as by taking on additional work, but their organization did not provide them with the opportunity to do so. Overall then, organizations may need to provide employees with more support if they want them to react constructively to feeling bored.

Conclusion

The aversive and distracting qualities of boredom are thought to encourage employees to engage in destructive behaviours that have the potential to harm the organization. More recently, researchers have suggested that feeling bored may be a unique negative emotion given that its distracting properties may lead employees to engage in productivity-enhancing behaviours like OCB and job crafting as a means of seeking an alternative goal. To fully understand the dynamic nature of these relations, I operationalized boredom as an affective state and used experience sampling methodology to test my hypotheses in an applied sample. The results suggest that individuals engage in more unproductive discretionary behaviours as their boredom at work increases and fewer productive ones.
References


Table 1. Power analysis results for main effects

<table>
<thead>
<tr>
<th>Population effect size</th>
<th>Level 1 Sample Size</th>
<th>Level 2 Sample Size</th>
<th>Power</th>
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</table>

*Note.* Power estimates that exceed .80 are bolded.
Table 2. Power analysis results for cross-level interactions

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<th>Level 2 Sample Size</th>
<th>Power</th>
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<tr>
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<td>10</td>
<td>250</td>
<td>1.00</td>
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</tbody>
</table>

*Note.* Power estimates that exceed .80 are bolded.
Table 3. Partitioning variance components of within-person variables

<table>
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<tr>
<th></th>
<th>Intercept ($\gamma_{00}$)</th>
<th>Within-person variance ($\sigma^2$)</th>
<th>Between-person variance ($\tau_{00}$)</th>
<th>Per cent of within-person variance $^b$</th>
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<td>3. CWBI</td>
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<tr>
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<tr>
<td>6. Job craft resources</td>
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<td>.41</td>
<td>.60</td>
<td>41</td>
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<tr>
<td>7. Job craft demands</td>
<td>1.76</td>
<td>.44</td>
<td>.62</td>
<td>42</td>
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</table>

$^a\gamma_{00}$ is the average intercept or grand mean across participants. $^b$ The per cent of within-person variance was calculated using the formula $\sigma^2/(\sigma^2 + \tau_{00})$.
Table 4. Descriptive statistics and correlations

<table>
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<tr>
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<th>6</th>
<th>7</th>
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<tr>
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<td>3.73</td>
<td>.07</td>
<td>.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. CWBO</td>
<td>3.69</td>
<td>.23</td>
<td>.15</td>
<td>.89</td>
<td></td>
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<td></td>
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<td>.89</td>
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<td>.54</td>
<td>.88</td>
<td></td>
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<td>-.02</td>
<td>.09</td>
<td>.28</td>
<td>.27</td>
<td>.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Job craft demands</td>
<td>1.76</td>
<td>.05</td>
<td>- .09</td>
<td>-.00</td>
<td>.05</td>
<td>.27</td>
<td>.17</td>
<td>.42</td>
<td>.91</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Conscientiousness</td>
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<td>- .21</td>
<td>-.15</td>
<td>-.24</td>
<td>-.12</td>
<td>-.12</td>
<td>-.14</td>
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<tr>
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<td>-.25</td>
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<td>.09</td>
<td>.07</td>
<td>.05</td>
<td>.39</td>
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Note. $M$ = mean; $SE$ = standard error. Bolded correlations are significant at $p < .05$. All correlations between daily variables are at the within-person level and correlations with conscientiousness and agreeableness are at the between-person level.
Table 5. Descriptive statistics and correlations for afternoon state boredom

<table>
<thead>
<tr>
<th></th>
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<th>SE</th>
<th></th>
<th>Within-person variance (σ²)</th>
<th>Between-person variance (τ00)</th>
<th>Per cent of within-person variance</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2. CWBO</td>
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<td>.28</td>
<td>6.28</td>
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<tr>
<td>3. CWBI</td>
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<td>.13</td>
<td>.04</td>
<td>1.57</td>
<td>3.25</td>
<td>33</td>
</tr>
<tr>
<td>4. OCBO</td>
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<td>.18</td>
<td>-.06</td>
<td>4.34</td>
<td>7.08</td>
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<tr>
<td>5. OCBI</td>
<td>4.58</td>
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<td>-.03</td>
<td>6.50</td>
<td>10.62</td>
<td>38</td>
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<tr>
<td>6. Job craft resources</td>
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<td>-.08</td>
<td>.41</td>
<td>.60</td>
<td>41</td>
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<tr>
<td>7. Job craft demands</td>
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<td>.05</td>
<td>-.06</td>
<td>.44</td>
<td>.62</td>
<td>42</td>
</tr>
<tr>
<td>8. Conscientiousness</td>
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<td>.03</td>
<td>-.21</td>
<td>-</td>
<td>.28</td>
<td>-</td>
</tr>
<tr>
<td>9. Agreeableness</td>
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<td>.04</td>
<td>-.28</td>
<td>-</td>
<td>.30</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. M = mean; SE = standard error; σ² = within-person variance; τ00 = between-person variance. Bolded correlations are significant at p < .05. All correlations between daily variables are at the within-person level and correlations with conscientiousness and agreeableness are at the between-person level.
Table 6. Personality item means and standard deviations

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<thead>
<tr>
<th>Item</th>
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<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Does a thorough job.</td>
<td>4.23</td>
<td>.67</td>
</tr>
<tr>
<td>Can be somewhat careless.</td>
<td>3.56</td>
<td>1.02</td>
</tr>
<tr>
<td>Is a reliable worker.</td>
<td>4.49</td>
<td>.64</td>
</tr>
<tr>
<td>Tends to be disorganized.</td>
<td>3.68</td>
<td>1.10</td>
</tr>
<tr>
<td>Tends to be lazy.</td>
<td>3.59</td>
<td>1.03</td>
</tr>
<tr>
<td>Perseveres until the task is finished.</td>
<td>3.98</td>
<td>.85</td>
</tr>
<tr>
<td>Does things efficiently.</td>
<td>4.09</td>
<td>.76</td>
</tr>
<tr>
<td>Makes plans and follows through with them.</td>
<td>3.94</td>
<td>.85</td>
</tr>
<tr>
<td>Is easily distracted.</td>
<td>3.04</td>
<td>1.01</td>
</tr>
<tr>
<td>Tends to find fault with others.</td>
<td>3.15</td>
<td>1.05</td>
</tr>
<tr>
<td>Is helpful and unselfish with others.</td>
<td>4.13</td>
<td>.73</td>
</tr>
<tr>
<td>Starts quarrels with others.</td>
<td>4.27</td>
<td>.84</td>
</tr>
<tr>
<td>Has a forgiving nature.</td>
<td>3.70</td>
<td>.97</td>
</tr>
<tr>
<td>Is generally trusting.</td>
<td>4.00</td>
<td>.93</td>
</tr>
<tr>
<td>Can be cold and aloof.</td>
<td>3.53</td>
<td>1.08</td>
</tr>
<tr>
<td>Is considerate and kind to almost everyone.</td>
<td>4.29</td>
<td>.65</td>
</tr>
<tr>
<td>Is sometimes rude to others.</td>
<td>3.72</td>
<td>.99</td>
</tr>
<tr>
<td>Likes to cooperate with others.</td>
<td>4.22</td>
<td>.62</td>
</tr>
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</table>

Note. $M = \text{mean}; SD = \text{standard deviation}.$
Figure 1. Interaction of agreeableness and state boredom on CWBI.
Figure 2. Interaction of agreeableness and state boredom on CWBI using an afternoon measure of state boredom.
Figure 3. Sample response distributions for (a) positively-keyed conscientiousness item and (b) negatively-keyed conscientiousness item.
Figure 4. Sample response distributions for a (a) positively-keyed agreeableness item and (b) negatively-keyed agreeableness item.
Figure 5. Response distribution for the negatively-keyed agreeableness item “Starts quarrels with others.”
Appendix A: Pre-screen questions

Age: _____

Gender:
☐ Male
☐ Female
☐ Other

I identify as (select all that apply):
☐ White/Caucasian
☐ Black/African American
☐ Chinese
☐ Korean
☐ Filipino
☐ Japanese
☐ Latin American
☐ West Asian (e.g., Iranian, Afghan, etc.)
☐ South Asian (e.g., East Indian, Sri Lankan, etc.)
☐ Southeast Asian (e.g., Vietnamese, Cambodian, etc.)
☐ Aboriginal/Native American/ First Nations Person
☐ Other (please specify): _______________

What is the highest level of education certification you have been granted?
☐ PhD Doctorate or Equivalent
☐ Master's Degree or Equivalent
☐ Professional Licensure (e.g., Law, Medicine)
☐ Teacher's College or Post-Grad Certificate
☐ Undergraduate Degree or Equivalent
☐ College Diploma or Equivalent
☐ High School Diploma or Equivalent
☐ Less than High School Diploma
☐ Other

In which country do you live?
☐ Canada
☐ United States
☐ Other

In which province/state do you live? (participants were presented with a list of all provinces and states in Canada and the US)

In which city do you live? ______________

In which time zone do you live? (participants were presented with a list of all time zones)
How many jobs do you have?
☐ 0
☐ 1
☐ 2
☐ 3 or more

The following questions refer to your PRIMARY job, (i.e., the job at which you work the most hours).

How many months have you been working with your current organization? _____

How many months have you been working in your current position? _____

What is your job title? ____________________

What industry do you work in? ___________________

For your primary job, do you work:
☐ Full-time
☐ Part-time

For your primary job, how often do you interact with other people in your organization (e.g., supervisor and work peers) during a typical workday?
☐ Almost never (i.e., less than 10% of the time)
☐ Rarely (i.e., 10-24% of the time)
☐ Sometimes (i.e., 25-50% of the time)
☐ Often (i.e., 51-75% of the time)
☐ Almost all the time (i.e., more than 76% of the time)

On average, how many hours a week do you work at your primary job? _____

For your primary job, at what time do you start your work day/arrive at work?
☐ Before 11 AM
☐ 11:01 AM - 1:00 PM
☐ After 1 PM
☐ n/a (varies each day)

For your primary job, at what time do you finish your work day/leave work?
☐ Before 3 PM
☐ After 3 PM
☐ n/a (varies each day)

For your primary job on which days do you work? (check all that apply)
☐ Sunday
☐ Monday
☐ Tuesday
☐ Wednesday
☐ Thursday
☐ Friday
☐ Saturday
☐ Varies each week
Appendix B: Conscientiousness items

I see myself as someone who...

1. Does a thorough job.
2. Can be somewhat careless (reverse-coded).
3. Is a reliable worker.
4. Tends to be disorganized (reverse-coded).
5. Tends to be lazy (reverse-coded).
6. Perseveres until the task is finished.
7. Does things efficiently.
8. Makes plans and follows through with them.
Appendix C: Agreeableness items

I see myself as someone who…

1. Tends to find fault with others (reverse-coded).
2. Is helpful and unselfish with others.
3. Starts quarrels with others (reverse-coded).
4. Has a forgiving nature.
5. Is generally trusting.
6. Can be cold and aloof (reverse-coded).
7. Is considerate and kind to almost everyone.
8. Is sometimes rude to others (reverse-coded).
9. Likes to cooperate with others.
Appendix D: State boredom items

Please indicate to what extent you feel this way right now.

1. I want to do something interesting but don’t know what to do.
2. I want to do something but I don’t know what.
3. I want something to happen but I’m not sure what.
4. I feel drowsy.
5. I feel fatigued.
6. I am lacking energy.
7. I feel sluggish.
8. It is taking a lot of effort to maintain my attention.
9. I am having difficulty maintaining my attention.
10. It is difficult for me to concentrate.
11. It is difficult to focus my attention.
Appendix E: Counterproductive work behaviour items

Please indicate how many times you engaged in the following behaviours at work today.

CWBO
1. Worked on a personal matter instead of work for your employer.
2. Spent too much time fantasizing or daydreaming instead of working.
3. Taken an additional or a longer break than is acceptable at your workplace.
4. Told someone about the lousy place where you work.
5. Intentionally worked slower than you could have worked.
6. Put little effort into your work.

CWBI
7. Made fun of someone at work.
8. Said something hurtful to someone at work.
9. Cursed at someone at work.
10. Lost your temper while at work.
11. Acted rudely toward someone at work.
Appendix F: Organizational citizenship behaviour items

Please indicate how many times you engaged in the following behaviours at work today.

OCBO
1. Offered suggestions to improve how work is done.
2. Offered suggestions for improving the work environment.
3. Volunteered for extra work assignments.
4. Said good things about your employer in front of others.
5. Gave up meal and other breaks to complete work.

OCBI
6. Helped co-worker learn new skills or shared job knowledge.
7. Lent a compassionate ear when someone had a work problem.
8. Lent a compassionate ear when someone had a personal problem.
9. Went out of my way to give co-worker encouragement or express appreciation.
10. Helped a co-worker who had too much to do.
Appendix G: Job crafting items

Please indicate how representative each statement is of your day at work today.

Seeking resources
1. Today, I have tried to learn new things at work.
2. Today, I have asked others for feedback on my job performance.
3. Today, I have asked colleagues for advice.
4. Today, I have asked my supervisor for advice.

Seeking challenge demands
5. Today, I have asked for more tasks if I finished my work.
6. Today, I have asked for more responsibilities.
7. Today, I have asked for more odd jobs.
## Appendix H: Search terms for Monte Carlo simulation power analysis

<table>
<thead>
<tr>
<th>Construct</th>
<th>Search Terms</th>
<th>Relevant Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Boredom</td>
<td>bored* or “negative affect*” or “negative emotion” or “deactivated emotion” or “deactivated state” or “deactivating state” or “deactivating emotion” or “low arousal” or lethargy* or fatigue or tired* or inattenti* or disengage* or withdrawn*</td>
<td>Chi et al., 2015; Christian et al., 2015; Dalal et al., 2009; Ferris et al., 2012; Scott &amp; Barnes, 2011; Yang &amp; Diefendorff, 2009.</td>
</tr>
<tr>
<td>CWB</td>
<td>“counterproductive work behavio*” or “organizational devian*” or “organisational devian*” or “interpersonal devian*” or “work* withdrawal” or sabotage or theft or micro-aggression or “work* aggression” or “work* violence” or “work* bullying” or social undermining or “workplace victimization”</td>
<td>Christian et al. 2015; Dalal et al., 2009; Lanaj et al., 2016; Spence et al., 2011; Yang et al., 2016.</td>
</tr>
<tr>
<td>OCB</td>
<td>“organizational citizenship behavio*” or prosocial* or helping or altruism or “interpersonal facilitation” or “contextual performance” or “contextual behavio” or “extrarole behavio*” or “extra-role behavio*” or “extra role behavio*” or “generalized compliance” or “job dedication”</td>
<td></td>
</tr>
<tr>
<td>Job Crafting</td>
<td>“job craft*” or “change-oriented*” or proactiv* or “personal initiative” or “individual initiative” or “taking charge” or voice or “prohibitive voice” or “speaking up” or “adaptive performance”</td>
<td>Fay &amp; Hütiges, 2016; Fay &amp; Sonnentag, 2012; Madrid et al., 2015; Sonnentag &amp; Starzyk, 2015.</td>
</tr>
</tbody>
</table>
Appendix I: Afternoon state boredom items

Please indicate to what extent you felt this way at work today.

1. I wanted to do something interesting but didn’t know what to do.
2. I wanted to do something but I didn’t know what.
3. I wanted something to happen but I wasn’t not sure what.
4. I felt drowsy.
5. I felt fatigued.
6. I was lacking energy.
7. I felt sluggish.
8. It took a lot of effort to maintain my attention.
9. I had difficulty maintaining my attention.
10. It was difficult for me to concentrate.
11. It was difficult to focus my attention.