DISSERTATION

RETHINKING RUDENESS: THE NUANCED IMPACT OF WORKPLACE E-MAIL INCIVILITY ON COGNITIVE PERFORMANCE

Submitted by

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ABSTRACT

RETHINKING RUDENESS: THE NUANCED IMPACT OF WORKPLACE E-MAIL INCIVILITY ON COGNITIVE PERFORMANCE

This research builds on prior work examining the relationship between perceived incivility in workplace e-mail and task performance. This study proposed attribution theory and self-determination theory as helping to explain the widely supported negative relationship between incivility and performance. The study design was between-subjects and implemented experimental vignette methodology (EVM) to determine if exposure to an uncivil e-mail impacted perceptions of blame attribution and thwarted fundamental needs as well as subsequent performance on a working memory task. Results based on a sample of 411 working adults recruited on Prolific reveal that, contrary to ample evidence indicating that incivility is detrimental to performance, the incivility-performance relationship appears to be more nuanced than the literature suggests. Findings introduce additional complexity to the experience of incivility: they provide evidence that the level of perceived rudeness might moderate how incivility relates to performance and that some responses, such as external attribution and thwarted relatedness, might even be advantageous to task performance. This work has important implications for how applied psychologists study incivility and understand it in terms of its influence on objective cognitive performance.

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INTRODUCTION

Incivility, defined as "low-intensity deviant behavior with ambiguous intent to harm" (Andersson & Pearson, 1999, p. 456) has become an important research area over the past two decades due to its high prevalence in the workplace and its negative impact on employees (Cortina et al., 2017; Yang et al., 2023). One of the first empirical studies in industrial/ organizational psychology that examined workplace incivility found that over 70% of employees had experienced incivility at work at some point over the past five years (Cortina et al., 2001). Since then, the number of individuals reporting incidents of workplace incivility has increased greatly, and the more recent figure now reflects that 98% of employees attest to experiencing uncivil behavior at work (Porath & Pearson, 2013). This subtle form of mistreatment is harmful not only to the target but also, under some conditions, to the instigator or the observer (Yang et al., 2023). Specifically, experienced incivility has been found to be related to undesirable outcomes such as greater negative affect and counter-productive work behaviors, and lower job satisfaction and wellbeing (Yao et al., 2022).

Incivility research has branched out to other workplace communication media and computer mediated platforms. Cyber incivility is defined as "communicative behavior exhibited in computer mediated interactions that violate workplace norms of mutual respect" (Lim & Teo, 2009, p. 419). There is evidence that when workers experience incivility in e-mail, those experiences are related to stress and withdrawal from work as well as affective and physical distress at work (Park & Haun, 2018; Park et al., 2018). E-mail incivility might even be more detrimental than face-to-face incivility (McCarthy et al., 2020) perhaps because, with reading and comprehending e-mail messages, recipients derive more negative interpretations than the

sender intended and may infer tone, possibly over-estimating the emotional charge (Byron, 2008). Highly ambiguous information usually benefits from a richer communication medium, otherwise, frame of reference and context can be especially unclear (Daft et al., 1987). According to media richness theory, when e-mail carries abstract or uncertain information, misinterpretation, misunderstanding, or conflict is more likely to occur and harder to resolve (Daft & Lengel, 1986). Because e-mail is one of the most popular and preferred methods of electronic workplace communication (Russel et al., 2023) and, on average, workers in office positions spend three hours per weekday checking work e-mail ("2019 Adobe E-mail," 2019), understanding the intersection of mistreatment and e-mail communication at work is crucial.

Workplace Mistreatment

Research in psychology and management has defined and studied many different forms of mistreatment and aggression (Hershcovis, 2011). An example of blatant mistreatment is *bullying*: This form of abuse is usually ongoing and can be perpetrated either privately or publicly (Einarsen, 2000). In contrast, an example of subtle mistreatment is *ostracism*: Ostracizing behaviors are considered acts of ignoring or excluding by individuals or groups at work (Hershcovis, 2011) and are unique because they manifest as inaction under circumstances where that inaction is not considered acceptable per the social norms of the workplace (Robinson et al., 2013). One characteristic that all mistreatment constructs share is that deviance occurs when an employee violates a workplace norm (Robinson & Bennett, 1995). Incivility too shares this trait, but, in this research, incivility is presented as a construct distinct from other forms of workplace mistreatment (Yao et al., 2022).

Conceptualizing Incivility

In Robinson and Bennet's (1995) model of workplace deviance, deviant behaviors are intentional, or, carried out by choice. However, uncivil behaviors, by definition, do not require intentionality on the part of the perpetrator. One of the reasons that incivility is difficult to study is because incivility is 'neutral on its surface' and therefore can be perceived regardless of whether the instigator of the incivility intended to cause harm or not. Furthermore, effects of incivility may reflect the *way* that the target of the incivility interprets the words or behavior to be uncivil (Cortina et al., 2013, p. 1580). In addition to the ambiguity of intent, incivility is distinctive because it is low-intensity and generic. Incivility is a form of interpersonal mistreatment that typically occurs in the context of a social interaction but it does not require power distance, it can be active or passive, and its content is not overtly related to group membership (Yao et al., 2022). Thus, incivility distinguishes itself from other mistreatment constructs because it is subtle, ambiguous, and non-specific. Face-to-face, incivility might manifest behaviorally as eye-rolling, using an inappropriate aggressive, or loud tone of voice, or interrupting while someone is speaking (Martin et al., 2005).

Just as incivility is different from other forms of mistreatment, incivility in e-mail seems to operate slightly differently from face-to face incivility. One reason for experiencing incivility in e-mail differently compared to other communication forms is that e-mail interactions lack the visual and auditory information present in most face-to-face interactions. As a lean media format, e-mail does not contain the same contextual cues that are embedded in face-to-face or even telephone communication, such as tone, volume, body language, facial expression, eye contact, etc., although emoticons and punctuation are often used in e-mail in an attempt to approximate them.

Incivility in e-mail and on text-based communication platforms has, from a semantic perspective, been conceptualized as accusatory, aggressive, condescending, and inappropriate (Howard, 2021). In general, e-mails are considered uncivil when the recipient perceives it to be unprofessional, demeaning, or disrespectful. Phrases like "it has now been over 48 hours since I expressed my concern to you…" and "I ask you to think carefully about all the company has done for you" have been considered uncivil. Contextual factors, like the timing of the e-mail (at what time it is sent, or, how temporally proximal the e-mail is to other communications) and who is copied on an e-mail can also contribute to perceptions of incivility, as well as choice of typographical and structural elements such as greetings, use of all capital letters, and length of message.

Incivility Correlates

Reviews and meta-analyses of workplace incivility have highlighted the myriad of consequences and antecedents associated with workplace incivility (Han et al., 2020; Schilpzand et al., 2016; Vasconscelos, 2020; Yao et al., 2022). The primary literature on antecedents suggests that incivility is experienced more often by employees who are younger and have less tenure (Lim & Lee, 2011), and those who are less emotionally stable and less agreeable (Milam et al., 2009). Empirical findings related to race/ethnicity and gender differences are more mixed. Some studies have found evidence that under-represented group members are more likely to report experiencing incivility (e.g., Cortina et al., 2013); others report results that minority group membership might be associated with more resilience to the mistreatment (e.g., Welbourne et al., 2015). In addition to individual characteristics, organizational climate, (e.g., individual perceptions of the climate as being unsupportive or tolerant of incivility) is related to experiencing incivility at work (Gallus et al., 2014; Han et al., 2020; Yao et al., 2022).

Consequences or outcomes of incivility are commonly categorized as being affective, attitudinal, health-related, or behavioral. Affective consequences include discrete emotions, such as anger and fear, and greater scores on negative affectivity mood-state measures (Kabat-Farr et al., 2018; Porath & Pearson, 2012). Incivility is also related to several job attitudes, including greater turnover intentions (Cortina et al., 2013), lower job satisfaction (Lim et al., 2008), and poorer fairness perceptions (Lim & Lee, 2011). Health-related outcomes of incivility are both physical and psychological – employees reporting experiences of workplace incivility also report more exhaustion (general and emotional), more depressive symptoms, and poorer mental and physical health as well as more psychological and physical distress (Lim et al., 2008; Lim & Lee, 2011; Park & Haun, 2018; Sliter et al., 2010).

In addition, incivility experiences are related to subsequent behavior. Acknowledging that the behavioral responses to incivility might have various dependencies, such as resources (e.g., Park et al., 2018), there is evidence that incivility is associated with greater withdrawal from work (Lim & Cortina, 2005), more retaliation and perpetrated incivility (Park & Martinez, 2022), more workplace deviance (Sisco et al., 2019), less engagement in work and tasks, and lower task performance (Chen et al., 2013; Giumetti et al., 2013). Several of these outcomes have been replicated in studies that either solely focused on incivility in e-mail or compared incivility in e-mail to face-to-face incivility. For example, incivility in e-mail is related to lower job satisfaction and organizational commitment, higher turnover intentions, higher likelihood of engaging in workplace deviance (Lim & Teo, 2009), higher heart rate (Scisco et al., 2019), and poorer task and creative performance (McCarthy et al., 2020).

Work Performance

Another consequence of incivility experienced at work is general work/job performance. For organizations that rely on human employees to achieve their mission and be successful, job performance is a critical outcome of interest, the foundation on which all other types of performance is built, and an important criterion to be studied in industrial/organizational psychology (Campbell & Wiernik, 2015). By definition, work performance is inherently behavioral and an important determinant of organizational effectiveness (Motowidlo, 2003).

Task Performance

Task performance refers to a specific facet of work performance, defined as "…the effectiveness with which job incumbents perform activities that contribute to the organization's technical core…" (in Borman & Motowidlo, 1997 p. 99). Task performance is important to study because it is crucial for organizational function (Pearson & Porath, 2010). Meta-analytic reviews of the incivility literature conclude that experienced incivility is important in predicting both poorer job/work performance (Han et al., 2020) and poorer task performance (Yao et al., 2022).

Workplace Incivility and Task Performance

Workplace incivility (past experienced, face-to-face, and cyber) is related to poorer task performance, both directly and indirectly. For example, experimental studies demonstrated that individuals exposed to rudeness, even imagined rudeness, perform more poorly on subsequent tasks compared to individuals who were not exposed to rudeness (e.g., Giumetti et al., 2013; Porath & Erez, 2007).

Porath and Erez (2007) conducted three studies to experimentally assess how different forms of rudeness affect task performance and helpfulness. In the first study, undergraduate students in a laboratory were assigned to either a neutral or rude condition where the rudeness

manipulation was implemented by the experimenter indirectly commenting generally about the behavior of students at that university after a late confederate had been dismissed from the experiment. Participants were then given ten minutes to solve ten anagrams (measuring task performance) and then were given five minutes to come up with as many uses for a brick as possible (measuring creativity and flexibility). Helpfulness was operationalized by what participants did when an experimenter knocked over a jar of pencils: if and how many pencils they picked up. The researchers also measured negative affect (Positive and Negative Affect Scale: PANAS, Watson et al., 1988). Participants in the rude condition performed more poorly on the anagram task than those in the control condition; individuals in that condition also produced fewer uses for bricks and the uses they did produce were rated as less creative and less flexible. In addition, those in the rude condition were less helpful, although negative affect did not mediate the rudeness and task performance relationship in this case.

With some slight alterations to procedure, the second study by Porath and Erez (2007) replicated the first but added a mediating variable, 'desire for revenge' (items related to withholding effort on tasks), as a potential explanation for the rudeness and task performance relationship. Findings were consistent with those from the first study but desire for revenge was not a significant mediator. The third study in the series tested if even *imagined* rudeness influenced task performance via memory-recall, evaluated as performance on a paired associate word task. This study supported mediation such that poorer recall partially explained the relationship between imagined rudeness and anagram solving. Collectively, these three studies demonstrated that exposure to rude behavior can influence task performance. Furthermore, there is evidence from the third study that disruption to cognitive processes might help to explain this phenomenon.

Giumetti and colleagues (2013) replicated and extended this research by investigating incivility in e-mail specifically. Using an undergraduate student sample in a lab, participants completed sets of difficult math problems while interacting with a fictional supervisor who, by random assignment, either provided them with uncivil or supportive statements. Using a conservation of resources framework (Hobfoll, 1989), the authors hypothesized that interacting with an uncivil supervisor would produce lower self-reported energy levels, more negative affect, less positive affect, poorer task performance, less task engagement, and higher heart rate and heart rate variability compared to those interacting with a supportive supervisor. In addition, Giumetti and colleagues examined whether energy levels would mediate the association between incivility and task performance and task engagement. They measured four types of energy using a single item for each, asking participants to estimate their current level of social, physical, cognitive, and emotional energy on a scale from *completely empty* to *completely full.* They found support for all hypotheses except for those related to physiological outcomes. Partial support was found for the mediation hypotheses, such that only social energy level explained the relationship between condition assignment and task performance and engagement.

A handful of similar, more recent variations of these experimental studies have been conducted to replicate and build upon these findings. Participants exposed to face-to-face incivility from the experimenter solved fewer anagrams than participants exposed to a neutral experimenter and this effect was even greater when the incivility was perpetrated over e-mail (McCarthy et al., 2020). Results, however, were less straightforward in a 2x2 experimental design whereby not only incivility but also medium (face-to-face vs. e-mail) was manipulated (Scisco et al., 2019): incivility was not related to number of anagrams solved, creativity, flexibility, or helping (the same measures from Porath & Erez, 2007), independent of medium,

but incivility did make a difference for participant heart rate, with this effect being stronger in the e-mail than face-to-face condition (Scisco et al., 2019).

Present Study & Hypotheses

Given the great number of experimental and correlational studies that have linked incivility to performance (see Tables 7a and 7b), this research ought to corroborate these robust effects such that:

H1. Individuals exposed to an uncivil e-mail will perform worse on a subsequent task than individuals exposed to a neutral e-mail.

The research summarized in the previous section suggests that the experience of incivility is associated with resource depletion and conservation of resources, with uncivil behavior being an interpersonal stressor (Cortina et al., 2017) that can limit emotional and cognitive resources (Han et al., 2016; Zhu et al., 2021). Specifically, incivility researchers have argued that the reason why resource loss occurs is due to common coping mechanisms in response to resource loss, which include either intentional or unintentional withdrawal, poorer concentration due to worry or avoidance, and disruption to attention (Giumetti et al., 2013; Porath & Erez, 2007; Porath & Pearson, 2010). Porath and Pearson (2010) have explicitly claimed that "when incivility occurs, it steals cognitive resources, decreasing attention and overloading working memory" (p. 65).

In general, there is consensus for the argument that incivility takes a toll on the target or assessor's resources, whatever type of resource that may be, and that depletion of those resources explains why incivility can be detrimental in so many different ways. However, past research has failed to clearly investigate cognitive perspectives on what happens to resources after exposure to incivility.

Incivility & Cognitive Resources

Performance requires information processing, a component of which is a filtering process conducted by attentional mechanisms (Wickens & Carswell, 2021). In addition, attention is a finite resource that influences perception, cognition, and action: one conceptualization of attention is that selective attention filters events in the external world and distributes its (limited) resources to tasks (Wickens, 2007). Exposure to a stressor like incivility is an event that might lead to shifts in attention, failure to inhibit irrelevant stimuli, or to the spread of resources more thinly across multiple competing processes (Bourne & Yaroush, 2002). Therefore, one proposition is that incivility is a stressor that undermines task performance because the exposure triggers evaluative processes that compromise one's ability to optimally disengage from irrelevant information and/or fully engage in all relevant information (Burgoyne & Engle, 2020). In this research, exposure to incivility should qualify as a distressing event that requires attentional resources that would otherwise be available to allocate to a different, primary task (Hockey, 1997; Kanfer & Ackerman, 1989: see *Figure 1*).

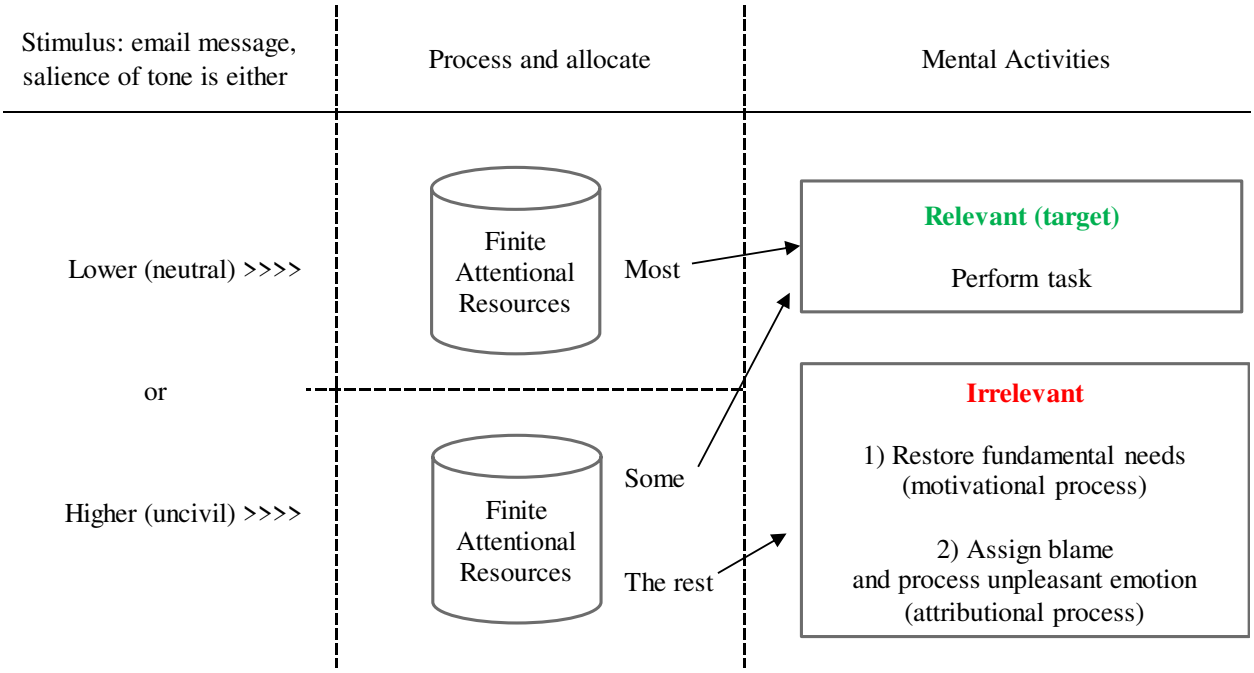


Figure 1. Conceptualization of Attentional Resource Framework

Adding context to this claim, off-task attention (or mind-wandering) occurs when attention is directed away from a primary task and toward something completely unrelated, either intentionally or unintentionally (Randall et al., 2014). In contrast to on-task attention, which serves to align cognitive resources with the demands of the primary task, thereby facilitating performance, off-task attention diverts resources away from the task and may hinder performance. Also, whereas intentional mind-wandering is argued to be a controlled, higher-order cognitive process because it is deliberately motivated, unintentional mind-wandering is not consciously initiated (Seli et al., 2016).

Rumination is the cognitive exercise of repeatedly going over thoughts in the mind and has been found to be significantly related to incivility (e.g., He et al., 2020). Schilpzand and colleagues (2016) suggested that rumination is distracting because there is an increase in focus on negative thoughts surrounding the uncivil experience. Rafaeli and colleagues (2012) proposed that this process would impede one's ability to maximally allocate attention to tasks at work.

They found that customer aggression had a negative effect on performance on both a free recall task and the Raven Progressive Matrices test (measures of working memory) and posited that the appraisal, rumination, and arousal elicited by the aggression interfered with retrieval process required for recall and thereby hindered working memory task performance.

There have been a number of propositions offered to explain what psychological processes may be responsible for cognitive impairment following incivility. For example, processing negative affect and unpleasant emotions (Kabat-Farr et al., 2018) or managing any resulting uncertainty about one's competence, autonomy, and relatedness (Mayer et al., 2012), and either of those activities could be associated with impaired attentional processing (Brose et al., 2012). A key objective of this research was to directly test some theory-based psychological processes that might explain incivility's negative effect on cognitive performance. To that end, this study was designed specifically to test attributional-affective mechanisms informed by attribution theory (e.g., Heider, 1958; Kedharnath et al., 2023; Weiner, 2000) and motivational processes explained by thwarted needs and self-determination theory (e.g., Deci & Ryan, 2000; Van den Broek et al., 2016).

This research was formulated on the fundamental claim that exposure to incivility is a salient event that necessitates attention for both appraisal and response management that otherwise would have been available for allocation to one's primary task. Accordingly, the goal was to investigate whether causal sense-making or restoring fundamental needs aided in explaining why performance was undermined by the uncivil interaction.

Motivational Response: Thwarted Needs & Self Determination Theory

Motivation can be defined as the underlying force that serves to explain the initiation, intensity, direction, and persistence of voluntary action (Dieffendorf & Chandler, 2011), is one of

the factors that contributes to how individuals decide to allocate resources at work, and is a key aspect of job performance (Kanfer et al., 2017). There are numerous theories of motivation in industrial/organizational psychology, but among the oldest areas of research on motivation stems from the fulfilment of needs. One of the more commonly applied needs-based motivation frameworks in research over the past two decades has been self-determination theory (SDT; Kanfer et al., 2017; Van den Broeck et al., 2016).

SDT posits that individuals are inherently compelled to strive for psychological growth, integrity, and well-being, and that the fulfillment of three essential needs are a prerequisite for achieving those states (Deci & Ryan, 2000). These three 'basic human psychological needs' are for autonomy, competence, and relatedness. The need for autonomy stems from an individual's need to feel in control of their own thoughts and actions as opposed to them being externally imposed. The need for competence is one for proficiency in order to feel a sense of skill mastery. The need for relatedness derives from the human need to belong and feel connected to other individuals. Ryan & Deci (2000) argue that these needs are "essential for facilitating optimal functioning of the natural propensities for growth and integration, as well as for constructive social development and personal well-being" (p. 68).

In general, satisfaction of needs for autonomy, competence, and relatedness are widely predictive of psychological well-being (Deci & Ryan, 2008). Additionally, empirical research within the SDT framework has found evidence that greater satisfaction of needs is positively related to work engagement, vigor, and interpersonal justice (Gillet et al., 2015; Kovjanic et al., 2013). In regard to performance, satisfaction of needs for competence, relatedness, and autonomy are all positively related to work performance evaluations and supervisor ratings of task performance, although the need for relatedness relationship is the weakest of the three

(Baard et al., 2004; Chiniara & Bentein, 2016). Satisfaction of psychological needs has also been studied as a mediator between workplace experiences and outcomes. For example, work and non-work experiences predicted mood, vitality, and physical well-being, mediated by autonomy and relatedness (Ryan et al. 2010) and participation in corporate responsibility initiatives impacted employee subjective well-being via psychological needs satisfaction within the SDT framework (Hu et al. 2019).

Although satisfying needs serves for predicting 'optimal functioning' and preferable individual and organizational outcomes, lack of needs satisfaction, or need 'thwarting' is a more appropriate lens for hypothesizing reduced functioning. That is, lack of need satisfaction does not capture the same phenomenon as need thwarting, which would occur under circumstances where low need satisfaction scores are due to an individual's being "actively undermined by others" (Costa et al. 2015 p. 12). Need thwarting is associated with interpersonal injustice, burnout, and emotional exhaustion (Gillet et al., 2015). When needs are thwarted or frustrated, there is evidence for resulting 'ill-being,' including depression, negative affect, and burnout (Bartholomew et al., 2011). Compared to individuals whose needs are highly satisfied, those whose needs are thwarted perform at a lower level creatively and self-report poorer mental health (Dalong et al., 2022).

The distinction between need *satisfaction* and need *thwarting* revolves around their differing impacts on individual functioning and well-being. Need satisfaction represents the fulfillment of basic psychological needs, such that when needs are satisfied, individuals are more likely to experience more positive outcomes. Need thwarting refers to conditions where an individual's basic psychological needs are actively obstructed or undermined. Based on my review of the literature, need thwarting as opposed to need satisfaction within an SDT framework

has been far less studied, but may be especially appropriate for the study of workplace mistreatment (e.g., Williams, 2007). Need satisfaction is more likely to result from positive work experiences, such as receiving task-specific guidance, getting support from others, and being empowered by others to make decisions, whereas need thwarting is a more likely outcome of more negative behaviors such as pressuring someone, criticizing their work, or being cold towards another (Howard et al., 2024). In the framework of incivility as a form of mistreatment, an undoubtedly negative behavior, it makes sense to evaluate needs from a thwarting perspective.

The experience of mistreatment by another may carry a message to the target that they are not a respected member of the organization or team, and therefore undercut their need for relatedness; if the interaction conveys any indication that the perpetrator is negatively evaluating the individual or their work, that mistreatment could also have the target doubting their capabilities and competence; finally, if the mistreatment is embedded in a communication that includes demands, unrealistic expectations, or an unreasonable request, the recipient may feel as if their sense of autonomy has been compromised (Chen et al., 2021; Jiang et al., 2023). To test this conceptualization, I hypothesize:

> H2. There will be significant differences in thwarted need ratings of a. competence, b. autonomy, and c. relatedness, such that individuals in the uncivil condition will report greater thwarted needs than those in the neutral condition.

Prior SDT Mediation Research with Mistreatment. Self-determination theory has been studied empirically in the mistreatment literature as a mediator in the past, albeit sparsely, and both the contexts and findings are somewhat mixed. An examination of bullying at work found that satisfaction of needs mediated the relationship between bullying and work engagement (Trépanier et al., 2013). Nurses in Canada reported how frequently they had been exposed to

bullying behaviors, to what extent their needs for competence, relatedness, and autonomy at work were satisfied, how engaged they were at work, and to what extent they were burnt out. Results showed that bullying experience was negatively related to satisfaction of needs and that there was an indirect effect of need satisfaction on the relationship between bullying and engagement for each of the three needs.

Another study surveyed telemarketing employees in China to test if need satisfaction could explain the relationship between reported customer mistreatment and self-reported job performance and job satisfaction (Chen et al., 2021). Significant indirect effects for both outcomes were found for autonomy and competence satisfaction, but not relatedness satisfaction. The authors replicated these findings in a second study with real estate property agents, adding evidence that HR Management empowerment buffered customer mistreatment and need satisfaction relationships.

Nurses in New Zealand participated in a three-wave survey to assess if need satisfaction mediated the relationship between incivility experience frequency and turnover intent (Jiang et al., 2023). In this research, incivility experiences were categorized by source (e.g., supervisor, coworker, customer, etc.). Overall, findings were inconsistent and depended on both source of incivility and type of need. The only significant mediation path in this study was that supervisor and co-worker incivility was related to turnover intent via low satisfaction of the need for autonomy. Taken together, these three studies indicate the limited research testing needs as mediators. However, the reasoning that uncivil interactions might undermine an individual's sense of competence, relatedness, and autonomy perhaps because they feel less "valued, worthwhile, and useful" warrants further exploration (Chen et al., 2013 p. 1201). Given the variability across past research, relevant hypotheses in this study do not make specific

predictions about each need individually, but they will be explored distinctly in the analysis of results to address which may be more or less important in explaining the incivility-task performance relationship.

Thwarted Needs & Performance. There remains, however, the basis for which thwarted needs explain the expected performance decrement. One proposition is that the experience of having one's fundamental needs thwarted prompts a restoration process as a means of coping (Sheldon & Gunz, 2009). This process might manifest by paying more attention to need-related cues after those needs have been thwarted. For example, Radel et al. (2013) experimentally thwarted participants' need for autonomy, resulting in shorter response latencies for subsequent autonomy-related stimuli compared to neutral stimuli. Threatening needs likely redirects focus to areas related to the need that was thwarted, thereby limiting the attention available to be used for other cognitive tasks (Baumeister & Leary, 1995; Radel et al., 2013).

If incivility exposure diverts attentional resources away from the primary task at hand, having one's fundamental needs thwarted by an uncivil message from a colleague might prompt efforts to restore those needs by focusing more heavily on need-related cues embedded in the message and situation, redirecting attention away from a competing task. Accordingly, a motivational mediator reroutes attentional resources towards restoring fundamental needs that were thwarted by an uncivil interaction:

> H3. The relationship between experimental condition and task performance will be partially mediated by reported thwarting of the needs for a. competence, b. autonomy, and c. relatedness such that there will be a larger, negative indirect effect of experimental condition on task performance specifically through thwarted needs for individuals in the uncivil condition compared to those in the neutral condition.

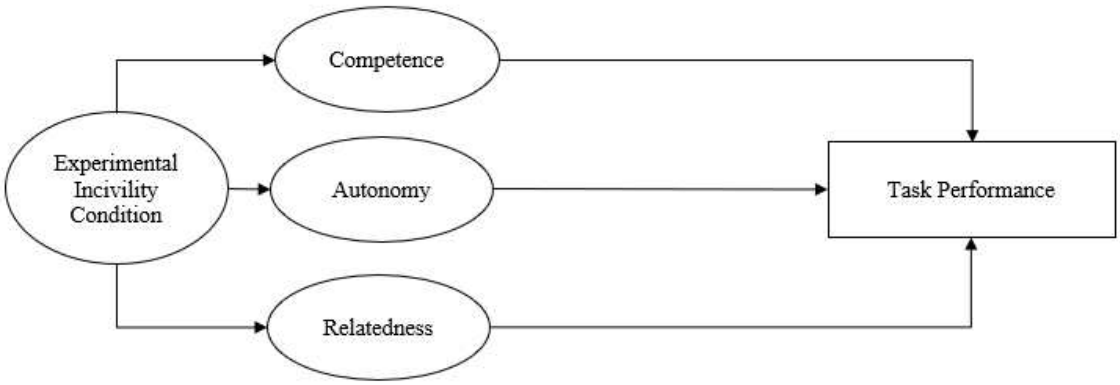


Figure 2. Needs-Based Model

In addition to coping with thwarted needs, there could be other reasons for which attentional resources get allocated off-task, one being that they are used to understand the cause of the behavior and process the emotions that the uncivil interaction triggered.

Attributional Response: Causal Sense-Making & Emotion

Appraisal frameworks have frequently been applied to understand the emotional and behavioral responses to workplace incivility (e.g., Bunk & Magley, 2013; Cortina & Magley, 2009; Porath & Pearson, 2012). From the perspective of appraisal theory, incivility is an interpersonal stressor that triggers a cognitive and emotional evaluation of the uncivil interaction and the extent to which that interaction is harmful or threatening. Primary appraisals are general but have valence (either positive or negative), and secondary appraisals become more specific. Heider (1958) developed the original naïve or common-sense psychology of attribution, namely, that, to find a satisfactory reason for an observed action by an 'actor,' people make a distinction between personal and impersonal causality.

Developed within social psychology, attribution theory provides the underpinnings for the conclusion that "property X characterizes property Y… the ascription of an attribute to an entity and the particular causal explanation of effects associated with that entity" (Kelley, 1973,

p. 107). Causal attribution is a cognitive appraisal process that requires sense-making and drawing inferences to explain behavior or events and their outcomes and is one in which we heuristically participate (Weiner, 1985). Attribution theory suggests that, after experiencing an event, especially one that is surprising, negative, or important, people have a general affective reaction and then engage in the mental exercise of trying to figure out *why* that event occurred in the way that it did and what caused it.

There are three dimensions of causal attribution: locus of causality, or whether the cause of the event rests within the self or outside the self; controllability, or the extent to which the event could have been changed willingly; and stability, or how temporary or permanent the cause of an event is assumed to be (Weiner, 2000). As individuals make sense of the event in this way, a more specific emotional response forms, which then informs a behavioral reaction (Weiner, 2000). The causal dimension of focus for this research is on locus of causality because, as Kedharnath and colleagues (2023) note, locus and controllability dimensions intersect considerably (Harvey et al., 2014), and those two dimensions are more commonly used than stability in the heuristic causal search (Wong & Weiner, 1981). Locus of causality has commonly been divided into two categories: internal attribution, whereby the individual assigns cause of an event to themselves, and external attribution, whereby they assign it to someone or some reason outside of themselves (Kelley, 1973). Eberly and colleagues (2011) theorize that there is an additional and distinct third locus category to be studied in dyadic interactions, a relational attribution whereby the cause of an event is due to the relationship between the self and the other. Given that this study used vignettes, and therefore the participants did not have a relationship with the 'other', I assessed only internal and external attribution as causal loci.

In the context of work, there are several scenarios that could arise wherein something goes wrong or is surprising, important, or negative. In response to such an event, identifying whom to assign blame (locus) could naturally follow according to attribution theory. In speaking about workplace incivility, an uncivil message from a colleague regarding such an event might even compound the impact of another event "due to difficulty in making sense of the situation, indecisiveness about whether or how to respond, and uncertainty about what could happen next" (Lim et al, 2008 p. 96). Also, as a violation of workplace norms, incivility provides a reason for which an explanatory search is necessary (Wong & Weiner, 1981). Therefore, one might expect an uncivil message regarding a workplace event to be a likely trigger of causal searching.

In response to incivility at work, individuals may make external attributions when they blame others for uncivil behavior or they may make internal attributions if they believe their own actions might have had something to do with the mistreatment. Blaming oneself for mistreatment is a highly plausible response to subtle transgressing behaviors representative of incivility (Schilpzand et al., 2016). Alternatively, it may be the case that individuals blame the perpetrator of the incivility, possibly in order to preserve self-esteem and a positive social identity (Tajfel & Turner, 1978). Indeed, after exposure to abusive supervision, individuals made blame attributions to the supervisor more severely than they did to the self (Kedharnath et al., 2023). Therefore, incivility could prompt either attributions to the self or to the other, although it would be beyond the scope of the current research to hypothesize whether internal or external attributions would be the more likely response. Therefore, generally speaking:

H4a. Individuals in the uncivil condition will make stronger attributions compared to those in the neutral condition.

In addition, attribution theory states that after making an attribution, an individual will have an emotional response. Gerace (2020) suggests that emotional responses might differ depending on the type of attribution made. For example, attributing blame to oneself might elicit feelings of shame and guilt; conversely, external attributions may relate more to outward-directed emotion, namely, anger (McAuley & Shaffer, 1993). Therefore, I also hypothesized that:

H4b. Internal locus of causality ratings will be positively related to guilt.

H4c. External locus of causality ratings will be positively related to anger.

Additionally, incivility has been found to directly relate to negative affective and discrete emotional responses, and, within this type of framework, the explanation for this relationship is based on the argument that such a stressor challenges one's wellbeing (Bunk & Magley, 2013; Chris et al., 2022; Porath & Pearson, 2012). Other researchers have found that incivility is associated with a few discrete negative emotions, including experiencing more anger, fear, and sadness (Porath & Pearson, 2012). The emotional response to the stressful uncivil event might be focused outward, resulting in anger, or inward, resulting in guilt (Kabat-Farr et al., 2018), which aligns with the attributional process discussed above.

Causal Sense-Making, Emotion & Performance. Negative affect signals that there is a need to resolve a problem in the work environment, which then requires attentional resources to assess and respond to the event (Porath & Erez, 2007). Therefore, an attribution-emotion response might act as a mediating path between an uncivil interaction and an outcome, in this case, task performance. However, task performance as an outcome has some unique characteristics – instead of thinking about negative affective states as shaping and influencing subsequent attitudes and behaviors in general, it is relevant to think about cognitive and emotional processing as consuming resources that otherwise would be available for work.

A well-documented tendency associated with attributional decision-making processes is that individuals may overestimate the contribution of internal and dispositional causes and underestimate the influence of external and circumstantial forces (Heider, 1958). One way to understand this is rooted in the decision-making literature, suggesting that over-attribution to disposition is a heuristic strategy that requires less cognition and allows for the conservation of effort (Gilbert et al., 1998; Tetlock, 1985). When committing this "fundamental attribution error" an observer overestimates the influence that the actor's disposition has on the behavior and, thus, there is a greater chance that this can influence the observer's judgment of the actor's character (Berry & Frederickson, 2015). In essence, the easier inference to make is to character – something about the person – rather than circumstance. The additional step to correct any potential oversight of this inferential inclination will require additional effort (Gilbert et al., 1988).

Despite the heuristic argument that it requires more resources and effort to look past personal blame when making attributions, past research has found that dispositional blame attribution is also a resource-consuming mediator in the mistreatment-outcome relationship (Cameron et al., 2019). Schilpzand and colleagues (2016) argued that self-blame is a likely response to incivility and found that self-blame mediated the relationship between experienced incivility and cognition-related outcomes such that more self-blame was associated with a stronger negative relationship with rumination, task-related stress, and psychological withdrawal. They described rumination as requiring attentional resources and as 'cognitively distracting;' task-related stress as eliciting thoughts of self-doubt and 'anxiety-bearing inquiries'; and psychological withdrawal as mentally disengaging from the environment. In light of these

findings, and explanations for them, internal attribution triggers psychological responses that might help to explain poorer task performance after exposure to incivility.

Conversely, there is also a case to be made that perpetrator attributions are resource depleting. Garcia and colleagues (2019) claimed that attributing blame to perpetrators of mistreatment enhances resource exhaustion and subsequent performance detriment because blaming others makes the mistreatment seem more unjust and therefore a more blatant violation of norms. Independent of the source of blame, attributional processes require that attention be allocated to determining the source of that blame and processing the accompanying unpleasant emotion and may leave one with fewer attentional resources to allocate towards task performance.

There is evidence that negative affect is associated with poorer recall on a memory task, and the explanation for this is rooted in models of attentional resource allocation (Ellis et al., 1997). These authors argue that emotional processing requires thoughts that are not relevant to the primary task and therefore contend with the thought activity needed for optimal performance on the task at hand: “memory is impaired as result of cognitive interference as well as failures of attention” (Ellis et al., 1997, p. 454). Incivility researchers have also posited that the explanation for the impact of negative affect and emotion on performance is rooted in the phenomenon of infringement upon cognitive resources that causes a ‘disruption’ in work performance either proximally or even the next day (e.g., Giumetti et al., 2013, Lim et al., 2008, Scisco et al., 2019, Wang et al., 2022). From a fundamental attribution error perspective, it would also be reasonable to propose that considering alternative or contextual explanations of behavior and resisting the urge to place blame on an individual automatically is more effortful than personal attribution and thereby would result in consumption of even more resources.

In sum, exposure to incivility is an event that prompts inferential sense-making, specifically, attributing a cause to the behavior. Attributing blame, whether internally or externally, is an effortful characterization but may be less effortful than correcting situational restraints, but the conflicting evidence in the literature precludes posing a directional hypothesis. Given these discrepancies, the following research question was posed:

RQ1. Will attribution and a subsequent emotional response sequentially mediate the relationship between experimental condition and task performance?

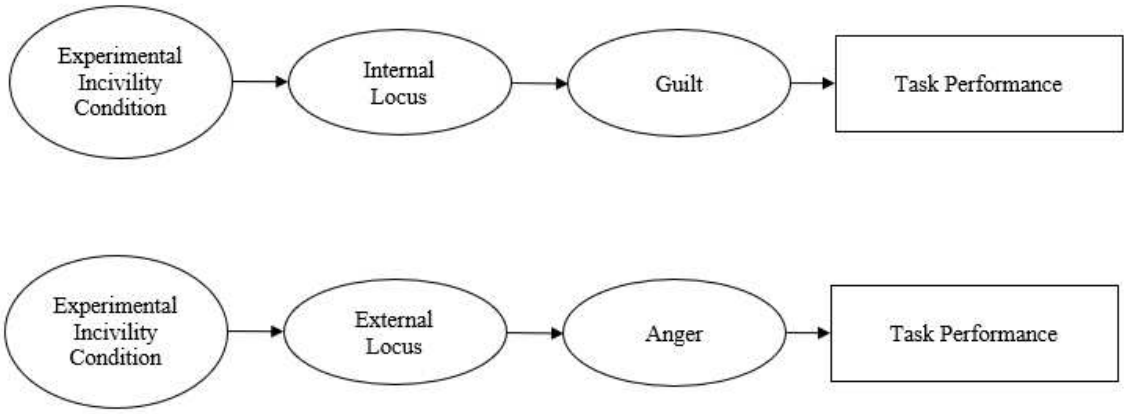


Figure 3. Attributional Models

Competing Parallel Responses

In addition to testing the mediating paths outlined in the above sections, another target of this research was to compare the relative strength of these psychological responses to one another: which process better explain the relationship between incivility and performance. To my knowledge, there is no prior study that has compared the relative strength of the combination of these specific mediating paths (in the context of e-mail incivility and task performance). Therefore, I sought to address:

RQ2. Which of these hypothesized mediating paths (thwarted competence, thwarted autonomy, thwarted relatedness, internal attribution, and external attribution) account for a greater proportion of the effect of experimental condition on task performance?

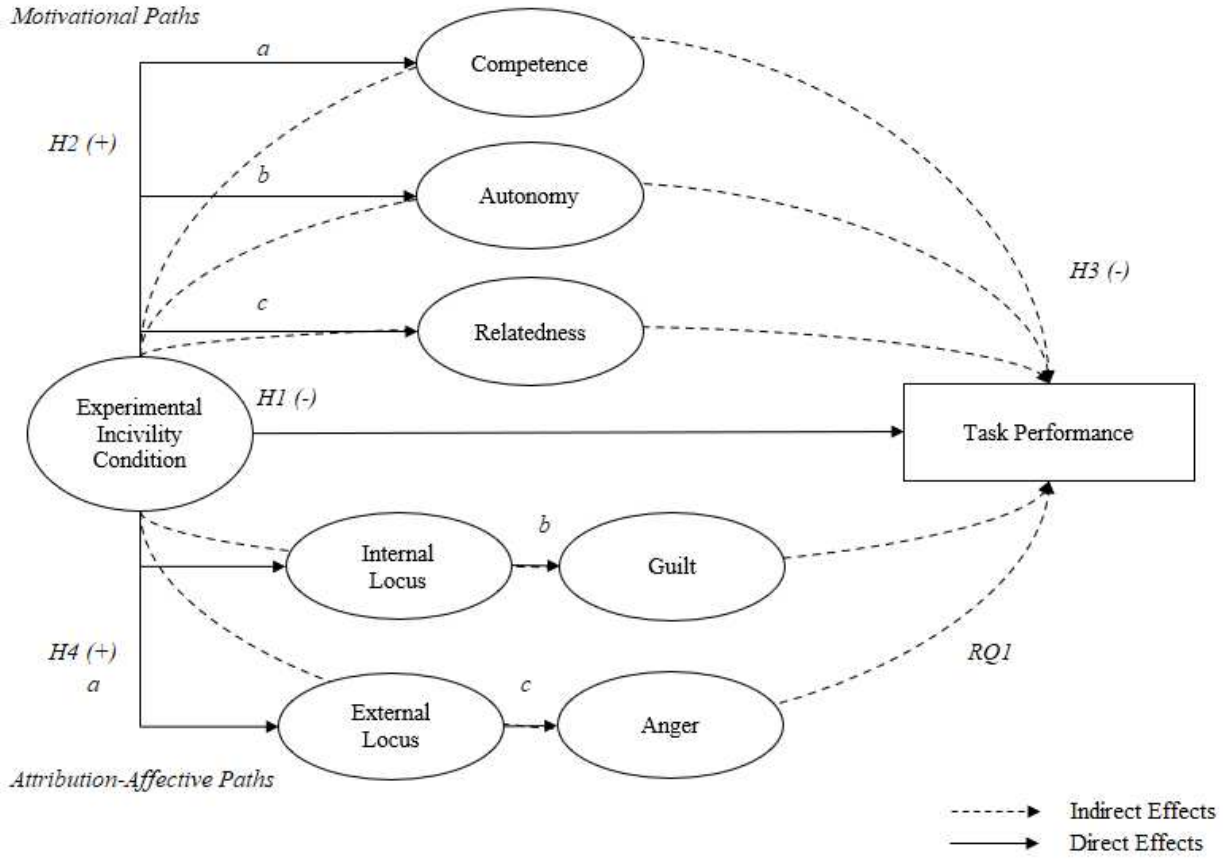


Figure 4. Competing Mediation Model

Overall Study Design

To test the hypotheses and address the research questions posed, this study was designed based on best practices in experimental vignette methodology (EVM; Aguinis & Bradley, 2014). The type of EVM is called 'paper people,' an approach whereby participants provide direct responses to hypothetical scenarios. This project used a between-person design in which each participant was presented with one vignette. The vignette described a scenario, followed by a randomly assigned e-mail message that was either neutral or uncivil. Study 1 was conducted to

pretest vignette stimuli. Study 2 was the primary empirical study conducted to test the proposed models.

STUDY 1: STIMULUS DEVELOPMENT & PRETESTING

Study 1: Methods

The goal of pretesting was to evaluate the strength of the experimental manipulation between uncivil and neutral vignette stimuli and to ensure the scenario was rich enough to engage participants in a realistic workplace situation.

Materials

Vignettes were presented alongside a hypothetical but common workplace scenario with enough contextual background to provide as much of a sense of realism as possible. Both the uncivil and neutral versions of the vignette were presented alongside the same scenario, but the verbiage in the e-mails varied by experimental condition (uncivil versus neutral). Original vignette content was based on qualitative evaluations of uncivil e-mail vignettes used in a prior vignette-based study that manipulated incivility in hypothetical e-mail messages (Goldman, 2022), scenarios and e-mail correspondence wherein e-mail incivility was manipulated to be uncivil or neutral (Park et al., 2023), verbiage from laboratory experiments that manipulated incivility in communications with participants (e.g., Giumetti et al, 2013; McCarthy et al., 2020), and general taxonomic features of uncivil language in e-mail (Howard, 2021). Vignette content was reviewed by subject matter experts (SMEs), who in this case were this dissertation's committee members, and by graduate students in the Colorado State University's (CSU) Industrial/Organizational Psychology program during cognitive interviews.

Prior to evaluating the vignette, participants were instructed to imagine (Porath & Erez, 2007, Study 3) that they encountered the presented workplace scenario and received the corresponding e-mail from a colleague or peer. The situation presented (meeting a project

deadline), was chosen because it is typical of many jobs and therefore likely to be applicable to eligible participants and perhaps reflect more generalizable results. Participants were told that the sender of the e-mail was a peer so as to avoid confounding interpretations or reactions with power distance or authority (e.g., Porath & Pearson, 2012). To control for other e-mail characteristics that might have confounded perceptions of incivility by distracting from the e-mail content itself, vignettes were composed using the following criteria: e-mails had no closings or greetings (given that these e-mail components introduce some differences in assessments of politeness: Waldvogel, 2007); the hypothetical scenario referred to a 'neutral' situation (there was no clear indication of conflict); and the participant and sender were of the same status, held the same title, and were on the same team (Bjørge, 2007). Uncivil and neutral e-mails had roughly equivalent word counts, literacy levels and ease of readability. Finally, neither vignette version included cursing, radical punctuation, or capitalization of entire words, as these are more blatant indicators of emotion (Byron & Baldridge, 2007; Ferreira et al., 2021; Papacharissi, 2004; Turnage, 2007). Final vignettes can be found in Appendix A-2.

Measures

Again, the goal of Study 1 was to evaluate the strength of the experimental manipulation and the realism of the vignette. To assess perceptions of incivility, participants responded to a set of relevant items from validated workplace incivility and cyber incivility scales (Cortina et al., 2001; Lim & Teo, 2009). Two items were added as a result of cognitive interview feedback: one item to control for the time of day that the e-mail was sent, given the context of the scenario, and a second to assess perceptions that the e-mail sender intended to be supportive. In addition to manipulation checking, pretesting assessed the degree to which participants felt immersed in the

scenario (Aguinis & Bradley, 2014). In addition to degree of immersion, participants were asked generally about the scenario's familiarity, relatability, and realism.

Participants & Procedure

Study 1 required two sets of participants for pretesting Rounds 1 and 2, respectively. The first set was a small group (*N*=6) of volunteer participants recruited from the CSU Psychology Department's Industrial/Organizational Program (graduate students and undergraduate research assistants). These volunteers participated in either a cognitive interview (*N*=2) or provided preliminary survey ratings and feedback (*N*=4). The second set was a group of undergraduate students recruited from management and psychology courses who completed the pretesting survey in exchange for course extra credit. There were no eligibility requirements to participate in pretesting, but certain participant characteristics (such as English language proficiency) were assessed on the backend to determine inclusion. All participants responded to a survey administered on the Qualtrics survey platform and can be found in Appendix A-2. The procedure is described below.

Round 1. After the pretesting survey was built in Qualtrics, I conducted two cognitive interviews. Cognitive interviewing is a widely used method for investigating how people process, interpret, and respond to surveys (Beatty & Willis, 2007). The procedure involved a one-on-one meeting with participants during which they systematically went through the survey and reported about their experience interacting with the survey and survey material in real time. My approach involved a talk-aloud and probing mix technique by which I received feedback on participants' comprehension, interpretation, timing, and format of the vignettes and associated measures (Beatty & Wills, 2007). The script used for the cognitive interviews can be found in Appendix 1-A.

As a result of cognitive interview feedback, the original vignettes were modified slightly in terms of formatting, sizing, and word choice, but no edits changed the message substantially. In response to vignette interpretation, two items were added related to e-mail timing and supportive intent, and one of the situational items was dropped because it wasn't as appropriate for a student sample ("How relevant is this situation to one you might come across in your own workplace?").

Once cognitive interviews were completed, I collected a few preliminary incivility ratings from four ($N = 4$) additional volunteer participants, who took the survey with the minor modifications made based on cognitive interviewee feedback. Scores on both the neutral and uncivil vignettes indicated that item response patterns were trending in the expected direction (incivility items getting ratings predominately in the 4-5 range on the uncivil vignette and in the 1-2 range on the neutral vignette). Satisfied that the survey was functioning as expected and that the two conditions were operating as intended, I proceeded with more formal testing.

Round 2. Next, I pretested the vignettes on a larger sample of undergraduates ($N = 222$). Students were recruited from undergraduate courses, ranging in level, in the Department of Psychology and School of Management at CSU. Students were compensated with extra credit.

Study 1: Analyses & Results

Data Cleaning & Quality

First, I conducted preliminary tests to ensure the quality of the responses. I reviewed several indicators that commonly reflect careless responding: the amount of time a participant spent in the survey (less than 5 minutes was suspicious), the amount of time they reported to have spent filling out the survey (severe over or under-reporting compared to their survey duration was suspicious), their subjective inattentive responding scores, and their performance

on an attention check item (Huang et al., 2012). I was concerned that 'failing' on more than one of these indices would indicate an inattentive responder.

I created an aggregate index of inattention based on these indices where a score of 1 represented perfect attention and higher scores indicated progressively poorer attention. About 80% of the sample had aggregate attention scores of two or less (N = 177). I conducted t-tests to determine whether the 20% of respondents who had aggregate attention scores greater than 2 rated differently than their more attentive peers on incivility ratings or reported 'immersion' in the vignette. In both conditions, incivility ratings were almost identical for both the attentive and suspected less attentive group ($M_{attentive}$ = 4.19, $M_{inattentive}$ = 4.20: $t_{uncivil}(46) = -.06$, $p = .95$; $M_{attentive}$ = 1.88, $M_{inattentive}$ = 1.88: $t_{neutral}(28) = -.01$, $p = .99$). In addition, there were no significant differences between these groups on immersion ratings ($M_{attentive}$ = 3.20, $M_{inattentive}$ = 2.90: $t_{uncivil}(32) = 1.34$, $p = .19$; $M_{attentive}$ = 3.30, $M_{inattentive}$ = 3.05: $t_{neutral}(29) = 1.19$, $p = .24$), but, it is worth noting that, descriptively, attentive respondents reported greater immersion in the vignettes than their less attentive counterparts, independent of condition. I conducted these tests with both the entire sample as well as a subset that did not include the suspected inattentive respondents, and, because including them did not significantly change any of the results, I decided to retain everyone ($N_{uncivil}$ = 113, $N_{neutral}$ = 109).

Sample

Among the 222 participants in Study 1, Round 2, the majority (92%) were native English speakers. The sample was 72% female with an average age of 21 years. Sixty-eight percent of respondents were White, 8.5% were Hispanic, and 16% identified as more than one race. Average and median reported work experience was surprisingly high (5 years), but I expect that the undergraduate student sample included summer work, part-time work, and extracurricular

work in their reporting. The average respondent was currently doing 15 hours per week of paid work and approximately 40% of the sample said that they used e-mail as a communication medium at work regularly throughout the day or at least a few times per day.

Before creating an incivility construct score, I checked that the items performed as expected. I conducted a one-factor confirmatory factor analysis at the sample level and within each experimental condition. After dropping the item that had been added to gauge perceptions of how appropriate the timing of the e-mail was, model fit and internal consistency was excellent for both conditions, per cut-offs suggested by Hu and Bentler (1999) and Tabachnik and Fidell (2013): $CFI_{uncivil}$ =.996, $CFI_{neutral}$ = .979, $TLI_{uncivil}$ =. 994, $TLI_{neutral}$ = .971, $RMSEA_{uncivil}$ = .028, $RMSEA_{neutral}$ = .073, $SRMR_{uncivil}$ = .036, $SRMR_{neutral}$ = .034, $\alpha_{uncivil}$ = .884, $\alpha_{neutral}$ = .917. Standardized factor loadings were all above .5, with the majority of the eight items loading in the .6-.8 range.

Manipulation Check

I conducted a one-sided independent sample *t*-test to confirm that incivility ratings were significantly greater in the uncivil condition compared to the neutral one and found that this was in fact the case ($M_{uncivil}$ = 4.19, $M_{neutral}$ = 1.88: $t(166) = -19.26$, $p < .001$). Further tests confirmed that there was not a significant difference in immersion by condition ($M_{uncivil}$ = 3.20, $M_{neutral}$ = 3.30: $t(220) = 0.89$, $p = .81$). The effect size for the mean difference in incivility rating by experimental condition was extremely large ($d = 3.01$, 95%; CI[2.63, 3.40]). Given this effect and the sample size, this test was very highly powered given that *a priori* power analyses indicated that, in order to detect $d = .6$ at $\beta = .80$, a one-sided t-test would require at least 35 participants per group ($N_{min} = 70$). With over 100 participants per group and such a large effect, power was more than sufficient.

In addition to group difference tests, I examined whether there were individual differences unduly influencing incivility ratings outside of condition. Therefore, I conducted a two-step hierarchical multiple linear regression to assess how much additional variance experimental condition explained in the incivility scores. In the first step, I added demographic variables (age, bi/multilingual, bi/multicultural, gender), work-related variables (work experience, paid working hours per week, e-mail use at work), as well as perceived immersion, and realism. I also included the attention index described previously. The results of the first model indicated that these ten variables explained approximately 13% of the variance in incivility scores ($R^2 = .13$, $p = .03$). Gender and realism were the only variables that were statistically significant predictors of incivility scores, with men reporting less incivility on average than women ($\beta = -.82$, $p = .003$) and with greater scores on realism associated with lower incivility scores ($\beta = -.52$, $p = .002$), when controlling for the other model variables.

In the next step I added the binary variable associated with assignment of experimental condition where 0 = neutral and 1 = uncivil. Adding condition as a predictor resulted in an increase in variance explained in incivility ratings of over 60% ($R^2 = .74$, $p < .001$). Condition was a significant predictor of incivility rating, where being assigned to the uncivil condition was associated with greater incivility scores ($\beta = 2.34$, $p < .001$). Also, adding condition as a variable caused the other model variables to become insignificant (gender was no longer statistically significant, $\beta = -.27$, $p = .07$). Finally, partial and semi-partial correlations indicated that the majority of the variance explained by experimental condition was not redundant with that explained by the other model variables ($r_{\text{zero-order}} = .85$, $r_{\text{partial}} = .84$, $r_{\text{semi}} = .78$). These findings provided sufficient assurance that the developed materials successfully produced the intended experimental effect.

STUDY 2: MAIN DATA COLLECTION

Study 2: Methods

Participants

Participants were recruited using the online crowd-sourcing platform Prolific (see Appendix B-1 for the Prolific study description). Using a crowd-sourcing platform as opposed to convenience or snowball sample increased the chances of obtaining a large sample of the adult working population (Cummings & Sibona, 2017). The rationale for sampling from Prolific in particular was that the quality of data that researchers collect using Prolific has been found superior to other, similarly designed crowd-sourcing platforms (e.g., MTurk; Douglas et al., 2023).

I conducted an *a priori* power analysis based on the degrees of freedom to estimate the model in *Figure 4* (Cortina et al., 2017) as well as an additional structural equation modeling (SEM) power analysis using *pwrSEM* (Wang & Rhemtulla, 2021) specified to detect factor loadings at .70, effect sizes of .30, and indirect effect sizes of .09. To achieve an acceptable level of power (minimum $\beta = .80$), given the proposed models, the sample size required was 400-450, or 200-225 per experimental condition. Anticipating that data from some participants would need to be dropped after data cleaning and quality checking, the total target sample size for completing both surveys was, at minimum, $N = 500$. Participants were eligible for the study if they were currently working in roles and organizations where they use e-mail regularly to communicate with their co-workers and they must, at minimum, have had at least 1 year of job experience, be currently working for pay at least 35 hours per week and have reported that they were at least very proficient in English (see Appendix B-2).

Procedure

Data collection took place across two time points. The survey at the first time point (Survey 1) included demographic items, control measures, and a working memory task. The survey at the second time point (Survey 2) contained the vignette evaluation exercise. One of the main reasons for this temporal separation was to minimize potential bias that may have arisen from responding to control and test measures at the same time or in the same survey. Item content on control measures has the potential to indicate to the participant what the purpose of the study is and influence responses on test measures, or vice versa. The surveys were separated in time by one week to allow for adequate distance such that respondents were not likely to remember the nature of the control items but not so much that attrition rate from Survey 1 to Survey 2 would be greater than expected.

Surveys were built and tested on the CSU Qualtrics survey platform and administered on Prolific. Participants who were eligible and consented to participate were invited to complete Survey 1. By random assignment, some participants completed the working memory task first and then responded to demographic and control measure items, and the others completed the task afterwards. Approximately one week after completing Survey 1, participants were invited to complete Survey 2, which included evaluating a hypothetical scenario with an accompanying e-mail interaction. After consenting to participate in Study 2, participants were given instructions that set expectations about the vignette evaluation exercise. They first reviewed background information explaining the scenario and their role in it. As part of the scenario, they were presented with a displayed e-mail message from a teammate at work, and the content of that message was either uncivil or neutral by random assignment. The e-mail message was presented to participants in an Outlook e-mail window to enhance the realism of the experience. After

reading the e-mail, participants were asked to craft a response to the sender as if they were actually working with them (there is evidence that even *imagining* a rude interaction will produce effects: Porath & Erez, 2007). Following this response, participants responded to several items measuring how they perceived the e-mail and the situation. After that assessment, participants completed another version of the same working memory task they did during Survey 1. Finally, participants were asked to respond to items related to their own judgments of how they performed the task.

Participation incentives. To incentivize participation in the surveys, I offered monetary compensation for attentively completing each survey. Research indicates that cash is better than sweepstakes for optimizing response rates (LaRose & Tsai, 2014) and more cash is better than less (DeCamp & Manierre, 2016). Prolific's payment principles required minimum compensation of $8 per hour (Prolific, 2024). The estimated time for the procedure outlined above was 10-12 minutes for Survey 1 and 20-25 minutes for Survey 2. Based on survey compensation conventions, participants were offered $0.15 to see if they were eligible to participate, $1.50 for completion of Survey 1 and $3.50 for completion of Survey 2.

Measures

Cyber Incivility. The cyber incivility scale is a 14-item scale ($\alpha = .95$) developed and validated by Lim & Teo (2009) to measure "behavior exhibited in computer mediated interactions that violate workplace norms of mutual respect" (Lim & Teo, 2009 p. 419). Appropriate and relevant items from this scale were selected and adapted to reflect the context of this research and were presented after participants engaged in the hypothetical e-mail interaction. The adapted item stem was "To what extent do you agree or disagree with the following statements: in this e-mail, my co-worker ___*"* and items included "said something hurtful.",

"made a demeaning remark about me.", and "used a rude tone." Three additional items from Cortina and colleague's workplace incivility scale (2001) were also selected as being applicable to the evaluation of the e-mail message's tone. Items were rated on a scale ranging from 1 *(Strongly disagree*) to 5 (*Strongly agree*), including a neutral option (*Neither agree nor disagree*).

Attribution. Locus of causality, or, the placement of blame to either the self or the sender, was measured following Zhan et al.'s (2023) adoption of internal and external attribution items from Herschovis and Barling (2010) and Kedharnath et al.'s (2023) adaptation of Burton et al.'s (2014) perceived abuse scale. All items were rated on a Likert response scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*). Internal attribution items were "I may have done something to deserve this behavior from my colleague," "I could be to blame for my colleague's behavior towards me," and "I probably provoked my colleague to act the way that they did", and external attribution items were "My colleague is responsible for what happened," "My colleague is at fault for this behavior," "My colleague's behavior is due to something about him or her (e.g., the type of person he or she is)" (Burton et al., 2014; Zhan et al., 2023).

Emotion. Consistent with prior workplace mistreatment research (e.g., Kabat-Farr et al., 2018; Porath & Pearson, 2012), discrete emotions for anger (hostility) and guilt were measured using basic emotion scale subsets of the PANAS-Extended Form scale (12 items from PANAS-X; Watson & Clark, 1994). Participants reported to what degree they were feeling a certain way in the moment, ranging from 1 (*Very slightly or not at all*) to 5 (*Extremely*). Anger emotions were 'angry', 'hostile', 'irritable', 'scornful', 'disgusted', and 'loathing'. The word 'frustrated' was be added to this category based on Harmon-Jones and colleagues (2016). Guilt emotions

were ‘guilty’, ‘ashamed’, ‘blameworthy,’ ‘angry at self’, ‘disgusted with self’, and ‘dissatisfied with self.’

Thwarted Needs. Psychological need thwarting was measured using frustration items from the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS; Chen et al., 2015). This scale was developed and validated across samples from four different countries: China, Peru, Belgium, and the United States. The three dimensions of the scale are frustrated autonomy, frustrated competence, and frustrated relatedness. Results from prior research have demonstrated measurement equivalence across samples and found that scores on each of the need frustration dimensions predict ill-being (as opposed to need satisfaction items, which predict well-being). The item stem was worded to fit the vignette evaluation activity: “After that interaction with your colleague, to what extent do you agree or disagree with the following statements.” An example of a frustrated relatedness item is: “I feel like the relationship with my colleague is superficial.” An example of a frustrated competence item is: “I have serious doubts about whether I can do things well.”

Task Performance. Prior research in industrial/organizational psychology that has examined the incivility-task performance relationship where task performance is not measured by subjective reporting but in-lab or in-field task completion has typically been operationalized as the number of anagrams correctly solved in 10 minutes (e.g., McCarthy et al., 2020; Porath & Erez, 2007). Other examples of activities used to operationalize task performance are difficult math problems and paired-associate word tasks (e.g., Giumetti et al., 2013; Porath & Erez, 2007). To align with this study’s discussion of cognitive resource depletion, task performance was operationalized by working memory, which requires the simultaneous maintenance and processing of information: working memory is influenced by maintenance of relevant

information and disengagement of irrelevant information (attention control, Burgoyne & Engle, 2020).

There are several measures of working memory. A common working memory task is a memory span task that requires individuals to remember information while they perform a different type of activity (e.g., solving math problems, reading sentences: Unsworth et al., 2021). For this research, I chose a simple operation span (O-span) task, which involves respondents solving simple arithmetic problems while trying to remember a series of unrelated words or letters (Unsworth et al., 2005). Operation-word pairs are presented in sets of varying sizes (in this case, three to six pairs per set, and order of set size presented was randomized). After each operation (e.g., 2 + 7 = 9?), participants confirm whether the operation was solved correctly or not. At the end of each set of operation-word pairs, participants recall as many of the words that were presented, in the order in which they were presented. The task is scored by how many words were recalled in the correct order (See Appendix D for the version of the task used in this study).

Participants completed an O-span task on both surveys (the structure of the task was the same, but the content was different). First, they were given detailed instructions on how to perform the task, and they had to spend at least 20 seconds on the instructions page before starting the task. To control for misreading or misunderstanding the instructions, participants also responded to three items related to their subjective understanding of and readiness to perform *before* they did the task.

The reason for two administrations of the task was to account for natural variability in working memory or capabilities on a task of this nature. Getting a baseline performance estimate for each respondent served as a control both to establish some basic familiarity with the task

prior to doing it after the experimental manipulation and also to consider individual differences in performance. When analyzing the resulting data, task performance as the outcome variable of interest was assessed either as the difference between final task performance (score on Survey 2) and baseline performance (score on Survey 1), "Change in Task Performance" *or* as final task performance while statistically controlling for baseline performance.

I acknowledge that several factors comprise working memory as a latent variable. However, given the time and resources available for executing this project and for the purposes of keeping the participant burden manageable, this research relied on the O-span task as the primary measure of task performance (Unsworth et al., 2021). That said, control measures related subjective task performance were included in Survey 2, and participants responded to these items after they completed the task.

Control Measures

To control for individual differences, I measured constructs likely to be correlated with response patterns on variables of interest. These measures and all associated items are listed in Appendix C: Latent Variable Measures.

Self-Regulation and Subjective Control of Attention. This is a measure of self-reported attention control and contain items that measure an individual's meta-perceptions of their own attention and ability to focus or inhibit interfering thoughts. This particular measure was translated from the German Self-Regulation scale developed by Schwarzer et al. (1999) and revalidated in English, resulting in 10 items that assess one's ability to maintain attention in goal pursuit (Diehl et al., 2006). Items from this scale have been used to measure subjective control of attention in research examining daily variability in working memory capacity (e.g., Brose et al., 2012), and in the context of social media addiction (Van Deursen et al., 2015). Example items are

"I can control my thoughts from distracting me from the task at hand" and "It is difficult for me to suppress thoughts that interfere with what I need to do." This measure was administered on both surveys: on Survey 1 to account for individual differences in regulating attention *in general*, and then on Survey 2 to estimate subjective attention regulation, *"while you were completing the working memory task,"* i.e., in the moments after completing both the vignette evaluation and O-span task.

Experienced Cyber Incivility. Six items from Cortina and colleague's (2001) workplace incivility scale (WIS, $\alpha = .89$), incorporating updates made in 2013, were included and adapted to specify e-mail as the communication medium. From both the original and the updated WIS, only items that did not risk infringing on other related workplace mistreatment constructs such as ostracism or bullying were selected and adapted for this context (Hershcovis, 2011). The instructions were "Rate approximately how often you have experienced any of the following by someone at work", and participants used a 5-point scale to respond: 1 (*Never*) to 5 (*Almost all the time*). Sample items included "Put you down or was condescending to you in some way through e-mail," and "made demeaning remarks about you through e-mail."

General Positive & Negative Affect. Additional scales included in the survey were PANAS (Positive and Negative Affect Scales, Watson et al., 1988) and Sensitivity to Interpersonal Treatment (SIT), a two-dimensional scale developed to measure the differences in a worker's sensitivity to interactions with fellow workers. Five items from this scale were included to control for potential differences in how deeply people are affected by interpersonal communications with their co-workers, e.g. "If my coworkers do not treat each other with respect, it stays on my mind" (Bunk & Magley, 2011).

Attribution Bias. Participants completed the six-item hostile attribution bias scale, which measures one's tendency to interpret ambiguous information or behavior as hostile (Adams & John, 1997). This measure is meant to control for individual differences in natural tendency to make negative attributions. An example item used is "I think most people would lie to get ahead."

Subjective Performance. In addition to actual performance on the working memory task, I also measured respondent perception of how demanding the task was as well as how they *thought* they did on the task. Items were selected and adapted from the Williams and Anderson measure of job performance (1991) and the NASA Task Load Index (NASA-TLX: Hart, 2006). Subjective Task Performance was measured with five items on a response scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*), including "I feel I was effective at that task" and "I believe I performed well on that task compared to others." Task Demand was measured with two discrete items on a sliding scale of 0 to 20. One of them estimated overall effort to perform: "How hard you had to work to accomplish your level of performance on that task?" The other specifically referred to mental demand: "How much mental and perceptual activity was required to successfully complete the task?"

Vignette "Strength". There were two distinct measurement approaches for gauging how 'real' the vignette experience was perceived to be and how embedded the participant felt in the scenario. "Immersion" is typically referenced in the context of media and technology as a psychological state that reflects the extent one feels engaged in a construed environment – in this case, the hypothetical situation outlined in the vignette (Lee & Li, 2023). Therefore, at the end of the vignette evaluation section on Survey 2, participants were asked to respond to the item "Now, reflecting on your experience evaluating the workplace scenario and e-mail message, to what

extent did you feel immersed in the situation?" where a rating of 1 was *Not at all* and 5 was *Extremely.*

In addition, participants were asked to respond to the e-mail right after they read it: "Imagining that you really do work with this person, and they sent you this e-mail at work, how would you respond? Please type out your e-mail response to this co-worker in the textbox below." The number of words they wrote in their e-mail response was calculated as a second approximation of how engaged participants were with the exercise. Furthermore, this metric was used as a means of identifying inattentive responders, elaborated next.

Insufficient Effort in Responding (IER). IER occurs when a respondent is not sufficiently motivated to accurately and attentively respond to a survey per its instructions. The following steps were taken to best prevent or minimize the likelihood of participant IER: survey instructions included language that explicitly told participants that missing attention checks might negatively influence their compensation (Huang et al., 2012). Attention check items were integrated into both of the surveys, two at each time point. An example attention check item is "Please respond 'Strongly disagree' to this item" In addition, at the end of each survey, I asked respondents outright if they actually paid attention (Subjective Response Effort).

Study 2: Analyses & Results

Data Preparation, Management & Cleaning

Once data collection was complete, all raw data from the three surveys (Eligibility, Survey 1, and Survey 2) were exported from Qualtrics to .csv files. The only manual file preparation was done to remove the extra header rows from each and ensure variables associated with experimental condition on Survey 2 were consolidated. That is, instead of having separate variables for perceived incivility in the neutral condition and perceived incivility in the uncivil

condition, perceived incivility became a single variable but could still be associated with the experimental condition assignment variable.

Next, I created a reference codebook of all variables (both observed and embedded) from each survey to document their original position and variable name in the exported data file. I then used this reference document to identify variables necessary for the analysis, reorder them, and assign them a more intuitive name. For example, I did not need click counts and other metadata that was recorded during the task. This procedure minimized the chance of importing the wrong set of variables because I could use formulas to specify their original positions and have a trail to follow in case of any error or need to replicate this process. Across the three raw datasets, 1,020 variables could be safely narrowed down to 220.

Having documentation of all exported variables, the complete, raw datasets were imported into RStudio. After selecting and reordering the relevant variables from each dataset, I merged them based on each respondent's Prolific ID. For the remainder of this document, I will refer to the total number of surveys as being two, with eligibility data being a part of data collected on Survey 1. The last step before moving onto data quality checking was to calculate task performance scores based on the word recall variable character strings. The instructions stated to participants that misspelled words or words entered in the wrong order would not be counted as correct, therefore only words entered in the correct order and accurately spelled were counted as correct. There was flexibility built in to be insensitive to case (entries were correct if words were all upper case, all lower case, or lower case with a capitalized first letter).

Quality Checks: Fraud, Inattentive Responding, and Missing Data

The survey platform Qualtrics has several features that serve as fraud detection. For the current study's surveys, I enabled prevention of multiple submissions or 'ballot box stuffing',

embedded reCAPTCHA fields, analysis of respondent browser, operating systems and location, and index prevention (so that search engines could not list the survey in search results). Each of these services was associated with a score; if this score met a certain threshold, that indicated a greater likelihood the response was a non-human or a duplicate entry. For each survey, I created a variable to flag any observations with a single fraud or duplicate variable score exceeding the indicated threshold. On Surveys 1 and 2, twenty-seven and twenty-six observations, respectively, had at least one instance of potential fraud (<5% of the sample). Twenty-one observations (3.6%) had at least one fraud flag on both surveys.

To aid in verifying if these responses were truly fraudulent or not, I cross-referenced these flags with other indicators of insufficient effort in responding. First, I looked at explicit attention check items. Fraud flags were associated with three cases on Survey 1 for which a single attention check was skipped or missed, but the broader response patterns and qualitative responses did not offer sufficient evidence to warrant dropping these cases. Similarly, on Survey 2, a different set of three respondents missed or skipped one attention check and was flagged as potential fraud, but nothing else about their responses or performance indicated the survey was completed by a bot.

To further investigate fraud and inattention, I examined open-ended responses to the experimental e-mail more closely. In general, participants wrote an average of 41 words in their e-mail responses (*Med* = 36). One participant wrote nothing at all, coupled with fraud flags on both surveys and therefore was removed from the dataset. Another 'double-flagged' observation had a nonsensical qualitative response and was also dropped. The remaining cases that either had any non-correct (missed or skipped) attention checks or any fraud flags were not worthy of dropping based on the rest of their data. One potential explanation for such minimal low-quality

data could be that the task was nuanced enough to require a human to complete it. Continuing to evaluate open-ended responses, four participants who wrote very little had responses that pointed to their not paying attention or not following instructions. Each of these four also met at least one other criterion that could reflect poor quality responses across the board.

I also assessed subjective inattentive responding to see if respondents were admittedly not giving their full attention to completing the study. Cases with very high cumulative scores on this measure (low subjective attention) were not flagged for fraud, nor were these scores related to other potential indicators of attention either (e.g., time spent on survey, length of response on Survey 2) with the following exception: time spent taking Survey 1 was positively related to IER on Survey 1 ($r = .11$, $p < .01$).

Finally, I had to drop anyone who did not complete the task on both surveys because they were missing on the outcome variable of interest. Beginning to end, each of these quality checks and resulting decisions left the sample at $N = 541$, or, 93% of those who completed both surveys.

Next, I examined missing data. Item level missing data was minimal (less than 1.5%), which meant that construct level missing data would not be an issue either. Only nine people had more than 5% of their data missing, and only four of them were worthy of dropping (e.g., failed to fill out the entire incivility scale on Survey 2).

Task Performance Integrity. O-span task scores are considered valid only if 80% of the intervening simple operations are answered correctly (Unsworth & Engle, 2006). Because the questions are posed such that respondents only need to click 'Yes' for accurate or 'No' for inaccurate (e.g., 8+2=10?), correct answers are a coin-flip in the sense that individuals can get half of them correct even by providing answers at random. In this dataset, 67% of the remaining 541 respondents met the 80% threshold. Adjusting that requirement down to 75% left 76% of the

remaining respondents' scores (N = 411), which was a much more comfortable final sample size. Given that this adjustment was somewhat arbitrary, all analyses that were conducted in Study 2 (not including those done post-hoc) were re-run again, both with the mandated 80% threshold *and with no threshold at all.* Differences in results were negligible, providing reassurance this discretionary change was acceptable. See Table 1a for a summary of how the sample size changed as a function of all previously described data integrity checks.

Sample Size & Characteristics

There were 1,733 individuals who took the eligibility survey, and 52% of that group met the eligibility criteria. Seven hundred and twenty-nine of those went on to complete Survey 1, and 580 of those to complete Survey 2. After the data cleaning processes described above, the final sample size was 411 ($N_{Neutral}$ = 201, $N_{Uncivil}$ = 210).

Demographically, the sample was well-balanced in regard to gender (47% Male, 52% Female), mostly White (72%), and with a mean age of 43 and almost 20 years of full-time work experience. Roughly a quarter of the sample claimed they were bicultural or bilingual, and 93% reported being native English speakers. The demographic composition of the sample was consistent across conditions. For a full breakdown of sample demographics, please refer to Table 1b.

Psychometrics

For all latent variables and scales (Appendix C), I conducted confirmatory factor analyses (CFAs) to test the psychometric properties of the constructs. Overall model fit parameters suggested by Hu and Bentler (1999) were used to assess quality of fit set by the following indices: comparative fit index (CFI) > .95, Tucker–Lewis Index (TLI) > .95, root mean square error of approximation (RMSEA) < .06, and standardized root mean square residual (SRMR) <

.08. In addition, I examined item factor loadings ($\lambda > .71$ is excellent and $> .63$ is very good: Tabachnick & Fidell, 2013) and internal consistency reliability ($\alpha > .70$).

Overall, the psychometric properties of measures exceeded fit index and internal consistency requirements, and items had either very good or excellent factor loadings such that items for most measures could be safely aggregated to dimensions (e.g., scores on incivility items could be averaged to produce an incivility construct score). Table 2 documents all measurement fit indices. Although RMSEA was for some scales greater than the cut-off cited above, there are defensible reasons for which this might be the case despite other estimates of model fit being excellent, for example: the data are nonnormal (Brosseau-Laird et al., 2012); inconsistencies in fit indices do not always indicate a mis-specified model or weak correlations; in larger samples with fewer degrees of freedom, RMSEA can be very sensitive (Lai & Green, 2016; Savalei, 2012).

Two constructs did not meet fit index requirements necessary to be aggregated: Sensitivity to Interpersonal Treatment (SIT: control variable on Survey 1), and Subjective Attention Control (control variable on Survey 2). Based on item content and inter-item correlations, it made the most sense for each measure to retain and average the two scale items that were most strongly related both empirically and qualitatively, based on a careful review of item content: SIT items 4 & 5; Subjective Attention Control on Survey 2, items 1 & 2.

Two constructs that were assumed to be unidimensional, anger (model variable on Survey 2) and subjective attention control (control variable on Survey 1), fit better both empirically and qualitatively as two dimensions: latent anger seemed to consist of one factor related to one's immediate state (Anger – State, e.g., anger, frustration), and the other to a deeper, more visceral type of hostility (Anger – Visceral, e.g., scorn, loathing); subjective attention control consisted of

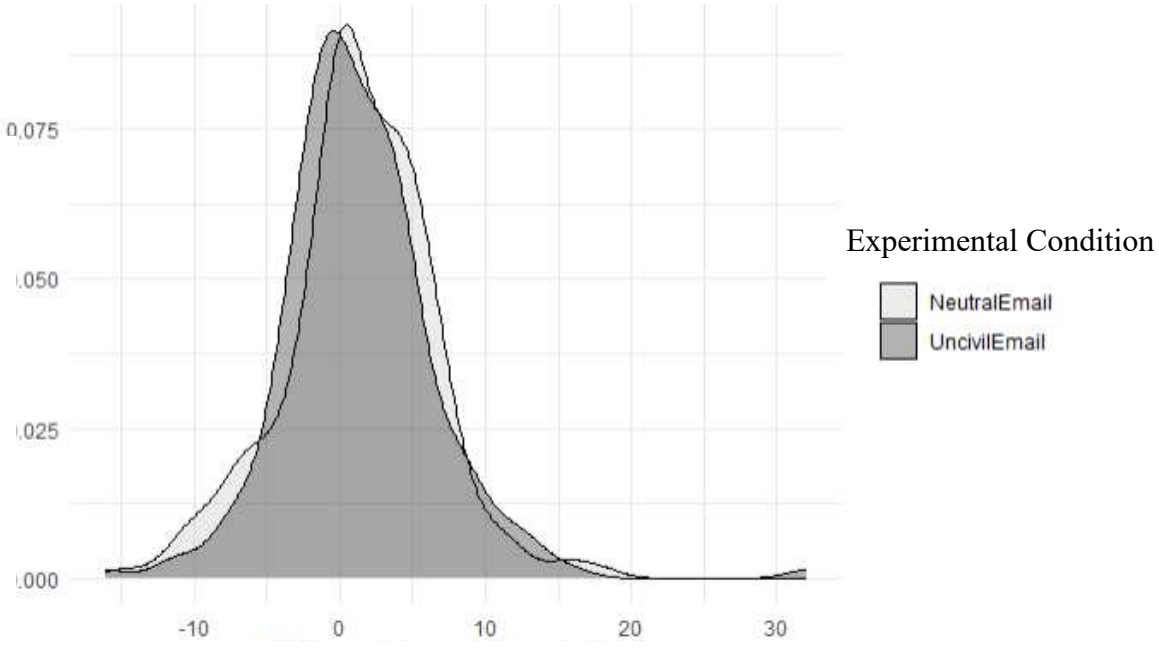
two sets of items, one that was distinctly positive (Positive Attention Control, e.g., "I can concentrate…") and one that was negative (Negative Attention Control, e.g., "It is difficult to suppress interfering thoughts…"). Note that the items on the negative dimension were reverse coded such that higher scores on both positive and negative dimensions reflect better subjective attention control. Given these psychometric properties, the two constructs were split into two variables, one representing each dimension.

Manipulation Check & Descriptive Statistics

The experimental manipulation was strong. Random assignment was associated with a significant difference in perceived incivility scores: $t(409) = -39.88$, $p < .001$; $M_{\text{Neutral}} = 1.45$, $M_{\text{Uncivil}} = 4.20$. All descriptive statistics for the sample and by experimental condition are displayed in Tables 3a and 3b.

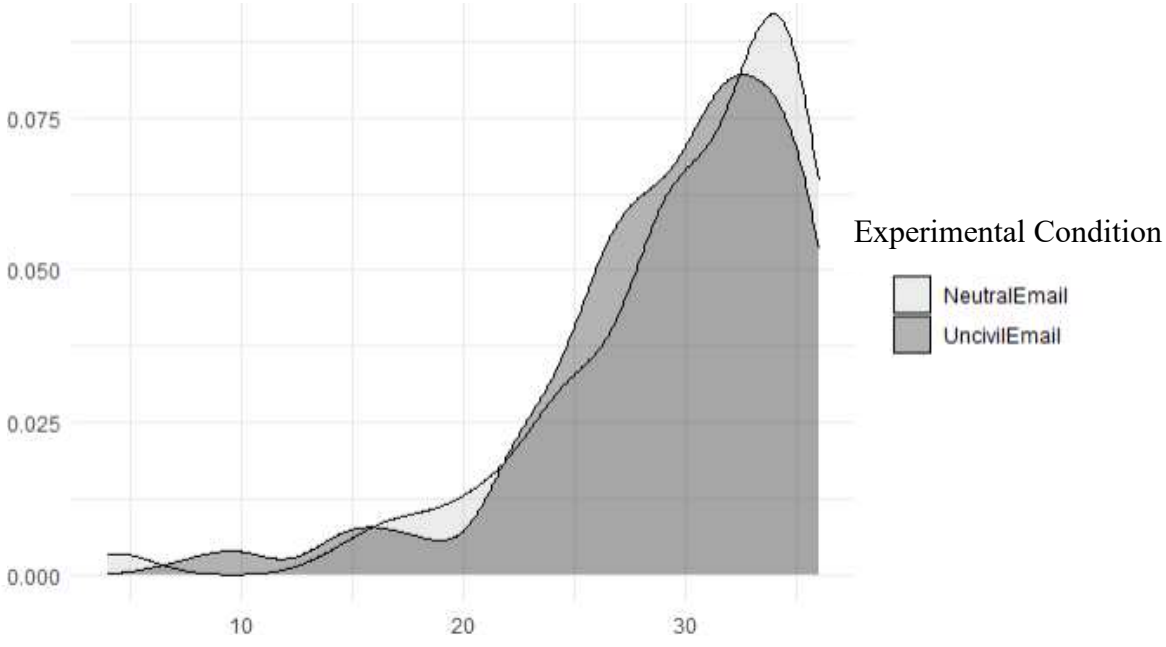
Performance Measures. Task performance, both final task scores on Survey 2 (S2) and difference in task scores from Survey 1 (S1) to Survey 2, was essentially the same in both experimental conditions (S2 - Task Performance : $M_{\text{uncivil}} = 29.3$, $M_{\text{neutral}} = 29.7$; Change in Task Performance from Baseline: $M_{\text{uncivil}} = 1.1$, $M_{\text{neutral}} = 1.3$). Mean difference tests confirmed that any potential disparities that existed were not statistically significant (Table 3c). This was also true for the subjective task performance measures on Survey 2. Density plots describing the distribution of data for all performance-related variables reflect that, in addition to central tendency measures reported, the data looked consistent across experimental conditions (see series of plots in *Figure 5* below.

Distribution of Baselined Task Performance by Experimental Condition



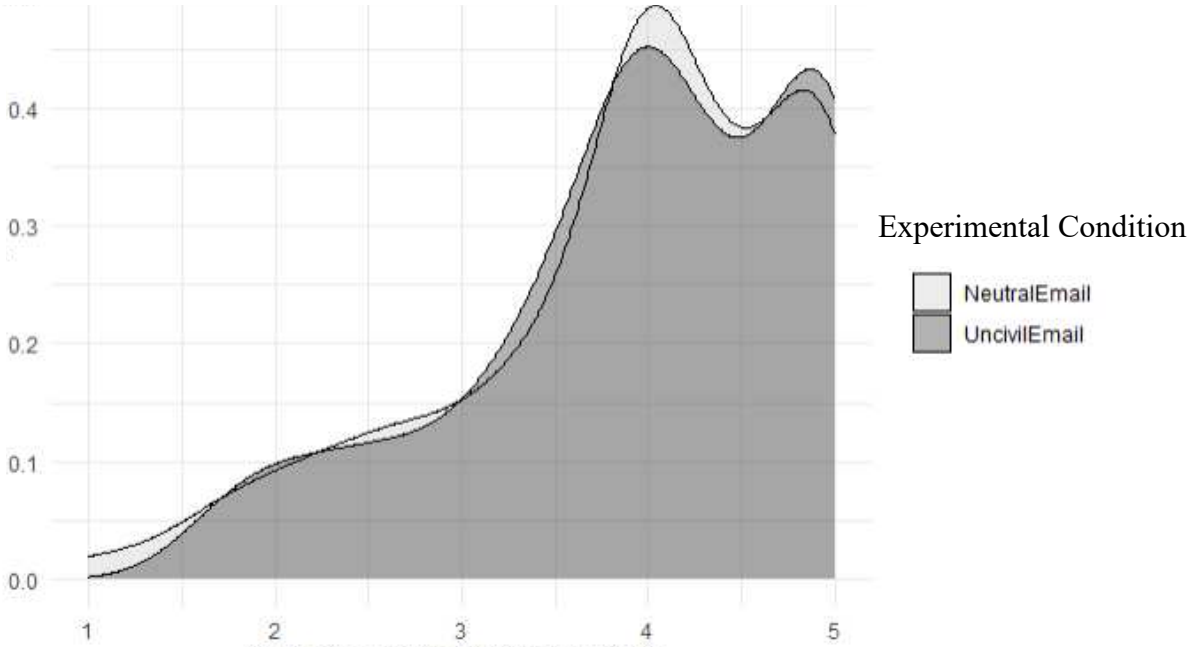
Baselined Task Performance

Distribution of Final Task Performance by Experimental Condition



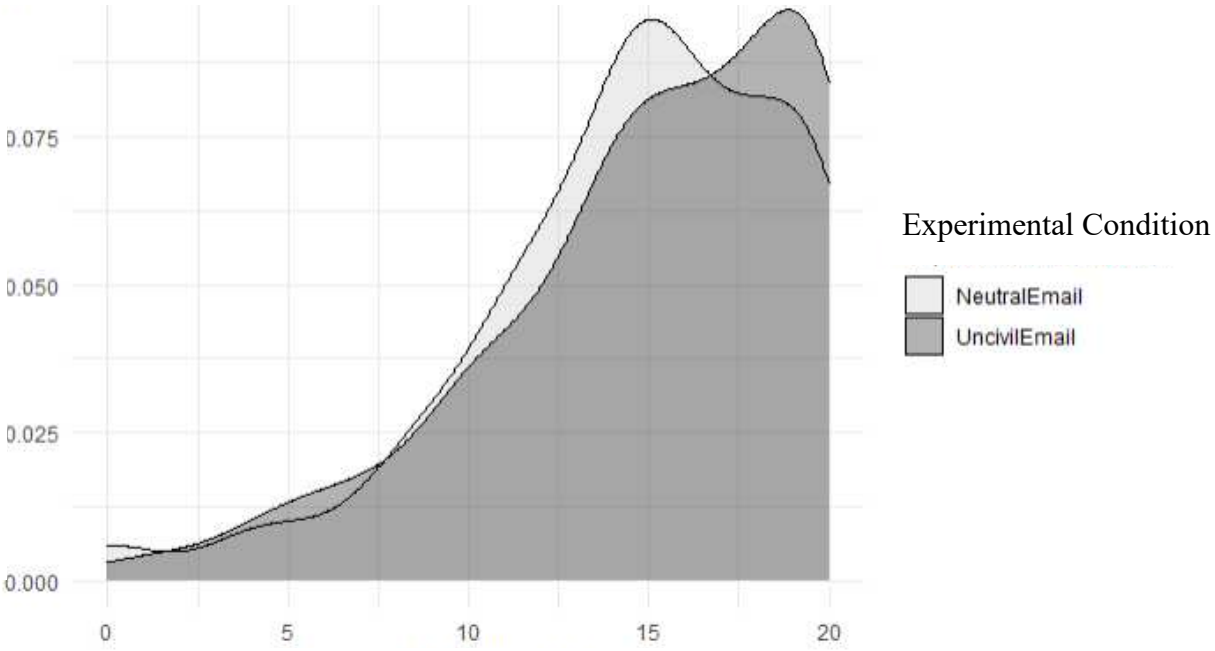
Final Task Score

Distribution of Subjective Task Performance by Experimental Condition



Subjective Performance on Final Task

Distribution of Subjective Task Demand (General) by Experimental Condition



Subjective Task Demand (General)

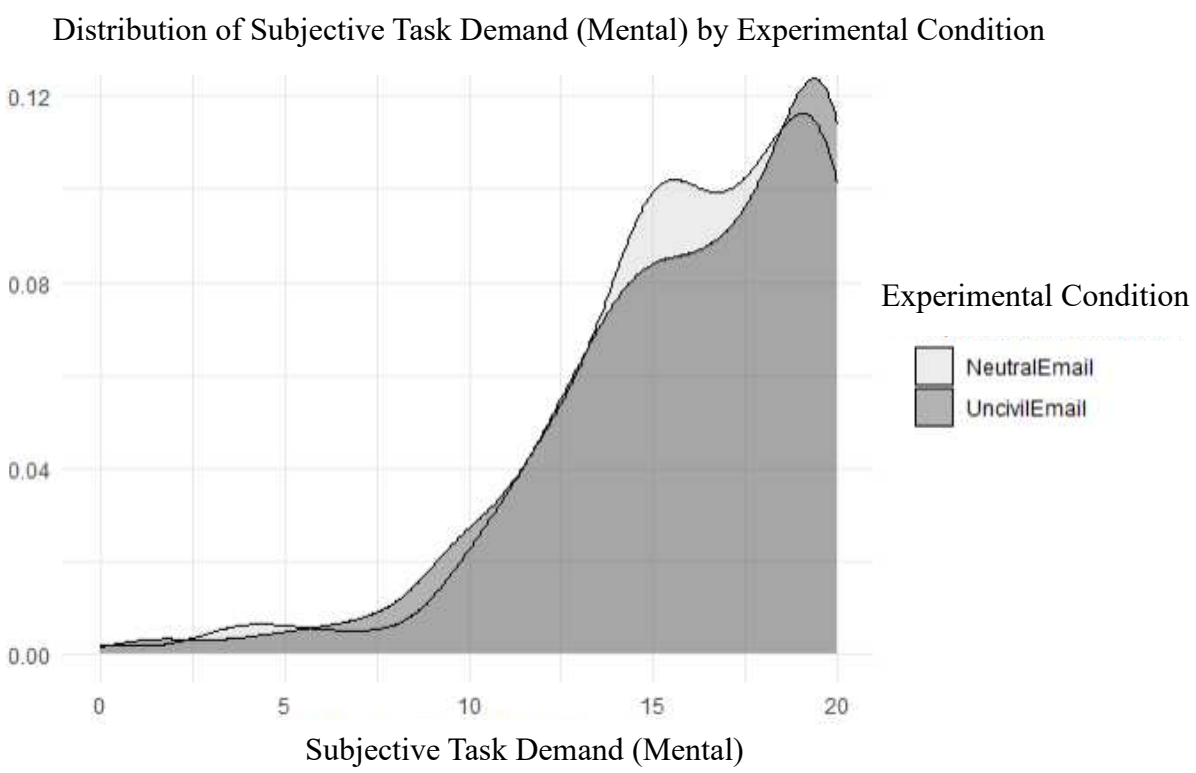


Figure 5. Series of Performance Measure Distribution Plots

Thwarted Needs, Attribution, and Emotion Variables. Despite means on performance-related measures being comparable across conditions, other variables looked different. Group comparison tests by condition revealed that individuals in the uncivil condition were more immersed in the experience (average immersion scores of 4.0 compared to 3.7, $p = .003$, $d = .30$) and, generally speaking, had a stronger reaction to the hypothetical interaction: they wrote more in their e-mail response to the e-mail sender (on average, 44 words compared to 38, $p = .012$, $d = .25$), they had more extreme emotional responses, but more so anger ($p < .001$, $d > 1$) than guilt (average scores of 1.5 compared to 1.1, $p < .001$, $d = .62$), they made stronger attributions, but more so externally (average scores of 3.9 compared to 2.6, $p < .001$, $d = 1.28$) than internally (average scores of 2.2 compared to 1.9, $p = .002$, $d = .30$), and they felt more undermined in their autonomy (average scores of 2.8 compared to 2.0, $p < .001$, $d = .78$), competence (average

scores of 2.1 compared to 1.6, $p < .001$, $d = .56$), and relatedness (average scores of 4.0 compared to 1.8, $p < .001$, $d > 2.0$). See Table 3c for all variable mean comparisons and effect sizes.

Variable Relationships

Consistent with the findings above, experimental condition alone was not significantly related to any performance-related variables or control variables but was positively related to all other variables (immersion, e-mail response word count, perceived incivility, attribution, emotion, and frustrated needs). All correlation coefficients both at the sample level and within experimental condition can be found in Tables 4a and 4b.

Perceived Incivility. At the sample level, perceived incivility was not related to any actual task or subjective performance measures. Within experimental condition, these relationships looked different. In the uncivil condition, perceived incivility was not related to change in task score ($r = .04$[1]) but was *positively* related to final task score ($r = .19$). However, in the neutral condition, perceived incivility was *negatively* related to both final task scores and change in task scores (respectively, $r = -.17$; $r = -.21$). The opposite direction of these relationships by condition indicates a potential interaction, which was tested post-hoc (see graphical depiction in *Figure 6*). The only other performance-related variables with which there was a significant relationship with perceived incivility was, within the neutral condition, mental demand of the task and subjective task performance ($r = -.16$ and $r = -.16$). These relationships were not significant in the uncivil condition.

[1] Parameters are statistically significant if $p < .05$.

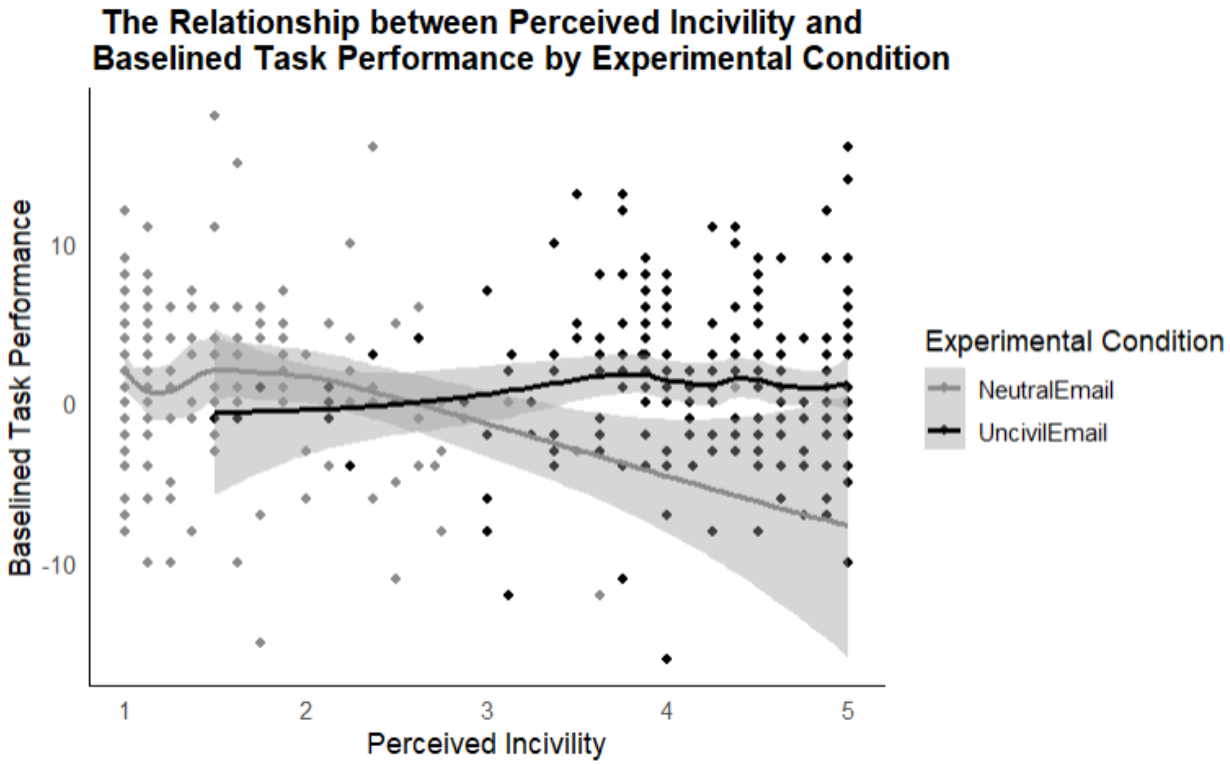


Figure 6. Potential Interaction

Other variables statistically significantly related to perceived incivility at the sample level were immersion (r = .13) and e-mail response word count (r = .16) as well as all attribution, emotion, and frustrated needs variables (the hypothesized mediators). Within condition, the presence or absence of relationships with perceived incivility varied: in the neutral condition, incivility was neither related to immersion nor to word count, but it was positively and significantly related to all other mediator variables; however, in the uncivil condition, the relationship with immersion and word count reemerged (r = .18, .22 respectively), and the nature of relationships with the mediator variables looked different. In the uncivil condition, incivility was still strongly and positively related to external attribution (r = .59), but *negatively* related to internal attribution (r = -.22); incivility was related to both dimensions of anger ($r_{\text{Anger-State}}$ = .43; $r_{\text{Anger-Visceral}}$= .34) but *not* to guilt (r = -.10); finally, incivility ratings within the uncivil condition

were positively associated with frustrated relatedness (r = .63) but *neither* with frustrated autonomy (r = .07) *nor* frustrated competence (r = -.12).

Performance Variables. As expected, task score on Survey 1 was positively and significantly related to final task scores within each condition and at the sample level. The difference between these scores (change in task score) was positively related to subjective performance in the neutral condition and overall, but not in the uncivil condition. Change in task score was not related to any mediator variables except for anger: change in performance was negatively related to both anger dimensions, but only in the neutral condition. Also, subjective performance was *negatively* related to task demand measures, guilt, frustration of needs (all three), but, again, only in the neutral condition, not the uncivil one. Both types of task demand (overall effort and general) were related to immersion, independent of condition. The other significant relationships between key variables and overall effort were, in the uncivil condition, frustrated autonomy (r = .18) and frustrated competence (r = .14); in the neutral condition, anger, ($r_{\text{Anger-State}}$ = -.20; $r_{\text{Anger-Visceral}}$ = -.18).

Mediator Variables. Attribution, emotion, and frustrated needs variables were all inter-related as expected at the sample level, strongly and positively with one another in the following way: internal attribution with guilt but not anger; external attribution with anger but not guilt; frustrated needs were all inter-correlated, the strongest being between frustrated competence and frustrated autonomy (r = .66) and the weakest between frustrated competence and frustrated relatedness (r = .39). Within conditions, some relationships looked different. Internal and external attribution were not related at the sample level, but in the neutral condition they were positively related (r = .31) and in the uncivil condition they were negatively related (r = -.49). Also unique to the uncivil condition was a negative relationship between external attribution

with guilt (r = -.28) and with frustrated competence (r = -.32), and an absence of relationship between frustrated relatedness and frustrated competence.

Hypothesis Testing

The original analytical strategy to test the hypothesized model and hypothesized alternative models in *Figures 2, 3,* and *4* was a structural equation model (SEM) with mediation analyses. I was prepared to carry out these analyses with the *lavaan* and *semTools* packages (Jorgensen et al., 2022; Rosseel, 2012) using the most current version of the software R/RStudio. However, path analysis and SEM assume hypothesized variable relationships between independent and dependent variables to be linear. Because of the lack of relationship between task performance or other performance-related variables with experimental condition, I was unable to test models exactly as outlined in the Introduction. Although I attempted to force the models as specified, they did not converge. Instead, I conducted several post-hoc analyses to address proposed hypotheses. In addition, I assessed potential confounds of the task performance measure used in this study, explored perceived incivility ratings as an alternate predictor to experimental condition, tested a suspected interaction between incivility ratings and experimental condition, and explored an alternative modeling technique.

Post-Hoc Analyses

Before exploring alternative models, I wanted to ensure that task performance was unrelated to whether participants completed the second survey. To check this, I compared the performance of individuals who only completed the first survey to those who completed both surveys. There were 153 people who started the first survey but either did not complete it, or they did complete it and did not go on to start the second survey. Among that group, 89 people completed the first survey and met the threshold on operation accuracy (minimum of 75%

correct) for task performance evaluation on Survey 1 but did not go on to complete Survey 2. Compared to the 411 individuals who met these criteria on both surveys, there was no difference in task performance ($M_{Survey1}$ = 29.0 vs. $M_{Survey1\&2}$ = 28.2; $t(144) = -1.3$, $p = .21$).

In terms of demographic characteristics, the two samples were proportionally very similar, although the Survey 1 sample had slightly more male participants (53% compared to 47%) and more who identified as Hispanic and other race (9% compared to 4%). However, task scores on Survey 1 were not significantly different between men and women, nor between Hispanic and other race categories. The only significant group differences on the task at baseline were: White participants scored higher than Black or African American participants by 2.94 points on average ($p = .04$) and native English speakers scored higher than non-native proficient English speakers by an average of 2.67 ($p = .03$).

Alternative Hypothesis Testing. Despite the relationships between hypothesized variables appearing non-linear based on predictor-outcome correlation coefficients, I nonetheless investigated some simple linear models in order to a) at the very least approximately address some of my hypotheses and b) to more formally test additional assumptions associated with linear modeling. To test the proposed relationships in Hypotheses 1, 2, and 4, I conducted multiple linear regression tests to assess the presumed effect that experimental condition would have on final task performance (always controlling for baseline task performance) as well as on frustrated needs, attribution, and emotion variables. I included measures of individual differences as covariates: general positive and negative affect, attribution bias, sensitivity to interpersonal treatment, past incivility experience, and general attention control (henceforth I will refer to this collection of variables as model covariates or 'individual differences'). I also decided to add both perceived incivility and an interaction term between these ratings and the experimental condition

as predictors given what I observed in my assessment of variable relationships (see *Variable Relationships: Perceived Incivility*). For each model, I started by including all relevant and individual difference variables as predictors. The final models reported in Tables 5a-e are the most parsimonious ones that were not significantly different than the comprehensive models. The choice of final model was based on a likelihood ratio test for a univariate outcome or a multivariate analysis of variance for multivariate outcomes. Post-hoc power analysis indicated that even the largest models were powered to detect the effects found ($\beta > .80$; $R^2_{adjusted} > .08$).

In addition, because path modeling was unsuccessful due to lack of convergence, I carefully checked the key assumptions on which linear models rely. Specifically, for each model built and reported below, I checked for statistical independence of the error terms using a Durbin-Watson test (major violations occur when $p < .05$); constant variance, or homoscedasticity using the Breusch-Pagan test ($p < .05$) ; normality of residuals using a Shapiro-Wilk test ($p < .05$); linearity of relationships by plotting standardized residuals versus predicted values (Flatt & Jacobs, 2019).

Incivility and Task Performance. Condition was not a significant predictor of task performance ($\beta = 1.12$, $p = .24$), but perceived incivility was negatively related, and the interaction term was positive. These results suggest that perceptions of incivility have a negative effect on performance, *depending on* condition such that that only individuals in the neutral condition experienced a decline in performance whereas the opposite was true in the uncivil condition. Results of this model are reported in Table 5a. However, after checking the assumptions outlined at the beginning of this subsection *Alternative Hypothesis Testing*, this model was in violation of all four of them, leading me to conclude that, based on this model, the evidence is not reliable enough to draw direct conclusions about Hypothesis 1.

Incivility and Frustrated Needs. Hypothesis 2 proposed that experimental condition would be related to frustrated needs. These three needs were modeled as multivariate outcomes to control for Type 1 error rate (Tabachnik & Fidell, 2013). Experimental condition on its own was not a significant predictor of any of the three needs, but perceived incivility and the interaction term were for all three. Needs were more thwarted when perceived incivility was high, but that relationship appeared to hold only for those in the uncivil condition (see Table 5b.). The variables in these models explained more variability in thwarted relatedness than either autonomy or competence: $R^2_{adjusted}$ = .79, .25, and .17, respectively. The assumptions of homoscedasticity and linearity were violated across outcomes; normality was violated for relatedness and competence; independence was not violated. Although there appears to be support for Hypothesis 2, I would still interpret these results with caution because of these violations.

Incivility, Attribution, and Emotion. To test Hypothesis 4a, I looked at internal and external attribution as multivariate outcomes (see Table 5c). Condition was a significant predictor of both internal and external attributions, however: the regression coefficient for the internal model was positive whereas that for the external one was negative; the effect of incivility on attributions was positive and significant, but only for external attribution; the interaction term was negative and significant but only for internal attribution. A direct interpretation of this set of results is that, for internal attributions, individuals in the uncivil condition made stronger attributions than those in the neutral condition, but, for those in the neutral condition, the strength of their internal attributions was dependent on their incivility scores: higher incivility ratings were associated with stronger internal attribution for those in the neutral condition. For external attributions, incivility rating was associated with stronger attribution, and individuals in the

uncivil condition tended to make much stronger external attributions than those in the neutral. In these models, predictor variables explained over six times more variance in external attribution ratings than internal ($R^2_{adjusted}$ = .49 vs. .08).

Hypotheses 4b and 4c were that external attribution would predict anger and internal would predict guilt. The results of the post-hoc models tested are documented in Tables 5d and 5e. External attribution ratings were positively associated with state anger (e.g., frustrated, irritable) but not visceral anger (e.g., disgusted, scornful). Internal attributions were positively associated with guilt. Once again, though, these attribution and emotion models violated normality, linearity, and homoscedasticity assumptions, and therefore, I find the relationships to be more complicated than the linear hypotheses put forth in 4a-c. Group difference tests, however, suggest that there is evidence to claim that, on average, individuals in the uncivil condition made stronger attributions and experienced more intense negative emotions overall (Table 3c).

Linear Modeling Limitations. It is important to be careful about how the results of this series of linear post-hoc models are interpreted – if at all – given that these models violate multiple key assumptions of linear regression. There is a shocking dearth of reporting of assumption checking across psychological research, which begs the question of how much of it truly conforms to these requirements, given that results based on violated assumptions can be misleading (Flatt & Jacobs, 2019). For example, heteroscedastic data are likely to lead to biased test statistics and confidence intervals, inflating the risk of Type 1 errors, and non-normality of error terms can distort *p*-values and confidence intervals.

Although the original models and associated hypotheses proposed in this research were rooted in theory and variable relationships numerously supported by published empirical

research over the last two decades, the data collected in this particular study indicate that things may be more complex in this context. Many common analytical methods used for quantitative research in industrial/organizational psychology have historically been based on traditional regression techniques (e.g., ANOVA, path analysis, SEM, etc.), and reliable inference based on these modeling techniques requires that specific assumptions regarding relationships among variables and behavior of residuals be met. Although there are several ways of handling models that violate these assumptions, such as bootstrapping, robust estimation of standard errors, variable transformations, and non-linear modeling, sometimes the data are too complex to fully remediate the issue, especially without creating more obscurity in the results and their interpretation (Flatt & Jacobs, 2019).

Despite the linear modeling techniques anticipated in the Introduction (SEM/path analysis) being unachievable due to non-convergence, and post-hoc linear regression models violating key assumptions, the data collected in this research study still might help to either support or not support the theoretically specified models proposed if there was a more flexible and forgiving approach used to analyze them (Putka et al., 2018).

Exploring an Alternative Analytical Strategy. Regression-based techniques are typically used in the organizational sciences for prediction and theory testing, but there are now available more 'modern' techniques that also are valuable for prediction and providing support to theory, such as neural networks, deep learning, classification and regression trees (CART), and random forests (Oswald et al., 2020). These methods have become more well-known with the rise of Big Data but have not yet made their way into mainstream research in the field. There are a couple of reasons why these approaches are not common: they are not yet part of graduate

training curricula, and that there is a misconception that they are only suitable for very large datasets (Putka et al., 2018).

Gradient Boosting Machines (GBMs). Decision tree-based machine learning techniques like random forest regression do not rely on linear relationships between model variables but are designed to optimize prediction of the outcome given the data and the predictors. Given the complexity of the data, I chose to implement Gradient Boosting Machines (GBMs) as an alternative analytical approach to addressing the original hypotheses and research questions proposed. GBMs excel in predictive accuracy and can handle complex, non-linear relationships and interactions among predictors (Friedman, 2001).

GBMs create models by repetitive random sampling of the training data and subsets of predictors to assemble decision trees. The boosting algorithm examines the errors from prior predictions and builds a new decision tree that focuses specifically on correcting the errors made by the first guess. This new tree does not try to predict the final outcome directly. Instead, it aims to fix the mistakes of the previous step. This cycle of learning from errors continues as each new tree is added to the model, incrementally improving its accuracy by correcting the residual errors left by all previous trees. The final model represents a combination of all the individual trees that leverages strengths of more accurate trees and mitigates weaknesses of poorer performing trees. GBM also incorporates cross-validation to mitigate model over-fitting as well as better ensure generalizability to unseen data.

From these models, one can derive the proportion of variance the predictors explain in the outcome (R^2) when applied to the test data as well as the prediction error on the test data set (RMSR). At the predictor level, the model produces an estimate of how important each predictor is in influencing the outcome variable (Feature Importance or Relative Influence). Unlike a

regression weight, where there is an associated y-unit change in the outcome for every one-unit change in the predictor, *controlling for all other model variables*, Relative Influence reflects how much the predictor contributes to the outcome in terms of reducing error (i.e., amount of model improvement), given the set of predictors in the model. This technique is not amenable to addressing causal mediation head-on like linear modeling approaches do, but they do allow for examining the relative importance of hypothesized mediating variables in predicting the outcome of interest (e.g., task performance after exposure to the manipulation).

Therefore, I reframed the original hypotheses as post-hoc research questions (RQ) to fit this new analytical context accordingly. For each post-hoc RQ, I ran a GBM using the *gbm* package in R (Ridgway, 2024). The analytical procedure consisted of partitioning the dataset into training and testing subsets to facilitate model training and validation. This process randomly allocated 70% of the data to the training set and the remaining 30% to the testing set. The model was configured to use a Gaussian distribution, appropriate for regression tasks, and was set to build 1,500 trees with an interaction depth of two. The learning rate, or shrinkage, was set to .001 to balance the trade-off between model complexity and performance. To enhance the model's generalizability, I incorporated five-fold cross-validation during training. After training the model, I evaluated its performance using the testing dataset. Cross-validation results were used to determine the optimal number of trees for making predictions. The predictions on the test set were then compared to the actual values, allowing me to calculate the RMSR as a measure of predictive accuracy. I also calculated R^2 using the total sum of squares and the residual sum of squares.

Additionally, the GBM output consisted of a relative influence score for each predictor in a given model. These values were derived from the resulting amount of error reduction each time

a particular predictor is used in a splitting point of a tree. Individual contributions to error reduction across all trees in the model are then added and normalized to produce a proportion of overall influence in model improvement.

Following each post-hoc research question, I summarize the associated GBM results below (they are reported in full in Table 6). I computed models both with and without individual difference covariates and opted to report the models without them because the smaller models performed better (baseline task performance was the only exception and remained in the models predicting final task performance). One potential explanation for this might be that those specific variables did not correlate with task performance and added unnecessary noise instead of predictive value in the model (Molnar, 2020). In addition, because previous modeling indicated there were likely interaction effects, I explicitly added separate predictors for experimental condition, perceived incivility score, and the resulting interaction term (collectively referred to as 'incivility experience' in the reconceived research questions below). Post-hoc RQs were worded to reflect the GBMs' prerogative to optimize predictive accuracy.

H1 → post-hoc RQ – A. To what extent does incivility experience influence the prediction of task performance?

Model A approximates how incivility contributes to predicting task performance. The results show that, given this set of variables, baseline task performance contributes 95% to reducing prediction error, with perceived incivility score contributing 3.15 out of the remaining five percent (RMSR = 4.17, R^2 = .41).

H2 → post-hoc RQ – $B_{1:3}$. To what extent does incivility experience contribute to predicting feelings of thwarted competence (B_1), autonomy (B_2), and relatedness (B_3)?

These three models approximate the effect of incivility on each thwarted need. Incivility experience predicted thwarted relatedness more so than autonomy and competence (R^2 = .72, .24, .11, respectively), and the relative predictive accuracy of these models followed the same pattern (RMSR = .73, .96, 1.01). Compared to experimental condition and the interaction term, perceived incivility did the lion's share of the work in optimizing prediction accuracy. Relative influence looked slightly different for thwarted competence, for which experimental condition and the interaction played a more important role.

H3 → post-hoc RQ – $C_{1:4}$. To what extent does incivility experience, as well as participants' reported thwarting of competence, autonomy, and relatedness needs contribute to predicting task performance?

I ran multiple models to address this question, one with incivility experience and thwarted competence only (C_1), another with incivility experience and autonomy only (C_2), a third with incivility experience and relatedness only (C_3), and a fourth with all three thwarted needs in the same model (C_4). RMSR and R^2 metrics produced by the models were comparable to one another as well as that produced to address post-hoc RQ A. Among these models, baseline task performance contributed the least when all incivility and thwarted needs variables were included (C_4: 92.7%). The remaining proportion of error reduction was influenced by perceived incivility score (2.2%) followed by autonomy, relatedness, and competence (1.8, 1.5, 1.5 percent respectively).

H4a → post-hoc RQ – $D_{1:2}$. To what extent does incivility experience contribute to predicting external (D_1) and internal (D_2) attributions?

Incivility predictors explained more variability in external (R^2 = .39) than internal attribution (R^2 = .11), but both models were comparable in prediction error (RMSR ≈ .9). In both

models, perceived incivility score contributed the most to reducing error but was more dominant in predicting external attribution (96.2%) than internal attribution (80.6%), for which outcome the interaction term contributed 17.0%.

H4b → post-hoc RQ – D_3. To what extent does incivility experience along with external attribution contribute to predicting anger?

H4c → post-hoc RQ – D_4. To what extent does incivility experience along with internal attribution contribute to predicting guilt?

Incivility experience and external attribution explained 26.8% of variability in anger. However, incivility scores and the interaction term did most of the work in influencing prediction accuracy (combined contribution of 94.7%) leaving only 5.2% to external attribution. In contrast, internal attribution was more influential in predicting guilt (41.4%) than external attribution was in predicting anger, despite the model R^2 being lower (.18).

RQ1 → post-hoc RQ – $E_{1:2}$: To what extent does incivility experience, as well as participants' reported attributions and emotions, predict task performance: when external attribution and anger (E_1) are both added as predictors and then when internal attribution and guilt (E_2) are added?

Attribution and emotion were stronger predictors than incivility experience in predicting task performance: external attribution and anger had a combined relative influence score of 6.5 compared to 2.5 across incivility variables; internal attribution and guilt had a combined score of 4.8 compared to 2.7 contributed by incivility variables. Model error and R^2 values were similar to models addressing RQs A and C.

RQ2 → post-hoc RQ – F. To what extent does incivility experience, as well as participants' reported thwarted needs, attributions and emotions, contribute to predicting task performance?

This last model consisted of all incivility, thwarted needs, attribution, and emotion variables. Discounting baseline task performance, predictors' relative influence scores summed to 11.5%. Among them, external attribution was most influential (3.12), followed by internal attribution (1.81), anger (1.38), perceived incivility (1.33), and guilt (1.26). Despite including all predictors, model performance got slightly worse compared to the other models predicting task performance. One reason for this could be that the additional predictors really do not have a meaningful relationship with the outcome variable and therefore just add noise to the model (Molnar, 2020).

In addition to considering the relative influence of predictors on the outcome, it is important to examine the shape and direction of the predictor-outcome relationships given linearity is not assumed. Partial dependency plots (PDPs) extracted from each model are reported in Supplemental A, and relevant dependencies are referenced in the discussion. These plots depict the marginal effect of a predictor on the outcome given the model (Friedman, 2001). When predictors are not correlated, PDPs show change in the predicted outcome at different levels of the predictor (Molnar, 2020).

DISCUSSION

The purpose of the current study was to test attribution theory and self-determination theory to advance understanding of mechanisms that explain the near ubiquitous empirical support for the negative relationship between e-mail incivility and task performance in work contexts. Moreover, I proposed that these explanations were rooted in cognitive processes related to attentional resource allocation and control when incivility exposure was followed proximally by a heavily cognitive task.

Summary & Interpretation of Results

Results largely did not align with findings from prior research. Neither exposure to incivility via the experimental manipulation nor reported incivility ratings were related to actual task performance, subjective task performance, or task demand. Rather, this work suggests that the relationship between incivility and subsequent task performance is more complex and nuanced compared to how it has been discussed in past research.

Task performance scores, on average, did not differ by experimental condition. On the other hand, mean incivility ratings did vary greatly by experimental condition, as did scores on measures of attribution, emotion, and thwarted needs, suggesting that individuals in the uncivil condition judged the e-mail to be more uncivil than individuals in the neutral condition and reacted more strongly to the e-mail and e-mail sender. However, these differences in evaluation and appraisal did not translate to variability in task performance as expected.

The relationships between variables of interest helped illuminate some subtle differences in participants' experiences between and within experimental conditions, even if interpretations

that extrapolate a direct linear relationship are inappropriate. Correlation coefficients pointed to a counter-intuitive interaction between perceived incivility and condition assignment such that, in the neutral condition, the relationship between incivility perception and performance was negative, but in the uncivil condition, it was positive. This discrepancy might reflect that each of the two experimental conditions created a unique experience for participants such that the degree of incivility detected had a different type of effect depending on whether the e-mail was intended to be neutral (was ambiguous) or not. For instance, within the uncivil condition, more incivility perceived was positively associated with blaming the e-mail sender for the behavior and higher levels of reported anger but was negatively associated with self-blame and guilt. In contrast, incivility ratings for participants in the neutral condition were positively related to both types of attribution and emotional states. This distinction might reflect that when incivility is clearly and strongly present, there is little doubt about who might be responsible. However, when the message is neutral or not uncivil, the attribution about the cause of the behavior is a bit more difficult to determine, albeit more subtle.

Investigation of interaction effects between incivility score and condition corroborated that perceived incivility was associated with poorer task performance after the exposure, but this relationship depended on the condition such that the negative relationship only emerged in the neutral condition and not in the uncivil one, where it was actually positive: in the neutral condition, perceiving more incivility was associated with lower task scores and in the uncivil condition, perceiving more incivility was associated with higher task scores. The interaction explained more variability in task performance after accounting for baseline performance, experimental condition, and incivility score alone. The significance and direction of incivility

and the incivility-condition interaction variables did not change even after controlling for individual differences, thwarted needs, attribution, and emotion.

Given the complexity of the relationships between the key variables of interest in this study, it was not possible to estimate the planned structural equation or path models to test linear direct and indirect effects. Instead, I estimated gradient boosting machine models on a post-hoc basis to examine how incivility, thwarted needs, attribution and emotion predicted task performance. Unsurprisingly, baseline task performance was by far the most influential predictor of task performance post-manipulation. Incivility exposure and perception of incivility on their own contributed less than 5% to predicting performance, and only 1.5% after hypothesized mediators were added as predictors, indicating that incivility experience alone is unlikely a detriment to immediate objective task performance. It is worth noting, however, that partial dependency plots (Supplement A) for these models point to a slight negative trend between perceived incivility and performance and a slight positive trend between the interaction of incivility perceived with condition and performance. These results are analogous to the results of linear modeling without implying a statistically significant moderated linear relationship.

The way in which hypothesized mediating variables predicted task performance was highly variable. Partial dependencies of thwarted needs on task performance indicate that the influence of undermined needs in predicting task performance might vary depending on the type of need. Thwarted competence looks to have a negative effect on performance, but only up to a certain point. This aligns with related empirical research on competence frustration, which proposed that after competence was undermined in one activity, intrinsic motivation to perform in a different activity was curvilinearly related to thwarted competence such that motivation declined as frustrated competence increased until its median value, after which the relationship

inflected and became positive (Fang et al., 2017). Thwarted autonomy and relatedness appear to predict performance in a different way: frustrated autonomy spurs greater performance at scores below the median and then plateaus, whereas higher levels of frustrated relatedness predict better performance. That said, these observations do not warrant an outright interpretation at this point because of the limited influence of these variables as predictors and the restricted range of the outcome variable.

Similar caution should be taken in drawing conclusions about attribution-emotion predictions of task performance. External attribution and anger were twice as influential in predicting performance as incivility experience, but it is difficult to tell why or how, as stronger external attributions appear to predict better performance, but higher anger levels predict lower task performance scores. Given the strong positive correlation between external attribution and anger, further research would be necessary to assess if and how attribution and emotion work together or separately as opposed to sequentially mediating a relationship between incivility and performance. The influence of internal attribution and guilt is similarly complex, but the observed pattern is that even low levels of guilt predict worse performance, and that either very high or very low levels of internal attribution reflect lower task scores.

When thwarted needs and attribution-emotion variables were treated as outcomes, there was evidence that incivility predicted some much better than others. For example, incivility was quite good at predicting thwarted relatedness such that, independent of condition, there appeared to be a positive linear relationship between perceived incivility and frustrated relatedness, and this is one of the few examples where a true linear relationship might be acceptable given the PDP: less perceived incivility predicts less thwarted relatedness, and as perceptions of incivility increase, thwarted relatedness does as well. Incivility did not do as well at predicting thwarted

competence, although the predictor-outcome relationship was quite interesting. PDPs suggest that perceived incivility positively predicts frustrated competence at lower levels of incivility, but as soon as incivility scores exceed their median value, the relationship changes direction, which is in line with the Fang and colleagues (2017) results described above.

Another interesting observation is the relationship between types of attribution and specific thwarted needs. External attribution was strongly and positively related to thwarted relatedness but not thwarted competence, and internal attribution was strongly and positively related to thwarted competence but only moderately to thwarted relatedness. This is consistent with attribution theory given that relatedness perceptions involve more outward direction than assessments of competence, which are more decidedly directed at the self (I feel like the relationship with my colleague is superficial vs. I feel insecure about my abilities). Additional research might explore more directly if and how type of attribution and undermined needs interact to impact performance.

Collectively, observations based on the patterns in these data suggest that, although exposure to incivility did not directly impair task performance in a consistent linear fashion, perceived incivility under different conditions seems to produce varying cognitive, motivational and emotional reactions that likely interact in ways that influence variability in performance. For example, attributing the cause of uncivil behavior to the other person and judging the relationship with that person to be superficial and cold might work together to motivate performance. Detecting subtle or ambiguous rudeness and attributing the cause of it to one's own deficiencies could undermine competence and damage performance, but, when that rudeness becomes blatant, those reactions could actually predict better performance. Despite the complexity of the variable relationships in the data and not being able to test causal mediation

outright, these results do offer some new insights regarding how incivility experiences may or may not influence performance.

Possible Explanations for a Null Incivility-Performance Relationship

Results of this study suggest that viewing incivility and performance through a cognitive resource-depletion lens alone is not adequate for understanding the relationship between the two constructs. That is, these data were inconsistent with the perspective that uncivil interactions consistently act to deplete cognitive resources or redirect them away from performance is met with some contradiction. Furthermore, the absence of performance decrements across conditions implies that more intricate mechanisms and individual differences are involved. Without dismissing the contribution of resource depletion theories (e.g., Giumetti et al., 2013) and stress appraisal frameworks (e.g., Bunk & Magley, 2013) in explaining how people react to uncivil experiences, the current research implies that past studies demonstrating that task performance after incivility exposure suffers due to distress and resource depletion could be overlooking other phenomena involved.

The unexpected finding that incivility may, in some cases, enhance performance highlights the need to reconsider the appraisal process in this context. For example, evaluating incivility as a challenge might fuel motivation to prove competence and drive individuals to focus more intensely on tasks, redirecting cognitive resources in ways that enhance performance temporarily. Indeed, rivalry and competitive situations have been shown to improve effort-based performance after enduring 'trash-talking' from another person (Yip et al., 2018). Also, perceiving incivility as a challenge as opposed to threat could influence whether future performance is productive or counterproductive, depending on an individual's core self-evaluation (Lu et al., 2023), and mistreatment in general may elicit a dual process, each with

different implications for how an individual copes in response to such mistreatment (Michalak et al., 2017).

Alternatively, perceptions of incivility as a threat might provoke a physiological stress reaction (Cortina et al., 2022), such as increased heart rate (Scisco et al., 2019), and a fight or flight response. The heightened vigilance that accompanies such a response could potentially lead individuals to redistribute cognitive resources to prioritize meeting immediate task demands (Hockey, 1997). Heightened vigilance following exposure to incivility as a threat would lend some support to the proposal that attention plays a critical role in how reactions to incivility affect performance.

Another point to discuss is whether the research design succeeded in creating adequate motive and opportunity for the participant to engage in off-task allocation of attentional resources, as proposed in the Introduction. It is possible that the combination of a hypothetical vignette and a brief, fast-paced task unrelated to the vignette did not create conditions optimal for either intentional or unintentional mind-wandering given that the experimental interaction was with a hypothetical person and participants had no need to contemplate relationship maintenance as a result of the e-mail exchange. Thus, they likely had little reason to deliberately allocate attention off-task to ruminate on the incivility. Similarly, knowing that there would be no consequences for their response to the hypothetical sender may diminish the likelihood for unintentional mind-wandering as a result of perceived incivility. Also, the task was designed such that participants could not stop or pause the task once it had begun – it lasted five minutes from start to finish and auto-advanced on a timer such that there was minimal opportunity for off-task attention (at least as opposed to untimed, less tightly structured tasks). This does not eliminate the possibility of mind-wandering, nor that it is meritless to reference attention

frameworks in the search to better understand how incivility impacts performance, but the results of this study specifically did not support a direct link between incivility and task performance necessary to infer a potential attentional disadvantage to those in the uncivil condition.

It is reasonable that individual differences related to working memory capacity and intrinsic motivation played a role in performance variability in this research. Individuals with lower working memory capacity tend to engage more in mind-wandering, which is associated with poorer performance (Randall et al., 2014). Moreover, Brosowsky and colleagues (2023) found that motivation plays a key role in moderating the effects of mind-wandering and performance such that individuals with higher intrinsic motivation are better insulated from the negative effects of mind-wandering on performance.

There are also some methodological reasons why the results of this study diverge from the literature. Compared to past experiments examining the incivility-performance relationship, the methods employed here deviate in several ways (see Tables 7a-c). For instance, the majority of the seminal studies in this area sampled undergraduate students at American universities whereas the current sample was derived from a diverse population of working adults. It is possible that adults with real-world experience in the workforce have developed better coping mechanisms in the face of such interactions.

In addition, sample sizes in previous studies were much smaller than that used in this research, which lends doubt to their power to detect the effects found. As an example, Giumetti and colleagues (2013) conducted a *t*-test to determine if the difference in number of correctly solved math problems between their uncivil condition and supportive condition was statistically significant, and they reported that indeed it was, $d = -.27$. However, the power for a *t*-test conducted with their sample size of 84 students and alpha level set to .05 is $\beta = .23$. Even

McCarthy and colleagues (2020), who sampled 254 students, achieved post-hoc power levels of only .54. Given that low power can inflate effect sizes and increase the chance of finding spurious statistical significance, it is possible that the results are not as reliable as implied by the authors' conclusions. The size of the sample in this study would have had a .74 and .77 power to detect the effect sizes in each of those two studies, respectively.

It is also worth discussing the various ways that both incivility and performance are operationalized. First, aside from the fact that frequently cited experimental studies have not used the same type of task employed in this research, it is noteworthy that none reported measuring or statistically controlling for participants' baseline performance. By accounting for the influence of baseline performance capabilities prior to experimental manipulation, the unique variability in performance leftover post-manipulation was a much smaller portion of the total.

There is also a wealth of correlational studies that provide substantial evidence that experiencing incivility is directly and negatively related to performance-related outcomes. These studies typically use various subjective measures to tap past incivility experience as well as performance. For those that use self-report measures of performance, it is possible that, by reflecting on uncivil experiences, any negativity elicited by this process could be more globally and widely attributed to performance as well, such that these scores are then underestimated for individuals who have a more frequent or severe history of incivility.

Finally, it is worth noting the file drawer phenomenon and publication bias. It is not outrageous to claim that the body of published literature on this topic could be influenced by researchers taking additional degrees of freedom to attain desired results or by journal editors who prefer to publish studies with confirmatory findings (Yarkoni & Westfall, 2017). That said, I will acknowledge the limitations of the current research as well.

Study Limitations

One potential concern in this research relates to method bias and the reliance on self-report measures in response to a single vignette in a between-persons design. This subjective approach strengthens the internal validity of the study by allowing participants to report their own perceptions, which is aligned with the definition of incivility: that mistreatment manifests because an individual perceives incivility (Andersson & Pearson, 1999). However, self-reporting and making judgments in a hypothetical scenario may not reveal the true nature of the effects: social presence theory supports that a simulated scenario such as the ones presented in the study would lead to an attenuation effect on any interaction because it is difficult to imagine that one is dealing with a 'real person' (Short et al., 1976). In addition, participants might be psychologically invested or impacted by the vignette differently than if confronted with the same situation in reality. For instance, affective forecasting in a hypothetical circumstance tends to be over-estimated and the distal nature of hypotheticals tends to lead people to process information at a high level – abstractly, as opposed to concretely (Danziger et al., 2012; Wilson & Gilbert, 2005).

In addition, the vignette methodology used in this study lacked contextual factors that might exist in the real world, such as information about the e-mail sender, familiarity or relationship with the e-mail sender, or workplace cultural norms, which my influence one's real experiences but will likely be less evident or considered in such a brief hypothetical encounter. Although steps were taken to make the experience as contextually rich, relatable, and real as possible including pretesting materials, displaying the vignette in a typical e-mail message window on a computer screen, and asking the participants to craft a response to the e-mail (asking for them to provide a behavioral response before evaluating their experience), and

including control variables, there is still room to question the extent to which the design was ecologically valid.

Another limitation is that data on all key variables were collected at the same time point, which may have increased common method bias (Podsakoff et al., 2012). In regard to collecting variables of interest in the same survey, the study procedure was sequenced and timed to best reflect the experience of incivility as a daily hassle that disrupts performance. The activities within the survey were presented in an order that ought to have represented how an, albeit brief, daily hassle like this might unfold: uncivil interaction (antecedent), followed by cognitive, motivational, and attributional-emotional processes (mediators), followed by performing a task (outcome). Additionally, the measures of the antecedent and outcome variables required very different cognitive exercises and therefore might be judged as psychologically separate.

There are also some qualifications to make regarding using the operation-span task as measuring working memory as indicator of task performance. First, working memory is multidimensional, and therefore it is not ideal to measure the whole construct with a single task (Unsworth et al., 2021), despite that using a single measure of working memory has been proposed as an acceptable starting point in the past (e.g., Prasad, 2019). Additionally, choosing a working memory task as indicator of task performance, although sensible in the context of the proposed cognitive resource lens, prohibits generalizing results to other performance domains, especially those that are not as heavily cognitive in nature (i.e., adaptive performance, creative performance, helping behaviors, etc.). Relatedly, the requirement to be uninterrupted, concentrated, and effortful for the period of time required to complete the task could have been overly burdensome to participants and might have contributed to their choice to participate at all.

Moreover, by not tying a reward directly to performance on the task, participants may have lacked a proper incentive to finish it or try their very best.

Another way the criterion of interest may have been deficient is that it did not explicitly reflect resource depletion or attentional resource misallocation. Cognitive resources, such as memory, attention, and processing capacity, are finite, but this research only indirectly measured resource depletion by expecting task score variability to be that indicator. Although I included some subjective measures such as items from the NASA Task Load Index (Hart, 2006) and attention control (Diehl et al., 2006; Schwarzer et al., 1999), I might have considered alternative measures that tapped constructs of energy, fatigue, or self-regulation. Objectively, I might have considered a task in which performance was based on either reaction time or interference inhibition (e.g., Stroop tasks).

In addition, considering task performance as an aggregate of performance across 36 trials may have obscured patterns of performance decline or fluctuation related to incivility across the course of the task. Examining trial-by-trial data or segmenting performance into early, middle, and late phases could reveal whether individuals initially resist the disruptive influence of incivility but succumb to its effects as their regulatory resources become depleted.

It is also a possibility that the uncivil and neutral conditions themselves were misconceived. It could be that the uncivil e-mail actually bordered on abusive supervision or aggression and instead it was the e-mail labeled as neutral and intended to be polite that was really the uncivil one, given the definition of incivility: neutral on its face, where the intent by the sender to harm is ambiguous (Andersson & Pearson, 1999). Because incivility is so perception-dependent, it may be that pure experimental incivility studies with random assignment are not even possible. Instead, it might be the case that, if we want to take a group

comparison approach, we have to study incivility using quasi-experimental designs such that the population is divided post-hoc based on their perceptions of incivility in reaction to stimuli solely intended to be neutral.

Lastly, it is always a possibility that critical individual differences were not taken into account in this study. For example, differences in feedback responses could have played a role in how participants reacted to the e-mail and scenario in the vignette. Feedback that is perceived as overly critical or lacking in constructive content could be conflated with incivility, and one's feedback orientation might factor into how individuals react to perceptions of incivility as well. For instance, individuals who score higher in social awareness feedback orientation and use feedback as a way to increase awareness of themselves and others might be more receptive to using the message content to understand the relationship and how others view them, as opposed to someone who is defensively oriented and reacts to feedback in a way that mitigates its emotional impact (Linderbaum & Levy, 2010). Notwithstanding these limitations, the current research makes several contributions to research and practice.

Implications for Theory & Research

This study sought to add to the development of a more integrated theoretical framework within the mistreatment literature (Yang et al., 2023). Specifically, the study was designed to help explain a fundamental relationship repeatedly supported, namely that between incivility exposure and performance. The development of good theory requires modeling mechanisms that explain relationships and testing mediation within this experimental design would have allowed for that (Whetten, 1989). Unfortunately, the data did not support the requisite hypothesis, as neither experimental condition nor perceived incivility was significantly related to any of the

performance measures (objective task performance, subjective performance, task demand). That said, this work still adds value to both attribution and self-determination theory literatures.

Attribution Theory

In this study, attributional dimensions, particularly locus of causality, were examined to assess how participants assigned blame for the incivility they experienced. The findings support attribution theory to the extent that both deliberate exposure to incivility and perceived incivility were associated with a strong inclination to designate a locus of causality for such a violation of norms. In addition, external attributions, where blame is placed on others, were associated with heightened anger, a specific emotional response directed outward. Internal attributions, where blame is directed inward, on the other hand, were linked to feelings of guilt. There was also a stronger inclination to make external than internal attributions independent of condition.

The original hypotheses posed both external and internal attributional processes as resource depleting in different ways and therefore that stronger attributions in general would facilitate poorer performance (Garcia et al., 2019; Schilpzand et al., 2016). This was not the case, in fact, the only relationship attribution-emotion variables had with performance was that, in the uncivil condition, more blame directed at the perpetrator was related to *better* performance. The results of this study provide nuanced insights into attribution theory by demonstrating how individuals process workplace incivility and the assignment of blame. When incivility was clearly present, participants in the uncivil condition exhibited a tendency to externalize blame, which correlated with heightened anger but unexpectedly coincided with improved task performance. This finding suggests that external attributions in this context may serve an adaptive function, potentially one that is energizing, enabling participants to direct their heightened response to the incivility toward task-focused efforts.

In contrast, participants in the neutral condition who nevertheless perceived some amount of incivility reported higher levels of self-blame, which correlated with increased feelings of guilt. These internal attributions may reflect a rumination process that diverts attentional resources away from task performance, supporting the notion that internal attributions can be resource-depleting (Schilpzand et al., 2016). The difference in attribution loci between conditions highlights that the clarity or ambiguity of incivility could influence how assigning blame could either disrupt or facilitate task performance. The findings in this research illustrate how the locus of causality might interact with contextual factors (e.g., the explicitness of incivility) to shape emotional and behavioral outcomes. This contributes to attribution theory by emphasizing the importance of situational nuances in determining the adaptive or maladaptive effects of attributional processes.

Self-Determination Theory

This research also examined motivational responses to incivility, specifically within the framework of self-determination theory (SDT: Deci & Ryan, 2000). Accordingly, I hypothesized that an uncivil interaction would undercut one's fundamental needs for competence, autonomy, and relatedness. Consistent with SDT, experienced incivility strongly undermined participants' sense of relatedness, reflecting a diminished sense of authentic connection with the e-mail sender. The relationships between incivility exposure and thwarted autonomy and competence were moderate overall, however, experimental condition again seemed to play a role in creating contextual dependencies even though moderation was not tested directly. For example, in the uncivil condition, although average scores on each of the three thwarted needs were greater than they were in the neutral condition, the relationships between perceived incivility and thwarted autonomy and competence were close to null. In contrast, these relationships were robustly

positive in the neutral condition. In addition, undermined needs played a negligible role in predicting task performance. This is inconsistent with the hypothesis that frustrated needs would prompt individuals to direct their attention to relevant need restorative cues rather than on their task at hand (Baumeister & Leary, 1995).

The absence of a relationship between undermined needs and task performance suggests that need frustration may not directly translate to negative performance outcomes. In terms of participants' subjective assessment, however, within the uncivil condition, the relationship between each thwarted need and subjective performance was close to zero, but in the neutral condition, these relationships were all negative and significant. Additionally, the negligible role of thwarted needs in predicting task performance challenges the assumption that need-thwarting automatically translates to performance decrements. These insights contribute to SDT by underscoring the complexity of how need frustration manifests in behavioral outcomes, emphasizing that context and the explicitness of mistreatment could play critical roles in shaping motivational and performance-related responses.

The findings from this study add nuance to our understanding of self-determination theory in the context of workplace mistreatment. One possible explanation for the differential impacts of incivility on psychological needs lies in the clarity of the mistreatment and an interaction with attributions. It could be that explicit mistreatment is easier to attribute externally, preserving a sense of self-efficacy and thereby also preserving feelings of competence and autonomy. Conversely, in the neutral condition, where rudeness was unintended and therefore more ambiguous, participants may have engaged in more extensive processing to interpret the interaction, which likely amplified their sense of threat to autonomy and competence. Moreover, these perceived threats were related to underestimating their performance subjectively, if not

actually impacting it objectively. These relationships suggest that undermining needs negatively skews self-evaluation but does not necessarily detract cognitive resources necessary to optimally engage in performing a task. These findings offer an opportunity to explore the effects of ambiguity in mistreatment in particular and how that aspect uniquely affects how individuals respond motivationally.

Incivility Research

This research also adds to the incivility literature, especially in reinforcing the key components of its definition: low-intensity, ambiguous in intent to harm (Andersson & Pearson, 1999), and neutral on its face (Cortina et al., 2013). Results point to participants having very different experiences in each of the two experimental conditions. Although individuals in the neutral condition reported less incivility on average, low to moderate levels of rudeness perceived were negatively related to task performance, subjective performance, and mental effort and positively related to self-blame, guilt, and undermining of competence and autonomy whereas, in the uncivil condition, high levels of reported rudeness were not related to any of those variables.

Subtle rudeness may, in fact, potentially have as much or more of a detrimental impact than more overt negative interactions. It could be that it is the ambiguity itself that triggers cognitive rumination as individuals attempt to decipher whether the interaction was deliberate, how to respond, and what the implications might be (McCarthy et al., 2014). That characteristic in particular could be the source of the additional cognitive processing that challenges performance, as prior research has documented. In contrast, overtly egregious interactions, while harmful, are easier to make sense of and externalize. When rudeness is explicit, recipients are more likely to attribute blame externally, ascribing the behavior to the perpetrator rather than

themselves. This externalization may serve as a psychological buffer, allowing individuals to preserve their self-concept and mitigate the negative impact on their sense of competence and autonomy (Kabat-Farr et al., 2018). This study highlights the importance of recognizing and addressing the unique challenges posed by incivility, which, due to its ambiguity, may elicit deeper cognitive and emotional responses than overt rudeness.

In addition, this research makes methodological contributions to the incivility literature. First, to my knowledge no experimental incivility study has been administered outside of a university lab or very specific field-setting. Participants in this study were recruited from a diverse sample of working adults, which is more representative of the workforce than either undergraduate students or individuals in a narrow specialty field (e.g., anesthesiology residents: Katz et al., 2019). Also, the operationalization of task performance has typically been self-report, supervisor-report, or based on performance on an anagram task. This research evaluated objective task performance using a working memory task from cognitive psychology and moreover controlled for individual baseline performance, which other studies have not reported doing.

From an analytical perspective, unlike many published studies (Flatt & Jacobs, 2019), assumption checking was conducted and reported, which prompted post-hoc investigations and analyses that could more flexibly handle the data. To my knowledge, no prior studies have used a machine learning strategy like a gradient boosting algorithm to examine to what extent incivility experiences contribute to predicting performance. The results reported in this research should motivate some additional scrutiny of the methods and analytical strategies of past studies claiming support for the negative impact of incivility on performance, especially in terms of statistical power and regression assumptions.

Practical Implications

Although the findings based on this research are complex, there is no practical (nor decent) scenario in which organizations should not want to prevent and intervene on incivility. E-mail is uniquely positioned as a potential conduit for incivility due to its lack of non-verbal cues, and therefore, employees should be trained on how to avoid and respond to those behaviors. Training programs should educate employees on the importance of crafting clear, respectful e-mails and providing guidelines on avoiding ambiguous language that could be misinterpreted as uncivil. For instance, drawing on the Civility, Respect, and Engagement at Work (CREW) program, which has been effective in reducing incivility and increasing self-efficacy (Leiter et al., 2011), organizations can incorporate tailored components focused on e-mail communication. CREW is aimed specifically at the workgroup level, and the exact program is customized for an individual organization and each participating workgroup within it. The intervention involves devoting time to regularly scheduled, facilitated meetings during which individuals within workgroups can openly discuss civility with one another, and the trained facilitators also provide individual support and guidance to workgroup members over the duration of the intervention.

Given the strong reliance upon electronic communication in the workplace, organizations might consider implementing programs specifically targeted at virtual teams. These programs can include training on media richness theory to help employees discern when e-mail is an appropriate medium and how to structure messages to maximize clarity and effectiveness (Jackson et al., 2006). Such programs can also teach best practices for managing e-mail volume and response expectations, thus hopefully preventing or reducing stressors that can be associated with e-mail communication.

There is also a need to emphasize strategies for interpreting e-mails cautiously and to equip employees with coping strategies for dealing with incivility when it happens. For instance, encouraging recipients to consider context and avoid making negative assumptions about sender intent. Examples of such strategies might include teaching employees to reread e-mails before reacting emotionally and/or focusing on the content rather than tone in order to assess the sender's intent more accurately (Byron, 2008). Another approach might be to foster a climate in which seeking clarification through follow-up questions or phone calls when an e-mail appears ambiguous or emotionally charged is valued. This type of response aligns with the principles of media richness theory because it creates an opportunity to integrate additional contextual cues into the conversation and enhance the clarity and depth of information being exchanged (Jackson et al., 2006).

Other types of individual-level interventions that might also help in this space include those that bolster employee resilience and self-regulation. Stress management workshops, mentoring programs, or training incorporating mindfulness techniques could help employees pause and regulate their emotional responses before replying to e-mails, furthering a more measured and constructive communication style (Glomb et al., 2011). Also, recognizing that susceptibility to incivility is not uniform underscores the need for flexible organizational policies and practices (e.g., offering employee assistance programs or tailored professional development) rather than one-size-fits-all approaches.

This study’s findings suggest that incivility does not necessarily lead to performance declines, at least in a subsequent cognitively-oriented task unrelated to the uncivil interaction. Based on this observation, it might be worthwhile to recommend task-switching as an effective strategy for buffering potential negative performance consequences by allowing individuals to

switch away from a task that is linked to an uncivil interaction and instead focus on other tasks that could even help to restore a sense of control and accomplishment. This suggestion also highlights possible benefits of job design (Parker et al., 2017), such as providing employees with autonomy so that they can determine when and how to perform various tasks may be beneficial. Similarly, job crafting, in which employees can modify their job to better fit their strengths and preferences.

Dos and Don'ts in Workplace E-mail

There are some strategies people can use to minimize the likelihood that someone perceives their e-mail to be uncivil. Tonal uncivil features of e-mail to avoid include bitter frustration, impatience, irony, mocking, threat, vulgarity, and blatant name-calling (Ferreira et al., 2021). Incivility is typically detected in e-mails with derogatory remarks, uncooperative language, pejorative words, and emotional undertones (Papacharissi, 2004). Incorrect use of capitalization, especially in business e-mail, can be perceived negatively, typically as a sign of anger and potentially as yelling (Byron & Baldridge, 2007). Messages that might spark conflict tend to contain 'flames,' which, in addition to writing in all capital letters, could come in the form of excessive punctuation, such as overuse of exclamation points or question marks (as well as multiple of any form of punctuation at the end of a sentence) and potentially any use of an acronym (e.g., ASAP) (Turnage, 2007).

While being wary to avoid being uncivil, conversely, there are ways to promote civility and politeness in e-mail. Using greetings and closings is a good way to acknowledge the e-mail recipient directly. There is empirical support that such formalities reflect more open and friendly relationships (Waldvogel, 2007). Inserting emoticons appropriately in e-mail can be a good strategy to project positivity and politeness, although users should exercise discretion when using

graphics in the workplace (Kavanagh, 2016). Even writing with common niceties such as 'please' and 'thank you' can aid in creating a more amicable digital interaction (Turnage, 2007). The perception of incivility can at times be out of an individual's control, as it exists in the 'eye of the beholder' (Andersson & Pearson, 1999), but the above practical recommendations may help curtail the occurrence of those negative perceptions. By addressing both the prevention of e-mail incivility and equipping employees with tools to manage its effects, organizations can foster a more respectful and productive work environment.

Future Directions

Future research should prioritize field studies and simulations to deepen our understanding of how incivility influences job-related task performance in real-world settings. Unlike laboratory experiments, which often focus on controlled environments, field studies can capture the complexity of workplace dynamics and provide richer insights into how incivility manifests in various contexts. For example, Katz and colleagues (2019) studied anesthesiology residents during a simulated surgery where performance was measured using behaviorally anchored rating scales for the technical and non-technical competencies directly tied to the actual job. This type of measure is a better reflection of the multidimensional performance that occurs in the workplace.

Moreover, expanding the range of performance measures to include creative problem-solving, teamwork, and other performative outcomes could elucidate the broader implications of incivility on performance at various levels. It could also be that different types of performance beyond job performance, such as Organizational Citizenship Behaviors and Counterproductive Work Behaviors could illuminate incivility's broader organizational impact. There is evidence that incivility might diminish helpful and collaborative behaviors (Taylor et al., 2012) and foster

retaliatory or undermining actions (Penney & Spector, 2005). Studying a diverse set of behavioral indicators could yield a more holistic understanding of how incivility shapes both individual and collective performance.

From a cognitive task performance perspective, future studies should incorporate more direct measures of cognitive resource depletion, such as vigilance tasks that assess reaction times, or physiological markers. Tracking real-time attentional shifts through eye-tracking technology or neurophysiological data (e.g., EEG) could shed light on if, when, and how strongly, incivility diverts attentional resources away from primary tasks.

In order to better understand the cognitive processes related to various types of performance in the wake of workplace mistreatment, industrial/organizational psychologists should do more interdisciplinary research with cognitive psychologists. This collaboration might offer valuable perspectives on the interplay between subjective experiences and objective performance. Cognitive psychology has important expertise in studying immediate, automatic reactions to stimuli as well as deliberation and cognition that should complement the work done in industrial/organizational psychology. By integrating the two perspectives and knowledge, researchers can better understand how employees process and respond to incivility in the moments immediately following the incident as well as how they reflect on such experiences over time. Such interdisciplinary work could also investigate how interventions targeting cognitive appraisals, such as reframing exercises, impact both immediate and long-term responses to incivility.

Further research could also examine the long-term effects of incivility on performance outcomes specifically. Longitudinal studies would provide more insight into the impact of incivility on individual and even organization performance over time. Furthermore, investigating

the timing and frequency of incivility incidents might reveal critical points at which interventions could be optimally effective.

In addition, there is still room to explore how cultural and individual differences shape perceptions and reactions to incivility. Cross-cultural studies could examine whether the thresholds for what is considered uncivil differ by cultural norms, particularly in high-context versus low-context communication cultures (Hall, 1976). Understanding these variations could inform tailored interventions to address the diverse needs of employees in multicultural and multinational organizations.

Advancements in analytical techniques, particularly machine learning, offer exciting opportunities to refine our understanding of incivility's impact. Future studies should explore the use of algorithms like gradient boosting to model the relationships between incivility, responses, and performance outcomes for the purposes of prediction. Comparative analyses of these methods with traditional ones would highlight their relative strengths and weaknesses, providing insights into how model parameters influence predictive accuracy as opposed to explanatory power. Yarkoni and Westfall's (2017) discussion on balancing explanation versus prediction underscores the value of integrating these approaches to build robust and interpretable models.

Finally, given the rise of using large language models (LLMs), chatbots, and other forms of automated communication tools in workplaces, future research could examine how these technologies influence perceptions of incivility (Wang et al., 2023). Studies could investigate whether messages generated by LLMs are more prone to being perceived as uncivil, and how employees respond to such interactions compared to human-to-human communication.

CONCLUDING REMARKS

This research contributes valuable insights to how we evaluate and understand the relationship between workplace e-mail incivility and task performance. Related literature has consistently proposed a negative, linear relationship between incivility and performance, explained frequently by resource depletion frameworks. The current study's findings challenge this view and highlight the complexity of how individuals react to perceived incivility. One observation that emerged in this study is that the relationship between perceived incivility and task performance might depend on whether the incivility is explicit or ambiguous. In addition, results indicated that low to moderate levels of perceived incivility in the neutral condition were associated with more internal attribution, guilt, undermined competence and autonomy, whereas explicit rudeness in the uncivil condition produced moderate to high levels of perceived incivility associated more with external attribution and anger. These findings suggest that the experience of incivility in a scenario in which neutrality is attempted produces a different psychological response process than the experience of incivility in a scenario in which rudeness is more explicit.

Methodologically, this study extends the literature by using a diverse sample of working adults and employing objective measures of task performance with baseline controls, providing a more robust test of the incivility-performance relationship in the context of work. The use of machine learning techniques highlighted the relative importance of predictors of performance, revealing that perceived incivility, while a contributor, plays a limited role in predicting task performance compared to baseline capabilities and other variables.

From a practical standpoint, these results underscore the importance of addressing how interventions may support all parties involved and equip employees with strategies to both communicate in a civil manner and to manage emotional and cognitive reactions to ambiguous or explicit rudeness they encounter. Future research should continue to explore these dynamics in real-world settings, using longitudinal designs to capture the temporal effects of incivility across various performance domains. Research should also consider expanding the scope to include creative and collaborative tasks, as well as examining cultural and individual differences, to further elucidate the broader implications of incivility in a variety of organizational contexts.

Table 1a. Sample Size

	N	Proportion of Previous *N*	Proportion of Original *N*
Completed Eligibility Study ("Original *N*")	1,733		
Eligible Participants	900	52%	52%
Completed Time 1 Survey	729	81%	42%
Completed Time 2 Survey	580	80%	33%
After Data Quality and Missingness Checks	540	93%	31%
After Disqualifying Operation Threshold*	411	76%	24%

**Task scores are only valid if a certain proportion of the intervening simple arithmetic operations were correct; the standard for this task is 80%; only 360 people in this sample met that threshold and adjusting it down to 75% allowed for the sample size to stay within reason. The data were re-run with both the 80% threshold and no threshold at all and did not seem to make a difference in the manipulation's or perceived incivility score's effect on any performance measures.*

Table 1b. Sample Composition

	N			%		
	All	Uncivil	Neutral	All	Uncivil	Neutral
Gender						
Male	193	98	95	47.2%	46.7%	47.7%
Female	214	111	103	52.3%	52.9%	51.8%
Other	2	1	1	0.5%	0.5%	0.5%
Race						
White	293	154	139	71.6%	73.3%	69.8%
Black or African American	40	19	21	9.8%	9.0%	10.6%
Asian	42	18	24	10.3%	8.6%	12.1%
Hispanic, Latinx, Chicanx	17	10	7	4.2%	4.8%	3.5%
Other	17	9	8	4.2%	4.3%	4.0%
English Proficiency						
I am a native reader and speaker of English	384	196	188	93.4%	93.3%	93.5%
Proficient but non-native speaker	27	14	13	6.6%	6.7%	6.5%
Bicultural						
No	306	169	148	74.8%	80.5%	74.4%
Yes	103	41	51	25.2%	19.5%	25.6%
Bilingual						
No	317	156	150	77.5%	74.3%	75.4%
Yes	92	54	49	22.5%	25.7%	24.6%
Workplace Email Usage Frequency						
Regularly throughout the day	336	170	166	81.8%	81.0%	82.6%
At least a few times a day	75	40	35	18.2%	19.0%	17.4%

	M (*SD*)			*Median*		
	All	Uncivil	Neutral	All	Uncivil	Neutral
Age	42.5 (12.6)	42.5 (13.0)	42.6 (12.2)	41	41	42
Years of Experience	19.7 (11.5)	19.6 (11.8)	19.8 (11.3)	20	18	20

Table 2. Psychometric Properties of Measures

Construct	$\chi^2(df)$	CFI	TLI	RMSEA	SRMR	α
S2 - Perceived E-mail Incivility	101.2(20)*	0.99	0.98	0.10	0.01	0.98
S2 - Attribution	15.3(8)	0.99	0.99	0.05	0.03	0.88 (internal) 0.85 (external)
S2 - Emotion – Guilt	60.3(9)*	0.97	0.95	0.12	0.03	0.93
S2 - Emotion – Anger	76.0(13)*	0.98	0.97	0.11	0.02	0.96 (state) 0.89 (visceral)
S2 - Thwarted Needs	25.6(24)	1.00	1.00	0.01	0.02	0.80 (autonomy) 0.93 (relatedness) 0.89 (competence)
S2 - Subjective Task Performance	39.9(5)*	0.98	0.96	0.13	0.02	0.94
S1 - Hostile Attribution Bias	3.8(2)	1.00	0.99	0.05	0.02	0.81
S1 - Subjective Attention Control	40.9(13)*	0.97	0.96	0.07	0.04	0.78 (positive) 0.80 (negative - R)
S1 - Experienced E-mail Incivility	54.5(9)*	0.97	0.96	0.11	0.03	0.92

NOTE: S1 = Survey 1, S2 = Survey 2; Two constructs did not meet fit index requirements necessary to be aggregated: Sensitivity to Interpersonal Treatment (SIT; control variable on Survey 1), and Subjective Attention Control (control variable on Survey 2). Based on item content and inter-item correlations, it made the most sense for each measure to retain and combine, i.e., average, the scale items which were most strongly related to one another both empirically and qualitatively: SIT items 4 & 5 ($r = .48$, $p < .05$); S2 - Subjective Attention Control items 1 & 2 ($r = .42$, $p < .05$).
** Statistically significant at $p < .05$.*

Table 3a. Descriptive Statistics: Overall Sample

Variable	*M*	*SD*	*Median*	*Range*
S1 - Task Operations Score	32.3	2.45	33	9
S1 - Task Performance Score	28.3	6.02	30	34
S2 - Task Operations Score	33.6	2.09	34	9
S2 - Task Performance Score	29.5	5.81	31	32
Change in Task Performance from Baseline	1.23	4.91	1	34
S2 - Subjective Task Performance	3.93	0.93	4	4
S2 - Task Demand - Overall Effort	15	4.46	15	20
S2 - Task Demand – Mental	16	3.74	17	20
S2 - Perceived E-mail Incivility	2.85	1.54	2.88	4
S2 - Attribution – External	3.29	1.19	3.33	4
S2 - Emotion - State Anger	2.10	1.28	1.5	4
S2 - Emotion - Visceral Anger	1.67	0.99	1	4
S2 - Attribution – Internal	2.04	0.96	2	4
S2 - Emotion – Guilt	1.35	0.67	1	3.67
S2 - Thwarted Need - Autonomy	2.41	1.10	2.33	4
S2 - Thwarted Need - Relatedness	2.89	1.41	3	4
S2 - Thwarted Need - Competence	1.85	1.00	1.33	4
S2 - Subjective Attention Control	3.24	0.67	3	3
S2 - E-mail Response Word Count	41	26	36	38
S2 - Vignette Immersion	3.85	0.93	4	4
S1 - Positive Affect^	15	4.21	15	20
S1 - Negative Affect^	8	3.23	7	17
S1 - Hostile Attribution Bias	2.93	0.93	3	4
S1 - Sensitivity to Interpersonal Treatment	4.17	0.79	4.5	4
S1 - Subjective Attention Control - Positive	3.81	0.76	4	3.50
S1 - Subjective Attention Control - Negative (R)	3.25	0.96	3.33	4
S1 - Experienced E-mail Incivility	1.72	0.70	1.67	4

Note: S1 = Survey 1, S2 = Survey 2
^ Individual scores are computed first as a sum and therefore range from 5 to 25. Values here represent an average of these scores.

Table 3b. Descriptive Statistics: By Experimental Condition

Variable	*M (SD)*		*Median*		*Range*	
	Neutral	Uncivil	Neutral	Uncivil	Neutral	Uncivil
S1 - Task Operations Score	32.3 (2.51)	32.3 (2.39)	33	33	9	9
S1 - Task Performance Score	28.4 (6.11)	28.2 (5.95)	30	29	33	34
S2 - Task Operations Score	33.6 (2.1)	33.6 (2.09)	34	34	9	9
S2 - Task Performance Score	29.7 (5.97)	29.3 (5.67)	31	30	32	29
Change in Task Performance from Baseline	1.3 (5.07)	1.1 (4.77)	1	1	33	32
S2 - Subjective Task Performance	3.9 (0.95)	4 (0.91)	4	4	4	3.40
S2 - Task Demand - Overall Effort	14.6 (4.45)	15 (4.46)	15	16	20	20
S2 - Task Demand - Mental	16 (3.68)	16 (3.8)	16	17	20	19
S2 - Perceived Email Incivility	1.5 (0.67)	4.2 (0.72)	1.13	4.38	4	3.50
S2 - Attribution - External	2.6 (1.1)	3.9 (0.9)	2.67	4	4	4
S2 - Emotion - State Anger	1.3 (0.62)	2.9 (1.25)	1	3	4	4
S2 - Emotion - Visceral Anger	1.2 (0.52)	2.2 (1.08)	1	2	4	4
S2 - Attribution - Internal	1.9 (0.83)	2.2 (1.06)	1.67	2	3	4
S2 - Emotion - Guilt	1.1 (0.43)	1.5 (0.79)	1	1.17	3	3.67
S2 - Thwarted Need - Autonomy	2 (0.94)	2.8 (1.11)	2	3	3.33	4
S2 - Thwarted Need - Relatedness	1.8 (0.91)	4 (0.86)	1.33	4	3.67	4
S2 - Thwarted Need - Competence	1.6 (0.8)	2.1 (1.1)	1	2	3.67	4
S2 - Subjective Attention Control	3.2 (0.68)	3.3 (0.66)	3	3.50	3	2.50
S2 - Email Response Word Count	37.6 (18.44)	44.1 (31.02)	34	38	107	194
S2 - Vignette Immersion	3.7 (0.94)	4 (0.91)	4	4	4	4
S1 - Positive Affect^	15 (4.1)	15.2 (4.32)	15	15	19	20
S1 - Negative Affect^	7.8 (3.17)	7.8 (3.29)	7	7	14	17
S1 - Hostile Attribution Bias	3 (0.92)	2.9 (0.95)	3	3	4	4
S1 - Sensitivity to Interpersonal Treatment	4.2 (0.77)	4.1 (0.79)	4.50	4	4	4
S1 - Subjective Attention Control - Positive	3.8 (0.76)	3.8 (0.77)	4	4	3.50	3.50
S1 - Subjective Attention Control - Negative (R)	2.7 (0.96)	2.8 (0.96)	2.67	2.67	4	3.67
S1 - Experienced Email Incivility	1.7 (0.68)	1.7 (0.71)	1.67	1.50	3	4

^ *Individual scores are computed first as a sum and therefore range from 5 to 25. Values here represent an average of these scores.*

Table 3c. Mean Differences by Experimental Condition

Variable	$M_{Neutral}$	$M_{Uncivil}$	*t*	*d*	*p*	
S1 - Task Operations Score	32.3	32.3	0.0	0.00	0.976	
S1 - Task Performance Score	28.4	28.2	0.4	-0.04	0.704	
S2 - Task Operations Score	33.6	33.6	-0.3	0.03	0.787	
S2 - Task Performance Score	29.7	29.3	0.7	-0.07	0.490	
Change in Task Performance from Baseline	1.3	1.1	0.4	-0.03	0.725	
S2 - Subjective Task Performance	3.9	4.0	-0.6	0.05	0.579	
S2 - Task Demand - Overall Effort	14.6	15.0	-1.1	0.11	0.276	
S2 - Task Demand – Mental	16.0	16.0	-0.2	0.02	0.823	
S2 - Perceived E-mail Incivility	1.5	4.2	-39.9	3.94	0.000	***
S2 - Attribution – External	2.6	3.9	-12.9	1.28	0.000	***
S2 - Emotion - State Anger	1.3	2.9	-16.5	1.61	0.000	***
S2 - Emotion - Visceral Anger	1.2	2.2	-12.0	1.17	0.000	***
S2 - Attribution – Internal	1.9	2.2	-3.1	0.30	0.002	**
S2 - Emotion – Guilt	1.1	1.5	-6.3	0.62	0.000	***
S2 - Thwarted Need - Autonomy	2.0	2.8	-8.0	0.78	0.000	***
S2 - Thwarted Need - Relatedness	1.8	4.0	-25.2	2.50	0.000	***
S2 - Thwarted Need - Competence	1.6	2.1	-5.7	0.56	0.000	***
S2 - Subjective Attention Control	3.2	3.3	-1.0	0.10	0.327	
S2 - Vignette Immersion	3.7	4.0	-3.0	0.30	0.003	**
S2 - E-mail Response Word Count	37.6	44.1	-2.6	0.25	0.010	**
S1 - Positive Affect^	15.0	15.2	-0.6	0.06	0.573	
S1 - Negative Affect^	7.8	7.8	0.0	0.00	0.992	
S1 - Hostile Attribution Bias	3.0	2.9	0.7	-0.07	0.501	
S1 - Sensitivity to Interpersonal Treatment	4.2	4.1	1.9	-0.19	0.055	+
S1 - Subjective Attention Control - Positive	3.8	3.8	0.3	-0.03	0.797	
S1 - Subjective Attention Control - Negative (R)	2.7	2.8	-0.4	0.04	0.670	
S1 - Experienced E-mail Incivility	1.7	1.7	0.4	-0.04	0.718	

Note: S1 = Survey 1, S2 = Survey 2
*+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$*
^ Individual scores are computed first as a sum and therefore range from 5 to 25. Values here represent an average of these scores.

Table 4a. Correlation Coefficients: Overall Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1 COND																											
2 OP1	0.00																										
3 T1	-0.02	**0.34**																									
4 OP2	0.01	**0.47**	**0.28**																								
5 T2	-0.03	**0.23**	**0.66**	**0.35**																							
6 EFF	0.05	-0.08	-0.08	-0.08	**-0.11**																						
7 MENT	0.01	**-0.12**	-0.07	-0.06	-0.05	**0.74**																					
8 SPERF	0.03	**0.12**	**0.23**	**0.22**	**0.38**	**-0.13**	**-0.13**																				
9 SATTN	0.05	0.04	**0.12**	**0.10**	**0.15**	**-0.11**	-0.09	**0.39**																			
10 Δ	-0.02	**-0.15**	**-0.45**	0.06	**0.38**	-0.03	0.03	**0.16**	0.03																		
11 IMM	**0.15**	-0.06	-0.02	-0.02	0.02	**0.19**	**0.20**	**0.14**	**0.13**	0.04																	
12 RESP	**0.13**	-0.04	0.02	0.02	**0.13**	0.07	0.07	0.02	0.08	**0.13**	**0.10**																
13 IN_P	**0.89**	0.01	0.02	0.03	-0.02	0.04	0.00	-0.01	0.02	-0.05	**0.13**	**0.16**															
14 STATE	**0.63**	-0.04	0.00	0.05	-0.03	0.00	-0.01	0.01	-0.06	-0.03	**0.13**	**0.19**	**0.73**														
15 VISC	**0.51**	-0.05	-0.05	0.01	-0.08	0.00	-0.03	0.02	-0.08	-0.03	**0.11**	**0.12**	**0.60**	**0.87**													
16 GUILT	**0.30**	**-0.15**	-0.08	-0.01	-0.08	0.08	0.09	-0.09	**-0.18**	0.00	0.05	0.02	**0.27**	**0.46**	**0.48**												
17 INT	**0.15**	-0.01	-0.04	0.04	-0.02	0.02	-0.02	-0.05	-0.09	0.02	-0.05	-0.03	**0.11**	0.09	0.06	**0.33**											
18 EXT	**0.54**	0.07	**0.13**	**0.17**	0.09	0.05	0.01	0.03	**0.12**	-0.05	0.07	**0.18**	**0.67**	**0.53**	**0.44**	0.04	-0.01										
19 AUTO	**0.36**	-0.03	-0.01	0.02	0.00	**0.12**	0.06	-0.07	**-0.15**	0.01	0.07	0.04	**0.42**	**0.40**	**0.32**	**0.39**	**0.36**	**0.32**									
20 RELATE	**0.78**	-0.02	0.01	0.07	0.00	0.03	0.00	-0.04	-0.02	-0.01	0.07	**0.12**	**0.88**	**0.68**	**0.56**	**0.30**	**0.17**	**0.67**	**0.54**								
21 COMP	**0.27**	-0.06	-0.06	0.01	-0.06	0.09	0.09	**-0.13**	**-0.20**	0.00	0.01	-0.02	**0.26**	**0.29**	**0.26**	**0.56**	**0.54**	0.05	**0.66**	**0.39**							
22 PA	0.03	-0.05	-0.08	-0.07	**-0.14**	0.06	0.07	**0.23**	**0.19**	-0.07	**0.14**	-0.03	-0.01	**-0.11**	-0.07	-0.04	-0.04	-0.06	-0.09	-0.06	-0.07						
23 NA	0.00	**-0.12**	-0.07	-0.03	-0.04	-0.01	0.06	**-0.17**	**-0.26**	0.05	-0.03	0.08	0.08	**0.29**	**0.29**	**0.33**	0.05	-0.01	**0.21**	**0.12**	**0.22**	**-0.32**					
24 HOST	-0.03	**-0.15**	**-0.11**	-0.09	-0.09	-0.02	0.05	**-0.15**	**-0.23**	0.02	-0.09	0.02	-0.01	**0.11**	**0.15**	**0.17**	0.08	-0.05	**0.17**	0.02	**0.14**	**-0.17**	**0.32**				
25 SIT	-0.09	0.09	**0.12**	**0.12**	**0.13**	0.00	0.01	0.08	-0.01	0.00	**0.11**	0.09	-0.03	-0.02	0.03	-0.06	-0.06	**0.10**	0.04	0.01	-0.05	0.05	-0.02	**-0.11**			
26 ATTNP	-0.01	0.08	0.01	0.01	-0.03	0.01	-0.05	**0.14**	**0.29**	-0.04	**0.17**	-0.03	-0.02	**-0.12**	-0.09	**-0.20**	**-0.16**	0.02	**-0.18**	-0.06	**-0.21**	**0.33**	**-0.32**	**-0.21**	**0.13**		
27 ATTNN	0.02	**-0.14**	-0.03	-0.07	-0.01	-0.05	0.00	-0.10	**-0.35**	0.02	**-0.14**	0.00	0.04	**0.18**	**0.14**	**0.25**	**0.18**	-0.04	**0.27**	**0.11**	**0.26**	**-0.30**	**0.42**	**0.38**	-0.05	**-0.61**	
28 IN_E	-0.02	-0.02	-0.02	-0.02	-0.08	**0.14**	**0.12**	-0.06	**-0.14**	-0.07	0.04	-0.04	0.00	0.08	**0.10**	**0.14**	0.06	0.01	**0.14**	0.05	**0.16**	-0.06	**0.29**	**0.19**	0.01	-0.07	**0.16**

Note: S1 = Survey 1, S2 = Survey2; Bolded coefficients are statistically significant at p < .05; 1COND=S2 - Experimental Condition; 2OP1=S1 - Task Operations Score; 3T1=S1 - Task Performance Score; 4OP2=S2 - Task Operations Score; 5T2=S2 - Task Performance Score; 6EFF=S2 - Task Demand - Overall Effort; 7MENT=S2 - Task Demand - Mental; 8SPERF=S2 - Subjective Task Performance; 9SATTN=S2 - Subjective Attention Control; 10Δ=Change in Task Performance from Baseline; 11IMM=S2 - Vignette Immersion; 12RESP=S2 - E-mail Response Word Count; 13IN_P=S2 - Perceived E-mail Incivility; 14STATE=S2 - Emotion - State Anger; 15VISC=S2 - Emotion - Visceral Anger; 16GUILT=S2 - Emotion - Guilt; 17INT=S2 - Attribution - Internal; 18EXT=S2 - Attribution - External; 19AUTO=S2 - Thwarted Need - Autonomy; 20RELATE=S2 - Thwarted Need - Relatedness; 21COMP=S2 - Thwarted Need - Competence; 22PA=S1 - Positive Affect; 23NA=S1 - Negative Affect; 24HOST=S1 - Hostile Attribution Bias; 25SIT=S1 - Sensitivity to Interpersonal Treatment; 26ATTNP=S1 - Subjective Attention Control - Positive; 27ATTNN=S1 - Subjective Attention Control - Negative; 28IN_E=S1 - Experienced E-mail Incivility.

Table 4b. Correlation Coefficients: By Experimental Condition

		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
2	OP1		**0.28**	**0.48**	**0.20**	**-0.15**	-0.12	**0.14**	0.06	-0.11	-0.04	-0.04	0.04	-0.05	-0.06	**-0.18**	-0.10	0.06	-0.10	-0.06	**-0.16**	-0.06	-0.07	**-0.24**	**0.17**	0.06	**-0.14**	-0.04
3	T1	**0.40**		**0.26**	**0.66**	-0.13	-0.04	**0.24**	**0.17**	**-0.46**	-0.03	-0.02	**0.15**	0.06	-0.01	-0.11	**-0.15**	**0.24**	-0.07	0.08	**-0.14**	-0.06	-0.04	**-0.17**	**0.14**	-0.02	-0.04	0.04
4	OP2	**0.46**	**0.31**		**0.32**	-0.08	-0.02	**0.23**	0.01	0.05	0.02	-0.02	0.12	0.10	0.05	0.02	0.01	**0.19**	0.01	**0.18**	0.01	-0.10	0.06	-0.07	0.13	-0.04	-0.03	-0.04
5	T2	**0.26**	**0.65**	**0.38**		-0.13	-0.04	**0.32**	0.11	**0.36**	-0.02	**0.14**	**0.19**	0.09	0.04	-0.08	-0.13	**0.24**	0.00	**0.16**	-0.10	**-0.17**	0.05	-0.11	**0.17**	-0.06	0.04	-0.03
6	EFF	0.00	-0.03	-0.09	-0.08		**0.77**	-0.06	-0.06	0.01	**0.16**	0.08	0.08	0.03	0.04	0.10	0.04	0.08	**0.18**	0.09	**0.14**	0.03	0.03	0.02	0.06	-0.02	-0.04	**0.17**
7	MENT	-0.13	-0.10	-0.10	-0.06	**0.71**		-0.06	-0.07	0.01	**0.17**	0.10	0.12	0.03	0.00	0.10	0.01	0.11	0.13	0.09	0.11	0.07	0.10	0.07	0.09	-0.06	-0.01	**0.19**
8	SPERF	0.10	**0.23**	**0.21**	**0.43**	**-0.20**	**-0.20**		**0.27**	0.08	0.07	0.00	0.02	0.04	0.07	-0.07	0.00	0.09	-0.03	0.00	-0.03	**0.25**	-0.13	-0.08	0.08	0.08	0.07	-0.02
9	SATTN	0.01	0.07	**0.19**	**0.19**	**-0.16**	-0.11	**0.49**		-0.08	0.08	0.04	-0.04	-0.16*	**-0.17**	**-0.26**	-0.11	**0.15**	**-0.21**	-0.12	**-0.22**	**0.22**	**-0.30**	**-0.25**	0.01	**0.35**	**-0.31**	**-0.16**
10	Δ	**-0.18**	**-0.44**	0.07	**0.40**	-0.06	0.05	**0.24**	**0.14**		0.02	**0.19**	0.04	0.03	0.06	0.05	0.02	-0.01	0.09	0.09	0.05	-0.13	0.11	0.09	0.02	-0.05	0.10	-0.08
11	IMM	-0.09	-0.01	-0.06	0.06	**0.20**	**0.24**	**0.19**	**0.18**	0.08		0.03	**0.17**	**0.15**	0.13	0.04	-0.03	**0.17**	0.11	**0.17**	0.04	0.13	0.01	-0.10	**0.15**	**0.20**	**-0.16**	**0.14**
12	RESP	-0.03	0.09	0.09	0.13	0.03	0.01	0.05	0.13	0.06	**0.18**		**0.21**	**0.20**	0.11	0.00	-0.09	**0.18**	0.02	0.08	-0.02	-0.04	**0.21**	0.07	0.08	-0.09	0.04	0.01
13	IN_P	0.01	0.01	-0.06	**-0.17**	-0.13	**-0.16**	**-0.16**	-0.06	**-0.21**	**-0.20**	-0.11		**0.43**	**0.34**	-0.10	**-0.22**	**0.59**	0.07	**0.61**	-0.12	-0.08	**0.15**	0.01	**0.22**	-0.01	0.00	-0.03
14	STATE	-0.07	-0.07	-0.01	**-0.19**	**-0.20**	-0.13	-0.10	-0.05	**-0.14**	-0.13	-0.06	**0.64**		**0.83**	**0.32**	-0.05	**0.30**	**0.20**	**0.38**	0.11	**-0.18**	**0.40**	**0.17**	0.05	**-0.16**	**0.23**	0.09
15	VISC	-0.07	-0.13	-0.08	**-0.30**	**-0.18**	**-0.17**	-0.12	-0.06	**-0.20**	**-0.15**	-0.12	**0.59**	**0.84**		**0.37**	-0.05	**0.24**	**0.16**	**0.29**	0.11	-0.09	**0.37**	**0.24**	0.12	-0.10	**0.18**	0.11
16	GUILT	-0.12	-0.01	-0.09	-0.08	0.01	0.08	**-0.17**	-0.13	-0.08	-0.07	-0.07	**0.24**	**0.59**	**0.49**		**0.39**	**-0.28**	**0.37**	0.06	**0.58**	-0.01	**0.29**	**0.21**	-0.04	**-0.22**	**0.26**	0.12
17	INT	0.09	0.11	0.09	0.13	-0.01	-0.06	-0.13	-0.09	0.02	-0.13	0.03	**0.16**	0.12	0.07	0.12		**-0.49**	**0.37**	-0.07	**0.59**	-0.04	0.02	0.11	-0.10	**-0.22**	**0.21**	0.00
18	EXT	0.10	0.10	**0.20**	0.04	-0.02	-0.08	-0.05	0.08	-0.07	**-0.16**	0.10	**0.45**	**0.35**	**0.27**	0.02	**0.31**		0.03	**0.53**	**-0.32**	-0.08	0.01	-0.12	**0.27**	0.03	-0.08	0.05
19	AUTO	0.04	0.07	0.02	0.03	0.01	-0.02	**-0.14**	**-0.14**	-0.05	-0.09	-0.05	**0.41**	**0.34**	**0.21**	**0.22**	**0.27**	**0.30**		**0.30**	**0.62**	-0.08	**0.15**	**0.16**	0.08	**-0.21**	**0.29**	**0.19**
20	RELATE	-0.01	0.01	0.02	-0.05	-0.11	-0.11	**-0.19**	-0.05	-0.07	**-0.29**	-0.01	**0.71**	**0.51**	**0.38**	**0.24**	**0.30**	**0.45**	**0.61**		0.12	**-0.17**	**0.18**	0.07	**0.25**	-0.10	0.11	0.04
21	COMP	0.08	0.05	0.00	0.00	0.00	0.05	**-0.30**	**-0.25**	-0.06	**-0.14**	**-0.15**	**0.32**	**0.33**	**0.26**	**0.37**	**0.41**	0.10	**0.64**	**0.54**		0.00	**0.14**	**0.15**	0.00	**-0.21**	**0.25**	**0.15**
22	PA	-0.03	-0.10	-0.05	-0.11	0.10	0.06	**0.22**	**0.16**	-0.01	**0.15**	-0.01	-0.08	**-0.15**	-0.13	-0.12	-0.06	-0.10	-0.13	-0.08	**-0.21**		**-0.33**	-0.10	0.07	**0.34**	**-0.30**	-0.05
23	NA	**-0.18**	-0.11	-0.13	-0.13	-0.06	0.02	**-0.21**	**-0.22**	-0.01	-0.07	**-0.17**	**0.21**	**0.35**	**0.32**	**0.47**	0.10	-0.03	**0.31**	**0.20**	**0.37**	**-0.32**		**0.32**	-0.06	**-0.34**	**0.41**	**0.28**
24	HOST	-0.05	-0.04	-0.11	-0.07	-0.06	0.02	**-0.21**	**-0.20**	-0.04	-0.07	-0.06	0.06	**0.16**	0.10	**0.16**	0.06	0.04	**0.25**	0.08	**0.18**	**-0.26**	**0.32**		-0.12	**-0.26**	**0.42**	**0.17**
25	SIT	0.01	0.09	0.12	0.08	-0.06	-0.08	0.08	-0.01	-0.02	0.09	**0.15**	-0.01	0.05	0.04	-0.04	0.02	0.10	0.08	0.00	-0.07	0.03	0.04	-0.12		0.08	-0.03	0.05
26	ATTNP	0.09	0.03	0.06	0.01	0.05	-0.04	**0.21**	**0.23**	-0.03	**0.16**	0.08	-0.04	-0.11	-0.11	**-0.19**	-0.09	0.03	**-0.15**	-0.06	**-0.22**	**0.32**	**-0.29**	**-0.15**	**0.18**		**-0.62**	**-0.15**
27	ATTNN	-0.13	-0.01	-0.12	-0.06	-0.07	0.02	**-0.26**	**-0.39**	-0.06	-0.13	-0.09	0.10	**0.19**	0.13	**0.28**	**0.15**	-0.05	**0.27**	**0.17**	**0.30**	**-0.30**	**0.44**	**0.34**	-0.06	**-0.60**		**0.16**
28	IN_E	-0.01	-0.08	0.01	-0.13	0.11	0.05	-0.09	-0.12	-0.06	-0.06	-0.13	0.13	**0.22**	**0.18**	**0.24**	**0.16**	0.00	0.12	**0.16**	**0.21**	-0.07	**0.31**	**0.22**	-0.02	0.02	**0.17**	

Note: S1 = Survey 1, S2 = Survey2; Bolded coefficients are statistically significant at p < .05; The bottom triangle is the NEUTRAL condition; 1COND=S2 - Experimental Condition; 2OP1=S1 - Task Operations Score; 3T1=S1 - Task Performance Score; 4OP2=S2 - Task Operations Score; 5T2=S2 - Task Performance Score; 6EFF=S2 - Task Demand - Overall Effort; 7MENT=S2 - Task Demand - Mental; 8SPERF=S2 - Subjective Task Performance; 9SATTN=S2 - Subjective Attention Control; 10Δ=Change in Task Performance from Baseline; 11IMM=S2 - Vignette Immersion; 12RESP=S2 - E-mail Response Word Count; 13IN_P=S2 - Perceived E-mail Incivility; 14STATE=S2 - Emotion - State Anger; 15VISC=S2 - Emotion - Visceral Anger; 16GUILT=S2 - Emotion - Guilt; 17INT=S2 - Attribution - Internal; 18EXT=S2 - Attribution - External; 19AUTO=S2 - Thwarted Need - Autonomy; 20RELATE=S2 - Thwarted Need - Relatedness; 21COMP=S2 - Thwarted Need - Competence; 22PA=S1 - Positive Affect; 23NA=S1 - Negative Affect; 24HOST=S1 - Hostile Attribution Bias; 25SIT=S1 - Sensitivity to Interpersonal Treatment; 26ATTNP=S1 - Subjective Attention Control - Positive; 27ATTNN=S1 - Subjective Attention Control - Negative; 28IN_E=S1 - Experienced E-mail Incivility.

Table 5a. Alternate Linear Modeling Results: Incivility & Task Performance

	S2 - Final Task Performance		
Variable	*β*	*SE*	*p*
(Intercept)	27.38	0.70	0.00
S2 - Experimental Condition	1.12	0.95	0.24
S2 - Perceived Email Incivility	-1.60	0.45	0.00
S1 - Task Performance Score	0.62	0.04	0.00
S1 - Positive Affect	-0.13	0.05	0.01
Condition-Incivility Interaction	2.26	0.61	0.00
Adjusted R^2		0.45	

Note: S1 = Survey 1, S2 = Survey 2.

Table 5b. Alternate Linear Modeling Results: Incivility & Thwarted Needs

	S2 - Thwarted Need - Autonomy			S2 - Thwarted Need - Relatedness			S2 - Thwarted Need - Competence		
Variable	*β*	*SE*	*p*	*β*	*SE*	*p*	*β*	*SE*	*p*
(Intercept)	2.74	0.16	0.00	3.09	0.11	0.00	2.05	0.15	0.00
S2 - Experimental Condition	-0.05	0.21	0.80	-0.07	0.14	0.61	0.31	0.20	0.12
S2 - Perceived Email Incivility	0.53	0.10	0.00	0.95	0.07	0.00	0.34	0.10	0.00
S1 - Subjective Attention Control - Negative	-0.28	0.05	0.00	-0.10	0.03	0.00	-0.26	0.05	0.00
S1 - Sensitivity to Interpersonal Treatment	0.11	0.06	0.06	0.08	0.04	0.06	0.00	0.06	0.96
Condition-Incivility Interaction	-0.45	0.14	0.00	-0.24	0.09	0.01	-0.53	0.13	0.00
Adjusted R^2		0.25			0.79			0.17	

Note: S1 = Survey 1, S2 = Survey 2.

Table 5c. Alternate Linear Modeling Results: Incivility & Attributions

	S2 - Attribution - External			S2 - Attribution - Internal		
Variable	*β*	*SE*	*p*	*β*	*SE*	*p*
(Intercept)	3.69	0.14	0.00	2.14	0.15	0.00
S2 - Experimental Condition	-0.70	0.19	0.00	0.44	0.21	0.03
S2 - Perceived Email Incivility	0.76	0.09	0.00	0.18	0.10	0.07
S1 - Positive Affect	-0.03	0.01	0.02	0.00	0.01	0.96
S1 - Negative Affect	-0.03	0.01	0.03	-0.01	0.02	0.74
S1 - Subjective Attention Control - Negative	0.07	0.05	0.14	-0.18	0.05	0.00
S1 - Sensitivity to Interpersonal Treatment	0.16	0.05	0.00	-0.02	0.06	0.77
Condition-Incivility Interaction	-0.06	0.12	0.63	-0.49	0.13	0.00
Adjusted R^2		0.49			0.08	

Note: S1 = Survey 1, S2 = Survey 2.

Table 5d. Alternate Linear Modeling Results: External Attribution & Anger

	S2 - Emotion - State Anger			S2 - Emotion - Visceral Anger		
Variable	*β*	*SE*	*p*	*β*	*SE*	*p*
(Intercept)	1.95	0.14	0.00	1.67	0.12	0.00
S2 - Attribution - External	0.11	0.05	0.02	0.06	0.04	0.17
S2 - Experimental Condition	0.06	0.19	0.73	-0.11	0.17	0.50
S2 - Perceived Email Incivility	0.42	0.09	0.00	0.34	0.09	0.00
S1 - Negative Affect	0.09	0.01	0.00	0.07	0.01	0.00
S1 - Hostile Attribution Bias	0.07	0.05	0.14	0.10	0.04	0.02
Condition-Incivility Interaction	0.18	0.12	0.13	0.08	0.11	0.43
Adjusted R^2		0.58			0.43	

Note: S1 = Survey 1, S2 = Survey 2.

Table 5e. Alternate Linear Modeling Results: Internal Attribution & Guilt

	S2 - Emotion - Guilt		
Variable	*β*	*SE*	*p*
(Intercept)	1.25	0.09	0.00
S2 - Attribution – Internal	0.19	0.03	0.00
S2 - Experimental Condition	0.39	0.13	0.00
S2 - Perceived Email Incivility	0.05	0.06	0.39
S1 - Positive Affect	0.01	0.01	0.11
S1 - Negative Affect	0.07	0.01	0.00
Condition-Incivility Interaction	-0.15	0.08	0.08
Adjusted R^2		0.27	

Note: S1 = Survey 1, S2 = Survey 2.

Table 6. Gradient Boosted Modeling Results

post-hoc RQ	Outcome	Predictors	*Relative Influence*	R^2	*RMSR*
A	Final Task Performance	Baseline Task Performance	95.67		
		Perceived E-mail Incivility	3.15		
		Condition-Incivility Interaction	0.95		
		Experimental Condition	0.23		
		Overall Model		0.412	4.167
B_1	Thwarted Need - Competence	Perceived E-mail Incivility	77.27		
		Condition-Incivility Interaction	16.16		
		Experimental Condition	6.56		
		Overall Model		0.106	1.010
B_2	Thwarted Need - Autonomy	Perceived E-mail Incivility	90.63		
		Condition-Incivility Interaction	9.10		
		Experimental Condition	0.26		
		Overall Model		0.235	0.955
B_3	Thwarted Need - Relatedness	Perceived E-mail Incivility	94.89		
		Condition-Incivility Interaction	5.11		
		Experimental Condition	0.00		
		Overall Model		0.719	0.732
C_1	Final Task Performance	Baseline Task Performance	94.45		
		Perceived E-mail Incivility	2.69		

post-hoc RQ	Outcome	Predictors	*Relative Influence*	R^2	*RMSR*
		Thwarted Need - Competence	2.10		
		Condition-Incivility Interaction	0.66		
		Experimental Condition	0.10		
		Overall Model		0.412	4.166
		Baseline Task Performance	94.21		
		Perceived E-mail Incivility	2.67		
C_2	Final Task Performance	Thwarted Need - Autonomy	2.36		
		Condition-Incivility Interaction	0.61		
		Experimental Condition	0.15		
		Overall Model		0.411	4.171
		Baseline Task Performance	94.31		
		Perceived E-mail Incivility	2.71		
C_3	Final Task Performance	Thwarted Need - Relatedness	2.26		
		Condition-Incivility Interaction	0.52		
		Experimental Condition	0.20		
		Overall Model		0.414	4.159
		Baseline Task Performance	92.65		
		Perceived E-mail Incivility	2.22		
		Thwarted Need - Autonomy	1.78		
C_4	Final Task Performance	Thwarted Need - Relatedness	1.48		
		Thwarted Need - Competence	1.45		
		Condition-Incivility Interaction	0.37		
		Experimental Condition	0.06		
		Overall Model		0.4112	4.171
D_1	Attribution - External	Perceived E-mail Incivility	96.21		

post-hoc RQ	Outcome	Predictors	*Relative Influence*	R^2	*RMSR*
		Condition-Incivility Interaction	3.74		
		Experimental Condition	0.53		
		Overall Model		0.392	0.914
D_2	Attribution - Internal	Perceived E-mail Incivility	80.62		
		Condition-Incivility Interaction	16.99		
		Experimental Condition	2.35		
		Overall Model		0.112	0.904
D_3	Emotion - Anger	Perceived E-mail Incivility	66.01		
		Condition-Incivility Interaction	28.70		
		Attribution - External	5.19		
		Experimental Condition	0.09		
		Overall Model		0.268	0.841
D_4	Emotion – Guilt	Attribution - Internal	41.43		
		Perceived E-mail Incivility	36.37		
		Condition-Incivility Interaction	20.04		
		Experimental Condition	2.16		
		Overall Model		0.182	0.627
E_1	Final Task Performance	Baseline Task Performance	91.09		
		Attribution - External	4.39		
		Emotion - Visceral Anger	2.08		

post-hoc RQ	Outcome	Predictors	*Relative Influence*	R^2	*RMSR*
		Perceived E-mail Incivility	1.98		
		Condition-Incivility Interaction	0.33		
		Experimental Condition	0.14		
		Overall Model		0.407	4.187
E_2	Final Task Performance	Baseline Task Performance	92.51		
		Attribution - Internal	2.93		
		Perceived E-mail Incivility	2.10		
		Emotion - Guilt	1.84		
		Condition-Incivility Interaction	0.56		
		Experimental Condition	0.06		
		Overall Model		0.409	4.178
F	Final Task Performance	Baseline Task Performance	88.52		
		Attribution - External	3.12		
		Attribution - Internal	1.81		
		Emotion - Visceral Anger	1.38		
		Perceived E-mail Incivility	1.33		
		Emotion - Guilt	1.26		
		Thwarted Need - Autonomy	1.09		
		Thwarted Need - Relatedness	0.67		
		Thwarted Need - Competence	0.64		
		Condition-Incivility Interaction	0.13		
		Experimental Condition	0.05		
		Overall Model		0.404	4.195

Table 7a. Methodological Summary of Relevant Literature: Experimental Studies Supporting the Relationship Between Incivility & Performance

Citation	Relevant Study	Participants	Sample Size	Design	Operationalization of Performance	Analytic Method	Results
Porath & Erez (2007)	Study 1	Undergraduate Students at American Universities	98	Lab experiment, between subjects (rude v. control), face-to-face between an experimenter and confederate	Task Performance: % of 10 anagrams solved correctly in 10 minutes.	MANOVA	Task performance was significantly lower in the rude condition.
	Study 2	Undergraduate Students at American Universities	82	Lab experiment, between subjects (rude v. control), face-to-face between an experimenter and confederate	Task Performance: % of 10 anagrams solved correctly in 10 minutes.	MANOVA	Task performance was significantly lower in the rude condition.
	Study 3	Undergraduate Students at American Universities	98	Lab experiment, between subjects (rude v. control), written hypothetical scenarios	Task Performance: % of 10 anagrams solved correctly in 10 minutes. Memory Recall: % of 15 paired-associates words correctly recalled later (5 min to memorize before manipulation).	MANOVA	Both ask performance and memory recall was significantly lower in the rude condition.

Citation	Relevant Study	Participants	Sample Size	Design	Operationalization of Performance	Analytic Method	Results
Giumetti et al. (2013)		Undergraduate Students at American Universities	84	Lab experiment, between subjects (uncivil vs. supportive e-mail interactions with a hypothetical supervisor)	Energy: subjective assessment of physical, cognitive, emotional and social energy. Task Performance: # of difficult math problems solved correctly. Task Engagement: subjective assessment of task absorption.	Paired-samples *t*-tests	Uncivil condition participants reported significantly lower scores on: mental energy, emotional energy, social energy, and task engagement; also solved fewer math problems correctly.
McCarthy (2014)		Undergraduate Students at American Universities	209	Lab experiment, between subjects, 2 (rude vs. neutral) x 2 (face-to-face vs. e-mail interactions with experimenter)	Task performance: word scramble activity (Erez & Isen, 2002; see also Porath & Erez, 2007); also, % of 10 anagrams solved correctly in 10 minutes	2-way ANOVA	Participants in rude conditions performed significantly worse on the task independent of medium.
Katz et al. (2019)		Doctors in anesthesiology residency programs at American Hospitals	67	Field experiment, between subjects (rude v. courteous face-to-face with a hypothetical surgeon)	Simulation experience; validated scenario with performance standards using BARS to measure technical and non-technical performance in areas: vigilance, medical decision-making, communication, and teamwork.	*t*-tests, chi-square tests and multivariate regression	Rude group scored lower on all BARS performance domains.
McCarthy et al. (2020)	Study 1	Undergraduate Students at American Universities	254	Lab experiment, between subjects, 2 (rude vs. neutral) x 2 (face-to-face vs. e-mail, similar to McCarthy, 2014)	Task Performance: % of 10 anagrams solved correctly in 10 minutes. Memory Recall: % of 15 paired-associates words correctly recalled later (5 min to memorize before manipulation).	2-way ANOVA	Participants in rude condition performed significantly worse. Across rude conditions, performance was worse in the e-mail condition.

Table 7b. Methodological Summary of Relevant Literature: Correlational Studies Supporting the Relationship Between Incivility & Performance

Citation	Relevant Study	Participants	Sample Size	Incivility Measure	Performance Measure	Analytic Method	Results
Sliter et al. 2012		Bank tellers in Midwestern United States	120	Experienced customer and coworker incivility	Absenteeism, tardiness, customer referrals, and archival performance data	Hierarchical Regression	Customer incivility predicted all performance outcomes but coworker incivility only predicted absenteeism.
Chen et al. (2013)	Study 1	Employees in Chinese manufacturing company nested under supervisors in teams of 4-5	235	Experienced incivility	Work Engagement: subjective assessment of vigor, dedication, and absorption. Task Performance: supervisor's subjective assessment of subordinate performance of job duties.	Hierarchical Multiple Regression	Incivility negatively predicted work engagement; engagement mediated the negative relationship between incivility and task performance.
	Study 2	Sales clerks at Chinese companies/stores nested under supervisors in teams of 4-5	204	See above	See above	See above	Replicated study 1
Giumetti et al. (2016)		Mixed: Business professionals <20%, psychologists 38%, MBA students 3%, Undergraduate Students at American University, 41%	220	Experienced cyber incivility	Performance: single item "In the past six months, do you think that your job performance has been . . ." and response options were on a 5-point Likert-type scale ranging from 1 (significantly below normal) to 5 (significantly above normal).	Hierarchical Multiple Regression	Cyber incivility significantly related to job performance controlling for negative affect.

Citation	Relevant Study	Participants	Sample Size	Incivility Measure	Performance Measure	Analytic Method	Results
Mao et al. (2019)		Full-time employees in China	384 subordinates, 41 groups (supervisors)	Experienced incivility	Task Performance: Supervisory ratings on items related to completion of job duties.	Hierarchical Linear Modeling	Experienced incivility was significantly related to lower task performance.
Shin & Hur (2020)		South Korean kindergarten teachers nested under principals	321	Experienced supervisor incivility	Job performance: supervisory ratings on in-role performance scale.	Multilevel Path Analyses	Job insecurity and amotivation sequentially mediated the relationship between supervisor incivility and job performance.*
Wang et al. (2022)		Full-time employees in China	112; 866 within person observations	Experienced cyber incivility	Task Performance: daily subjective assessment of meeting job performance responsibilities/requirements/ standards.	Multilevel Path Analyses	Cyber incivility predicted significantly worse task performance the next day.
Ejiroghene & Josephine (2023).		Local Government Council employees selected from three senatorial districts (Delta South, Delta Central, and Delta North) of Delta State, Nigeria	227	Experienced supervisor and coworker incivility	Performance: subjective assessment of task, contextual, and adaptive performance.	Simple Linear Regression	Both types of incivility predicted worse task and adaptive performance but not contextual performance for which there was a positive relationship.
Gaan & Shin (2023)		366 frontline employees in 48 department stores in India	336	Experienced supervisor incivility	Performance: subjective assessment of in-role and extra-role job performance.	(multilevel)Hierarchical Linear Modelling	Controlling for demographics, supervisor incivility negatively impacts in-role and extra role performance. These relationships are mediated by self-efficacy.

**Regression weight was -.005 in a 90% CI, and the correlation coefficient was -.06, $p > .05$.*

Table 7c. Methodological Summary of Relevant Literature: Studies Lacking Support for the Relationship Between Incivility & Performance

Citation	Relevant Study	Participants	Sample Size	Design	Performance Measures	Analytic Method	Results
Yip et al. (2018)	Study 1	Undergraduate Students at a North American University	178	Lab experiment, between subjects (trash-talking* vs. neutral interaction with confederate competitor over instant messaging).	Incentives: $10 to show up, opportunity for additional $1 based on performance. Effort-Based Performance: slider task, on 50 sliders you need to move each one to the designated benchmark between 0 and 1000; scored by # of correctly moved sliders. Allowed 2 minutes to complete the task, and you could stop at any time.	ANOVA	Participants in trash-talking condition had greater effort-based performance and the relationship was mediated by perceived rivalry.
	Study 2	Undergraduate Students at a North American University	369	Same as study 1 with 2 additional conditions: non-task communication and no message	Same as study 1	ANOVA	Participants in trash-talking condition had greater effort-based performance than those in all three other types of control conditions; performance best to worst: trash-talk > no message > neutral > non-task communication
	Study 4	Undergraduate Students at a North American University	240	Lab experiment, between subjects, 2 (trash-talking* vs. neutral) x 2 (competitive vs. cooperative setting)	Same as study 1; cooperative condition was told that collective performance would be compared to another team's.	ANOVA	Participants in the trash-talking condition performed better than neutral but only in the competitive setting; they performed worse in the cooperative one.

Citation	Relevant Study	Participants	Sample Size	Design	Performance Measures	Analytic Method	Results
Scisco et al. (2019)		Undergraduate Students at American Universities	232	Lab experiment, between subjects, 2 (uncivil vs. neutral) x 2 (face-to-face vs. cyber)	Task Performance: % of 10 anagrams solved correctly in 10 minutes. Memory Recall: % of 15 paired-associates words correctly recalled later (5 min to memorize before manipulation).	2-way ANOVA	Neither effects of incivility nor medium on task performance were significant.
Goldman (2024), unpublished		Working adults recruited on Prolific	411	Experimental online survey, between subjects, (uncivil v. neutral e-mail interaction with a hypothetical coworker)	Task Performance: performance on a simple operation span task. Subjective Task Performance: subjective assessment of performance on the task. Task Demand: subjective assessment of how much mental and overall effort required by the task.	*t*-tests, hierarchical multiple regression, gradient boosting machines	Participants in the uncivil condition did not perform significantly worse on any performance measures.

***Trash-talking is not the same as incivility; examples in this study include: 'just so you know, i'm taking that bonus money. . .you're definitely going to lose"; "i'm smarter than you. . ..i'm faster than you. . ..i'm going to beat you so bad."*

REFERENCES

"2019 Adobe E-mail Usage Study." (2019, September 12). Retrieved from: https://www.slideshare.net/adobe/2019-adobe-e-mail-usage-study

Aguinis, H., & Bradley, K. J. (2014). Best practice recommendations for designing and implementing experimental vignette methodology studies. *Organizational Research Methods, 17*(4), 351-371.

Aguinis, H., & Vandenberg, R. J. (2014). An ounce of prevention is worth a pound of cure: Improving research quality before data collection. *Annual Review of Organizational Psychology and Organizational Behavior. 1*(1), 569-595.

Alwin, D. F., & Hauser, R. M. (1975). The decomposition of effects in path analysis. *American Sociological Review*, 37-47.

Andersson, L. M., & Pearson, C. M. (1999). Tit for tat? The spiraling effect of incivility in the workplace. *Academy of Management Review*, *24*(3), 452-471.

Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, *34*(10), 2045–2068.

Barlett, C. P. (2015). Anonymously hurting others online: The effect of anonymity on cyberbullying frequency. *Psychology of Popular Media Culture, 4*(2), 70-79.

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, *37*(11), 1459-1473.

Baumeister, R. F. & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Beatty, P. C., & Willis, G. B. (2007). Research synthesis: The practice of cognitive interviewing. *Public Opinion Quarterly*, *71*(2), 287-311.

Bennett, R. J., & Robinson, S. L. (2000). Development of a measure of workplace deviance. *Journal of Applied Psychology*, *85*(3), 349–360.

Berry, Z., & Frederickson, J. (2015). Explanations and implications of the fundamental attribution error: A review and proposal. *Journal of Integrated Social Sciences*, *5*(1), 44-57.

Bjørge, A. K. (2007). Power distance in English lingua franca e-mail communication. *International Journal of Applied Linguistics*, *17*(1), 60-80.

Bjørn, P., & Ngwenyama, O. (2009). Virtual team collaboration: building shared meaning, resolving breakdowns and creating translucence. *Information Systems Journal*, *19*(3), 227-253.

Blau, P. M. (1964). *Social exchange theory*. John Wiley & Son.

Borah, P. (2013). Interactions of news frames and incivility in the political blogosphere: Examining perceptual outcomes. *Political Communication*, *30*(3), 456-473.

Borman, W. C., & Motowidlo, S. J. (1997). Task performance and contextual performance: The meaning for personnel selection research. *Human Performance*, *10*(2), 99-109.

Bourne Jr, L. E., & Yaroush, R. A. (2003). *Stress and cognition: A cognitive psychological perspective* (No. IH-045).

Brose, A., Schmiedek, F., Lövdén, M., & Lindenberger, U. (2012). Daily variability in working memory is coupled with negative affect: The role of attention and motivation. *Emotion, 12*, 605– 617.

Brosowsky, N. P., DeGutis, J., Esterman, M., Smilek, D., & Seli, P. (2023). Mind wandering, motivation, and task performance over time: Evidence that motivation insulates people from the negative effects of mind wandering. *Psychology of Consciousness: Theory, Research, and Practice, 10*(4), 475–486.

Brosseau-Liard, Patricia E, Victoria Savalei, and Libo Li. "An investigation of the sample performance of two nonnormality corrections for RMSEA." *Multivariate Behavioral Research 47.6* (2012): 904–930. Web.

Bunk, J. A., & Magley, V. J. (2011). Sensitivity to interpersonal treatment in the workplace: Scale development and initial validation. *Journal of Occupational and Organizational Psychology*, *84*(2), 395-402.

Bunk, J. A., & Magley, V. J. (2013). The role of appraisals and emotions in understanding experiences of workplace incivility. *Journal of Occupational Health Psychology, 18*(1), 87–105.

Burgoyne, A. P., & Engle, R. W. (2020). Attention control: A cornerstone of higher-order cognition. *Current Directions in Psychological Science, 29*(6), 624-630.

Burton, J. P., Taylor, S. G., & Barber, L. K. (2014). Understanding internal, external, and relational attributions for abusive supervision. *Journal of Organizational Behavior*, *35*(6), 871–891.

Byron, K. (2008). Carrying too heavy a load? The communication and miscommunication of emotion by e-mail. *Academy of Management Review*, *33*(2), 309-327.

Byron, K., & Baldridge, D. C. (2007). E-mail recipients' impressions of senders' likability: The interactive effect of nonverbal cues and recipients' personality. *The Journal of Business Communication (1973)*, *44*(2), 137-160.

Cameron, C. D., Hutcherson, C. A., Ferguson, A. M., Scheffer, J. A., Hadjiandreou, E., & Inzlicht, M. (2019). Empathy is hard work: People choose to avoid empathy because of its cognitive costs. *Journal of Experimental Psychology: General, 148*(6), 962–976.

Campbell, J. P. (2012). Behavior, performance, and effectiveness in the twenty-first century. *The Oxford Handbook of Organizational Psychology*, *1*, 159-194.

Campbell, J. P., & Wiernik, B. M. (2015). The modeling and assessment of work performance. *Annu. Rev. Organ. Psychol. Organ. Behav.*, *2*(1), 47-74.

Chen, Y., Ferris, D. L., Kwan, H. K., Yan, M., Zhou, M., & Hong, Y. (2013). Self-love's lost labor: A self-enhancement model of workplace incivility. *Academy of Management Journal, 56*(4), 1199-1219.

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion, 39*, 216–236.

Chen, J., Kang, H., Wang, Y., & Zhou, M. (2021). Thwarted psychological needs: the negative impact of customer mistreatment on service employees and the moderating role of empowerment HRM practices. *Personnel Review, 50*(7/8), 1566-1581.

Chiniara, M., & Bentein, K. (2016). Linking servant leadership to individual performance: Differentiating the mediating role of autonomy, competence and relatedness need satisfaction. *The Leadership Quarterly*, *27*(1), 124-141.

Chris, A. C., Provencher, Y., Fogg, C., Thompson, S. C., Cole, A. L., Okaka, O., ... & González-Morales, M. G. (2022). A meta-analysis of experienced incivility and its correlates: Exploring the dual path model of experienced workplace incivility. *Journal of Occupational Health Psychology*, *27*(3), 317.

Costa, S., Ntoumanis, N., & Bartholomew, K. J. (2015). Predicting the brighter and darker sides of interpersonal relationships: Does psychological need thwarting matter?. *Motivation and Emotion*, *39*, 11-24.

Cortina, J. M., Green, J. P., Keeler, K. R., & Vandenberg, R. J. (2017). Degrees of freedom in SEM: Are we testing the models that we claim to test? *Organizational Research Methods, 20*(3), 350-378.

Cortina, L. (2008). Unseen injustice: Incivility as modern discrimination in organizations. *Academy of Management Review*, *33*(1), 55–75.

Cortina, L. M., Hershcovis, M., & Clancy, K. B. (2022). The embodiment of insult: A theory of biobehavioral response to workplace incivility. *Journal of Management*, *48*(3), 738-763.

Cortina, L. M., Kabat-Farr, D., Leskinen, E. A., Huerta, M., & Magley, V. J. (2013). Selective incivility as modern discrimination in organizations: Evidence and impact. *Journal of Management*, *39*(6), 1579–1605.

Cortina, L. M., Kabat-Farr, D., Magley, V. J., & Nelson, K. (2017). Researching rudeness: The past, present, and future of the science of incivility. *Journal of Occupational Health Psychology*, *22*(3), 299-313.

Cortina, L. M., & Magley, V. J. (2009). Patterns and profiles of response to incivility in the workplace. *Journal of Occupational Health Psychology, 14*, 272–288.

Cortina, L., Magley, V., Williams, J., Langhout, R., & Barling, Julian. (2001). Incivility in the workplace: Incidence and impact. *Journal of Occupational Health Psychology, 6*(1), 64-80.

Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, *12*(3), 346-371.

Cummings, J., & Sibona, C. (2017). Crowdsourcing surveys: Alternative approaches to survey collection. *Journal of Information Systems Applied Research*, *10*(1), 44.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management science*, *32*(5), 554-571.

Daft, R. L., Lengel, R. H., & Trevino, L. K. (1987). Message equivocality, media selection, and manager performance: Implications for information systems. *MIS quarterly*, 355-366.

Dalong, Z., Jian, Z., & Huirong, T. (2022). The impact of basic psychological needs on employees' creative performance and mental health: A latent profile analysis from the perspective of thwarted psychological need. *Management Review*, *34*(3), 209.

Danziger, S., Montal, R., & Barkan, R. (2012). Idealistic advice and pragmatic choice: A psychological distance account. *Journal of Personality and Social Psychology*, *102*(6), 1105.

DeCamp, W., & Manierre, M. J. (2016). "Money will solve the problem": Testing the effectiveness of conditional incentives for online surveys. *Survey Practice*, *9*(1).

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268.

Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology/Psychologie Canadienne*, *49*(3), 182.

DeClercq, D., Haq, I. U., Azeem, M. U., & Ahmad, H. N. (2019). The relationship between workplace incivility and helping behavior: roles of job dissatisfaction and political skill. *The Journal of Psychology, 153*(5), 507-527.

Diefendorff, J. M., & Chandler, M. M. (2011). Motivating employees. In *APA handbook of industrial and organizational psychology, Vol 3: Maintaining, expanding, and contracting the organization* (pp. 65–135). American Psychological Association.

Diehl, M., Semegon, A. B., & Schwarzer, R. (2006). Assessing Attention Control in Goal Pursuit: A Component of Dispositional Self-Regulation. *Journal of Personality Assessment*, *86*(3), 306–317.

Dillman, D. A., Smyth, J. D., & Christian, L. Melani. (2014). *Internet, phone, mail, and mixed-mode surveys : the tailored design method* (Fourth edition.). Wiley.

Douglas, B. D., Ewell, P. J., & Brauer, M. (2023). Data quality in online human-subjects research: Comparisons between MTurk, Prolific, CloudResearch, Qualtrics, and SONA. *Plos one*, *18*(3), e0279720.

Douglas, Kiewitz, C., Martinko, M. J., Harvey, P., Kim, Y., & Chun, J. U. (2008). Cognitions, emotions, and evaluations: An elaboration likelihood model for workplace aggression. *The Academy of Management Review*, *33*(2), 425–451.

Einarsen, S. (2000). Harassment and bullying at work: A review of the Scandinavian approach. *Aggression and Violent Behavior*, *5*(4), 379-401.

Ellis, H. C, Moore, B. A., Varner, L. J., & Ottaway, S. A. 1997. Depressed mood, task organization, cognitive interference, and memory: Irrelevant thoughts predict recall performance. *Journal of Social Behavior and Personality, 12*: 453-470.

Enders, C. K., & Bandalos, D. L. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling, 8*(3), 430-457.

Fang, H., He, B., Fu, H., & Meng, L. (2017). Being eager to prove oneself: U-shaped relationship between competence frustration and intrinsic motivation in another activity. *Frontiers in Psychology*, *8*, 2123.

Ferreira, I., Cheng, J., & Adams, B. (2021). The" Shut the f** k up" phenomenon: Characterizing incivility in Open Source code review discussions. *Proceedings of the ACM on Human-Computer Interaction*, *5*(CSCW2), 1-35.

Flatt, C., & Jacobs, R. L. (2019). Principle assumptions of regression analysis: Testing, techniques, and statistical reporting of imperfect data sets. *Advances in Developing Human Resources*, *21*(4), 484-502.

Fonseca, A., Brauer, M., Moisuc, A., & Nugier, A. (2013). Cognitive load causes people to react ineffectively to others' norm transgressions. *Journal of Applied Social Psychology*, *43*(7), 1518-1527.

Francis, Holmvall, & O'Brien. (2015). The influence of workload and civility of treatment on the perpetration of e-mail incivility. *Computers in Human Behavior, 46*, 191-201.

Friedman, J. H. (2001). Greedy function approximation: a gradient boosting machine. *Annals of Statistics*, 1189-1232.

Gallus, J. A., Bunk, J. A., Matthews, R. A., Barnes-Farrell, J. L., & Magley, V. J. (2014). An eye for an eye? Exploring the relationship between workplace incivility experiences and perpetration. *Journal of Occupational Health Psychology, 19*(2), 143–154.

Garcia, P. R. J. M., Restubog, S. L. D., Lu, V. N., Amarnani, R. K., Wang, L., & Capezio, A. (2019). Attributions of blame for customer mistreatment: Implications for employees' service performance and customers' negative word of mouth. *Journal of Vocational Behavior*, *110*, 203–213.

Gelfand, M. J., Aycan, Z., Erez, M., & Leung, K. (2017). Cross-cultural industrial organizational psychology and organizational behavior: A hundred-year journey. *Journal of Applied Psychology*, *102*(3), 514.

Gerace, A. (2020). Internal and external attributions. *Encyclopedia of personality and individual differences*, 2328-2334.

Gerlach, P., Teodorescu, K., & Hertwig, R. (2019). The truth about lies: A meta-analysis on dishonest behavior. *Psychological Bulletin, 145*(1), 1.

Gilbert, D. T., Krull, D. S., & Pelham, B. W. (1988). Of thoughts unspoken: Social inference and the self-regulation of behavior. *Journal of Personality and Social Psychology*, *55*(5), 685.

Gilbert, D. T., Pelham, B. W., & Krull, D. S. (1988). On cognitive busyness: When person perceivers meet persons perceived. *Journal of Personality and Social Psychology*, *54*(5), 733.

Gillet, N., Fouquereau, E., Huyghebaert, T., & Colombat, P. (2015). The effects of job demands and organizational resources through psychological need satisfaction and thwarting. *The Spanish Journal of Psychology*, *18*, E28–E28.

Giumetti, G., Mckibben, E., Hatfield, A., Schroeder, A., & Kowalski, R. (2012). Cyber incivility @ work: The new age of interpersonal deviance. *Cyberpsychology, Behavior, and Social Networking, 15*(3), 148-154.

Giumetti, G. W., Hatfield, A. L., Scisco, J. L., Schroeder, A. N., Muth, E. R., & Kowalski, R. M. (2013). What a rude e-mail! Examining the differential effects of incivility versus support on mood, energy, engagement, and performance in an online context. *Journal of Occupational Health Psychology, 18*(3), 297–309.

Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work: Its impact on well-being and performance. *Research in Personnel and Human Resources Management, 30*(1), 115-157.

Goldman, C. (2022). *Don't Take That Tone with Me! An Examination of Attribution and Evaluation as a Consequence of Incivility Perceived in Workplace E-mail.* Unpublished Master's thesis, Colorado State University, Fort Collins, CO, USA.

Hallgren, K. A. (2012). Computing inter-rater reliability for observational data: an overview and tutorial. *Tutorials in quantitative methods for psychology*, *8*(1), 23.

Han, S. J., Bonn, M. A., & Cho, M. (2016). The relationship between customer incivility, restaurant frontline service employee burnout and turnover intention. *International Journal of Hospitality Management*, *52*, 97-106.

Han, S., Harold, C. M., Oh, I., Kim, J. K., & Agolli, A. (2022). A meta-analysis integrating 20 years of workplace incivility research: Antecedents, consequences, and boundary conditions. *Journal of Organizational Behavior*, *43*(3), 497–523.

Harmon-Jones, C., Bastian, B., & Harmon-Jones, E. (2016). The discrete emotions questionnaire: A new tool for measuring state self-reported emotions. *PloS one*, *11*(8), e0159915.

Hart, S. G. (2006, October). NASA-task load index (NASA-TLX); 20 years later. In *Proceedings of the human factors and ergonomics society annual meeting* (Vol. 50, No. 9, pp. 904-908). Sage CA: Los Angeles, CA: Sage publications.

Harvey, P., Madison, K., Martinko, M., Crook, T. R., & Crook, T. A. (2014). Attribution theory in the organizational sciences: The road traveled and the path ahead. *Academy of Management Perspectives*, *28*(2), 128-146.

Harvey, P., Martinko, M. J., & Borkowski, N. (2017). Justifying deviant behavior: The role of attributions and moral emotions. *Journal of Business Ethics*, 779-795.

He, Y., Walker, J. M., Payne, S. C., & Miner, K. N. (2021). Explaining the negative impact of workplace incivility on work and non-work outcomes: The roles of negative rumination and organizational support. *Stress and Health*, *37*(2), 297-309.

Heider, F. (1958). The naive analysis of action.

Hershcovis, M. S., & Barling, J. (2010). Comparing victim attributions and outcomes for workplace aggression and sexual harassment. *Journal of Applied Psychology*, *95*(5), 874–888.

Hershcovis, M. (2011). "Incivility, social undermining, bullying. . .oh my!": A call to reconcile constructs within workplace aggression research. *Journal of Organizational Behavior, 32*(3), 499–519.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*(3), 513.

Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological Psychology, 45*, 73–93.

Howard, D. J. (2021). *Hello Traitor: An Examination of Individual Differences in Perceptions of Technology-Related Incivility* (Doctoral dissertation, University of South Florida).

Howard, J. L., Slemp, G. R., & Wang, X. (2024). Need support and need thwarting: A meta-analysis of autonomy, competence, and relatedness supportive and thwarting behaviors in student populations. *Personality and Social Psychology Bulletin*, 01461672231225364.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1-55.

Huang, J. L., Curran, P. G., Keeney, J., Poposki, E. M., & DeShon, R. P. (2012). Detecting and deterring insufficient effort responding to surveys. *Journal of Business and Psychology, 27*(1), 99-114.

Ismail, I. R., Poon, J. M., & Arshad, R. (2018). Effects of workplace incivility, negative affectivity and hurt feelings on coworker helping. *UKM Journal of Management, 52*, 33-45.

Itzkovich, Y., & Heilbrunn, S. (2016). The role of co-workers' solidarity as an antecedent of incivility and deviant behavior in organizations. *Deviant Behavior, 37*(8), 861-876.

Jackson, T. W., Burgess, A., & Edwards, J. (2006). A simple approach to improving e-mail communication. *Communications of the ACM*, *49*(6), 107-109.

Jak, S., Jorgensen, T. D., Verdam, M. G. E., Oort, F. J., & Elffers, L. (2020). Analytical power calculations for structural equation modeling: A tutorial and Shiny app. *Behavior Research Methods*.

Jiang, L., Xu, X. V., & Jacobs, S. (2023). From incivility to turnover intentions among nurses: a multifoci and self-determination perspective. *Journal of Nursing Management*, 2023.

Johns, G. (2018). Advances in the treatment of context in organizational research. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*, 21-46.
Jones, E. E., & Davis, K. E. (1965). From acts to dispositions the attribution process in person perception. In *Advances in Experimental Social Psychology* (Vol. 2, pp. 219-266). Academic Press.
Jorgensen, T. D., Pornprasertmanit, S., Schoemann, A. M., Rosseel, Y., Miller, P., Quick, C., & Garnier-Villarreal, M. (2022). semTools: Useful tools for structural equation modeling. *R package version 0.5*, *6*.
Kabat-Farr, Cortina, L. M., & Marchiondo, L. A. (2018). The emotional aftermath of incivility: Anger, guilt, and the role of organizational commitment. *International Journal of Stress Management*, *25*(2), 109–128.
Kane, M. J., Conway, A. R., Miura, T. K., & Colflesh, G. J. (2007). Working memory, attention control, and the N-back task: a question of construct validity. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *33*(3), 615.
Kanfer, R., & Ackerman, P. L. (1989). Motivation and cognitive abilities: An integrative/aptitude-treatment interaction approach to skill acquisition. *Journal of Applied Psychology, 74*(4), 657.
Kanfer, R., Frese, M., & Johnson, R. E. (2017). Motivation related to work: A century of progress. *Journal of Applied Psychology, 102*(3), 338–355.
Kedharnath, U., Henle, C. A., & Mumford, T. (2023). Attributions for abusive supervision: Who do subordinates blame and does it matter?. *Scandinavian Journal of Psychology*.
Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist*, *28*(2), 107.
Kent, R. L., & Martinko, M. J. (1995). The development and evaluation of a scale to measure organizational attributional style. *Attribution theory: An organizational perspective*, 53-75.
Klitmøller, A., Schneider, S. C., & Jonsen, K. (2015). Speaking of global virtual teams: language differences, social categorization and media choice. *Personnel Review*.
Koo, T. K., & Li, M. Y. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *Journal of Chiropractic Medicine*, *15*(2), 155-163.
Kovjanic, S., Schuh, S. C., & Jonas, K. (2013). Transformational leadership and performance: An experimental investigation of the mediating effects of basic needs satisfaction and work engagement. *Journal of Occupational and Organizational Psychology*, *86*(4), 543-555.
Lai, K., & Green, S. B. (2016). The problem with having two watches: Assessment of fit when RMSEA and CFI disagree. *Multivariate Behavioral Research, 51*(2-3), 220-239.
Lalwani, N., & Duval, T. S. (2000). The moderating effects of cognitive appraisal processes on self-attribution of responsibility. *Journal of Applied Social Psychology*, *30*(11), 2233-2245.
Lachowicz, M. J., Preacher, K. J., & Kelley, K. (2018). A novel measure of effect size for mediation analysis. *Psychological Methods*, *23*(2), 244.
LaRose, R., & Tsai, H. Y. S. (2014). Completion rates and non-response error in online surveys: Comparing sweepstakes and pre-paid cash incentives in studies of online behavior. *Computers in Human Behavior*, *34*, 110-119.
Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping* (pp. 150–153). Springer.

Leiter, M. P., Laschinger, H. K. S., Day, A., & Oore, D. G. (2011). The impact of civility interventions on employee social behavior, distress, and attitudes. *Journal of Applied Psychology*, *96*(6), 1258-1274.

Lee, H. M., & Li, B. J. (2023). So far yet so near: Exploring the effects of immersion, presence, and psychological distance on empathy and prosocial behavior. *International Journal of Human-Computer Studies, 176*, 103042.

Lim, S., & Cortina, L. M. (2005). Interpersonal mistreatment in the workplace: the interface and impact of general incivility and sexual harassment. *Journal of applied psychology*, *90*(3), 483.

Lim, S., Cortina, L. M., & Magley, V. J. (2008). Personal and workgroup incivility: impact on work and health outcomes. *Journal of Applied Psychology*, *93*(1), 95.

Lim, S., & Lee, A. (2011). Work and nonwork outcomes of workplace incivility: Does family support help? *Journal of Occupational Health Psychology, 16*(1), 95–111.

Lim, V., & Teo, T. (2009). Mind your E-manners: Impact of cyber incivility on employees' work attitude and behavior. *Information & Management*, *46*(8), 419–425.

Linderbaum, B. A., & Levy, P. E. (2010). The development and validation of the Feedback Orientation Scale (FOS). *Journal of Management*, *36*(6), 1372–1405.

Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198-1202.

Lord, R.G., & Smith, J. E. (1983). Theoretical, information processing, and situational factors affecting attribution theory models of organizational behavior. *The Academy of Management Review*, *8*(1), 50–60.

Lu, W., Wu, H., Liu, S., & Sun, B. (2023). "Render Good for Evil" or "Take an Eye for an Eye"? The double-edged sword of customer mistreatment. *Journal of Business and Psychology*, *38*(4), 941-953.

Mackey, Frieder, R. E., Brees, J. R., & Martinko, M. J. (2017). Abusive supervision: A meta-analysis and empirical review. *Journal of Management, 43*(6), 1940–1965.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*(1), 83.

Mao, C., Chang, C.-H., Johnson, R. E., & Sun, J. (2019). Incivility and employee performance, citizenship, and counterproductive behaviors: Implications of the social context. *Journal of Occupational Health Psychology, 24*(2), 213–227.

Marchiondo, Cortina, L. M., & Kabat-Farr, D. (2018). Attributions and appraisals of workplace incivility: Finding light on the dark side?: Incivility attributions and appraisals. *Applied Psychology*, *67*(3), 369–400.

Martin, R. J., Hine, D. W., & Barling, J. (2005). Development and validation of the uncivil workplace behavior questionnaire. *Journal of Occupational Health Psychology*, *10*(4), 477–490.

Martinko, M. J. (1995). Attribution theory. *The Blackwell Encyclopedic Dictionary of Organizational Behavior. London: Blackwell*, 21-3.

Martinko, M. J., Douglas, S. C., & Harvey, P. (2006). Attribution theory in industrial and organizational psychology: A review. *International Review of Industrial and Organizational Psychology 2006*, *21*, 127-187.

Martinko, M. J., Harvey, P., & Dasborough, M. T. (2011). Attribution theory in the organizational sciences: A case of unrealized potential. *Journal of Organizational Behavior*, *32*(1), 144-149.

Martinko, M. J., & Mackey, J. D. (2019). Attribution theory: An introduction to the special issue. *Journal of Organizational Behavior*, *40*(5), 523-527.

Matta, F. K., Erol-Korkmaz, H. T., Johnson, R. E., & Biçaksiz, P. (2014). Significant work events and counterproductive work behavior: The role of fairness, emotions, and emotion regulation. *Journal of Organizational Behavior*, *35*(7), 920–944.

Mayer, D. M., Thau, S., Workman, K. M., Van Dijke, M., & De Cremer, D. (2012). Leader mistreatment, employee hostility, and deviant behaviors: Integrating self-uncertainty and thwarted needs perspectives on deviance. *Organizational Behavior and Human Decision Processes*, *117*(1), 24-40.

McAuley, E., & Shaffer, S. (1993). Affective responses to externally and personally controllable attributions. *Basic and Applied Social Psychology*, *14*(4), 475-485.

McCarthy, K. A. (2014). *e-Rudeness at Work: The Impact of Rude E-mail on Employee Performance* (Doctoral dissertation, UC Irvine).

McCarthy, K. A. (2016). Is rudeness really that common? An exploratory study of incivility at work. *Journal of Organizational Computing and Electronic Commerce*, *26*(4), 364-374.

McCarthy, K., Pearce, J. L., Morton, J., & Lyon, S. (2020). Do you pass it on? An examination of the consequences of perceived cyber incivility. *Organization Management Journal, 17*(1), 43–58.

McCarthy, K., Pillai, R., Cherry, B., & Steigerwald, M. (2019). From cyber to e-mail incivility: A psychometric assessment and measure validation study. *Organization Management Journal*, *16*(2), 61-68.

Meyer, R. D., Dalal, R. S., & Hermida, R. (2010). A review and synthesis of situational strength in the Organizational Sciences. *Journal of Management*, *36*(1), 121-140.

Meyer, R. D., Dalal, R. S., José, I. J., Hermida, R., Chen, T. R., Vega, R. P., ... & Khare, V. P. (2011). Measuring job-related situational strength and assessing its interactive effects with personality on voluntary work behavior. *Journal of Management*, *40*(4), 1010-1041.

Michalak, R., Kiffin-Petersen, S., & Ashkanasy, N. M. (2017). Coping with Interpersonal Mistreatment: Not a Case of "Either Or," but Rather "It Depends". *The handbook of stress and health: A guide to research and practice*, 365-387.

Milam, A. C., Spitzmueller, C., & Penney, L. M. (2009). Investigating individual differences among targets of workplace incivility. *Journal of Occupational Health Psychology, 14*(1), 58–69.

Mischel, W. 1977. The interaction of person and situation. In D. Magnusson & N. S. Endler (Eds.), *Personality at the crossroads: Current issues in interactional psychology*: 333-352. Hillsdale, NJ: Lawrence Erlbaum.

Molnar, C. (2020). *Interpretable Machine Learning: A Guide for Making Black Box Models Explainable*. Retrieved from https://christophm.github.io/interpretable-ml-book/

Moon, C., Weick, M., & Uskul, A. K. (2018). Cultural variation in individuals' responses to incivility by perpetrators of different rank: The mediating role of descriptive and injunctive norms. *European Journal of Social Psychology*, *48*(4), 472-489.

Motowidlo, S. J. (2003). Job performance. *Handbook of Psychology: Industrial and Organizational Psychology*, *12*(4), 39-53.

Motowidlo, S. J., & Van Scotter, J. R. (1994). Evidence that task performance should be distinguished from contextual performance. *Journal of Applied Psychology, 79*(4), 475–480

Mouratidis, K., & Papagiannakis, A. (2021). COVID-19, internet, and mobility: The rise of telework, telehealth, e-learning, and e-shopping. *Sustainable Cities and Society*, *74*, 103182.

Murphy, K. R., & Kroeker, L. P. (1989). Dimensions of job performance. *Testing: Applied and Theoretical Perspectives*, 218-247.

Newman, D. A. (2014). Missing data: Five practical guidelines. *Organizational Research Methods*, *17*(4), 372-411.

Oehlert, G. W. 1992. A note on the delta method. *The American Statistician*, 46: 27-29.

O'Laughlin, K. D., Martin, M. J., & Ferrer, E. (2018). Cross-sectional analysis of longitudinal mediation processes. *Multivariate Behavioral Research*, *53*(3), 375-402.

Oswald, F. L., Behrend, T. S., Putka, D. J., & Sinar, E. (2020). Big data in industrial-organizational psychology and human resource management: Forward progress for organizational research and practice. *Annual Review of Organizational Psychology and Organizational Behavior*, *7*(1), 505-533.

Papacharissi, Z. (2004). Democracy online: Civility, politeness, and the democratic potential of online political discussion groups. *New Media & Society*, *6*(2), 259-283.

Park, H. M., Carter, K. M., & Phillips, J. M. (2023). Resisting delegation: the Influence of incivility and developmental tasks on commitment to the supervisor and delegation resistance. *Journal of Business and Psychology*, *38*(6), 1245–1266. https://doi.org/10.1007/s10869-023-09898-4

Park, L. S., & Martinez, L. R. (2022). An "I" for an "I": A systematic review and meta-analysis of instigated and reciprocal incivility. *Journal of Occupational Health Psychology, 27*(1), 7–21.

Park, Y., Fritz, C., & Jex, S. M. (2018). Daily cyber incivility and distress: The moderating roles of resources at work and home. *Journal of Management*, *44*(7), 2535-2557.

Park, Y., & Haun, V. (2018). The long arm of e-mail incivility: Transmitted stress to the partner and partner work withdrawal. *Journal of Organizational Behavior, 39*(10), 1268-1282.

Parker, S. K., Morgeson, F. P., & Johns, G. (2017). One hundred years of work design research: Looking back and looking forward. *Journal of Applied Psychology, 102*(3),

Parker, S. K., Ward, M. K., & Fisher, G. G. (2021). Can high-quality jobs help workers learn new tricks? A multidisciplinary review of work design for cognition. *Academy of Management Annals*, *15*(2), 406-454.

Penney, L. M. (2003). *Workplace incivility and counterproductive workplace behavior (CWB): what is the relationship and does personality play a role?*. University of South Florida.

Penney, & Spector, P. E. (2005). Job stress, incivility, and counterproductive work behavior (CWB): the moderating role of negative affectivity. *Journal of Organizational Behavior, 26*(7), 777–796.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539-569.

Podsakoff, N. P., Whiting, S. W., Podsakoff, P. M., & Blume, B. D. (2009). Individual- and organizational- level consequences of organizational citizenship behavior: A meta-analysis. *Journal of Applied Psychology, 94*, 122–141.

Porath, C. L., & Erez, A. (2007). Does rudeness really matter? The effects of rudeness on task performance and helpfulness. *Academy of Management Journal*, *50*(5), 1181-1197.
Porath, C. L., & Pearson, C. M. (2010). The cost of bad behavior. *Organizational Dynamics, 39*(1), 64-71.
Porath, C. L., & Pearson, C. M. (2012). Emotional and behavioral responses to workplace incivility and the impact of hierarchical status. *Journal of Applied Social Psychology, 42*, E326-E357.
Porath, C. L., & Pearson C. (2013). The price of incivility. *Harvard Business Review, 91*(1–2), 115–121.
Prasad, J. J. (2019). *It Takes Two to Tango: Examining the Interdependence of State Working Memory Capacity and Ego Depletion*. Michigan State University.
Preacher, K. J., & Coffman, D. L. (2006, May). Computing power and minimum sample size for RMSEA [Computer software]. Available from http://quantpsy.org/.
Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, *40*(3), 879-891.
Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: quantitative strategies for communicating indirect effects. *Psychological Methods*, *16*(2), 93.
Prolific. (2024). Prolific: The Online Participant Recruitment Platform for Researchers. Retrieved from https://researcher-help.prolific.com/hc/en-gb/articles/4407695146002-Prolific-s-payment-principles.
Putka, D. J., Beatty, A. S., & Reeder, M. C. (2018). Modern prediction methods: New perspectives on a common problem. *Organizational Research Methods*, *21*(3), 689-732.
Qualtrics. (2024). Fraud Detection. Retrieved from https://www.qualtrics.com/support/survey-platform/survey-module/survey-checker/fraud-detection/
Radel, R., Pelletier, L., & Sarrazin, P. (2013). Restoration processes after need thwarting: When autonomy depends on competence. *Motivation and Emotion*, *37*, 234-244.
Rafaeli, A., Erez, A., Ravid, S., Derfler-Rozin, R., Treister, D. E., & Scheyer, R. (2012). When customers exhibit verbal aggression, employees pay cognitive costs. *Journal of Applied Psychology, 97*(5), 931–950.
Rakha, & Amer, S. M. (2023). Customer Incivility and Counterproductive Work Behaviors in Egyptian Healthcare Service: Does Workplace Social Support Buffer? *International Business Research (Toronto), 16*(10), 48–.
Randall, J. G., Oswald, F. L., & Beier, M. E. (2014). Mind-wandering, cognition, and performance: a theory-driven meta-analysis of attention regulation. *Psychological bulletin*, *140*(6), 1411.
Ridgeway, G. (2007). Generalized Boosted Models: A guide to the gbm package. *Update*, *1*(1), 2007.
Robinson, S. L., & Bennett, R. J. (1995). A typology of deviant workplace behaviors: A multidimensional scaling study. *Academy of Management Journal*, *38*(2), 555-572.
Robinson, S., O'Reilly, J., Wang, W., & Robinson, S. (2013). Invisible at work: An integrated model of workplace ostracism. *Journal of Management*, *39*(1), 203–231.
Rösner, L., Winter, S., & Krämer, N. (2016). Dangerous minds? Effects of uncivil online comments on aggressive cognitions, emotions, and behavior. *Computers in Human Behavior, 58*, 461-470.

Rosseel, Y. (2012). lavaan: An R package for Structural Equation Modeling. *Journal of Statistical Software*, *48*(2), 1–36.
Russell, D. (1982). The causal dimension scale: A measure of how individuals perceive causes. *Journal of Personality and Social Psychology*, *42,* 1137–1145.
Russell, D.W. (1991). The measurement of attribution process: Trait and situational approaches. In S.L. Zelen (Ed.), *New models, new extensions of attribution theory*. New York: Springer-Verlag.
Russell, E., Jackson, T. W., Fullman, M., & Chamakiotis, P. (2023). Getting on top of work-e-mail: A systematic review of 25 years of research to understand effective work-e-mail activity. *Journal of Occupational and Organizational Psychology*.
Ryan, R. M., Bernstein, J. H., & Brown, K. W. (2010). Weekends, work, and well-being: Psychological need satisfactions and day of the week effects on mood, vitality, and physical symptoms. *Journal of Social and Clinical Psychology*, *29*(1), 95-122.
Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist*, *55*(1), 68–78.
Savalei, V. (2012). The relationship between root mean square error of approximation and model misspecification in confirmatory factor analysis models. *Educational and Psychological Measurement, 72*(6), 910-932.
Schilpzand, P., De Pater, I. E., & Erez, A. (2016). Workplace incivility: A review of the literature and agenda for future research. *Journal of Organizational Behavior*, *37*, S57-S88.
Schilpzand, P., Leavitt, K., & Lim, S. (2016). Incivility hates company: Shared incivility attenuates rumination, stress, and psychological withdrawal by reducing self-blame. *Organizational Behavior and Human Decision Processes*, *133*, 33-44.
Schwarzer, R., Diehl, M., & Schmitz, G. S. (1999). *Self-Regulation Scale* [Database record]. APA PsycTests.
Scisco, J. L., Giumetti, G. W., Bodinger, J. F., Randall, K. J., & Shemanskis, R. N. (2019). The impacts of face-to-face and cyber incivility on performance, helping behavior, counterproductive behaviors, and physiological activity. *Occupational Health Science, 3*, 409-420.
Seli, P., Risko, E. F., Smilek, D., & Schacter, D. L. (2016). Mind-wandering with and without intention. *Trends in Cognitive Sciences*, *20*(8), 605-617.
Sheldon, K. M., & Gunz, A. (2009). Psychological needs as basic motives, not just experiential requirements. *Journal of Personality*, *77*(5), 1467-1492.
Sinclair, R. R., Martin, J. E., & Croll, L. W. (2002). A threat-appraisal perspective on employees' fears about antisocial workplace behavior. *Journal of Occupational Health Psychology*, *7*(1), 37–56.
Sliter, M., Jex, S., Wolford, K., & McInnerney, J. (2010). How rude! Emotional labor as a mediator between customer incivility and employee outcomes. *Journal of Occupational Health Psychology*, *15*(4), 468.
Tabachnick, B. G., & Fidell, L. S. (2013). Using multivariate statistics (6th ed.). Boston, MA: Pearson.
Tajfel, H., & Turner, J. C. (1978). Intergroup behavior. *Introducing Social Psychology*, *401*, 466.
Taylor, S. G., Bedeian, A. G., & Kluemper, D. H. (2012). Linking workplace incivility to citizenship performance: The combined effects of affective commitment and conscientiousness. *Journal of Organizational Behavior*, *33*(7), 878–893.

Tetlock, P. E. (1985). Accountability: A social check on the Fundamental Attribution Error. *Social Psychology Quarterly*, *48*(3), 227–236.

Trépanier, S. G., Fernet, C., & Austin, S. (2013). Workplace bullying and psychological health at work: The mediating role of satisfaction of needs for autonomy, competence and relatedness. *Work & Stress, 27*(2), 123-140.

Troth, Lawrence, S. A., Jordan, P. J., & Ashkanasy, N. M. (2018). Interpersonal Emotion Regulation in the Workplace: A Conceptual and Operational Review and Future Research Agenda. *International Journal of Management Reviews : IJMR, 20*(2), 523–543.

Turnage, A. K. (2007). E-mail flaming behaviors and organizational conflict. *Journal of Computer-Mediated Communication*, *13*(1), 43-59.

Unsworth, N., Heitz, R. P., Schrock, J. C., & Engle, R. W. (2005). An automated version of the operation span task. *Behavior Research Methods, 37*(3), 498-505.

Unsworth, N., Miller, A. L., & Robison, M. K. (2021). Are individual differences in attention control related to working memory capacity? A latent variable mega-analysis. *Journal of Experimental Psychology: General*, *150*(7), 1332-1357.

Unsworth, N., Redick, T. S., Heitz, R. P., Broadway, J. M., & Engle, R. W. (2009). Complex working memory span tasks and higher-order cognition: A latent-variable analysis of the relationship between processing and storage. *Memory, 17*(6), 635-654.

Van den Broeck, A., Ferris, D. L., Chang, C. H., & Rosen, C. C. (2016). A review of self-determination theory's basic psychological needs at work. *Journal of management*, *42*(5), 1195-1229.

Van den Broeck, A., Howard, J. L., Van Vaerenbergh, Y., Leroy, H., & Gagné, M. (2021). Beyond intrinsic and extrinsic motivation: A meta-analysis on self-determination theory's multidimensional conceptualization of work motivation. *Organizational Psychology Review*, *11*(3), 240-273.

Van den Broeck, A., Vansteenkiste, M., De Witte, H., Soenens, B., & Lens, W. (2010). Capturing autonomy, competence, and relatedness at work: Construction and initial validation of the Work-related Basic Need Satisfaction scale. *Journal of Occupational and Organizational Psychology*, *83*(4), 981-1002.

Van Deursen, A. J., Bolle, C. L., Hegner, S. M., & Kommers, P. A. (2015). Modeling habitual and addictive smartphone behavior: The role of smartphone usage types, emotional intelligence, social stress, self-regulation, age, and gender. *Computers in human behavior*, *45*, 411-420.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, *3*(1), 4-70.

Vasconcelos, A. F. (2020). Workplace incivility: a literature review. *International Journal of Workplace Health Management, 13*(5), 513-542.

Waldvogel, J. (2007). Greetings and closings in workplace e-mail. *Journal of Computer-Mediated Communication*, *12*(2), 456-477.

Wang, Q., Teng, X., Cai, Z., Qu, Y., & Qian, J. (2021). My fault? Coworker incivility and organizational citizenship behavior: the moderating role of attribution orientation on state guilt. *Frontiers in Psychology, 12*, 683843.

Wang, Y. A., & Rhemtulla, M. (2021). Power analysis for parameter estimation in structural equation modeling: A discussion and tutorial. *Advances in Methods and Practices in Psychological Science*, *4*(1), 251524592091825.

Wang, X., Lin, X., & Shao, B. (2023). Artificial intelligence changes the way we work: A close look at innovating with chatbots. *Journal of the Association for Information Science and Technology*, *74*(3), 339-353.
Wasti, S. A., & Erdaş, K. D. (2019). The construal of workplace incivility in honor cultures: evidence from Turkey. *Journal of Cross-Cultural Psychology, 50*(1), 130–148.
Watson, D., & Clark, L. A. (1994). *Manual for the positive and negative affect schedule (Expanded form)* (Unpublished manuscript). University of Iowa, Iowa City, IA.
Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.
Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, *92*(4), 548–573.
Weiner, B. (2000). Intrapersonal and interpersonal theories of motivation from an attributional perspective. *Educational Psychology Review*, *12*, 1-14.
Weingart, L., Behfar, K., Bendersky, C., Todorova, G., & Jehn, K. (2015). The directness and oppositional intensity of conflict expression. *Academy of Management Review*, *40*(2), 235–262. https://doi.org/10.5465/amr.2013-0124.
Weiss, H. M., & Cropanzano, R. (1996). Affective events theory. *Research in Organizational Behavior*, *18*(1), 1-74.
Welbourne, J., Gangadharan, A., Sariol, A., & Hurrell, Joseph J. (2015). Ethnicity and cultural values as predictors of the occurrence and impact of experienced workplace incivility. *Journal of Occupational Health Psychology, 20*(2), 205-217.
Welbourne, J. L., & Sariol, A. M. (2017). When does incivility lead to counterproductive work behavior? Roles of job involvement, task interdependence, and gender. *Journal of Occupational Health Psychology, 22*(2), 194–206.
Whetten, D. A. (1989). What constitutes a theoretical contribution?. *Academy of Management Review*, *14*(4), 490-495.
Wickens, C. (2021). Attention: Theory, principles, models and applications. *International Journal of Human–Computer Interaction*, *37*(5), 403-417.
Wickens, C. D. (2007). Attention to attention and its applications: A concluding view. *Attention: From Theory to Practice*, 239-249.
Wickens, C. D., & Carswell, C. M. (2021). Information processing. *Handbook of Human Factors and Ergonomics*, 114-158.
Williams, K. D. (2007). Ostracism. *Annu. Rev. Psychol.*, *58*, 425-452.
Williams, L.J. & Anderson, S.E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management, 17*, 601–617.
Wilson, T. D., & Gilbert, D. T. (2005). Affective forecasting: Knowing what to want. *Current Directions in Psychological Science*, *14*(3), 131-134.
Wong, P. T., & Weiner, B. (1981). When people ask" why" questions, and the heuristics of attributional search. *Journal of Personality and Social Psychology*, *40*(4), 650.
Yang, L-Q., Fox, S., & McMahon, K. Mistreatment in Organizations. (2023). In L. E. Tetrick, G. G. Fisher, M. T. Ford, & J. Campbell Quick (Eds.), Handbook of Occupational Health Psychology (3rd ed.). American Psychological Association: Washington D.C.

Yang, L. Q., Zheng, X., Liu, X., Lu, C. Q., & Schaubroeck, J. M. (2020). Abusive supervision, thwarted belongingness, and workplace safety: A group engagement perspective. *Journal of Applied Psychology, 105*(3), 230.

Yao, J., Lim, S., Guo, C. Y., Ou, A. Y., & Ng, J. W. X. (2022). Experienced incivility in the workplace: A meta-analytical review of its construct validity and nomological network. *Journal of Applied Psychology*, *107*(2), 193.

Yue, Y., Wang, K. L., & Groth, M. (2015). Incivility breeds civility? Effect of customer mistreatment on employees' daily helping behavior. In *Academy of Management Proceedings* (Vol. 2015, No. 1, p. 10334). Briarcliff Manor, NY 10510: Academy of Management.

Zhan, X., Zhao, X., Guo, Y., Li, Z., & Qin, X. (2023). Revenge or forgiveness? The dual-path mechanism of employee coping with experienced incivility from an attribution perspective. *Asia Pacific Journal of Management*, 1-29.

Zhang, Y., Liu, X., Xu, S., Yang, L. Q., & Bednall, T. C. (2019). Why abusive supervision impacts employee OCB and CWB: A meta-analytic review of competing mediating mechanisms. *Journal of Management*, *45*(6), 2474-2497.

Zhu, H., Lyu, Y., & Ye, Y. (2021). The impact of customer incivility on employees' family undermining: A conservation of resources perspective. *Asia Pacific Journal of Management*, *38*(3), 1061-1083.

APPENDIX A-1: STUDY 1 COGNITIVE INTERVIEW SCRIPT

Thank you for helping me out with this. You are one of the first people to see this material.

My project will involve an experimental vignette design, and I will be asking you to help me ensure the quality of the vignette materials. I will give you more information about the nature of the project and goals of the study later in this interview.

What I would like from you is to pretend that you are a participant without the benefit of knowing about my research. We will go through the participant experience of interacting with the vignette, and I will ask you to "think aloud" as we go through the survey, which means I would like you to verbalize your thoughts, questions, and difficulties as you encounter them. Feel free to express any uncertainties or confusion as it occurs, and don't hesitate to provide feedback when you have it.

As we go through the survey live, consider clarity, typos, and formatting. When we get to survey items, I would also like you to tell me how you would respond to the item if you were a participant. At times, I may interject or ask follow-up questions to get a better understanding of your verbalizations. I might also ask you to explain why you chose to answer an item in a particular way. I will take notes as we go along.

After we finish going through that material, I will have some follow-up questions for you that ask you to reflect on the experience and material presented.

Are you ready to begin?

Probes:

1. Can you repeat the question in your own words?
2. What do you think the question was asking?
3. Is there anything about this that is confusing to you?

'Debrief':

For this study, everyone will receive the same instructions and background information. The experimental manipulation was the e-mail message content (neutral/uncivil): you read the __ one.

Do you have any initial reactions or questions about what we just did?

APPENDIX A-2: STUDY 1 SURVEY

Consent**

Welcome! You have been invited to participate in a short survey conducted by Colorado State University's Department of Psychology. Before you proceed, we would like you to understand the purpose, nature, and expectations of this survey. Please take the time to read this informed consent statement carefully, and do not hesitate to reach out to us if you have any questions or concerns.

Purpose of the Survey: The purpose of this survey is to better understand how individuals evaluate workplace e-mail. Your task will be to complete this survey by reading and responding to a brief, hypothetical workplace scenario and then answering a few questions about a theoretical interaction over e-mail with a coworker. Results from this survey will be used to inform the design of additional studies.

Investigators: The researchers involved in this study are Chloe Goldman, M.S. and Gwenith Fisher, PhD (Colorado State University, Department of Psychology).

Compensation: You will receive course extra credit for your participation in this study. Extra credit points will be commensurate with the total points offered in the course per instructor discretion.

Confidentiality: The survey is confidential. Your individual responses will be recorded online through a secure online survey tool hosted by Colorado State University. Only the researchers listed above will have access to these data. We will not collect any personally identifiable information, such as your name or contact information, unless you choose to provide it voluntarily.

Only aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored on a password-protected, secure server accessible only to the researchers. Final aggregate results will be made available to participants upon request (e-mail chloe.goldman@colostate.edu).

Participation & Withdrawal: Your participation is entirely voluntary. If you choose to participate, you may withdraw at any time without penalty or loss of benefits to which you are otherwise entitled. You may leave any survey question blank if you choose not to answer. Your decision

will not affect your current or future relationship with the Colorado State University's Department of Psychology.

Risks and Benefits: There are no known risks associated with participating in this survey and there are no direct benefits to participating in this survey. However, your participation will contribute to valuable research insights that will benefit the researchers.

Duration and Procedures: The survey will take approximately 10 minutes total to complete. During The Survey you will be asked to provide some general demographic information and read and respond to a brief, hypothetical workplace scenario.

Please answer the questions honestly and to the best of your ability.

Contact Information: If you have any questions about the survey, please feel free to contact Chloe Goldman at chloe.goldman@colostate.edu or Gwen Fisher (Principal Investigator) at Gwen.Fisher@colostate.edu.

Consent to Participate: By clicking "Yes, I agree to participate" below, you agree to participate in this research study, you agree that you have read this consent form, understand what is being requested of you as a participant in this project, and give consent to participate. If you do not wish to continue, please exit the survey window now.

If you have questions about your rights as a participant, please contact the CSU Institutional Review Board (IRB) at: CSU_IRB@colostate.edu || 970-491-1553.

Thank you in advance for your participation!

Do you agree to participate in this study?**

- ○ Yes, I agree to participate

VIGNETTE

Instructions: For the purposes of this study, imagine that you are in the situation described below. After reading about the situation, you will receive an e-mail from your co-worker, which you will evaluate and respond to in the context of the situation as if you were really encountering such a scenario. Please read the background information and e-mail carefully.

Background Information: You are working for a large advertising agency, Super Ads, as a Customer Account Manager. Super Ads specializes in creating cutting-edge, nation-wide ad campaigns for several service provider industries, such as telecommunications, finance, and insurance. Approximately 1,500 employees work for Super Ads, including Graphic Designers, Copywriters, Marketing Managers, and Account Executives.

Over its 20-year history, the agency has engaged in rigorous market research to launch and coordinate multichannel campaigns for many Fortune 100 companies. Super Ads promises clients the development of compelling brand stories, brand imaging expertise, and creative media applications. You have earned a business degree and have had one (1) year of advertising experience before joining Super Ads.

You have now been working for Super Ads for two (2) years. As a Customer Account Manager, your main responsibilities are to create advertising campaigns and make sure the campaign is in line with the client's budget and timeline. In addition, you conduct market research, collaborate with the Creative Director's team to design ads, and study market trends and pop culture.

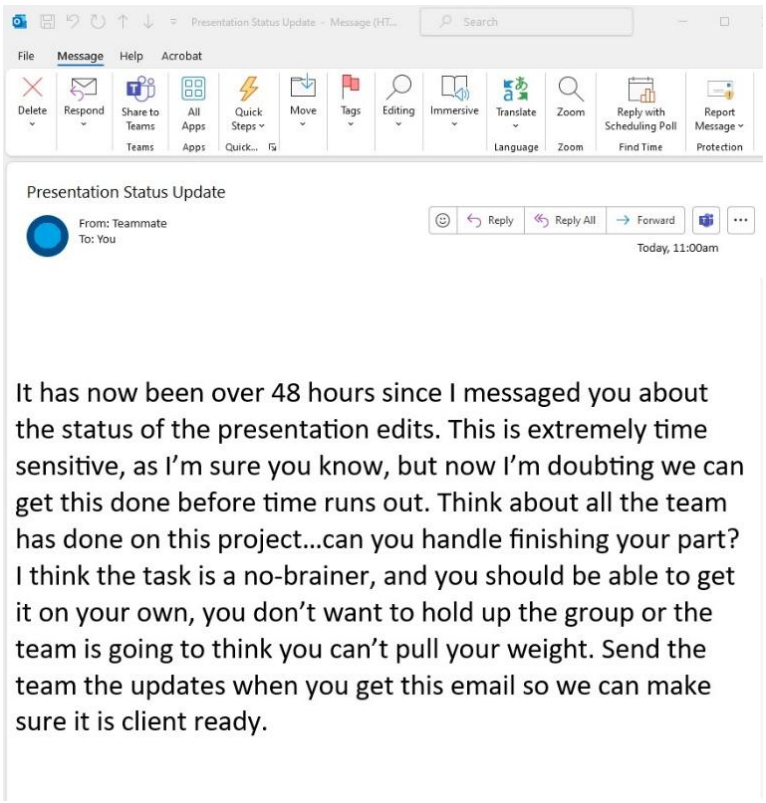
Currently, you are working on a campaign with a team of three other Customer Account Managers, each of whom holds the same rank and position as you do. You are putting a proposal for the campaign together for a client, and you have been working with this team on crafting the final presentation for the past three months.

The client meeting is coming up in the next week, and you are polishing and editing the presentation, which is due to the rest of the team by the end of the business day (5:00pm). While you are working on completing this task, you receive the following e-mail from one of your project teammates at 11:00am.

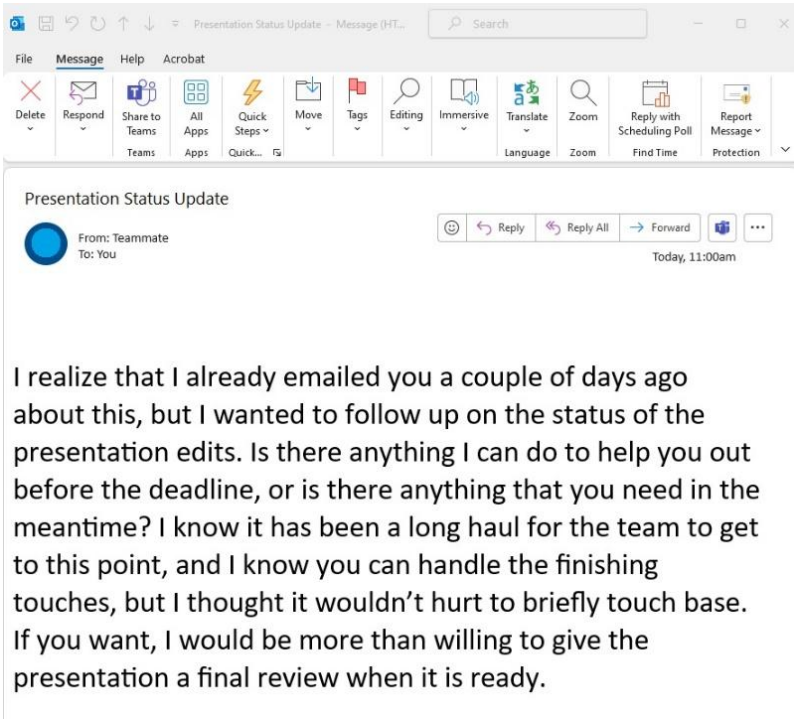
NOTE: You can assume that your teammate has addressed this e-mail to you personally and has not copied anyone else on the e-mail. In addition, the sender included an appropriate e-mail greeting and closing or e-mail signature.

[E-mail Window Image – Randomly either uncivil (a) or neutral (b)]

a)



b)



[Open-ended] Imagining that you really do work with this person, and they sent you this e-mail at work, how would you respond? Please type out your e-mail response to this co-worker in the textbox below:

Perceived Cyber Incivility Scale, items 1-7 only.

[Open-ended] Please describe the tone of the e-mail in your own words.

[Open-ended] Were there any specific words or phrases in this e-mail that influenced your responses to the previous questions?*

Thinking about the background information you were provided, please respond to the following questions:

How relevant is this situation to one you might come across in your own workplace?
How familiar to you is this workplace situation?
How relatable to you is this workplace situation?

- Not at all
- Slightly
- Moderately
- Very
- Extremely

Please select the option "Somewhat disagree".

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

How realistic was this situation?
To what extent did you feel immersed in the situation?

- Not at all
- Slightly
- Moderately
- Very
- Extremely

[Open-ended] What type of information might make this workplace situation clearer or more relatable to you?

How old are you (please enter as a whole number, i.e. number of years)?

Which of the following describes you? Select all that apply.

- White
- Black or African American
- Asian
- Hispanic, Latinx, Chicanx
- American Indian or Alaskan Native
- Middle Eastern or North African
- Native Hawaiian or other Pacific Islander
- Some other race, ethnicity or origin
- Prefer to self describe _____
- Prefer not to say

With which gender do you identify?

- Female
- Male
- Non-Binary/genderqueer
- Questioning
- Prefer to self-describe _____
- Prefer not to say

How would you rate your English language proficiency?

- I do not know English
- A little proficient
- Moderately proficient
- Very proficient
- I am a native English reader/speaker

Are you bilingual or multilingual?

- Yes
- No

Do you identify as bicultural or multicultural?

- Yes
- No

How many years of work experience do you have? (Please enter a whole number greater than or equal to zero).

How many hours per week do you currently get paid to work? (Please enter a whole number greater than or equal to zero).

Approximately how often do you use e-mail as a communication medium at work?

- Regularly throughout the day
- At least a few times a day
- Once a day or less
- Not at all

You are almost finished with the survey. Before exiting, we would like you to respond to a few items that will help us ensure the integrity of the research.

Subjective Response Effort items

Approximately how long did it take you to complete this survey? (Please enter a whole number to indicate number of minutes you spent in the survey).

APPENDIX B-1: STUDY 2 RECRUITMENT

Title: Working Memory and E-mail Communication at Work

We are conducting an academic survey to get your perspective on the e-mails you receive at work. Your responses will help further research that helps organizations understand how to best support employees and their performance in the workplace.

Total earning potential is **$5.15 for 30 minutes** of your time.

This first, brief survey will be used to determine if you are eligible to participate in the study. If you are eligible, you will be invited to participate in the study.

The complete study consists of the following components:

Part 1 (~30 sec) $0.15:

To confirm your eligibility to participate, you will be asked to answer a few questions. You will be compensated $0.15 to answer these preliminary questions. Based on your answers, you may be invited to complete the full study.

Part 2 (~10-12 min) $1.50:

This full survey asks questions regarding your experiences with e-mail at work, and your perspective on various workplace activities. You will also complete a brief working memory task, which will be accompanied by a detailed set of instructions to guide you. Participants who complete the entire survey will be compensated $1.50 for approximately 10-12 minutes of time.

During this part of the study, you will need to use a keyboard to type, so please consider this when selecting the type of device you are using. Also, the working memory task will require 5 minutes of uninterrupted time, therefore it is a good idea to be in an environment where this will be possible for you.

You must complete all questions and correctly answer the majority of the attention check questions to be compensated for the study. Sophisticated statistical control methods will be used to check the validity of responses such that not responding attentively might influence compensation.

If you successfully complete the entire survey, you will be compensated $1.50 and will also be invited to complete Part 3 in one week, for additional compensation of $3.50. Total compensation for attentive completion of all parts of this study is $5.15.

Part 3 (~16-20 min) $3.50:

This survey will ask you to evaluate a hypothetical workplace scenario that involves responding to an e-mail you receive from a coworker. You will also complete a brief working memory task as you did in the previous survey. Participants who complete the entire survey will be compensated $3.50 for approximately 16-20 minutes of time.

During this part of the study, you will need to use a keyboard to type, so please consider this when selecting the type of device you are using. Also, the working memory task will require 5 minutes of uninterrupted time, therefore it is a good idea to be in an environment where this will be possible for you.

You must complete all questions and correctly answer the majority of the attention check questions to be compensated for the study.

This study was approved by the Institutional Review Board (IRB) at Colorado State University.

APPENDIX B-2: STUDY 2 ELIGIBILITY SURVEY

Please select your age [drop-down]:

How many hours per week do you currently get paid to work?
- Less than 20
- 20-34
- 35 or more*

How many years of paid, full-time (35 hours or more per week) work experience do you have? [drop-down *all options except 'less than 1']

Approximately how often do you use e-mail as a communication medium at work?
- Regularly throughout the day*
- At least a few times a day*
- Once a day or less
- Not at all

How would you rate your proficiency with reading and speaking the English language?
- I do not know how to read and speak English
- A little proficient
- Moderately proficient
- Very proficient*
- I am a native reader and speaker of English*

**Selecting these response options would make a participant eligible.*

APPENDIX B-3: STUDY 2 SURVEY 1

NOTE: Skip logic and other survey functionality is not displayed in this appendix

Welcome! You have been invited to participate in a survey conducted by Colorado State University's Department of Psychology. Before you proceed, we would like you to understand the purpose, nature, and expectations of this survey. Please take the time to read this informed consent statement carefully, and do not hesitate to reach out to us if you have any questions or concerns.

Purpose of the Survey: The purpose of this survey is to understand how different individuals react to e-mail at work. For this project, we are asking you to complete two online surveys, which will involve the following types of tasks: providing answers to a series of questions related to your experiences at work, reading and responding to a brief, hypothetical workplace scenario, and completing short working memory tasks. Results from this project will be shared at professional psychology conferences for the purpose of scientific communication of results and may also be published in academic journals.

Investigators: The researchers involved in this study are Chloe Goldman, M.S. and Gwenith Fisher, PhD (Colorado State University, Department of Psychology).

Compensation: You will be compensated a total of $5.15 for your participation in the project. You earned $0.15 for being eligible, and you will earn $1.50 for the completion of Survey 1 and $3.50 for the completion of Survey 2, one week later. Please note that compensation will only be awarded to participants who pass at least 80% of the attention checks (i.e., questions in the survey with an obvious correct response to determine who is paying attention).

Confidentiality: The survey is confidential. Your individual responses will be recorded online through a secure online survey tool hosted by Colorado State University. Only the researchers listed above will have access to these data. We will not collect any personally identifiable information, such as your name or contact information, unless you choose to provide it voluntarily. Only aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored on a password-protected, secure server accessible only to the researchers. Final aggregate results will be made available to participants upon request (e-mail chloe.goldman@colostate.edu).

Participation & Withdrawal: Your participation is entirely voluntary. If you choose to participate, you may withdraw at any time without penalty or loss of benefits to which you are otherwise entitled. You may leave any survey question blank if you choose not to answer. Your decision will not affect your current or future relationship with the Colorado State University's Department of Psychology.

Risks and Benefits: There are no known risks associated with participating in this survey and there are no direct benefits to participating in this survey. However, your participation will

contribute to valuable research insights that may benefit researchers, practitioners, employees, and organizations and advance our understanding of work-related behaviors, attitudes, and experiences.

Duration and Procedures: The two surveys will take approximately 30 minutes total to complete (Survey 1: ~10-12 minutes, Survey 2: ~16-20 minutes). During Survey 1, you will be asked a series of questions related to your work-related behaviors, attitudes, and experiences and you will be asked to complete a short working memory task. One week later you will take Survey 2. During Survey 2 you will be asked to read and respond to a brief, hypothetical workplace scenario and complete a short working memory task. Please answer the questions honestly and to the best of your ability.

Contact Information: If you have any questions about the survey, please feel free to contact Chloe Goldman at chloe.goldman@colostate.edu or Gwen Fisher (Principal Investigator) at Gwen.Fisher@colostate.edu.

Consent to Participate:

By clicking "Yes, I agree to participate" below, you agree that you have read this consent form, understand what is being requested of you as a participant in this project, give consent to participate, and certify that you are at least 18 years of age, are a native or proficient English speaker, and work for pay at least 35 hours per week.

If you have questions about your rights as a participant, please contact the CSU Institutional Review Board (IRB) at: CSU_IRB@colostate.edu || 970-491-1553

Thank you for your participation!

Do you agree to participate in this study?

Yes, I agree to participate
No, I do not wish to participate

Task Instructions and Content

Congratulations, you are finished with the task! A few more things before you finish up. Please proceed to the next page to continue.

Below are a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word.

PANAS

Hostile Attribution Scale (included an attention check item: Please select “Somewhat disagree.”)

Sensitivity to Interpersonal Treatment Scale

Dispositional Self-Regulation & Attention Control Scale (included an attention check item: Please select “Strongly agree.”)

Experienced Cyber Incivility Scale

[Demographic Items]

With which gender do you identify?

- Male
- Female
- Other

Which of the following best describes how you identify racially?

- White
- Black or African American
- Asian
- Hispanic, Latinx, Chicanx
- Other

Do you identify as bicultural or multicultural?

- No
- Yes

Do you consider yourself to be bilingual or multilingual?

- No
- Yes

You have now finished the survey. Before exiting, we would like you to respond to three optional items that will help us ensure the integrity of the research.

Subjective Response Effort items

APPENDIX B-4: STUDY 2 SURVEY 2

[Consent] *See Appendix B-3*

[Vignette] *See Appendix A-2*

[Open-ended] Response Imagining that you really do work with this person, and they sent you this e-mail at work, how would you respond? Please type out your e-mail response to this co-worker in the textbox below:

Perceived Cyber Incivility Scale

Attribution Items (Included attention check item: Please select "Strongly disagree.")

PANAS-X

BPNFS Items

Now, reflecting on your experience evaluating the workplace scenario and e-mail message, to what extent did you feel immersed in the situation?

- Not at all
- Slightly
- Moderately
- Very
- Extremely

Task Instructions and Content

Subjective Performance Items (Included attention check item: Please select "Completely true.")

State Self-Regulation & Attention Control Items

You are almost finished with the survey. Before exiting, we would like you to respond to a few items that will help us ensure the integrity of the research.

Subject Response Effort Items

APPENDIX C: LATENT VARIABLE MEASURES

Sensitivity to Interpersonal Treatment – Survey 1

(Bunk & Magley, 2011)

Instructions: *Please rate the extent to which you agree with the following:*

1. I would remember when my coworkers treat me with respect.*
2. I would remember when my coworkers lie to me.*
3. If my supervisor appreciates my coworker's hard work, it stays on my mind.*
4. It is upsetting to me if my supervisor yells at my coworkers.
5. If my coworkers do not treat each other with respect, it stays on my mind.

Items are rated on a scale of 1-5: 1 (*strongly disagree*) to 5 (*strongly agree*)

**These items were not included in construct aggregation due to psychometric properties.*

Hostile Attribution Bias – Survey 1

(Adams & John, 1997)

Instructions: *Please rate the extent to which you agree or disagree with the following statements:*

1. I commonly wonder what hidden reason another person may have for doing something nice for me.
2. I think most people would lie to get ahead.
3. People pretend to care more about one another than they really do.
4. A person is better off if he or she doesn't trust anyone.

Items are rated on a scale of 1-5. 1 (*strongly disagree*) to 5 (*strongly agree*)

General Positive and Negative Affect Schedule (PANAS) – Survey 1

(Watson, Clark & Tellegen, 1988)

Instructions: *Below are a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word.*

Indicate to what extent you generally feel this way, that is, how you feel *on an average day.*

1. Interested (PA)
2. Excited (PA)
3. Strong (PA)
4. Enthusiastic (PA)
5. Proud (PA)
6. Distressed (NA)
7. Upset (NA)
8. Guilty (NA)
9. Scared (NA)
10. Hostile (NA)

Items rated on a scale of 1-5: 1 (*Very slightly or not at all*), 2 (*a little*), 3 (*moderately*), 4 (*quite a bit*), 5 (*extremely*).

Self-Regulation & Subjective Control of Attention – Surveys 1 & 2
(Diehl et al., 2006; Schwarzer et al., 1999).

Dispositional Regulation – Survey 1

Response scale: 1 (*Not at all true*), 2 (*Barely true*), 3 (*Somewhat true*), 4 (*Completely true*).

To what extent would you say that each statement is true about you in general:

1. I can concentrate on one activity for a long time, if necessary
2. If I am distracted from an activity, I don't have any problem coming back to the topic quickly
3. If an activity arouses my feelings too much, I can calm myself down so that I can continue with the activity soon
4. It is difficult for me to suppress thoughts that interfere with what I need to do (R)
5. I can control my thoughts from distracting me from the task at hand
6. When I worry about something, I cannot concentrate on an activity. (R)
7. I usually have a whole bunch of thoughts and feelings that interfere with my ability to work in a focused way (R)

Items 1, 2, 3, and 5 comprise a positive regulation dimension, 4, 6, and 7 a negative one.

State Regulation – Survey 2

To what extent would you say that each statement is true about you while you were participating in this study:

1. It is difficult for me to suppress thoughts that interfere with what I need to do (R)
2. I can control my thoughts from distracting me from the task at hand
3. If I am interrupted, I won't have any problem resuming my concentrated style of working*

*****_This item was not included in construct aggregation due to its psychometric properties._

Cyber Incivility Scale (Experienced) – Survey 1

(Lim & Teo, 2009)

Instructions: *Rate approximately how often you have experienced any of the following by someone at work:*

Someone _____

1. Said something hurtful to you through e-mail.
2. Used e-mail to say negative things about you that he/she would not say to your face-to-face.
3. Made demeaning remarks about you through e-mail.
4. Inserted sarcastic or mean comments between paragraphs in e-mails.
5. Put you down or was condescending to you in some way through e-mail.
6. Sent you e-mails using a rude or discourteous tone.

Items are rated on a scale of 1-5: 1 *(not at all*) to 5 (*all the time*)

Cyber Incivility Items (Perceived) – Survey 2

(Adapted from Lim & Teo, 2009 and Cortina et al., 2001)

Instructions: To what extent do you agree or disagree that the characteristics or content of this e-mail…

1. Was hurtful
2. Said negative things that the sender would not have said to you face-to-face
3. Was demeaning or derogatory
4. Put you down or was condescending
5. Used a rude or discourteous tone
6. Was unprofessional
7. Was insulting or disrespectful
8. Was sent at an appropriate time*
9. Was intended to be supportive (R)

**This item was not included in construct aggregation due to its psychometric properties.*

Items are rated on a scale of 1-5: 1 *(Strongly disagree*) to 5 (*Strongly agree*)

Basic Negative Emotion Scales (PANAS-X) – Survey 2

(Watson & Clark, 1994)

Instructions: This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and indicate to what extent **you are currently feeling** this way**.**

Items rated on a scale of 1-5: 1 (*Very slightly or not at all*), 2 (*a little*), 3 (*moderately*), 4 (*quite a bit*), 5 (*extremely*).

Anger/Hostility

1. Angry
2. Scornful*
3. Disgusted*
4. Loathing*
5. Irritable
6. Hostile
7. Frustrated**

**These items comprised the 'visceral' dimension of anger, and the others the 'state' dimension.*

Guilt/Shame

1. Guilty
2. Ashamed
3. Blameworthy
4. Angry at self
5. Disgusted at self
6. Dissatisfied with self

**Harmon-Jones et al., 2016.

Attribution – Locus of Causality – Survey 2

(Adapted from Burton et al., 2014, Herschovis & Barling, 2010, and Martinko & Kent, 1995)

After that interaction, given the situation, to what extent do you agree or disagree with the following statements:

Internal Attribution

1. I may have done something to deserve this behavior from my colleague
2. I could be to blame for my colleague's behavior towards me
3. I probably provoked my colleague to act the way that they did

External Attribution

1. My colleague is responsible for what happened
2. My colleague is at fault for this behavior
3. My colleague's behavior is due to something about him or her.

All items are rated on a response scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*).

Basic Psychological Need Frustration Scale (BPNFS) – Survey 2

(Chen al., 2015)

After that interaction, given the situation, to what extent do you agree or disagree with the following statements:

Autonomy

1. I feel forced to do something I wouldn't have chosen to do
2. I feel pressured to do too many things
3. I feel like what I have to do next is an obligation

Relatedness

1. I feel like the relationship with my colleague is superficial
2. I feel like my colleague dislikes me
3. I feel like my colleague is being cold or distant towards me

Competence

1. I have serious doubts about whether I can do things well
2. I feel disappointed about my performance
3. I feel insecure about my abilities

All items are rated on a response scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*)

Subjective Performance

Adapted from Hart (2006), Williams & Anderson (1991)

Subjective Task Performance

1. I feel I was effective at that task.
2. I believe I performed well on that task compared to others.
3. I am satisfied with my overall performance on that task.
4. I was able to accomplish that task efficiently.
5. I met or exceeded expectations for performance on that task.

Rated on a response scale of 1 (*Strongly disagree*) to 5 (*Strongly agree*).

Task Demand

For the next two items, please use the slider to indicate:

Rated on a sliding scale of 0 (*Not at all/None*) to 20 (*Extremely Hard/All the activity I had*)

Effort: How hard you had to work to accomplish your level of performance on that task?

Mental Demand: How much mental and perceptual activity was required to successfully complete the task?

Subjective Response Effort – Surveys 1 & 2

(Huang et al., 2012)

You have now finished the survey. Before exiting, we would like you to respond to three optional items that will help us ensure the integrity of the research. To what extent would you agree with each of the following statements:

1. I didn't pay attention to what the questions in this survey actually meant. (R)
2. I thought about the survey questions before answering them.
3. I responded carelessly to the questions. (R)

Items are rated on a scale of 1-5. 1 (*strongly disagree*) to 5 (*strongly agree*)

APPENDIX D: WORKING MEMORY TASK MEASURE

Task Performance: Working Memory Simple Operation Span (O-Span) Task

Instructions (untimed, participants could stay on this page for as long as they needed to, but they could not proceed to start the task unless spending at least 20 seconds on this page):

We are asking you to complete a 5-minute task.

To perform this task, you will read and verify a simple math problem (an operation such as 4 ÷ 2 = 1 ?) and then read a word after the operation. After a series of operations and words has been presented, you will be asked to recall the words that followed each operation.

When presented with a math operation, you should decide whether the given answer is correct or incorrect. If the answer is correct, respond 'Yes'; if the answer is incorrect, respond 'No'. Once you have responded yes or no, you will see a word. Read the word to yourself and try to remember it. You will then see another math operation, which you will read and then indicate whether the answer is correct, yes or no. Words and math operations will alternate in a series of varying length.

At some point, you will be asked to recall all the words from a series. This means you should attempt to recall and enter (type into the provided text boxes) all of the words from the series in the order in which they were presented. Being correct means that you enter all words from the series accurately and in the same order the items appeared in the sequence. Any mistake (misspelling words, recalling too few words, recalling the wrong words, or recalling words in the wrong order) will be marked as incorrect. Please note that math problems (operations), words, and recall opportunities will be presented for a limited time and automatically progress. For example, each math problem (operation) will be shown for 4 seconds.

You will not be able to pause the task or go back to previous operations or words, so please ensure that you have 5 uninterrupted minutes to dedicate to this task. Your recall score is valid only if you are more than 80% accurate in evaluating the math problems, so try to answer all of those problems correctly while trying also to remember the order of the words.

To what extent do you agree or disagree with the following statements:

1. I have read the instructions carefully.
2. I understand what I need to do to perform on this task.
3. I am confident that I can perform this task to the best of my ability.

Task Structure & Timing

There were eight sets of operation-word pairs in each task: two sets of three operation-word pairs, and an additional two sets of four, five and six operation word pairs. Operations were presented for four seconds during which the participant had to answer if the operations were correct or not, after which the screen auto-advanced to a single capitalized word, which was presented for 1.5 seconds before auto-advancing to the next operation. At the end of each set, participants had a recall screen where they typed in the words that they could remember in the order that they had appeared. Recall time was relative to set size: participants had 10 seconds to recall three items, 14 for four, 18 for five, and 20 for six items. This structure and timing resulted in a maximum task time of precisely 5 minutes.

Task Content

The operations and words to recall for the task were different on Surveys 1 and 2. The exact content presented to participants is displayed below.

Set ID	Word Order in Set	Operation	Answer Correct? (Yes/No)	Word	Used in Survey
D	1	8 + 6 = 14	Yes	SUN	1
D	2	36 - 8 = 24	No	BOX	1
D	3	7 x 3 = 14	No	FISH	1
E	1	4 x 12 = 48	Yes	TREE	1
E	2	9 ÷ 3 = 4	No	COAT	1
E	3	8 x 3 = 24	Yes	STAR	1
G	1	4 + 3 = 7	Yes	SOCK	1
G	2	10 - 4 = 8	No	FORK	1
G	3	9 + 6 = 14	No	TRAIN	1
G	4	10 - 3 = 6	No	CHAIR	1
H	1	5 + 7 = 12	Yes	WORM	1
H	2	12 x 2 = 22	No	MILK	1
H	3	6 ÷ 2 = 3	Yes	RAIN	1
H	4	14 - 9 = 5	Yes	NOSE	1
J	1	2 x 7 = 9	No	CAKE	1
J	2	11 - 4 = 5	No	HAND	1
J	3	7 + 8 = 15	Yes	KEY	1
J	4	16 - 4 = 12	Yes	BELL	1
J	5	5 + 3 = 15	No	DUCK	1
K	1	22 - 3 = 18	No	DESK	1
K	2	12 + 5 = 17	Yes	SOAP	1
K	3	8 ÷ 4 = 2	Yes	RUN	1
K	4	10 ÷ 1 = 10	Yes	DOG	1
K	5	3 - 2 = 5	No	PEN	1
A	1	3 + 5 = 8	Yes	BEAR	1
A	2	4 x 3 = 9	No	DRILL	1
A	3	9 - 3 = 7	No	MEAL	1
A	4	12 ÷ 3 = 4	Yes	SNOW	1
A	5	4 - 3 = 5	No	PINK	1
A	6	7 x 4 = 27	No	LAMP	1
B	1	24 ÷ 6 = 8	No	JAR	1
B	2	7 + 4 = 11	Yes	CAT	1
B	3	14 - 6 = 8	Yes	CUP	1
B	4	6 - 2 = 2	No	HILL	1
B	5	4 x 2 = 8	Yes	BALL	1
B	6	10 ÷ 5 = 2	Yes	OWL	1

Set ID	Word Order in Set	Operation	Answer Correct? (Yes/No)	Word	Used in Survey
C	1	18 ÷ 3 = 6	Yes	FIRE	2
C	2	15 - 5 = 3	No	DRUM	2
C	3	4 × 3 = 1	No	TAPE	2
F	1	16 ÷ 4 = 4	Yes	GATE	2
F	2	2 + 9 = 11	Yes	NAIL	2
F	3	14 - 7 = 7	Yes	ROPE	2
I	1	11 + 7 = 18	Yes	RING	2
I	2	9 x 5 = 13	No	DOOR	2
I	3	11 - 4 = 8	No	SHOE	2
I	4	6 ÷ 3 = 2	Yes	FROG	2
O	1	7 + 4 = 11	Yes	KITE	2
O	2	3 x 2 = 6	Yes	ROSE	2
O	3	6 + 7 = 13	Yes	BOAT	2
O	4	4 x 2 = 9	No	PAINT	2
M	1	3 + 2 = 6	No	ANT	2
M	2	8 ÷ 2 = 4	Yes	ICE	2
M	3	12 x 4 = 24	No	DOLL	2
M	4	5 + 6 = 11	Yes	ROCK	2
M	5	5 x 1 = 6	No	HOUSE	2
L	1	4 x 1 = 5	No	LOG	2
L	2	10 - 6 = 14	No	POOL	2
L	3	9 ÷ 3 = 12	No	DISH	2
L	4	6 x 6 = 36	Yes	BOOK	2
L	5	3 + 4 = 12	No	BIRD	2
N	1	11 - 6 = 7	No	APPLE	2
N	2	2 x 2 = 4	Yes	FLAG	2
N	3	9 - 4 = 5	Yes	SHIP	2
N	4	24 ÷ 3 = 12	No	LEAF	2
N	5	5 x 4 = 20	Yes	LION	2
N	6	17 x 2 = 36	No	MASK	2
P	1	9 - 2 = 7	Yes	BLUE	2
P	2	21 - 7 = 14	Yes	COLD	2
P	3	5 ÷ 2 = 10	No	BONE	2
P	4	6 x 3 = 18	Yes	GLASS	2
P	5	8 - 3 = 11	No	PLANE	2
P	6	7 + 7 = 12	No	MAP	2