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What a Rude E-Mail! Examining the Differential Effects of Incivility Versus Support on Mood, Energy, Engagement, and Performance in an Online Context

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Existing research on workplace incivility has demonstrated an association with a host of negative outcomes, including increased burnout, turnover intentions, and physical symptoms. With the rise in Internet communication over the last decade, interpersonal mistreatment has spilled over to the Internet, but little is known about the impact of incivility communicated via e-mail on employee psychological and performance outcomes. The current study presents a within-subjects experiment wherein incivility and support were manipulated in a laboratory-based simulated workplace setting. Eighty-four participants completed a series of math tasks while interacting with either an uncivil or a supportive supervisor via e-mail. Data were collected on energy, cardiac activity, mood, task performance, and engagement. Findings indicate that participants reported higher levels of negative affect and lower levels of energy after working with the uncivil supervisor than with the supportive supervisor. Additionally, participants performed significantly worse on the math tasks and had lower engagement in the uncivil condition than the supportive condition, and these relationships were mediated by energy. No differences were found in cardiac activity between the two conditions. Results are discussed in terms of their implications for the 21st century world of work.

Keywords: workplace cyber incivility, online communication, task performance, engagement, cardiac activity

Interpersonal mistreatment in the workplace can have serious consequences for both employee health and organizational efficiency. One particular form of interpersonal mistreatment that has received increased attention over the past decade is workplace incivility. Incivility is a mild but common form of mistreatment involving rude and discourteous behaviors that violate norms for respect (Andersson, 1999; Cortina, Magley, Williams, & Langhout, 2001). Previous studies have found workplace incivility to be associated with increased psychological distress and organizational withdrawal, as well as decreased job satisfaction, compromised physical health, and even subsequent aggressive behavior (Caza & Cortina, 2007; Kern & Grandey, 2009; Lim, Cortina, & Magley, 2008; Pearson, Andersson, & Wegner, 2001; Taylor & Kluemper, 2012). Although studies have indicated that this form of mistreatment is highly prevalent in the workplace, incivility experienced through information and communication technologies (ICTs; e.g., e-mail, text messages) may be even more common today. These media trigger a reduced adherence to social norms (Suler, 2004) and carry fewer nonverbal cues (Byron, 2008), which may produce communication that is either intended and/or perceived to be rude. Just as face-to-face incivility negatively impacts employees, incivility communicated through ICTs is likely to lead to serious negative consequences for employees in the 21st century world of work.

Despite the growing threat incivility poses, much of the existing incivility research is limited to cross-sectional self-report designs, limiting our ability to make causal inferences about the real impact of incivility on workplace outcomes. Recent research has called for more rigorous examinations of incivility and its ostensible outcomes (Sakurai & Jex, 2012). Additionally, there is little research on how incivility may impact individuals in an online context. Therefore, the current study extends the workplace incivility literature in two important ways. First, the current study entails an experimental manipulation of incivility in a simulated workplace. Second, the current study extends our understanding of incivility in

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an online domain, examining the impact of incivility communicated via e-mail on important psychological, physiological, and performance-based outcomes.

Online Communication at Work

Communication in the workplace is becoming increasingly wired, with interactions that were once carried out face-to-face now being facilitated electronically. A report from 2008 noted that more than half of all employed adults have work e-mail accounts, and 96% of workers use the Internet, e-mail, or cell phones to stay connected with their jobs (Madden & Jones, 2008). These numbers are likely to be even higher today and in the future. With so many employees online at work, it is no surprise that e-mail is the second most common method used by employees to communicate with supervisors, second only to face-to-face communication (Lim & Chin, 2006). As communication increases online, the ease with which individuals can intentionally or unintentionally engage in incivility has also likely increased (Pearson, Andersson, & Porath, 2005).

Online interaction is interpreted differently and elicits different behavior than face-to-face communication. People may say and do things online that they would not do in person due to the "online disinhibition effect" (Suler, 2004): because normal constraints on behavior are less salient online, uncivil behaviors are more likely. In addition, miscommunication increases due to the lack of instant feedback and absence of nonverbal cues in e-mail and other ICTs (Byron, 2008). Workers may interpret benign messages as being offensive or aggressive, and the lack of instant feedback may leave an employee wondering about the true intention of the message.

Theoretical Background

Conservation of resources theory (COR; Hobfoll, 1989) suggests that, when an employee experiences a threat of loss or an actual loss of resources, he or she is likely to experience stress. Resource loss may occur when an individual does not receive needed resources at work (e.g., social support, control over decisions) or when he or she experiences a high level of demands (e.g., role conflict, work overload, interpersonal conflict). According to COR, individuals are motivated to maintain multiple types of resources, including objects, conditions, personal characteristics, energies, and social support. Hobfoll (1989) theorized that social support serves as a resource for employees to the extent that it helps them maintain or gain resources. COR also suggests that individuals may use up resources in the process of coping with a stressful event. For example, if an individual experiences a resource loss due to interpersonal conflict at work, he or she may cope with this stressful event by withholding effort or taking breaks from work.

Although incivility is a relatively mild form of interpersonal mistreatment, research has indicated that it occurs on a nearly daily basis for many workers (Sliter, Jex, Wolford, & McInnerney, 2010), and as such it might be considered a daily hassle (Cortina et al., 2001). As these "micro stressors" accumulate over time, they can sap the emotional and cognitive resources of employees. According to COR, this loss of resources is experienced as stressful for employees and can lead employees to try to replace these resources by using coping strategies, withdrawing effort, or disengaging from the uncivil encounter. If these coping efforts are not effective over time, individuals are likely to experience psychological distress (Hobfoll & London, 1986). Empirical support for this theory is abundant, including recent work by Sliter et al. (2010), who found that incivility drains mental and emotional resources and negatively impacts performance quality over time. Additionally, Sakurai and Jex (2012) found that more frequent exposure to coworker incivility is associated with increased negative emotions and decreased work effort.

With regard to the role of social support, past research has demonstrated that support at work helps to alleviate the negative impact of stress (e.g., Mohr & Wolfram, 2010). Perceived organizational support is associated with increased positive mood, extra-role behaviors directed toward the organization, and decreased strain symptoms, absenteeism, and turnover intentions (Rhoades & Eisenberger, 2002). Although support may be offered from many workplace sources, supervisor support is a key contributor to perceived organizational support (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002). Additionally, Duffy, Ganster, and Pagon (2002) theorized that social support might be viewed as a buffer against the negative effects of social undermining (which they define as "behavior intended to hinder . . . [one's] ability to establish and maintain positive interpersonal relationships [and] work-related success"; p. 332), particularly when employees experience both of these behaviors at the same time at work. It appears that supervisor incivility and supervisor support may have opposing effects on worker outcomes, and we posited that they can be considered as two sides of a workplace interaction style continuum.

Based on COR theory, the current study conceptualized workplace incivility as an experience that depletes resources. In response to this depletion, individuals are likely to report lower levels of energetic resources, experience psychological distress, and withdraw from work. Conversely, support is conceptualized as an event that helps individuals to maintain resources. When individuals interact with a supportive supervisor, they are likely to have more energy, experience less psychological distress, and be more engaged in work. In the sections that follow, we provide support for these hypotheses.

Hypotheses Development

Employee Energy Resources

Research and theory related to the construct of burnout can be a useful model for thinking about how energy might play a role in the stressor−strain process. Shirom and Melamed (2006) noted that burnout may result from "the continuous depletion of individuals' energetic coping resources resulting from their chronic exposure to occupational stress" (p. 179). That is, this strain outcome is thought to result from repeated exposure to stressors *through* a depletion of energy. As such, when individuals experience a stressful event at work, they may experience a reduction in their levels of energy (Kjelberg et al., 2010). This theory would thus see energy depletion as an antecedent of strain (Shirom, 2009).

In an incivility context, frequent rude or discourteous e-mails may deplete an individual's cognitive, emotional, and social energies, because the individual may spend time worrying about future interactions with the uncivil source, have hurt feelings, and feel

rejected or isolated from the constant barrage of interpersonal harassment. Recent research has found a positive relationship between cyber incivility and burnout among employed adults (Giumetti, McKibben, Hatfield, Schroeder, & Kowalski, 2012), but only a few studies have examined the stressor−energy relationship within an experimental context. Therefore, the current study made the following hypothesis:

Hypothesis 1: Experiencing incivility will be associated with lower energy levels compared to experiencing support.

Physiological Activity

Limited evidence has suggested that experiencing workplace incivility may be related to physical health outcomes. Lim et al. (2008) found that self-reported workplace incivility was related to poorer mental health, which, in turn, was related to poorer physical health as assessed with a health satisfaction questionnaire. However, Cortina et al. (2001) and Miner, Settles, Pratt-Hyatt, and Brady (2012) did not find a relationship between self-reported workplace incivility and health outcomes. Because these studies used self-report measures, the direct effect of experiencing workplace incivility on physical health is still unknown.

One mechanism by which workplace incivility may impact physical health is through an imbalance of the autonomic nervous system, with increased sympathetic nervous system activity (e.g., increased heart rate) and decreased parasympathetic nervous system activity (e.g., decreased heart rate variability [HRV], defined as the variation in the intervals between successive heartbeats; Berntson & Cacioppo, 2004). This imbalance has been linked to a number of negative health outcomes, most notably cardiovascular disease (Thayer, Yamamoto, & Brosschot, 2010). To our knowledge, cardiovascular activity associated with a direct experience of incivility via ICTs has not been reported in previous literature. However, a study of face-to-face incivility found that interpreting incivility as a discriminatory behavior was related to increased heart rate and increased systolic blood pressure, depending on participants' race (Salomon & Jagusztyn, 2008). In another study, a rude interpersonal exchange preceded a math task, but this rude interaction did not affect systolic blood pressure or heart rate (Delahanty et al., 2000). Additionally, mental stress and workplace stress are associated with decreased HRV (Chandola, Heraclides, & Kumari, 2010; Hjortskov et al., 2004; Thayer et al., 2010). Thus, the current study sought to fill existing gaps in the literature and describe the cardiovascular response to incivility.

Hypothesis 2: Experiencing incivility will result in increased heart rate and decreased HRV compared to experiencing support.

Emotional Reactions

COR theory suggests that, when employees experience stress due to the loss of resources at work, psychological distress may result (Hobfoll, 1989). In a qualitative study, Pearson et al. (2001) found that participants who had been victims of workplace incivility described experiencing negative emotional states. These negative emotions increase the risk for serious mental health concerns, because high negative affect is associated with depression and anxiety, and low positive affect is related to depression (Clark, Watson, & Mineka, 1994). Experiencing incivility has also been found to have a negative relationship with overall mental health (Lim et al., 2008). Additionally, Martin and Hine (2005) found that individuals reporting more frequent experiences of workplace incivility also reported higher levels of psychological distress. Based on this prior theoretical and empirical support, we made the following hypothesis:

Hypothesis 3: Experiencing incivility will be associated with higher levels of negative affect and lower levels of positive affect compared to experiencing support.

Work Behaviors

Task performance. As COR theory predicts, when individuals experience a loss of resources, one possible coping response is to withdraw effort from work (Hobfoll, 1989). Therefore, when incivility depletes an individual's resources at work, they may decrease work output. Decreased performance may be due to intentional decreases in work time, effort, and quality (Pearson, Andersson, & Porath, 2000) or due to lost time spent avoiding and worrying about the offender (Johnson & Indvik, 2001; Pearson, 1999). It has also been suggested that experiencing incivility causes workers to disengage from their jobs and to decrease their effort, which leads to decreased performance (Caza & Cortina, 2007; Johnson & Indvik, 2001). Rude treatment has been found to lead to decreased concentration, poorer short-term memory, and decreased creativity (Porath & Erez, 2007; Porath & Pearson, 2010), all of which can decrease work productivity. Additionally, research on social undermining found that undermining had a larger effect on passive counterproductive behaviors (e.g., withholding effort at work) than social support (Duffy et al., 2002). However, many of the studies identifying these relationships have done so using nonexperimental methods (e.g., surveys), limiting the ability to make causal inferences. In the current experimental study, we hypothesized that:

Hypothesis 4: Experiencing incivility will be associated with lower task performance compared to experiencing support.

Task engagement. According to COR theory, a surplus of resources at work (e.g., supervisor support) should increase work engagement (Gorgievski & Hobfoll, 2008) and a large level of demands (e.g., supervisor incivility) should decrease engagement (Hobfoll & Shirom, 2001). Indeed, meta-analytic evidence has suggested that resources, such as social support, are positively predictive of engagement and demands are negatively predictive of engagement (Halbesleben, 2010). Research focused specifically on incivility has found that high levels of face-to-face incivility are associated with considerable reductions in engagement (Reio & Sanders-Reio, 2011). Further, a recent incivility intervention found that reducing the incidence of incivility was linked with an increase in workplace engagement (Osatuke, Moore, Ward, Dyrenforth, & Belton, 2009). The pattern of these results provides preliminary evidence of a causal link between incivility and engagement, but, because these studies were conducted using survey-based designs, causal inferences are limited. Therefore, we extended this literature by examining the impact of incivility on engagement in an experimental setting.

Hypothesis 5: Experiencing incivility will be associated with lower task engagement compared to experiencing support.

The mediating role of energy. One mechanism by which incivility may reduce performance and engagement is by acting through reductions in energy. As COR theory might predict, experiencing incivility may deplete energetic resources and employees may respond by reducing effort at work or by becoming less engaged in the task (Hobfoll, 1989). Few studies on incivility have attempted to establish the mechanisms by which incivility impacts outcomes at work. However, a recent study by Taylor, Bedeian, and Kluemper (2012) found that workplace incivility impacted citizenship performance through perceptions of affective commitment. That is, individuals who experienced rude and disrespectful treatment at work reported lower levels of emotional attachment to the organization, and this was associated with lower levels of extra-role behaviors at work. The current study extended the examination of mediators of uncivil workplace encounters by exploring the mediating role of energy in the relationships between incivility and both task performance and engagement.

Hypotheses 6a and 6b: Energy will mediate the relationship between condition and outcomes such that interacting with an uncivil supervisor will result in lower energy levels than interacting with a supportive supervisor, which will, in turn, reduce (a) task performance and (b) engagement.

The Current Study

Although surveys have provided a preliminary research foundation, a more controlled experimental design is the next logical step in understanding the consequences of workplace incivility. Few studies have experimentally manipulated incivility, and, to the authors' knowledge, no studies have experimentally manipulated incivility in an online context. Thus, we used a within-subjects design to examine the differences in outcomes resulting from incivility and support. The sample consisted of university undergraduates who completed a simulated work task with two different supervisors via e-mail. This enabled us to compare how the different supervisor conditions affected energy, cardiac activity, mood, engagement, and performance.

Method

Participants

Eighty-four undergraduate students (41.6% male, 88.0% White, M_{age} = 19.2 years, SD = 4.2) enrolled at a university in the southeastern United States completed this experiment. Participants were recruited from undergraduate psychology classes, and they were given class credit for their participation.

Measures and Materials

Demographics questionnaire. Participants reported their age, current class year, sex, and race.

Energy. Energy for doing various tasks was measured using four items developed by Britt, McKibben, McFadden, & Kelley (2013). Instructions asked participants to think about their energy levels and to estimate their current level of physical, cognitive, emotional, and social energy on a scale from 1 (*completely empty*) to 7 (*completely full*). A graphic of an energy tank gauge (similar to an automobile fuel gauge) was provided to aid participants in thinking about energy levels.

Manipulation check. To determine whether participants correctly perceived the supervisor to be uncivil or supportive, a short manipulation check was included at the end of each postmeasure survey. Participants completed a survey comprised of six incivility items selected from the Workplace Incivility Scale (WIS; Cortina et al., 2001) and five supervisor support items selected from the Perceived Supervisor Support Scale (PSSS; Kottke & Sharafinski, 1988). A sample item from the WIS is "My supervisor put me down or was condescending to me," and a sample item from the PSSS is "My supervisor valued my contributions to the task." The response scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*), and the mean was used to represent each construct. Reliability was high for both scales during Round 1 (α_{WIS} = .91, α_{PSSS} = .91) and Round 2 (α_{WIS} = .96, α_{PSSS} = .95) of the experiment.

Task engagement. To determine how engaged participants were in the tasks of each round, we used a 5-item Engagement Scale adapted from the Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006). Response options on the scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*), and the mean of the five items was used to represent engagement. A sample item is "I felt completely absorbed in these tasks." Internal reliability was acceptable for the uncivil condition (α = .73) and the supportive condition (α = .70).

Physiological recording equipment. Cardiovascular activity was measured via interbeat intervals (IBIs). IBIs are the time intervals between successive heartbeats in milliseconds. Thus, as heart rate increases, IBIs decrease. To obtain IBIs, participants were connected to a BioLog Model 3991 (UFI, Morro Bay, CA). The BioLog unit derives IBIs by monitoring the R spikes in the electrocardiogram and recording the time interval between successive R spikes of the cardiac QRS interval. Participants' skin was prepared using Omni Prep abrasive cleansing paste (D.O. Weaver & Co., Aurora, CO), and three ConMed Cleartrace electrodes (ConMed Corp., Utica, NY) were placed as follows: positive below the lowest left false or vertebrochondral rib, negative in the upper center region of the clavicle (i.e., collar bone), and the reference below the lowest right false or vertebrochondral rib.

Math tasks. During the performance phase of the experiment, participants completed a series of math tasks that were created based on quantitative Graduate Record Examination (GRE) data analysis questions (used with permission, Educational Testing Services, Princeton, NJ) by two industrial–organizational psychology graduate students. Each task contained a figure and two specific questions that could be answered by looking at the figure and performing calculations.

To test the difficulty, timing, and wording of the math tasks, a pilot study was completed with 10 undergraduate students. Pilot participants were given 15 tasks and a calculator, and were asked to provide the correct answer and the time it took to complete each task. Based on the feedback from the pilot study, four tasks were modified to make the wording clearer or the figure more interpretable. Two full sets of 15 tasks were then

created. A sample math task from each condition of the experiment is presented in Appendix A (The sample items were created by the authors, based on GRE-type questions). Previous studies have supported the use of GRE questions as simulated workplace tasks (e.g., Baumeister, Twenge, & Nuss, 2002; John, Bassett, Thompson, Fairbrother, & Baldwin, 2009; Spencer, Steele, & Quinn, 1999).

Uncivil and supportive statements. Paired with each math task was an uncivil or supportive statement from the respective supervisor. The uncivil statements were developed based on the WIS (Cortina et al., 2001), and supportive statements were based on the PSSS (Kottke & Sharafinski, 1988). For example, the uncivil comments "I couldn't be less confident in your ability, but here is the next set anyway" and "Try these next tasks, genius" reflect the WIS item "put you down or was condescending to you." The supportive statements "I definitely appreciate your help on these tasks" and "I really appreciate your efforts on these tasks" reflect the PSSS item "My supervisor values my contributions."

A pilot study was also conducted on the preliminary uncivil and supportive statements to determine how uncivil or supportive each statement was perceived to be. To create the statements, two industrial−organizational psychology graduate students were instructed to come up with short (20 words or less) phrases that would reflect incivility or support, based on the WIS and PSSS. A total of 50 items were created (25 each for uncivil and supportive) and were administered to a pilot sample of six undergraduate students. The pilot participants were asked to rate each item on a 7-point scale based on how uncivil, neutral, or supportive they thought each item was (1 = *very uncivil or rude* to 4 = *neutral* to 7 = *very supportive*). They were also given definitions for incivility and support ("any statement that is rude, insulting, discourteous, impolite, or unmannerly" and "provides assistance, is positive, or helpful," respectively). The average rating for each item was computed, and 14 items with average scores above 6 were retained as supportive items and 14 items below 2 as uncivil items. The final set of statements can be found in Appendix B.

Procedure

The study was approved by the university institutional review board. After providing informed consent, participants were told that the purpose of the study was to compare performance on workplace tasks completed with a supervisor in a face-to-face setting to performance on tasks completed with a supervisor over e-mail. Each participant was led to believe that he or she had been randomly assigned to the e-mail condition (although, in actuality, all participants were in the e-mail condition). Participants were told they were taking the role of an entry-level worker in an accounting firm, and their goal was to complete as many of the assigned tasks as possible while maintaining the highest possible level of accuracy. Participants were also told that they would have two different MBA student volunteers as supervisors (each with a different name—Jessie or Casey), but, because he or she was in the e-mail condition, the supervisors could not be met until after the study. Additionally, participants were informed that, because excellent work in the office may be rewarded with a bonus, participants who had the greatest number of correct answers would win a $50 gift card. This incentive was used to increase performance motivation on the task. The cover story aimed to maximize the extent to which participants believed that the supervisor statements were to be taken seriously and to minimize attention drawn to the difference in supervisor characteristics.

Participants completed the study in six phases.

Phase 1: Begin physiological recording and premeasures. After being connected to the BioLog unit, participants were seated and physiological recording began. Participants were given as much time as necessary to complete the demographic questionnaire and a baseline energy measure.

Phase 2: E-mail task completion. Participants were randomly assigned to interact with either an uncivil or a supportive supervisor over e-mail while completing a series of math tasks. The order of conditions and pairing of conditions to math task sets were counterbalanced to reduce possible order effects on outcome variables of interest. The location of the statements was varied in each e-mail task (i.e., above figure, below figure, below questions) to ensure that participants would not ignore the statement purely based on the location of the statement in the e-mail. Participants were seated at a computer workstation and given instructions on how to operate the e-mail software. Then, participants were told they would complete a series of math problems with their supervisor for a period of 15 minutes, during which time they would need to send their answers as e-mail replies to their supervisor. Each e-mail from the supervisor contained a statement, a figure, and questions that could be answered by referring to the figure. The first e-mail to participants was the same for both conditions, which explained the situation and provided the first task, without including an uncivil or supportive statement.

Phases 3: Postmeasures. Participants were given as much time as needed to complete the state energy measure, engagement measure, and the manipulation check.

Phase 4: Resting baseline. Participants sat on a sofa and watched a 10-min clip from a nature documentary film. Participants were told that this was a "work break" and that they should just sit back and enjoy the film. This break period was designed to provide a resting physiological baseline, and to reduce the likelihood of task fatigue and contrast effects from phase 2.

Phases 5: E-mail task completion. After the resting baseline period was over, participants were led back to the computer workstation to complete the second 15-min round of math tasks via e-mail with either an uncivil or a supportive supervisor (whichever they had not experienced in Round 1).

Phases 6: Postmeasures. Participants were given as much time as needed to complete the state energy measure, engagement measure, and the manipulation check. Participants were then fully debriefed and were allowed to leave.

IBI Data Processing

IBI data were processed in order to derive two main outcomes for each experimental condition: (a) average IBIs as a measure of heart rate and (b) high-frequency (HF) activity in HRV as a measure of parasympathetic nervous system activity (Grossman & Taylor, 2007). When fluctuations in the intervals

between successive heartbeats (IBIs) are plotted over time, they form a pseudosinusoidal waveform. Fluctuations in this waveform have been associated with changes in autonomic activity. Although the physiological basis for the HF fluctuations in this waveform is well known and has been consistently associated with parasympathetic activity, other low- and mid-frequency fluctuations have been shown to be influenced by both parasympathetic and sympathetic activity (e.g., Katona & Jih, 1975; Eckberg, 1983; Grossman, Karemaker, & Wieling, 1991). Therefore, the current study focused on the HF fluctuations that occur between 0.15 and 0.5 Hz as a measure of parasympathetic activity (Stern, Ray, & Quigley, 2001). Here, we describe the specifics of the IBI data reduction process, which followed established guidelines (Task Force of the European Society of Cardiology and the North American Society of Pacing Electrophysiology, 1996). First, the IBI data were manually checked for errors and were hand-corrected. Then, the IBI data were resampled at 1 Hz. Next, a spectral analysis was completed using fast Fourier transform of 64-s periods of data that were overlapped 75%. Prior to being Fourier-transformed, a Hamming window was applied to each 64-s period to linearly detrend, mean-center, and taper approximately the first and last 6 s of the data in each window to zero to reduce leakage. Spectral density estimates were derived at a bin width of 0.017 Hz (1 cycle per minute). The spectral power at the HF peak between 0.15 and 0.5 Hz was taken as the HF measure. Results from the multiple windows were averaged together for the period of interest. HF activity was natural log− transformed to normalize the distribution.

Respiration rate was derived from the HF peak in the IBI fluctuations according to the method described by Thayer, Peasley, and Muth (1996). Prior to examining differences in the HF fluctuations, differences in respiration rate between conditions were examined because respiration strongly contributes to the HF fluctuations and must be controlled to separate respiratory effects from experimental effects (Grossman et al., 1991). If respiration differs between conditions, then it is recommended that respiration be controlled to isolate the effect of parasympathetic influences on the heart (Grossman & Taylor, 2007). In the current study, respiration differed significantly between conditions, $F(2, 132) = 12.36$, $p < .05$, $\eta^2 = .16$. Therefore, effects due to respiration were removed by regressing HF HRV on respiration within individual (Grossman & Taylor, 2007). Unstandardized residuals were saved and used as the measure of parasympathetic activity.

Results

Manipulation Check

A series of dependent paired-samples t tests confirmed that the uncivil and supportive statements were perceived as intended. Participants perceived greater incivility in the uncivil condition ($M = 3.43$, $SD = 0.95$) than in the supportive condition ($M = 1.83$, $SD = 0.64$), $t(82) = 10.79$, $p < .001$. Additionally, participants perceived greater support in the supportive condition ($M = 3.60$, $SD = 0.70$) than in the uncivil condition ($M = 2.15$, $SD = 0.76$), $t(82) = 10.43$, $p < .001$.

Hypothesis Testing

Descriptive statistics, intercorrelations, and scale reliabilities are presented in Table 1. A series of dependent paired-samples t tests comparing the two conditions (incivility vs. support) were conducted to examine differences in energy, affect, task performance, and engagement (Hypothesis 1 and Hypotheses 3−5).[1] Results of these tests are in Table 2. A series of repeated-measures analyses of variance were performed to test for the hypotheses dealing with differences in physiological activity between the different phases of the experiment (Hypothesis 2), and the results are presented in text below. To test Hypotheses 6a and 6b, the mediation hypotheses, a series of regression analyses were conducted with differences between the conditions on energy-predicting differences between conditions on task performance or engagement, respectively, per the guidelines of Judd, Kenny, and McClelland (2001), and the results are presented in text below.

Support was found for Hypothesis 1, because the results from dependent paired t tests indicated that mental, emotional, and social energy levels were significantly lower in the uncivil condition compared to the supportive condition (see Table 2). Additionally, energy levels in both uncivil and supportive conditions were significantly lower than baseline for all four types of energy. Effect sizes were calculated for the differences between uncivil and supportive conditions using the means and standard deviations, correcting for the dependence among the means (Cohen, 1988; Morris & DeShon, 2002). Although significant, these differences were relatively small in magnitude.

Hypothesis 2 was not supported. Sixty-seven participants had usable IBI data. Although a significant main effect was found for condition on mean IBIs, $F(2, 132) = 88.62$, $p < .05$, $\eta^2 = .57$, least significant difference post hoc tests indicated that the differences were between the resting baseline ($M = 844.81$, $SD = 138.80$) and each experimental condition (uncivil condition: $M = 771.55$, $SD = 126.01$, $p < .05$; supportive condition: $M = 770.00$, $SD = 118.80$, $p < .05$). Thus, heart rates were significantly higher when completing math tasks with both supervisors compared to resting. No significant differences were found in mean IBIs between the uncivil and the supportive condition. Likewise, HF HRV did not differ significantly between conditions, $F(2, 132) = 0.04$, $p > .05$, $\eta^2 = .00$.

Results supported Hypothesis 3, because individuals reported higher negative affect in the uncivil condition ($M = 2.06$, $SD = 0.83$) than in the supportive condition ($M = 1.67$, $SD = 0.72$, $p < .001$), and lower positive affect in the uncivil condition ($M = 3.05$, $SD = 0.75$) than in the supportive condition ($M = 3.28$, $SD = 0.69$, $p < .001$). Examination of the effect sizes indicated that these differences were small to medium in size.

[1] Because there are multiple dependent measures being compared for differences across the two conditions, a multivariate analysis of variance (MANOVA) omnibus test was also conducted to control the experimentwise Type 1 error rate. Results from a repeated-measures MANOVA with nine dependent variables (i.e., engagement; number correct; positive affect; negative affect; physical, mental, emotional, and social energy; and heart rate variability) revealed a significant omnibus test, $F(9, 48) = 3.43$, $p = .003$, and each of the differences identified as being significant with the dependent paired t tests remained significant.

Table 1
Descriptive Statistics, Intercorrelations, and Scale Reliabilities for Study Variables

#	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Uncivil																				
1	Mean IBI	−771.55	126.01	—																	
2	HF HRV	0.00	1.11	.64	—																
3	Positive affect	3.05	0.74	−.18	−.02	*.84*															
4	Negative affect	2.06	0.82	.05	.10	−.01	*.85*														
5	Physical energy	4.64	1.30	−.09	−.17	.30	−.16	—													
6	Mental energy	4.19	1.36	−.11	−.16	.37	−.24	.64	—												
7	Emotional energy	4.63	1.39	−.14	−.17	.14	−.29	.47	.61	—											
8	Social energy	4.68	1.44	−.06	−.17	.13	−.29	.45	.58	.78	—										
9	Engagement	3.33	0.67	.04	.04	.49	.23	.16	.09	.04	.00	*.73*									
	Supportive																				
10	Mean IBI	770.00	118.80	.91	.61	−.19	.03	−.02	−.12	−.11	−.01	.08	—								
11	HF HRV	0.00	1.12	.56	.86	−.08	.13	−.06	−.16	−.16	−.13	.14	.68	—							
12	Positive affect	3.28	0.69	−.14	−.11	.65	.15	.22	.21	.04	.00	.40	−.15	−.10	*.83*						
13	Negative affect	1.67	0.72	.27	.24	.17	.56	−.12	−.02	−.23	−.25	.13	.22	.18	.05	*.89*					
14	Physical energy	4.74	1.27	.13	−.02	.20	.02	.74	.47	.42	.37	.14	.16	.06	.29	.02	—				
15	Mental energy	4.40	1.29	−.02	−.14	.29	−.11	.52	.73	.40	.39	.12	−.04	−.12	.37	−.09	.64	—			
16	Emotional energy	4.85	1.31	−.12	−.09	.15	−.16	.39	.50	.75	.64	.08	−.08	−.07	.14	−.16	.52	.61	—		
17	Social energy	5.05	1.36	−.05	−.13	.09	−.14	.45	.41	.60	.74	−.03	−.01	−.10	.15	−.16	.52	.44	.73	—	
18	Engagement	3.45	0.58	−.01	−.01	.23	.21	.01	−.09	−.02	−.12	.65	.01	.06	.39	−.06	.09	.05	.06	.05	*.70*

Note. Internal consistency reliability values (in italics) are presented along the diagonal for variables that were measured with multi-item scales. Values above $r = .23$ or below $r = -.23$ are significant at $p < .05$. IBI = interbeat interval; HF HRV = high-frequency heart rate variability.

Hypothesis 4 was supported by our data, because participants answered fewer questions correctly in the uncivil condition ($M = 4.33$, $SD = 2.43$) than in the supportive condition ($M = 4.97$, $SD = 2.58$, $p < .05$). It is interesting that there was no significant difference in number of questions attempted in the uncivil ($M = 9.58$, $SD = 3.52$) and the supportive conditions ($M = 9.74$, $SD = 3.57$), $t(77) = -0.41$, $p = .68$. Next, we examined Hypothesis 5, and found that participants were significantly less engaged in the uncivil condition ($M = 3.33$, $SD = 0.67$) than in the supportive condition ($M = 3.45$, $SD = 0.58$), $t(83) = -2.08$, $p = .04$, $d = -.23$.

Finally, we examined the two mediation hypotheses (6a and 6b). First, focusing on the mediating role of energy in the relationship between condition and task performance, we regressed change in task performance on changes in physical, mental, emotional, and social energy (and, to avoid biased estimation, also on the centered sum of each energy score). Less emotional energy with an uncivil supervisor compared to a supportive supervisor predicted decreased task performance ($b = .924$, $\beta = .368$, $p = .022$), providing partial support for Hypothesis 6a. The intercept in this regression was not significant ($p > .05$), indicating complete mediation (Judd et al., 2001). Changes in physical, social, and mental energy did not significantly predict changes in task performance. Next, we examined the mediating role of energy in the relationship between condition and engagement by regressing change in engagement on change in physical, mental, emotional, and social energy (as well as the centered sum of each energy score). Less social energy with an uncivil supervisor compared to a supportive supervisor predicted less engagement ($b = .211$, $\beta = .404$, $p = .003$), providing partial support for Hypothesis

Table 2
Differences in Positive and Negative Affect, Energy, and Task Performance Between Uncivil and Supportive Conditions

Hypothesis	Variable	Mean difference (uncivil − support)[a]	*SE*	*t*	*d*[b]
1	Physical energy[c]	−0.10	.10	−0.94	−0.10
	Mental energy	−0.21	.11	−2.00*	−0.22
	Emotional energy	−0.21	.10	−2.05*	−0.22
	Social energy	−0.37	.11	−3.33*	−0.37
3	Positive affect	−0.23	.07	−3.42*	−0.38
	Negative affect	0.38	.08	4.71*	0.54
4	Number correct	−0.64	.27	−2.36*	−0.27
	Number attempted	−0.17	.40	−0.41	−0.05
5	Engagement	−0.12	.05	−2.08*	−0.23

[a] Negative values indicate the uncivil mean is lower than the supportive mean. [b] Cohen's effect size, adjusted for dependence among means. [c] Physical, mental, emotional, and social energy were also significantly lower than baseline energy in both the uncivil and supportive conditions (*p*s < .05).
* $p < .05$.

6b. Additionally, the intercept in this regression was not significant ($p > .05$), providing evidence for complete mediation. Changes in physical, emotional, and mental energy between conditions did not significantly predict changes in engagement.

Discussion

Summary of Findings

The current study examined the differential impact of incivility versus support on individuals in a simulated online work environment. Based on COR theory (Hobfoll, 1989), we predicted that incivility would deplete energy resources, increase negative mood states, and negatively impact work behaviors compared with support. Results of the within-subjects experiment supported most of the hypothesized relationships. Specifically, incivility was associated with lower energy levels, because individuals reported lower mental, emotional, and social energy after interacting with an uncivil supervisor compared to a supportive supervisor. Additionally, incivility was associated with increased negative affect and decreased positive affect compared to support. It appears that incivility has detrimental affective consequences, whether it is carried out face-to-face (e.g., Sakurai & Jex, 2012) or via ICTs.

Incivility was also associated with poorer performance on a simulated workplace task compared to support. Additionally, lower levels of engagement were found in the uncivil condition compared to the supportive condition. These findings are in line with COR theory's predictions that individuals might withdraw effort and become disengaged when resources have been depleted. Further, the relationship between condition and task performance was mediated by emotional energy, such that working with an uncivil supervisor reduced emotional energy, which resulted in poorer work performance. Finally, the relationship between condition and engagement was mediated by social energy such that working with an uncivil supervisor reduced social energy, and this resulted in lower levels of engagement. It is interesting that emotional energy served as the mediator when performance was the outcome and social energy served as the mediator when engagement was the outcome. This pattern of results might suggest that emotional energy plays a bigger role in predicting performance than other forms of energy, and that social energy plays a bigger role in predicting engagement than other forms of energy. Future research is needed to examine the differential relationships of the various forms of energy and important organizational outcomes. Nonetheless, these results suggest that energy is a viable mechanism through which incivility may impact workplace outcomes, providing support for COR theory.

Incivility did not increase heart rate or decrease HRV compared to support. This finding could indicate that the incivility manipulation in this study was not strong enough to elicit a physiological stress response. Because incivility is a relatively mild form of mistreatment, it is possible that one instance of incivility may not stimulate an immediate physiological response. Instead, changes in mood and reduced energy as a result of experiencing incivility may lead to poor health-related coping mechanisms and a delayed stress response, a direction for future incivility research. Cortina and Magley (2009) noted that the most common coping styles employed by individuals after an uncivil encounter are conflict avoidance (e.g., putting up with it) and minimization (e.g., trying to forget it). These coping mechanisms may lead individuals to "bottle up" their frustrations, which may cause other psychological (e.g., losing sleep) and physical health problems (e.g., ulcers) in the future if not dealt with appropriately. Alternatively, this finding could also indicate that the math tasks used in this study resulted in a strong stress response that did not allow for the detection of a weaker, additive stress response to incivility. This seems to be supported by the significant increase in heart rate in response to completing math tasks in both conditions compared to a resting baseline period. Nevertheless, future research should further examine the physiological impact of incivility to enhance our understanding of this relationship.

Theoretical Implications

The results of the present study extend the current incivility literature in numerous ways. First, the current study examined incivility in an online context. With so many individuals relying on e-mail as their primary mode of communication at work, it is becoming increasingly important to understand how misbehavior online can impact employees. Previous research has found that face-to-face incivility is associated with increased psychological distress, withdrawal behavior, and decreased work performance and physical health (e.g., Martin & Hine, 2005; Sakurai & Jex, 2012). The current study expands on this previous research by demonstrating that experiencing supervisor incivility via e-mail may also be harmful for these important outcomes relative to experiencing supervisory support.

Second, we used an experimental manipulation of incivility. Much of the existing incivility research has used survey-based designs (e.g., Cortina et al., 2001; Lim et al., 2008), and recent authors have called for more rigorous methodologies to examine the impact of incivility on workplace outcomes. Although no experiment is perfect, the current within-subjects experiment used several elements of experimental control to help rule out other explanatory variables and to provide stronger evidence for causal mechanisms.

Third, the current study provides evidence of a linkage between incivility and reductions in energy. COR theory suggests that exposure to certain stressors at work uses up valued resources and often leads to psychological distress (Hobfoll, 1989). Existing research on the construct of psychological burnout implies that energy reductions may be a precursor to the experience of burnout (Shirom & Melamed, 2006). However, few studies have examined the impact of stressors on energy as proximal outcomes. The present study found a negative relationship between incivility and energy for doing social, emotional, and mental tasks. This empirical evidence supports the contention of COR theory that stressors use up energy resources. Additionally, we found support for energy as the mechanism through which incivility may impact work outcomes, including engagement and task performance. These findings may serve as a preliminary step toward understanding the mechanisms by which individuals experience reductions in important work outcomes.

Fourth, the current study used objective measures of outcomes, including task performance and physiological activity. Although self-reports are an important part of our understanding of individual reactions to stressors in the workplace, they

may suffer from unreliability and common method variance issues (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Results of the current study indicate that experiencing incivility was associated with poorer task performance than support. Prior researchers have speculated that such decreases in performance may be intentional (Pearson et al., 2000), whereas others have suggested that it may be due to lost time spent avoiding and worrying about the offender (Johnson & Indvik, 2001). Results of the current study indicate that participants did not attempt fewer problems in the uncivil condition, but instead got fewer tasks correct. This suggests that decreased performance may not be intentional, but rather, based on our mediation analysis, may be due to a reduction in energy resources. Additionally, we found that participants reported feeling less engaged in the task after completing it with the uncivil supervisor than with the supportive supervisor, and that this may have resulted from a reduction in social energy. These findings support previous research, which has shown that incivility may lead to reductions in engagement (e.g., Reio & Sanders-Reio, 2011).

Practical Implications

From an organization's perspective, incivility communicated via e-mail may be difficult to identify and stop, because it is relatively mild in nature, and few individuals are likely to report such instances to their supervisor or administrators (Sakurai & Jex, 2012). However, given the potentially negative impact of such behavior, organizations would be well advised to implement some form of online etiquette training for employees to curb such incivility. One such intervention for face-to-face incivility was recently described by Leiter, Laschinger, Day, and Oore (2011). The Civility, Respect, and Engagement at Work (CREW) intervention is a 6-month intervention program that was tested by performing a baseline measurement of incivility and outcomes, then assigning workgroups to attend weekly CREW meetings during which participants learned civil ways of interacting with one another, and finally completing a postintervention measurement of incivility and outcomes. Initial results suggest that such an intervention program can help reduce incivility, absences, and burnout and improve manager trust and organizational commitment (Leiter et al., 2011; see also Osatuke et al., 2009). If employers know that incivility communicated via e-mail can detract from work performance, they may consider implementing a similar training program to educate employees about the negative impact of incivility and the appropriate ways to interact through ICTs.

Additionally, at an individual level, employees should pay careful attention to their online communications and rephrase any cases that could be misperceived as impolite. It is interesting that certain technology providers have begun to provide tools that can help users to refrain from sending uncivil communications. For example, users of Google's e-mail application, Gmail, can use a tool called "Undo Send" that permits users to stop a message from being sent up to 30 s after pressing the send button. Features like these and the send delay function in Microsoft Outlook may enable a sender to quickly reread his or her e-mail before it is sent and rescind a message if he or she perceives the message to be uncivil.

Finally, because supervisor support was associated with better outcomes in terms of energy, mood, and task engagement and performance, organizations should encourage supervisors to be more supportive. Organizations might consider training managers to recognize and value the contributions of their employees or to implement participative performance development systems in which development plans are created cooperatively by employees and their supervisors, thereby motivating employees to achieve these goals. By showing more support for their employees in these ways, supervisors may be able to improve day-to-day employee morale and performance.

Limitations and Future Research

Although the current study extends previous research, it was not without limitations. One concern deals with experimental realism. Because this experiment involved a simulated workplace task completed with two hypothetical supervisors, whom participants never met in person, participants may not have believed that the supervisors were real, that the uncivil or supportive comments were sincere, or that the supervisors really needed them to complete the tasks. If this was the case, the results of this experiment would likely underestimate what might be found in a real workplace. Future workplace simulation research should directly assess the degree to which participants thought that the comments were real and were to be taken seriously.

Another possible limitation deals with contrast effects. It is possible that the supervisors' characteristics themselves did not matter as much as the differences in treatment between the two conditions. To test this possibility, it would be helpful to include a neutral supervisor condition in future research.

Perhaps the primary concern is the use of undergraduate students as study participants and the potential lack of ecological validity. One might argue that a 15-min laboratory interaction between an undergraduate student and an unknown supervisor might yield very different results compared to studies involving employees who have ongoing relationships with their supervisors. That being said, there are a number of points that may help to address some of this concern. First, several experimental investigations have successfully used undergraduate students to examine occupational phenomena and work performance as the outcome of interest for a similarly short period of time (e.g., Probst, 2002). Second, the finding that only 15 min of incivility can elicit significant differences in performance compared to support suggests that the effects of continued incivility may have more serious effects on work output among employed workers. Finally, incivility and support cannot be ethically manipulated in an organizational setting to determine their relative influence on mood, performance, and physiological reactivity, but a laboratory experiment allows for more precise examination of these relationships. The literature to date on incivility is primarily survey-based, and, as such, the use of a laboratory experiment can support and extend findings from these correlational, cross-sectional studies.

Another avenue for future research is to explore how so-called "cyber incivility" compares with face-to-face incivility and incivility communicated via e-mail. Cyber incivility may be a different phenomenon due to the many features of online

communications that make it more likely for individuals to misbehave, including the ability to copy and reproduce messages instantly, the perception of anonymity, the relative permanence of online messages, and the fact that such systems and messages can be accessed 24 hr a day, 7 days a week (Kiesler, Siegel, & McGuire, 1984; Pearson et al., 2005). Some have suggested that the omnipresence and interconnectivity of ICTs allow users to reach audiences across organizational boundaries, and that the possible realm of cyber incivility is much wider than conventional incivility (Weatherbee & Kelloway, 2006).

Indeed, cyber incivility may be of a different nature and be comprised of different behaviors than face-to-face incivility. For example, face-to-face incivility might involve condescension, ignoring or excluding, making rude or derogatory remarks, or showing little interest in someone's opinion (Cortina et al., 2001). Cyber incivility may include some of these same behaviors transmitted through ICTs, but might include some unique behaviors, such as showing impatience by sending multiple e-mails about one request, carbon-copying another person's supervisor to force the priority of an issue, sending or receiving a text message during a meeting, or using emoticons inappropriately. It may be the case that individuals are more negatively impacted by cyber incivility because they can reread the message multiple times and because there is less opportunity for immediate follow-up to clarify the intent of the message. One avenue for future research is to explore the long-term, additive physiological effects of repeatedly experiencing face-to-face and cyber incivility. Future experimental research could pair cyber incivility with a more passive task than the math tasks used in the current study (e.g., simple office work) to examine the immediate effect of cyber incivility on physiological activity. Additionally, future work is needed that more clearly operationalizes cyber incivility, capturing some of the unique behaviors that might be part of this construct (e.g., repeated postings, big audiences, inappropriate use of technology).

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Appendix A

Sample Task E-Mail in the Uncivil Condition

Seriously, these tasks aren't that difficult. Send your responses to this next set of questions.

1. At the peak of catalog sales, how much lower were catalog sales than in-store sales?

2. How much greater or lesser were cumulative sales from 1996−1998 for online stores than for other online sources?

Your supervisor,
Jessie

Sample Task E-Mail in the Supportive Condition

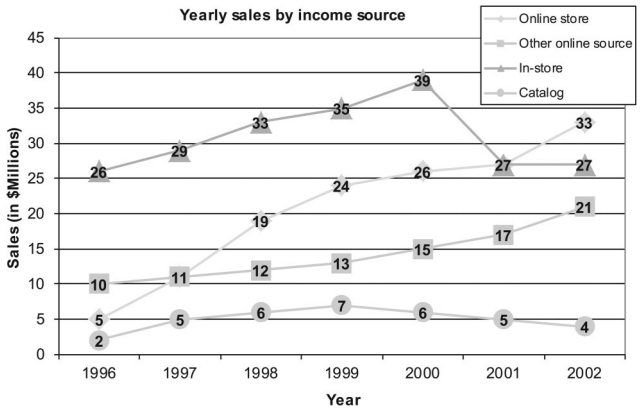
Hi again,

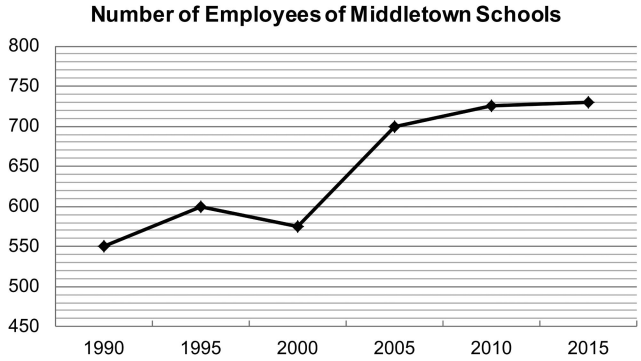
Try this next set of questions out—I think you've got the right stuff to solve these.

1. Based on the graph, what is the percent change in the number of teachers from 1990−2010?

2. If the percent increase of employees had stayed the same between 2005−2010 as it was from 2000−2005, how many more employees would have there been in 2010?

Good luck,
Casey





(*Appendices continue*)

Appendix B

Uncivil and Supportive Statements

Condition	Statement
U	1. Seriously, these tasks aren't that difficult. Send your responses to this next set of questions.
U	2. Let's try to get this painful experience of working together over as quickly as we can.
U	3. Try these next tasks, genius.
U	4. This is the easiest task I have ever seen—you'd better get it right.
U	5. Send me your responses to these questions asap! I'm tired of waiting.
U	6. I just told the experimenter you cheated on the last task. I wish you were not such a liar. Do these tasks next.
U	7. I couldn't be less confident in your ability, but here is the next set anyway.
U	8. My mistake, I thought you actually wanted to win the bonus incentive.
U	9. I think just about anyone else would've been a better coworker. But anyway, here's the next problem set.
U	10. You're going to get all of these wrong anyway, but here are a few more tasks.
U	11. I feel bad for your friends who have to deal with your slowness all of the time, but here's another set of tasks.
U	12. I bet you can barely even do these tasks. Here are a few more.
U	13. I doubt that you can get this task done before the time runs out. Work on these now.
U	14. I'm not sure how I got stuck with you. I think just about anyone else would've been better. But anyway, here's the next problem set.
S	1. Try this next set of questions out—I think you've got the right stuff to solve these.
S	2. Please send me your responses to the questions above. Thanks for all of your help!
S	3. I'm so glad that we were paired together. Working with you has made this much easier.
S	4. Thanks for your answers! Work on this next set of questions. I chose them because I know you can handle them.
S	5. I'm so glad that I have you helping me with this! Here is the next task.
S	6. Thanks again for your help. I'm really enjoying working with you.
S	7. I feel confident that you'll be able to answer these accurately. Keep them coming!
S	8. I know this is not the most fun task in the world, but I hope that you're finding the problem-solving to be valuable and engaging. Here are a few more.
S	9. I'm really proud of your work so far. Keep it coming!
S	10. I've got your back on these—I know we can get through this together. Here is another set of tasks.
S	11. I definitely appreciate your help on these tasks. Here are a few more.
S	12. I really appreciate your efforts on these tasks. I've got a few more for you to do still.
S	13. Thanks for your help; I really value your contributions on these tasks. Here is another set of tasks for you.
S	14. Wow, you got all these done so quickly! Thanks for everything.

Note. U = uncivil condition; S = supportive condition.

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