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HOT BUTTONS AND TIME SINKS: THE EFFECTS OF ELECTRONIC COMMUNICATION DURING NONWORK TIME ON EMOTIONS AND WORK-NONWORK CONFLICT

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As advances in communication technologies have made organizations more easily connected to their workforce outside of normal work hours, there is increased concern that employees may experience heightened work-nonwork conflict when away from the office. The current study investigates the effects of electronic communication received during nonwork time using an experience sampling methodology to examine within-person relationships among elements of electronic communication (affective tone, time required), emotional responses (anger, happiness), and work-to-nonwork conflict in a sample of 341 working adults surveyed over a seven-day period. Hierarchical linear modeling results suggested that both affective tone and time required were associated with anger, but only affective tone was associated with happiness. Further, anger was associated with work-to-nonwork conflict and mediated the effects of affective tone and time required on work-to-nonwork conflict. Results also revealed cross-level moderating effects of abusive supervision and communication sender together, as well as segmentation preference. Implications of these findings for future theorizing and research on electronic communication during nonwork time are discussed.

Through the advent of technologies such as e-mail, wireless internet, and cell phones, organizations are becoming more wired both within and outside of the workplace. This new era of workplace connectivity has not only changed when and where employees work but also blurred the boundaries between work and nonwork domains (Derks, van Mierlo, & Schmitz, 2014; Tomlinson, 2007). In addition, workplace interactions that once only occurred face-to-face are now commonly carried out through electronic communication. A 2008 report indicated that 96% of employees use internet, e-mail, or cell phones to stay in touch with communications from work, and since 2002 the number of employees that check their work-related electronic communications in the evening or on the weekend has tripled (Madden & Jones, 2008). With innovations in technology such as lightweight laptops, tablets, and smartphones, these numbers are likely to be even higher in the future. This has led to what has been called "the new night shift" (Stone, 2014), when after normal business hours employees log back on to work (or never log off) in order to address incoming electronic communications. Thus, although advances in communication technologies have added more flexibility to employees' lives, they have also made it increasingly difficult to disconnect from work when away from the workplace.

Although still in its infancy, research to date suggests that as employees use communication technologies to stay connected to the workplace outside of normal work hours, there are deleterious

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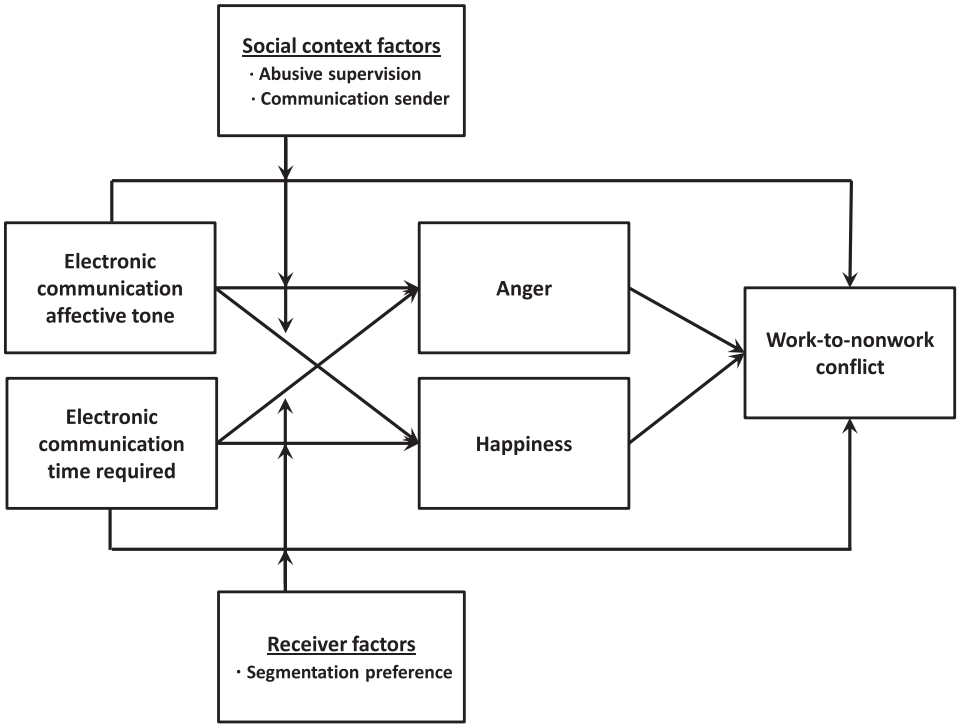
effects on work-nonwork conflict (Boswell & Olson-Buchanan, 2007; Diaz, Chiaburu, Zimmerman, & Boswell, 2012; Duxbury, Towers, Higgins, & Thomas, 2006). This research has relied heavily on qualitative and cross-sectional studies focused on communication technology adoption rates or volume of use. Although informative, these studies do not capture the possibility that individual electronic communications may possess unique elements that determine the extent of negative, or positive, effects on employees. Indeed, theory and research suggests that electronic communications are comprised of both verbal and nonverbal elements that elicit emotions in their recipients (Byron, 2008; Walther & D'Addario, 2001), which may be key considerations for how perceptions of work-nonwork conflict are formed. Examining electronic communications during nonwork time through this lens underscores that each communication and employee reaction differs on an event-by-event basis. Similarly, Weiss and Cropanzano (1996) argued that work events are dynamic occurrences that have immediate affective consequences, emphasizing the importance of focusing on within-person affective experiences over time. Recently, Maertz and Boyar (2011) advocated that research should adopt a within-person approach to daily experiences of work-nonwork conflict. These literature streams converge to suggest that within-person variation in electronic communication experiences, emotional responses, and work-nonwork conflict represent meaningful fluctuations that are essential to consider in organizational scholarship.

Electronic communication by definition entails exchanges with other people. Just as with other interpersonal interactions, the social and relational patterns underlying electronic communications likely exert a strong influence on the construal of employees' affective reactions to electronic communications received during nonwork time, thus serving as critical moderating factors. Dating back to Berlo's (1960) communication model, social context factors have consistently been connected to perceptions formed via different media (e.g., Byron, 2008; Schmitz & Fulk, 1991). In addition to the communication sender being a critical social context factor (Berlo, 1960), the nature of the relationship one has with his/her supervisor has long been suggested as a paramount consideration for how employees interpret and react to workplace stimuli (Scandura & Graen, 1984; Tepper, 2000), which should include electronic communications. Also, important to the communication exchange process is the central role that characteristics of the receiver play in how information is perceived, cognitively processed, and the emotional responses that result (Baralou & McInnes, 2013; Byron, 2008). Because of the exceedingly blurred demarcation between work and nonwork time and the ubiquitous nature of electronic communication, individual differences in preference for managing the boundaries between work and nonwork are a particularly important receiver characteristic with potential implications for how one reacts to electronic communications received during nonwork time.

Using a within-person approach and experience sampling methodology in the current study, we aim to contribute to the growing literature on electronic communication during nonwork time by focusing on perceived affective tone and time required as elements of electronic communication that serve as antecedents to employees' affective reactions. Integrating research on emotions in electronic communication (Byron, 2008; Byron & Baldridge, 2005) with affective events (Weiss & Cropanzano, 1996) and appraisal theory of emotion (Lazarus, 1991, 1999), we propose that employees appraise work-related electronic communications during nonwork time as favorable or unfavorable events depending upon the affective tone conveyed and time required by the electronic communication, resulting in negative (anger) or positive (happiness) emotional responses and subsequent work-to-nonwork conflict. We draw from the literature on how emotions can deplete or conserve/enhance resources (i.e., Baumeister & Heatherton, 1996; Fredrickson, 1998; Weiss, Suckow, & Cropanzano, 1999) and position anger and happiness as mediators of the relationships between electronic communication elements and work-to-nonwork conflict. However, in line with research on positive–negative asymmetry effects (i.e., Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), we propose that the indirect effects are stronger through anger than through happiness. Finally, extending theorizing on the role of social context and receiver factors in emotional responses to electronic communication (Byron, 2008), we examine how the nature of the supervisory relationship (abusive supervision), the communication sender (supervisor versus non-supervisor), and individual differences in boundary management strategies (segmentation preference) serve as potential moderators of the predicted within-person relationships. Figure 1 summarizes our proposed relationships.

In examining our proposed relationships, the current research makes a number of significant

FIGURE 1
Conceptual Model for the Effects of Work-Related Electronic Communication during Nonwork Time



contributions to the literature. First, we actively answer Boswell and Olson-Buchanan's (2007) call for research that helps us better understand both the potential costs and benefits of "after hours" electronic communication usage by providing a more complete test of electronic communications from work during nonwork time. In doing so, we recognize that the interplay between electronic communication elements, negative and positive emotions, and work-nonwork conflict is a complex process that entails immediate emotional and attitudinal reactions to work events in the moment. Further, we integrate disparate literatures and theories on verbal and nonverbal communication, emotions, positive–negative asymmetry effects, and work-nonwork spillover to provide a unified conceptual framework that advances understanding of work-related electronic communication during nonwork time.

Second, following sentiments by Dabbish and Kraut (2006), our study challenges the assumption that the quantity of electronic communication from work during nonwork time is the determining factor of consequences for employees. Rather, in line with past theories of affect (e.g., Lazarus, 1991; Weiss & Cropanzano, 1996), we adopt a more nuanced view of electronic communications during nonwork time as external work events experienced while in the nonwork domain that serve as elicitors of specific emotional responses depending on the nature of the communication. This approach allows us to examine how certain relational dynamics (abusive supervision, communication sender) might work in conjunction to account for why employees react more negatively or positively to some electronic communications, which has been overlooked by research to date (Barley, Meyerson, & Grodal, 2011). Similarly, we advance understanding of the role of individual differences in emotional reactions to electronic communication by considering how segmentation preference serves as an additional boundary condition of the proposed relationships, thereby extending work on integration-segmentation tendencies in the work–family literature (e.g., Kreiner, Hollensbe, & Sheep, 2009).

Finally, the current research advances practice by providing management with guidance about which electronic communication elements may produce the strongest negative emotional responses and cause harm to employees' nonwork lives, as well as whether electronic communications may offer potential benefits by eliciting positive emotional reactions and improving nonwork functioning. Understanding

how to best ameliorate the deleterious effects and enhance the positive effects of electronic communications from work during nonwork time is valuable to organizations given that technologies will continue to make it difficult for employees to disconnect from the workplace, and organizations are not likely to adopt policies restricting the use of electronic communications to regular business hours (Perlow, 2012). Below, we develop the theoretical rationale and explanation for our proposed relationships.

THEORETICAL BACKGROUND AND HYPOTHESES

According to affective events theory (AET; Weiss & Cropanzano, 1996), work-related events are proximal causes that spark emotions and subsequent attitudes. AET clearly defines work-related events as significant occurrences that precipitate change in one's circumstances and "generate an emotional reaction or mood in people" (Weiss & Cropanzano, 1996: 31). Further, positive events are viewed as goal congruent (e.g., receiving praise from your boss) and differentiated from negative events that are viewed as incongruent with one's goals and personal strivings (e.g., being reprimanded by your boss). The premise of AET is that specific workplace events are situational antecedents of emotional responses and transmit their influence on subsequent attitudes through the affect-laden response of the individual (Frijda, 1988; Weiss & Cropanzano, 1996). Research has supported AET, finding that emotional responses help explain how a myriad of workplace events relate to job satisfaction (Scott & Judge, 2006), organizational commitment (Mignonac & Herrbach, 2004), and engagement (Bledow, Schmitt, Frese, & Kühnel, 2011). AET has also been invoked across the work-nonwork interface to investigate how family events relate to job satisfaction and performance through work mood (Carlson, Kacmar, Zivnuska, Ferguson, & Whitten, 2011). However, to date, very little research has adopted an AET framework to examine how events experienced from one domain (i.e., work) while occupying another domain (i.e., nonwork) may elicit emotions and/or subsequent attitudes. We adopt an AET framework to suggest that electronic communications from work during nonwork time represent work-related events that occur in the nonwork realm, and affective responses should impact one's nonwork experiences in the moment.

While AET provides a general framework for understanding the role of emotions in the relationship between work events and attitudes, Byron's (2008) theoretical model of emotion in e-mail describes how specific electronic communication elements elicit emotional responses in their recipients. Drawing from the literature on verbal and nonverbal communication of emotion (e.g., Elfenbein & Ambady, 2002), Byron (2008) proposed that although constrained by inherent characteristics of the media, senders of electronic communication convey emotionally-laden information to others. The most straightforward way in which senders do this is by verbalizing their emotion (i.e., "I am very happy with your recent work on this project."), and this verbalized emotional content is readily interpreted by receivers. According to Byron (2008), receiver's emotional responses to electronic communication are also highly dependent upon nonverbal cues such as degree of formality, presence of a greeting, as well as temporal aspects (i.e., time to respond, message length, duration of the interaction). To our knowledge, no studies have examined how nonverbal cues, together with verbal cues, may elicit discrete emotions in receivers of electronic communication, especially when the communication occurs across the work-nonwork interface. Following the established literature on chronemics, which focuses on "how we perceive, structure, and react to time and. . .the messages we interpret from such usage" (Burgoon & Saine, 1978: 99), we suggest that in addition to explicit verbal information (i.e., affective tone), receiver emotional responses are also strongly impacted by the nonverbal component of time involved to read and comply with the sender's request (i.e., time required).

An important issue to consider when examining electronic communication as an affective event is the relevant emotions that may be elicited. Schwarz and Clore define emotions as feelings that arise "in response to ongoing, implicit appraisals of situations with respect to positive or negative implications for one's goals and concerns" (1996: 385). Further, Lazarus and Folkman (1984) suggest that how a specific event is construed, and the associated pattern of cognitive appraisal, evokes a particular emotion. Each emotion also involves changes in action tendency ranging from approach to avoidance, which manifests in more (less) personal meaningfulness, expressive behavior, and organized effort (Frijda, 1988). Anger and happiness are the discrete emotions most often described as approach-oriented expressions with strong significance to personal goal success/failure (Lazarus,

1991; Slepian, Weisbuch, Adams Jr, & Ambady, 2011).[1] Anger is the most intense negatively-valenced emotion and arises when goal blockage is attributed to the intentional actions of others (Lerner & Keltner, 2001). It is accompanied by frustration and aggression inclinations (Berkowitz, 1989; Carver & Harmon-Jones, 2009). Happiness is the positively-valenced counterpart to anger. It has a similar intensity but an internal locus of control focus, and is accommodated by an urge toward exuberance and seeking contact with others (Frijda, 1988). Further, in contrast to anger, happiness results from goal attainment (Smith, Haynes, Lazarus, & Pope, 1993). Anger and happiness are both highly interpersonally-oriented emotions that arguably cannot be fully understood apart from the situational context in which they occur (Averill, 1983; Frijda, 1988). Because electronic communications are interpersonal by nature and often emotionally charged, intense emotional reactions may serve as key mechanisms in the relationships between affective work events during nonwork time and ensuing experiences of work-nonwork interference. For this reason, we consider the effects of electronic communication verbal (affective tone) and nonverbal (time required) elements in relation to the emotions of anger and happiness elicited during nonwork time, and subsequent episodes of work-nonwork conflict.

Electronic Communication Affective Tone and Emotions

Whether intentional or not, electronic communication is capable of delivering an emotionally-charged tone (Barsade & Gibson, 2007; Walther, 1996), whereby messages of support, recognition, and encouragement convey a positive affective tone and uncivil, hostile, or degrading content reflect a negative affective tone. Thus, in the current study we view affective tone as a single continuum ranging from positive to negative. However, perceived affective tone in electronic communication differs from face-to-face communication in that electronic communication lacks much of the richer nonverbal information (e.g., inflection, gesture) that normally helps the receiver decipher the sender's intended meaning, particularly when the message is ambiguous (Kruger, Epley, Parker, & Ng, 2005). Thus, in the absence of nonverbal cues derived from message characteristics or the interpersonal context, receivers respond to whatever affective tone they perceive in electronic communication.

In line with both AET and Lazarus' (1991) appraisal theory of emotion, the event of receiving electronic communication during nonwork time represents a sudden change in current circumstances, which motivates individuals to make sense of the event through cognitive appraisal. During this appraisal, which occurs quickly and automatically, the individual primarily judges whether the event is favorable or unfavorable for one's self and his/her current goals as well as its relevance to personal well-being (Frijda, 2007; Lazarus, 1991; Weiss & Cropanzano, 1996). Negative emotions, such as anger, arise from events appraised as unfavorable and obstructing valued goals; positive emotions, such as happiness, stem from events appraised as favorable and facilitating valued goals (Frijda, 1988; Lazarus, 1991, 1999). In accordance with this, we suggest that the perceived affective tone of electronic communication signals situational favorability or unfavorability and goal facilitation or obstruction, influencing subsequent emotions of anger and happiness. Electronic communication perceived as negative in affective tone is likely viewed as a situational attack on the receiver (Izard, 2007), an attack that is especially unwarranted because it occurs outside the confines of the normal workday. This event that conveyed a negative tone will be appraised as unfavorable, but it may also represent a deliberate assault by the sender on the receiver's goals of having pleasant relations with friends and family and maintaining well-being in the nonwork domain (Averill, 1983; Carver & Harmon-Jones, 2009). This sense of goal obstruction and the associated frustration should contribute to the experience of anger (Berkowitz, 1989). In addition, just as anger may occur as a result of an electronic

[1] Other emotions such as fear and sadness are also possibly elicited in response to electronic communication. However, it has been suggested that fear is an avoidance-oriented emotion, and characterized by weak behavioral tendencies (Adams Jr, Ambady, Macrae, & Kleck, 2006). Sadness is a complex emotion that can vary in intensity and expression, and it is often difficult to associate with a proximal cause (Frijda, 1994). Because of the difficulties in understanding sadness, Barr-Zisowitz (2000) suggested that it is better to focus on other negatively-valenced emotions such as anger. Since work electronic communication during nonwork time is by nature a sudden encroachment on one's personal life, we focused on intense, approach-oriented emotions, such as anger and happiness that can clearly impact one's emotion processing and attitudes while occupying the nonwork domain. We thank an anonymous reviewer for suggesting we clarify this point so as not to suggest that electronic communications can only elicit the emotions of anger and happiness.

communication's negative affective tone, happiness may occur when a positive affective tone is perceived. According to Lazarus (1991), happiness is experienced when one strives and makes progress toward valued goals. Electronic communication from work during nonwork time that conveys a positive affective tone should facilitate a sense of goal accomplishment regarding one's work and life in general, resulting in felt happiness. Viewing affective tone as a continuum ranging from positive to negative, this suggests that electronic communication perceived more negatively should encourage anger and inhibit happiness.

Hypothesis 1: Within individuals, electronic communication affective tone is related to anger and happiness, such that a more negative affective tone is (a) positively related to anger and (b) negatively related to happiness.

Electronic Communication Time Requirements and Emotions

Previous theorizing by Byron (2008) suggests that although the verbalized content of an electronic communication message contains emotionally-laden components, nonverbal cues can also elicit emotion in message receivers. According to the literature on chronemics (e.g., Prasopoulou, Pouloudi, & Panteli, 2006), temporal aspects of electronic communication play a critical role as nonverbal cues that are interpreted by message receivers. Integrating this literature with Lazarus' (1991) appraisal theory of emotion, we propose that the time required to read and comply with electronic communication messages during nonwork time elicits emotional responses of anger and happiness.

Work by Byron and Baldridge (2005) and Walther and Tidwell (1995) suggests that the longer it takes to attend to an electronic communication message, the more the experience contributes to negative affect. Studies also show that employees can use e-mail as a medium to assert their power over other employees (Fragale, Sumanth, Tiedens, & Northcraft, 2012), and receiving electronic communication during nonwork time rather than during the workday does very little to mitigate receivers' felt obligations to read, respond, and comply with any associated requests (Barley et al., 2011). Thus, a receiver of time-intensive electronic communication may view the occurrence as an attempt by the sender to exhibit his/her dominance over the receiver, particularly since work-related electronic communication during nonwork time goes against historical societal norms (Prasopoulou et al., 2006). This negative appraisal reflects a type of goal frustration (Lazarus, 1991), in which one's sense of identity and preservation of well-being in the nonwork domain is thwarted, thereby precipitating a negative emotional response.

Conversely, electronic communication that is relatively effortless to read and requires minimal work by the receiver is likely appraised favorably. An electronic message requiring a brief amount of time may facilitate goal accomplishment and a sense of personal well-being because the receiver of the message now has one less work task to complete, of which the completion was straightforward, and he/she can readily re-engage in the nonwork domain. Less time demanding communication is also likely perceived as being considerate of one's personal time, eliciting a positive emotional response as the receiver's well-being and identity is recognized and supported. Therefore, we predict:

Hypothesis 2: Within individuals, electronic communication time required is (a) positively related to anger and (b) negatively related to happiness.

Electronic Communication, Work-to-Nonwork Conflict, and the Mediation of Emotions

Numerous studies have found that general electronic communication usage during nonwork time is related to work-to-nonwork conflict (e.g., Boswell & Olson-Buchanan, 2007; Fenner & Renn, 2010; Kennedy, Wellman, & Amoroso, 2011) as well as negative personal consequences such as sleep deprivation, burnout, and marital dissatisfaction (Chesley, 2005; Lanaj, Johnson, & Barnes, 2014; Towers, Duxbury, Higgins, & Thomas, 2006). Often invoked in these studies is the premise that because of the difficulty in transitioning between and meeting the demands of multiple roles, electronic communication usage during nonwork time intrudes and detracts from one's personal life. Although we agree with the fundamental tenet that experiencing work intrusions while participating in the nonwork domain increases work-to-nonwork conflict (e.g., Williams & Alliger, 1994), this premise does not account for the role of specific electronic communication elements in shaping employees' experiences and the possibility that electronic communication during nonwork could have beneficial effects on one's personal life. We contend that

electronic communications from work during nonwork time should be treated as episodic events with unique elements that determine whether each event has a beneficial or deleterious impact on an employee's nonwork life (i.e., work-to-nonwork conflict).

Greenhaus and Beutell (1985) described work-nonwork (family) conflict as a form of interrole conflict where the role demands of one role (e.g., work) interferes with meeting the demands of another role (e.g., family). Cross-domain research clearly illustrates that attitudes, emotions, and cognitions from work can interfere with nonwork (Eby, Maher, & Butts, 2010b). Further, previous meta-analytic work on the antecedents of work-to-family conflict has shown that unfavorably viewed aspects of one's work experience such as job stress, psychological demands from work, and workload are related to work-to-family conflict (Byron, 2005; Demerouti, Bakker, & Bulters, 2004). Taken together, we expect the elements that determine favorability/unfavorability of electronic communication events (affective tone, time required) will relate to work-to-nonwork conflict. However, we propose that these relationships are mediated by the elicited emotions of anger and happiness. To the extent that the elements of electronic communication episodes are viewed unfavorably (i.e., negative affective tone, more time required), anger should occur and increase work-to-nonwork conflict. In contrast, when features of electronic communication episodes are viewed favorably (i.e., positive affective tone, less time required), happiness should occur and lessen work-to-nonwork conflict.

When anger is experienced in response to an unfavorably appraised event, event-related thoughts are difficult to dismiss, and both attentional and cognitive resources are heavily depleted as individuals engage in narrowed information processing to assess blame and preserve self-identity (Lazarus, 1991; Martin & Tesser, 1989). An effect of this narrowed information processing is that attention is confined to the immediate, anger provoking event and not easily directed toward subsequent nonwork activities (Baumeister & Heatherton, 1996). Feelings of anger tend to linger and become difficult to self-regulate and suppress (Potegal, 2010), increasing the likelihood that anger bleeds over and is detrimental to nonwork social relationships (i.e., spouse, children, friends). This lack of self-regulation is even more likely to occur later in the evening, when fatigue and overexertion have already depleted the ability to control one's emotions (Baumeister & Heatherton, 1996), causing further exhaustion and making individuals even less apt to engage in nonwork activities. Based on the above reasoning, we expect that when electronic communication is viewed unfavorably (i.e., negative affective tone, more time required) and anger is elicited, this anger will hinder functioning and involvement in the nonwork domain as well as induce more strain, thus increasing work-to-nonwork conflict.

In comparison to negative emotions such as anger, a clear distinction has been made regarding happiness as an emotional response. Specifically, accumulated evidence suggests that happiness results from an appraisal of relevance to personal well-being and goal congruence, and is not dependent upon identity preservation or assessing the accountability of others (Smith et al., 1993; Weiss et al., 1999). Thus, experiencing happiness occupies less attentional and cognitive resources than experiencing anger. Because these resources are not diverted from the nonwork domain, greater attention is focused on nonwork activities. Similarly, broaden and build theory (Fredrickson, 1998, 2001) argues that positive experiences and emotions enhance health and flourishing by expanding one's cognitions and action repertoires. This allows positive emotions to provide instant benefits in the way of physical, cognitive, and psychological resources that are available for use in the nonwork domain, thereby decreasing work-to-nonwork conflict. Altogether, these arguments suggest electronic communication affective tone and time required are related to work-to-nonwork conflict, and these relationships are mediated by immediate effects on anger and happiness. Thus, we hypothesize:

Hypothesis 3: Within individuals, (a) electronic communication affective tone is positively related to work-to-nonwork conflict, and this relationship is mediated by (b) anger and (c) happiness.

Hypothesis 4: Within individuals, (a) electronic communication time required is positively related to work-to-nonwork conflict, and this relationship is mediated by (b) anger and (c) happiness.

Negative Versus Positive Emotions

In her model of emotions in e-mail, Byron (2008) proposed a *negativity bias*, whereby individuals overemphasize negative (rather than positive)

information conveyed in e-mail. Supporting the notion that "bad is stronger than good," Baumeister et al. (2001) provided evidence that negatively valenced events (e.g., losing money, receiving criticism) have a greater impact on individuals than do positively valenced events (e.g., winning money, receiving praise). Similarly, euphoria from positively valenced events tends to be more transitory than the lasting impression of negatively valenced events (Brickman, Coates, & Janoff-Bulman, 1978). This pattern has been confirmed in research on the positive–negative asymmetry effect (e.g., Peeters, 1971; Peeters & Czapinski, 1990) which stipulates that negative stimuli are processed more extensively and contribute more to one's overall impression than do positive stimuli. Lazarus alluded to a similar positive–negative asymmetry effect as it pertains to emotions by stating, "My best guess is that goal incongruent or negative emotions have a much more obvious and powerful impact on adaptation and subjective well-being than do positive ones" (1991: 264). Taken together, because happiness is more fleeting than anger and anger involves more cognitive processing and rumination, we expect that the indirect effects of electronic communication elements on work-to-nonwork conflict are stronger through anger than through happiness.

Hypothesis 5: The within-person indirect effects from (a) electronic communication affective tone and (b) time required to work-to-nonwork conflict through anger are stronger than the indirect effects from electronic communication affective tone and time required to work-to-nonwork conflict through happiness.

The Moderating Role of Social Context and Receiver Factors

Although generally overlooked, some research in the electronic communication literature emphasizes that reactions to others' communication are shaped by ingrained relational patterns (Baralou & McInnes, 2013; Boudens, 2005) and individual differences that influence how environmental stimuli are evaluated (Byron & Baldridge, 2007). Byron (2008) posited that social context and receiver factors influence how electronic communication is interpreted and the emotions that are elicited. Drawing from this literature, we propose that abusive supervision, communication sender, and segmentation preference serve as key moderators of how electronic communication affects proximal emotions and work-to-nonwork conflict.

Receivers of electronic communication draw upon the accrued knowledge of their interpersonal experiences to reduce uncertainty about the appraised meaning of a current electronic communication (Byron & Baldridge, 2007), which is especially relevant for more subjective elements of electronic communication such as perceived affective tone (versus more objective elements such as time required). The relationship quality that an employee has with his/her supervisor is a key factor that may influence appraisals of affective tone in electronic communication. In particular, the effect of affective tone on emotions and work-to-nonwork conflict may be contingent upon whether an employee is experiencing abusive supervision. Abusive supervision represents the extent to which a supervisor engages in a sustained display of hostile and self-serving verbal and nonverbal behavior toward the subordinate (Mitchell & Ambrose, 2007) and has been linked to work–family conflict, emotional labor, and psychological distress (Carlson, Ferguson, Hunter, & Whitten, 2012; Tepper, 2000). In contrast to other indicators of relationship quality, such as leader-member exchange (LMX; Graen & Uhl-Bien, 1995), abusive supervision focuses more on negative aspects of the supervisor–subordinate relationship. Although we acknowledge that general perceptions of how positive the relationship is between the supervisor and subordinate may play a role in how individuals react to the affective tone of electronic communication, previous theory and empirical work suggests that negative work relationships have greater predictive power in explaining employee outcomes than positive relationships (Eby, Butts, Durley, & Ragins, 2010a; Labianca & Brass, 2006).

A commonly espoused tenet in the social cognitive literature is that individuals develop relational schemas for interactions with others derived from internal representations of a particularly salient relationship, such as the relationship with one's supervisor (Andersen & Chen, 2002; Baldwin, 1992; Horowitz, 1991). These cognitive structures serve as generic scripts for an expected pattern of interaction with others that help an individual efficiently interpret incoming information and make inferences about missing or ambiguous information. Support for this premise has been found regarding dysfunctional relational patterns, whereby subordinates who experienced supervisor abuse or aggression in the past expected similar malicious treatment in the future

from their supervisor as well as others in the workplace (Barling, Rogers, & Kelloway, 2001; LeBlanc & Kelloway, 2002). These dysfunctional relational patterns should be particularly important for employee reactions to the affective tone of electronic communication because the lack of audio and visual cues in such communication causes ambiguity and uncertainty that increases the receiver's reliance on his/her predominant relational schema to infer the appropriate response to the message. Relational schemas, on the other hand, should have little bearing on the effects of time required by electronic communication because this element is relatively unambiguous, leaving few, if any, inferences to be drawn by the receiver.

Aligning with Lazarus (1991), relational schemas are elements of the cognitive structure representing regularities in patterns of interpersonal relationships that can prime, or influence, the appraisal process and subsequent emotional responses (Baldwin, 1992; Higgins, 1987). When an electronic communication received during nonwork time conveys a positive or negative affective tone, employees likely use their knowledge of how abusive their supervisor typically is as a "role-relationship model" (Horowitz, 1989: 260) to appraise and react to the current interpersonal exchange, no matter whether the exchange is with their supervisor or another work constituency (e.g., coworker). Of course, the communication sender (i.e., supervisor versus non-supervisor) also likely plays a role in how abusive supervision influences the effects of affective tone in electronic communication. A relational schema is more strongly activated when an interpersonal exchange includes the target person from whom the relational schema was primarily derived (Baldwin, 1992). Thus, abusive supervision should have more applicability when employees are communicating with their supervisors, in comparison to peers or subordinates. Because of this, we suggest that abusive supervision interacts with the communication sender to influence how affective tone affects emotional responses. Specifically, electronic communication with a negative affective tone received from a supervisor who is perceived as highly abusive should elicit the strongest emotional response (i.e., more anger, less happiness) because the activated relational schema of abusive supervision primes the employee to appraise the intent of the supervisor's communication as malicious and demeaning (even if not intended to be). We also expect a similar, but weaker, effect when electronic communication with a negative affective tone is received from a non-supervisor and the employee perceives his/her supervisor as abusive because it is likely that abusive supervision still operates as a relational schema in the employee's cognitive appraisal process, albeit with a less profound effect due to the presence of a different exchange partner than the one primarily represented by the relational schema. In contrast, electronic communication perceived as negative in affective tone from either a supervisor or non-supervisor when the employee does not experience abusive supervision should elicit weaker emotional responses because the employee's overarching positive relational schema for interpersonal exchanges contrasts with the unfavorable electronic communication and may override or discount the appraisal of the specific event and lessen the emotional response (Baldwin, 1992). Further, we expect the weakest effect to occur for communication that is negative in affective tone from a supervisor who is generally perceived as not abusive due to people being most prone to disattend or explain away episodic information from a highly significant other when it is inconsistent with one's overarching relational schema which was derived from that specific relationship (i.e., communication negative in affective tone and low abusive supervision). Finally, we propose that abusive supervision and communication sender should interact in a similar manner to moderate the relationship between affective tone and work-to-nonwork conflict. For example, an employee likely ruminates most over an electronic communication negative in affective tone, thereby experiencing interference with nonwork participation and engagement, when the communication is received from a supervisor viewed as generally abusive toward the employee. Thus, we expect:

Hypothesis 6: In a three-way interaction, abusive supervision and communication sender together moderate the within-person relationships between electronic communication affective tone with (a) anger, (b) happiness, and (c) work-to-nonwork conflict such that the relationships are strongest when abusive supervision is higher (versus lower) and communications are from supervisors (versus non-supervisors) and the relationships are weakest when abusive supervision is lower (versus higher) and electronic communications are from supervisors (versus non-supervisors).

Characteristics of receivers, such as individual differences in how employees manage their

personal boundaries between the work and nonwork domain, also likely impact reactions to electronic communication received during nonwork time. According to boundary theory (Ashforth, Kreiner, & Fugate, 2000), individuals vary in their preferences for segmenting work and nonwork domains, coined *segmentation preference* (Powell & Greenhaus, 2010). Those with a high segmentation preference like to keep their work domain separate from their nonwork domain, and those with a low segmentation preference prefer to integrate or blend the two domains by maintaining highly permeable boundaries around work and nonwork. To date, empirical research has consistently painted a bleak picture of those that prefer to integrate work and nonwork in favor of those that prefer to segment, demonstrating that segmentation preference is negatively related to work-to-nonwork conflict and stress (Kreiner, 2006) and positively related to psychological detachment from work and life satisfaction (Hahn & Dormann, 2013). In contrast to these findings, we argue that a high segmentation preference can exacerbate negative reactions and lessen positive reactions, particularly in the case of electronic communication that encroaches upon one's temporal boundaries (i.e., time required). As mentioned earlier, people feel obligated to read, respond, and comply with electronic communications received during nonwork time (Barley et al., 2011), and this obligation has become expected by most organizations today (Perlow, 2012). Thus, employees with a high segmentation preference that receive electronic communication during nonwork time likely still read and act upon any requests in the electronic communication. However, because individuals with a high preference for segmentation desire to protect their nonwork time from unwanted work intrusions and limit the duration of such intrusions (Powell & Greenhaus, 2010), we expect that the time required to deal with electronic communication from work during nonwork time will elicit stronger emotions (more anger, less happiness) and be more debilitating in the way of work-to-nonwork conflict for these employees in comparison to those with a preference for integrating work and nonwork. We do not make predictions for segmentation preference moderating the effects of affective tone. Employees who prefer to segment work and nonwork desire to limit work from intruding upon their time occupying the nonwork domain. Thus, segmentation preference largely pertains to maintaining work-nonwork boundaries regarding time and place (Kreiner, 2006), which has conceptual relevance for time required by electronic communication but not for the affective tone of such communication.

Hypothesis 7: Segmentation preference moderates the within-person relationships between electronic communication time required with (a) anger, (b) happiness, and (c) work-to-nonwork conflict such that the relationships are strongest when segmentation preference is higher (versus lower).

Taken together, our aforementioned hypotheses imply potential moderated mediation. We propose that abusive supervision and communication sender together strengthen the indirect effects of affective tone on work-to-nonwork conflict through anger and happiness. We also predict that segmentation preference strengthens the indirect effects of time required on work-to-nonwork conflict through anger and happiness. Thus, we hypothesize:

Hypothesis 8a: The indirect effects of electronic communication affective tone on work-to-nonwork conflict through anger and happiness are moderated by both abusive supervision and communication sender together such that the indirect effects are strongest when abusive supervision is higher (versus lower) and communications are from supervisors (versus non-supervisors) and the relationships are weakest when abusive supervision is lower (versus higher) and electronic communications are from supervisors (versus non-supervisors).

Hypothesis 8b: The indirect effects of electronic communication time required on work-to-nonwork conflict through anger and happiness are moderated by segmentation preference such that the relationships are strongest when segmentation preference is higher (versus lower).

METHODS

Participants and Procedure

Using the authors' personal and professional networks, participants for this study were recruited from a variety of industries including technology, finance, manufacturing, government, and healthcare. Initially, e-mail invitations were sent to approximately 300 of the authors' contacts outside of

academia that described the study, requested their voluntary participation, and asked them to forward the invitation to others in their professional networks. Subsequently, approximately 600 e-mail invitations were sent to business school alumni of a university in the Southwestern United States. Study invitations were also posted on various LinkedIn interest groups. This "snowball sampling" methodology is consistent with approaches used previously in the literature (e.g., Grant & Mayer, 2009; Piccolo, Greenbaum, Hartog, & Folger, 2010), and it allowed for us to sample from a broad range of organizations with a wide spectrum of communication technologies utilized by their employees.

Participants completed an initial on-line survey assessing background characteristics (age, gender, marital status, parental status, hours worked per week, workplace expectations for segmentation), perceptions of abusive supervision and segmentation preference. Following the initial survey, participants were asked to complete seven on-line experience sampling surveys after the end of their workday and after receiving a work-related electronic communication. Participants were entered into a draw for two tablet computers that were awarded at the end of the study. We used experience sampling methodology to assess day-to-day variation in elements of electronic communication within-person while at the same time controlling for possible between-person confounds and biases. This approach also allowed us to best capture emotional reactions to electronic communication and episodes of work-to-nonwork conflict, which are likely transitory and occur simultaneously in the moment (Eby et al., 2010).

Q:1

For each of the seven daily surveys, participants were sent a reminder e-mail with a link for that day's online survey between 5:00 and 6:00 p.m. We adopted an "event contingent" sampling strategy, whereby participants were instructed to complete the survey based upon the most recent electronic communication received from work after working hours. Because of possible discrepancies in defining the workday, participants were instructed that if they received the survey before the end of their workday or had not yet received a work communication, to complete the survey after the next work communication during nonwork hours was received. Participants did not provide study data on days when no work electronic communication was received after work hours.

Seven hundred and two participants completed the initial on-line survey, and 385 participants completed daily surveys. We dropped 28 participants because they received no work communication during nonwork time over the course of the study, and 16 participants were removed due to missing data on individual-level variables. This resulted in a final sample of 341 participants, 176 of whom could be identified as university alumni and 69 came from the authors' contacts. The remaining 96 participants resulted from the snowball sampling. In all, the 341 participants completed a total of 1,572 daily surveys for which work-related electronic communication was received during nonwork time. The majority of participants were male (64%), married or living with a partner (70%), and had at least one child under the age of 18 at home (52%). The median participant age range was 36–40 years old, and they worked an average of 47 hours per week (SD = 9.20). Participants had been employed in the current organization an average of 8.54 years (SD = 7.57) and reported a median salary of $75,000 to $100,000.

Measures

Electronic communication affective tone and time required. Both affective tone and time required were assessed daily, after participants received a work communication. In line with how previous studies have measured the perceived tone of written text and affective responses to external stimuli (e.g., Cantor, Bryant, & Zillmann, 1974; Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005), perceptions of affective tone were measured using a single item that asked "How would you describe the tone of this electronic communication?" The response scale was 1 ("negative") to 5 ("positive"). To align with the directionality of our hypotheses, we then reversed-scored the item so that higher scores represented more negative affective tone. To assess the time required by electronic communication, each of the daily surveys asked participants "How long did it take you to read and comply with what was requested in this electronic communication?" Responses were coded in hours and fractions of hours.

Anger and happiness. Participants' emotions were measured daily after receiving work-related electronic communication. We measured both anger and happiness using four emotion words for each emotion (Shaver, Schwartz, Kirson, & O'Connor, 1987; Weiss et al., 1999). Participants were asked, "Please indicate the extent to which you felt the following after reading the most recent work-related

electronic communication," followed by a randomized list of emotion words that corresponded with anger (anger, aggravation, resentment, irritation) and happiness (happiness, pride, enthusiasm, eagerness). The response scale was from 1 ("not at all") to 5 ("very much"). Coefficient α was .90 for anger and .89 for happiness.

Work-to-nonwork conflict. Following previous research, we conceptualized work-nonwork conflict as a unidimensional construct comprised of time demands and psychological strain (see Netemeyer, Boles, & McMurrian, 1996). Thus, we measured daily work-to-nonwork conflict using the five-item scale from Netemeyer et al. (1996), changing the wording to pertain to the nonwork domain in general and not just family. A sample item is "Today the demands of my work interfered with my home and personal life." The response scale was 1 ("strongly disagree") to 5 ("strongly agree"). Coefficient α was .93.

Abusive supervision. We assessed abusive supervision on the initial survey using the nine-item scale from Zellars, Tepper, and Duffy (2002). Participants were asked to report the frequency that their supervisor demonstrated a variety of behaviors such as "talked down to me" using a scale ranging from 1 ("never") to 5 ("very often"). Coefficient α was .89.

Communication sender. In the daily surveys, we also asked participants to report who sent the focal electronic communication. Sender was coded as 1 if the communication was received from a supervisor and 0 if the sender was a coworker, subordinate, or client/customer. In all, 21% of electronic communications were received from supervisors, 41% were from coworkers, 16% were from subordinates, and 22% were from clients/customers.

Segmentation preference. To assess individual preferences for segmentation, we used Kreiner's (2006) four-item scale. A sample item is "I don't like work issues creeping into my home life," with higher scores indicating a stronger segmentation preference. The response scale was 1 ("strongly disagree") to 5 ("strongly agree"). Coefficient α was .91.

Control variables. Age, gender, marital status, parental status, work hours, and workplace segmentation were treated as individual-level variables and used as controls in all analyses. We included age, gender (0 = "female", 1 = "male"), marital status (0 = "not married", 1 = "married or living with partner"), and parental status to be consistent with previous work–family research (e.g., Ford, Heinen, & Langkamer, 2007). Age was measured as a categorical variable with five-year bins ranging from 25 to 60. Parental status was coded as 1 if there were children under 18 living with the respondent, or otherwise 0. We included average weekly work hours as a control to ensure that the observed relationships for time required were not an artifact of long work hours, which have often been linked to work–family conflict (Byron, 2005). Workplace expectations for work-nonwork segmentation were included as a control to account for organizational norms regarding electronic communication accessibility and responsiveness by their employees (Matusik & Mickel, 2011). Workplace segmentation was measured with two items adapted from Kreiner (2006): "At my company it is expected that people will read and act on work-related electronic communication outside of working hours" (reverse-coded) and "My company lets people forget about work when they're home." Participants responded using a scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), and coefficient α was .81.

RESULTS

Analytical Strategy

Our data contained a hierarchical structure in which daily responses were nested within individuals. To account for these dependencies in the data, we used random coefficient modeling with HLM 6 (Bryk & Raudenbush, 1996) to test our hypotheses. To separate Level 1 and Level 2 effects and remove between-person variance in order to appropriately test the within-person relationships, we centered Level 1 predictors around individuals' means and Level 2 predictors around their grand means (Hofmann, Griffin, & Gavin, 2000). The within- (Level 1) and between-person (Level 2) intercorrelations among the study variables are provided in Table 1.

Before testing our hypotheses, we ran a series of unconditional models in HLM to examine whether there was sufficient within-person variance. Results indicated that 78% of the variance in affective tone and 73% of the variance in time required resided at the within-person level. Also, 74% of the variance in anger and 61% of the variance in happiness was within-person. Finally, 54% of the variance in work-to-nonwork conflict was within-person. Altogether, these results confirm the appropriateness of using multilevel modeling for hypotheses testing.

Hypotheses Tests

Within-person results. Table 2 presents the results for the effects of electronic communication

TABLE 1
Means, Standard Deviations, and Correlations among Study Variables[a]

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Level 1 (within-person)																
1. EC affective tone	2.54	.96														
2. EC time required	.38	.55	.07**													
3. Anger	1.45	.76	.45**	.26**	(.90)											
4. Happiness	1.71	.96	−.54**	.02	−.25**	(.89)										
5. Work-to-nonwork conflict	2.37	1.04	.14**	.22**	.29**	−.13**	(.93)									
6. EC sender	.21	.41	−.01	.02	.09**	−.03	.07**									
Level 2 (between-person)																
7. Age	4.38	2.08	−.12**	−.02	−.05*	.10**	−.05*	−.12**								
8. Gender	.63	.48	−.04	−.02	−.05*	.11**	−.07**	.00	.11*							
9. Marital status	.70	.46	−.04	.05	−.01	−.02	−.03	−.04	.29**	.17**						
10. Parental status	.52	.50	.01	.01	−.01	−.01	−.03	−.05	.20**	.17**	.44**					
11. Work hours	47.49	9.20	.00	.10**	.00	.01	.11**	−.01	−.04	.12*	.01	.05				
12. Workplace segmentation	2.28	.95	.00	−.10**	−.10**	−.02	−.19**	−.04	−.01	−.02	−.01	−.04	−.17**	(.81)		
13. Segmentation preference	3.58	.97	.13**	.09**	.17**	−.20**	.20**	.09**	−.26**	−.15**	−.10	−.08	.07	−.09	(.91)	
14. Abusive supervision	1.62	.60	.10**	.02	.17**	−.06*	.15**	.10**	.00	−.01	−.03	−.04	.02	−.20**	.25**	(.89)

[a] $N_{(\text{Level 1})} = 1{,}530 - 1{,}572$. $N_{(\text{Level 2})} = 341$. Coefficient α is provided along the diagonal. EC affective tone was coded 1 = positive, 5 = negative. EC sender was coded 0 = non-supervisor, 1 = supervisor. Gender was coded 0 = female, 1 = male. Marital status was coded 0 = not married, 1 = married or living with partner. Parental status was coded 0 = no children living at home, 1 = children living at home. EC = electronic communication.

** $p < .01$

* $p < .05$

TABLE 2
HLM Results for Effects on Anger and Happiness[a]

Variable	Outcome: Anger			Outcome: Happiness		
	b	*SE*	*t*	*b*	*SE*	*t*
Intercept (b_{00})	1.45	.03	51.33**	1.70	.04	44.06**
Level 1						
EC affective tone (b_{10})	.29	.02	11.74**	−.45	.03	−16.06**
EC time required (b_{20})	.15	.04	3.57**	.02	.04	.38
Level 2						
Age (b_{01})	−.02	.01	−1.87	.05	.02	2.22*
Gender (b_{02})	−.07	.05	−1.44	.13	.07	1.89
Marital status (b_{03})	.05	.05	1.00	−.09	.09	−1.04
Parental status (b_{04})	.04	.05	.93	.02	.08	.20
Work hours (b_{05})	.00	.00	.10	−.00	.01	−.07
Workplace segmentation (b_{06})	−.05	.02	−2.14*	.00	.04	.07
σ^2	.22			.38		
Pseudo-R^2	.48			.32		

[a] $N_{\text{Level 1}}$ = 1,530. $N_{\text{Level 2}}$ = 341. EC affective tone was coded 1 = positive, 5 = negative. Gender was coded 0 = female, 1 = male. Marital status was coded 0 = not married, 1 = married or living with partner. Parental status was coded 0 = no children living at home, 1 = children living at home. EC = electronic communication. All Level 1 variables were centered at individuals' means and Level 2 variables were grand-mean centered. *b* = unstandardized regression coefficient obtained from HLM.

** $p < .01$

* $p < .05$

affective tone and time required on within-person emotional reactions of anger and happiness. Supporting Hypothesis 1, affective tone was positively related to anger (b = .29, p<.01) and negatively related to happiness (b = -.45, p<.01). As Hypothesis 2a predicts, time required to read and comply with electronic communication was positively related to within-person anger (b = .15, p<.01). However, Hypothesis 2b was not supported; there was not a significant relationship between time required and happiness (b = .02, n.s.).

Our next set of findings concern the total and indirect effects on work-to-nonwork conflict (see Table 3). Regarding total effects on within-person work-to-nonwork conflict, results revealed no relationship between affective tone and work-to-nonwork conflict (b = .04, n.s.) and a positive relationship between time required and work-to-nonwork conflict (b = .34, p<.01). Thus, support was found for Hypothesis 3a but not Hypothesis 4a. Hypothesis 3b and 3c predict that the within-person relationship between affective tone and work-to-nonwork conflict is mediated by anger and happiness, respectively. As the indirect effects model in Table 3 shows, anger was significantly related to work-to-nonwork conflict (b = .15, p<.01) but happiness was not (b = .03, n.s.), and the coefficient for affective tone decreased slightly when controlling for the effects of anger and happiness. To formally test our proposed indirect effects, we conducted Sobel (1982) tests and then employed Tofighi and MacKinnon's (2011) distribution-of-products method in the RMediation package to estimate a 95% confidence interval (CI) around the indirect effects. Results of the Sobel tests showed a significant indirect effect of affective tone on work-to-nonwork conflict through anger (z = 3.15, p<.01) but not happiness (z = -.88, n.s.). The RMediation results indicated that the indirect effect through anger was .042, which was statistically significant (p<.05) because zero was not contained in the CI (95% CI = .017, .070). In contrast, the indirect effect through happiness was −.012 and not significant (95% CI = −.039, .015). Thus, Hypothesis 3b, but not 3c, was supported.

Hypothesis 4b and 4c predict that the within-person relationship between time required and work-to-nonwork conflict is mediated by anger and happiness, respectively. As the indirect effects model in Table 3 shows, the coefficient for time required decreased slightly when including the effects of anger and happiness. Supporting Hypothesis 4b, Sobel tests showed a significant indirect effect of time required on work-to-nonwork conflict through anger (z = 2.41, p<.05). In addition, the RMediation results indicated that the indirect effect through anger was .022 and statistically significant (95% CI = .007, .043). However,

TABLE 3
HLM Results for Effects on Work-to-Nonwork Conflict[a]

Variable	Total Effects Model			Indirect Effects Model		
	b	*SE*	*t*	*b*	*SE*	*t*
Intercept (b_{00})	2.35	.04	55.42**	2.34	.04	55.35**
Level 1						
EC affective tone (b_{10})	.05	.03	1.73	.01	.03	.24
EC time required (b_{20})	.34	.06	6.12**	.31	.06	5.45**
Anger (b_{30})				.15	.04	3.27**
Happiness (b_{40})				.03	.03	.82
Level 2						
Age (b_{01})	–.03	.02	−1.35	–.03	.02	−1.47
Gender (b_{02})	–.11	.09	−1.18	–.10	.09	−1.15
Marital status (b_{03})	.08	.11	.76	.08	.11	.78
Parental status (b_{04})	–.02	.10	–.16	–.02	.10	–.23
Work hours (b_{05})	.01	.00	1.65	.01	.00	1.48
Workplace segmentation (b_{06})	–.20	.04	−4.21**	–.20	.05	−4.31**
σ^2	.51			.48		
Pseudo-R^2	.10			.16		

[a] $N_{\text{Level 1}} = 1{,}530$. $N_{\text{Level 2}} = 341$. EC affective tone was coded 1 = positive, 5 = negative. Gender was coded 0 = female, 1 = male. Marital status was coded 0 = not married, 1 = married or living with partner. Parental status was coded 0 = no children living at home, 1 = children living at home. EC = electronic communication. All Level 1 variables were centered at individuals' means and Level 2 variables were grand-mean centered. *b* = unstandardized regression coefficient obtained from HLM.

** $p < .01$

Q:19 * $p < .05$

Hypothesis 4c was not supported, as the Sobel test showed no indirect effect through happiness (z = .35, n.s.) and the RMediation results indicated an indirect effect of .000 (95% CI = –.003, .005).

Hypothesis 5 predicts that the within-person indirect effects of affective tone and time required on work-to-nonwork conflict are stronger through anger than through happiness. As reported above, our findings demonstrated significant indirect effects for both affective tone and time required through anger, but no indirect effects operated through happiness. To formally test Hypothesis 5, we employed a *z*-test for the magnitude of the difference in indirect effects obtained from the RMediation results. Supporting Hypothesis 5a and 5b, we found that the indirect effects through anger were stronger than the indirect effects through happiness for both affective tone (z = 2.53, p<.05) and time required (z = 2.39, p<.05).

Moderation results. Hypothesis 6a, 6b, and 6c predict that the within-person relationships between affective tone with anger, happiness, and work-to-nonwork conflict are strongest when employees perceive higher (versus lower) abusive supervision and electronic communications originate from supervisors (versus non-supervisors) and the relationships are weakest when employees perceive lower (versus higher) abusive supervision and electronic communications originate from supervisors (versus non-supervisors). Testing these hypotheses entailed estimating cross-level, three-way interactions with slopes-as-outcomes HLM models that incorporated moderating effects for communication sender at Level 1 and abusive supervision at Level 2. As shown in Table 4, results revealed a significant three-way interaction for anger (b = .24, p<.01), but not happiness (b = –.01, n.s.) or work-to-nonwork conflict (b = .09, n.s.). Thus, Hypothesis 6b and 6c were not supported. The graphical plot of the significant three-way interaction between affective tone, abusive supervision, and communication sender is shown in Figure 2. Supporting Hypothesis 6a, simple slopes tests following Preacher, Curran, and Bauer's (2006) guidelines indicated that the relationship between affective tone and anger was significant when abusive supervision was high and communications were from supervisors (t = 9.30, p<.01), and tests of simple slopes differences suggested the strength of this relationship was stronger than it was under the other three conditions (t = 4.09, 6.82, 4.87; all p<.01). Also, the relationship between affective tone and anger was not significant when abusive supervision was

TABLE 4
HLM Results for Moderating Effects of Electronic Abusive Supervision, Communication Sender, and Segmentation Preference[a]

Variable	Outcome: Anger			Outcome: Happiness			Outcome: Work-to-Nonwork Conflict		
	b	*SE*	*t*	*b*	*SE*	*t*	*b*	*SE*	*t*
Intercept (b_{00})	1.44	.03	54.93**	1.70	.04	45.76**	2.34	.04	58.16**
Level 1									
EC affective tone (b_{10})	.28	.02	12.14**	–.45	.03	−16.25**	.01	.03	.19
EC time required (b_{20})	.15	.04	3.91**	.02	.04	.55	.29	.05	5.69**
Anger (b_{30})							.14	.04	3.17**
Happiness (b_{40})							.03	.03	.87
EC sender (b_{50})	.14	.05	2.83**	–.03	.05	–.65	.02	.05	.45
EC tone X EC sender (b_{60})	.02	.06	.78	.05	.08	.66	–.06	.08	–.75
Level 2									
Age (b_{01})	–.01	.01	–.69	.03	.02	1.27	–.00	.02	–.04
Gender (b_{02})	–.04	.05	–.87	.09	.07	1.29	–.05	.08	–.61
Marital status (b_{03})	.05	.05	1.07	–.10	.09	−1.15	.06	.10	.62
Parental status (b_{04})	.06	.04	1.42	.00	.08	.04	–.01	.10	–.09
Work hours (b_{05})	–.00	.00	–.65	.00	.01	.22	.01	.01	1.28
Workplace segmentation (b_{06})	–.05	.02	−2.38*	.01	.04	.32	–.19	.04	−4.27**
Segmentation preference (b_{07})	.10	.02	3.83**	–.17	.05	−3.32**	.22	.04	4.95**
Abusive supervision (b_{08})	.17	.05	3.30**	–.03	.05	–.56	.13	.07	1.87
EC time X Segmentation preference (b_{21})	.03	.04	.78	.01	.05	.31	.19	.04	4.26**
EC tone X Abusive sup. (b_{11})	.09	.04	2.53**	.05	.03	1.60	.00	.04	.03
Abusive sup. X EC sender (b_{51})	.25	.07	3.38**	–.04	.07	–.53	.15	.09	1.65
Abusive sup. X EC tone X EC sender (b_{61})	.24	.08	3.10**	–.01	.09	–.10	.09	.10	.95
σ^2	.20			.36			.48		
Pseudo-R^2	.54			.36			.17		

[a] $N_{\text{Level 1}}$ = 1,530. $N_{\text{Level 2}}$ = 341. EC affective tone was coded 1 = positive, 5 = negative. EC sender was coded 0 = non-supervisor, 1 = supervisor. Gender was coded 0 = female, 1 = male. Marital status was coded 0 = not married, 1 = married. Parental status was coded 0 = no children living at home, 1 = children living at home. EC = electronic communication, EC tone = EC affective tone, EC time = EC time required, abusive sup. = abusive supervision. All Level 1 variables were centered at individuals' means and Level 2 variables were grand-mean centered. *b* = unstandardized regression coefficient obtained from HLM.

** $p < .01$

* $p < .05$

low and communications were from supervisors (t = .57, n.s.).

Hypothesis 7a, 7b, and 7c predict that the within-person relationships between time required with anger, happiness, and work-to-nonwork conflict are stronger for employees with higher (versus lower) segmentation preference. As shown in Table 4, HLM results indicated a significant two-way interaction for work-to-nonwork conflict (b = .19, p<.01), but not anger (b = .03, n.s.) or happiness (b = .01, n.s.). The plot of the significant interaction between time required and segmentation preference is depicted in Figure 3. Simple slopes tests indicated that the relationship between time required and work-to-nonwork conflict was significant when segmentation preference was high (t = 6.05, p<.01) and this relationship was stronger than it was when segmentation preference was low (t = 4.81, p<.01). Overall, Hypothesis 7c was supported, but Hypothesis 7a and 7b were not.[2]

Moderated mediation results. Hypothesis 8a and 8b predict that the proposed moderation effects for affective tone and time required demonstrate indirect effects on work-to-nonwork conflict through anger and happiness. Because these hypotheses reflect tests of first-stage moderated mediation (Edwards & Lambert, 2007), only the observed three-way

[2] In exploratory analyses, we also examined possible interactions between time required, abusive supervision, and communication sender as well as affective tone with segmentation preference. Results of these analyses showed no significant effects on anger, happiness, or work-to-nonwork conflict.

FIGURE 2
Three-Way Interaction Effect for Electronic Communication Affective Tone, Abusive Supervision, and Communication Sender on Anger

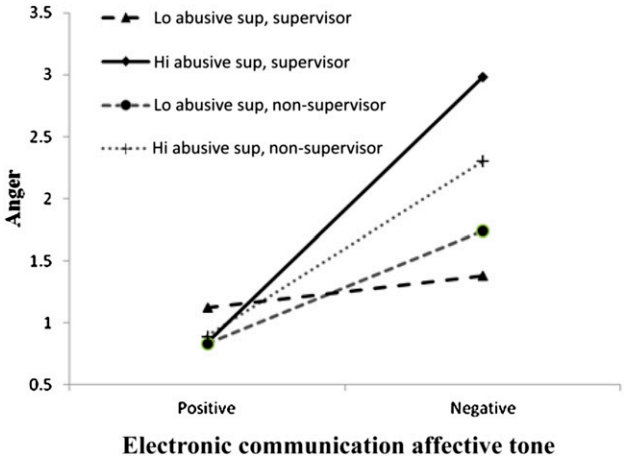
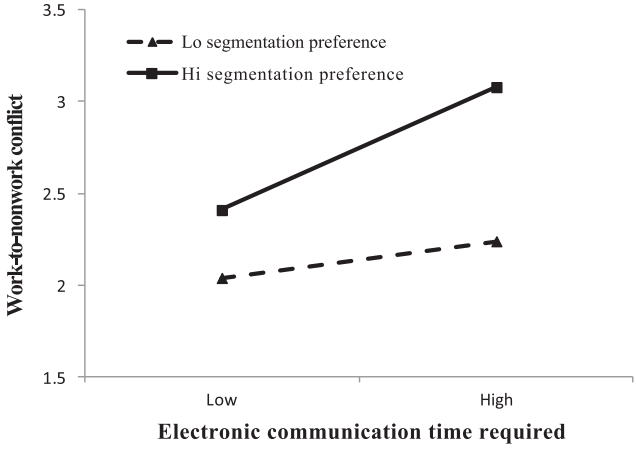


FIGURE 3
Cross-Level Interaction Effect for Electronic Communication Time Required and Segmentation Preference on Work-to-Nonwork Conflict



interaction between affective tone, abusive supervision, and communication sender on anger was examined to ascertain a possible indirect effect on work-to-nonwork conflict. Specifically, we employed Bauer, Preacher and Gil's (2006) method for calculating conditional indirect effects in multilevel regression to estimate the indirect effect of affect tone on work-to-nonwork conflict through anger at higher (+1 *SD*) and lower (–1 *SD*) levels of abusive supervision and for electronic communications from supervisors versus non-supervisors. Partially supporting Hypothesis 8a, results indicated that the indirect effect of affective tone on work-to-nonwork conflict through anger varied as a function of abusive supervision and communication sender. That is, the indirect effect was significant when abusive supervision was high and communication was from supervisors (estimate = .11, $z = 3.07$, $p<.01$) as well as when communication was from non-supervisors and abusive supervision was high (estimate = .08, $z = 2.98$, $p<.01$) or low (estimate = .06, $z = 2.54$, $p<.05$). However, the indirect effect was not significant when abusive supervision was low and communication was from supervisors (estimate = .04, $z = 1.24$, n.s.).

Supplemental Analyses

In the daily surveys, participants were given the opportunity to voluntarily provide the full text of the focal electronic communication they received. Participants provided unedited text for 186 of the 1,530 (12%) electronic communications used in the primary analyses. This data allowed us to explore one of the fundamental tenets of appraisal theory of emotion in the context of electronic communication—that it is how a person construes an event, rather than objective characteristics of the event itself, that shapes emotional responses (Lazarus & Folkman, 1984; Siemer, Mauss, & Gross, 2007). Further, little research has examined the extent to which misinterpretations of affective content in electronic communication are attributable to the receiver (Byron, 2008). As an initial test of this, we had five scholars who were well-versed in the emotions literature serve as experts to rate the affective tone for each of the 186 electronic communication messages on the same rating scale used by the study participants (and then we reversed-scored the measure so higher scores indicated more negative tone). The inter-rater reliability for these ratings was good (ICC = .89). There was also consistency between expert and participant ratings of affective tone, particularly for messages strongly affective in nature. For example, the most negatively toned message rated by experts was "If shift is below 250 CSPH I would like for you to explain what you could have done differently. If you are above 250 explain that as well," which received a mean rating of 4.40 by experts and a similar rating of 4.00 by the study participant. One of the most positively toned messages was "I just want to thank you all for your dedication in your work for inventory prep. All Sunday bulk and bin loads were completed in a timely manner. We did not have to push any loads out and inventory started on time with no issues.

Q:5

Thank you for your efforts," which was rated 1.00 by experts and the study participant.

We used average expert ratings as a measure of *objective affective tone* and ran HLM models (including control variables) to examine the effects of objective affective tone on within-person anger and happiness through perceived affective tone as rated by study participants. Despite the small sample size, the total effects models indicated significant relationships for objective affective tone with anger ($b = .20$, $p<.01$) and happiness ($b = -.27$, $p<.01$), and a significant relationship between objective affective tone and perceived affective tone ($b = .44$, $p<.01$). The indirect effects models revealed that perceived affective tone was significantly related to anger ($b = .35$, $p<.01$) and happiness ($b = -.45$, $p<.01$), and the coefficients for objective affective tone predicting anger ($b = .04$, n.s.) and happiness ($b = -.07$, n.s.) decreased substantially when controlling for the effects of perceived affective tone. Formal mediation tests indicated that the indirect effect of objective affective tone on anger through perceived affective tone was .155 and significant ($z = 2.95$, $p<.01$; 95% CI = .064, .271). Results also indicated a significant indirect effect of −.198 on happiness ($z = -3.28$, $p<.01$; 95% CI = −.095, −.325).

Altogether, these results suggest that electronic communications are not completely ambiguous events, and they carry clear linguistic, affective cues for message recipients that are often interpreted accurately. However, we also found some evidence to support appraisal theory assumptions that individuals differ in how they interpret the affective tone of electronic communications, as the correlation between expert and participant ratings of affective tone was moderate ($r = .45$, $p<.01$) and 80% of the variance in this relationship remained unexplained. This also supports our contention that the interpretation of affective tone is likely shaped by social context factors. Further supporting this, in the sample of 30 electronic communications received from supervisors where full text of the message was provided, the correlation for abusive supervision with perceived affective tone ($r = .20$) was stronger than the correlation with objective affective tone ($r = -.06$). We note that our supplemental results should be interpreted with caution because of the small sample size and likelihood that participants may have been reluctant to share full texts of electronic communications that were overly negative in tone.

DISCUSSION

The use of electronic communication technologies to stay connected to work at all times is one of the new realities of organizational life. However, research has shown that staying electronically connected has harmful consequences in the way of increased work-nonwork conflict. Our study extends this line of research and highlights the importance of treating electronic communications during nonwork time as unique, within-person events comprised of specific elements (affective tone, time required) that determine employees' negative *and* positive emotional responses and subsequent work-to-nonwork conflict. Partially supporting our predictions, affective tone was associated with anger and happiness but time required was only associated with anger. Further, there were indirect effects on work-to-nonwork conflict through anger for both affective tone and time required. Finally, we found evidence that the indirect effect for affective tone through anger was stronger when abusive supervision was higher and communications were from supervisors, while the association between time required and work-to-nonwork conflict was stronger for those individuals higher on segmentation preference.

Implications for Theory and Research

The present research makes several key theoretical contributions. First, whereas past research shows that the frequency of electronic communication use during nonwork time is related to increased work-nonwork conflict (Boswell & Olson-Buchanan, 2007; Fenner & Renn, 2010), what has been missing is theory and research that moves beyond viewing electronic communications during nonwork time as purely benign occurrences without meaning and instead treats them as unique work events with their own properties, connotations, and interpretations. Our study addresses this shortcoming by examining how fluctuations in specific electronic communication elements (affective tone, time required) serve as catalysts of the affective process underlying episodic work-to-nonwork conflict. Extending research on affective events and the cognitive appraisal process (see Weiss & Cropanzano, 1996), we found that electronic communications represent distinct work events and convey differing affective tone that can elicit both anger and happiness in employees while they are away from the workplace. The finding for happiness is particularly important, as it shines a positive light on electronic communications during

nonwork time, expanding past studies focused on the negative aspects of electronic communication after work hours (i.e., Lanaj et al., 2014). Further, this finding challenges prior research suggesting that senders predominantly use electronic communication to convey negative news and not as a means for providing positive information or praise (i.e., Markus, 1994).

Of the two electronic communication elements examined, only time required had an association with work-to-nonwork conflict, in that work-to-nonwork conflict increased on days when individuals spent more time reading and completing tasks required by a work-related communication. This finding is consistent with accumulated research demonstrating a relationship between work hours and work-nonwork conflict (Byron, 2005). However, in our study we controlled for average work hours per week. Thus, our study extends research on work hours by articulating what type of time demands, beyond work hours, lead to daily fluctuations in work-to-nonwork conflict. Previous research by Barley et al. (2011) has shown that time spent on electronic communication serves as a salient signal of stress and overload more so than time spent on other activities during the work day (e.g., meetings, phone calls), which may help to explain why time required was associated with anger but not happiness. Happiness is only possible when goal accomplishment is present during the appraisal process (Lazarus, 1991). Any time spent on electronic communication during nonwork may be viewed in terms of goal frustration, rather than goal accomplishment, and thus more applicable to anger because time required is regarded negatively by individuals no matter the length of time involved.

The supported indirect effects of affective tone and time required on work-to-nonwork conflict through anger shed light on the affective process underlying electronic communication. Although research has shown that frequency of electronic communication use during nonwork time is related to work-nonwork conflict (i.e., Boswell & Olson-Buchanan, 2007; Derks & Bakker, 2014), no studies to date have explored the mechanisms explaining *how* electronic communication impacts one's work-nonwork experiences. Our study demonstrates that negative emotional responses, such as anger, play a critical role as mechanisms through which electronic communications serve as work events that permeate across the work-nonwork boundary. The pattern of indirect effects we found also contributes to the growing literature on positive–negative asymmetry effects and confirms Lazarus' (1991) argument regarding the strength of negative emotions relative to positive emotions. Even though affective tone was associated with happiness, only anger served as a mediating mechanism of the effects on work-to-nonwork conflict. Of course, it may be that anger matters more than happiness for certain types of outcomes. Previous work by Judge, Ilies, and Scott (2006) suggests that due to the valence congruency principle (Ajzen & Fishbein, 1977), negative emotions are more relevant to negative phenomena, such as work-to-nonwork conflict, than positive phenomena. Thus, future research should examine electronic communication in relation to a range of both negative *and* positive outcomes, including work-nonwork enrichment, life satisfaction, and social functioning.

Our study also contributes to the literature on relational dynamics at work by highlighting the important role that supervisors play in employees' affective reactions to electronic communications. Although not hypothesized, results showed that employees displayed more anger in response to supervisors' communications than in response to communications from others. Because they are motivated to seek approval and rewards from higher status others in the organization (Coyle-Shapiro, Kessler, & Purcell, 2004), employees may become angry when they receive communications from supervisors during nonwork time because they have no other course of action other than to acquiesce to their supervisor's demands. Our three-way interaction results further highlight the important role of supervisors by showing that anger was more likely to occur in response to communications negative in affective tone when abusive supervision was high and the communication originated from supervisors. Although a weaker effect, employees also reacted with anger in response to negative affective tone when abusive supervision was high and communications were received from non-supervisors. Also, as expected, communication negative in affective tone from supervisors when abusive supervision was low showed the weakest effect on anger. These findings help bolster the literature on relational schemas in that experienced abusive supervision establishes a script for an employee's expected pattern of interactions not only with his/her supervisor but also with others he/she interacts with from work.

Finally, our results expand the literature on boundary theory in a variety of ways. Challenging the prevailing suggestion that segmentation is

a universally beneficial buffer for employees (e.g., Kreiner, 2006; Liu, Kwan, Lee, & Hui, 2013), the cross-level interaction results showed that employees higher on segmentation preference were more likely to experience increased work-to-nonwork conflict when electronic communications required more time. Conversely, employees who preferred to integrate work and nonwork were largely unaffected by the time demands of electronic communications. Importantly, these findings were observed after taking into account organizational expectations for work-nonwork segmentation. Taken together, these findings add complexity to boundary theory by revealing how segmentation preferences operate in real-time when work events traverse the divide into the nonwork domain.

Implications for Practice

Our findings point to the importance of clearly expressing the affective intent and level of attention desired when communicating electronically after normal work hours. Kruger et al. (2005) argued that people are naturally overconfident in their ability to accurately convey ambiguous messages and emotion to others via electronic communication. This bias is likely exacerbated after work when senders are less precise and deliberate in their communication because their physical and emotional resources are depleted. To help employees become aware of this problem, organizations may want to offer training on the appropriate use of electronic communication after regular business hours and include guidelines for proper communication style, suitable hours of use, appropriate recipients, and topics that are best discussed face-to-face. This may also be advantageous because training on electronic media can create desired organizational norms for use (Orlikowski, Yates, Okamura, & Fujimoto, 1995). Our findings also suggest that there are potential benefits to electronic communication during nonwork time in that employees experience more happiness when they receive communications that are positive in affective tone. Thus, organizations may benefit from emphasizing the importance of focusing on positive feedback and goal progress, rather than work deficiencies and corrective action, when communicating electronically after work. Just as some companies underscore celebrating employee successes and having fun in the workplace, performance management systems could emphasize that managers should provide intermittent praise and encouragement to their employees in the evenings via electronic communication. Such actions may also go a long way toward repairing subordinates' perceptions of abusive supervision, limiting the deleterious effect of supervisors as catalysts for negative emotional reactions to electronic communications received during nonwork time.

Our findings for segmentation preference suggest individuals need to be sensitive to the desired boundary management preferences of those they communicate with electronically. Although policies prohibiting electronic communication after regular business hours are improbable because they contradict organizational efforts to increase connectivity such as providing company laptops and smartphones, work units may informally establish equitable guidelines customized to the desires of each employee. Ultimately, the best solution for people with high segmentation preference may be to choose their employer wisely (Methot & LePine, in press), going to work for a company that has clear organizational policies for electronic communication use during nonwork time that are personally acceptable.

Strengths, Limitations, and Future Directions

The current research has a number of strengths, including collecting data on electronic communications and employee reactions shortly after they occurred, longitudinal data from a field setting, and the use of experience sampling methodology. Nonetheless, there are several limitations. First, we did not employ a random population sampling methodology to acquire participants. Convenience sampling, such as we used in this study, is mostly a concern when wanting to generalize findings to a specific population (Highhouse & Gillespie, 2009). Because our objective was to include a wide range of communications, a large sampling of employees from diverse organizations was desirable. Despite this, future research should examine our hypothesized model in more controlled settings or a single organization. A second limitation is that our within-person measures were collected concurrently each day. Although this design feature was necessitated by our primary interest in reactions in the moment, a concern is that our results cannot eliminate alternative causal ordering. For example, it is plausible that people's anger (happiness) caused them to perceive the tone of electronic communications more negatively (positively). Our supplemental results provide some evidence that this was likely not the case, as there was a moderately strong correlation between third-party ratings of objective affective tone and participant

ratings of perceived affective tone. To better disentangle the causal ordering of relationships, future studies might measure emotions and work-nonwork conflict at the end of the workday, immediately after receiving electronic communication from work in the evening, and the next morning to examine changes across these periods.

Another limitation is that we used single-item, self-report measures of affective tone and time required. Although this is consistent with prior research on individuals' affective responses (Mauss et al., 2005) and time reporting (Jones, O'Connor, Conner, McMillan, & Ferguson, 2007), we acknowledge that our measures were susceptible to low reliability, retrieval errors, and common method bias. However, these concerns may be minimized because before hypotheses testing we removed between-person variance through individual-mean centering, essentially controlling for common source effects such as recall bias, social desirability, response tendencies, and trait affectivity. Moreover, it is doubtful that the observed cross-level interactions were due to common method bias. Notwithstanding these points, future research might include multi-item measures of affective tone and features of time, as well as multi-source data from both employees and significant others in their personal life.

The current study also provides several additional avenues for future research. Although we focused on affective tone and time required as important elements of electronic communication, future research could explore other verbalized and non-verbalized elements in electronic communication suggested in the literature. These include such features as informal salutations and closings, capitalization, response time between messages, and even emoticons (Byron & Baldridge, 2005; Walther & Tidwell, 1995). Time of day may also be an important consideration as perhaps electronic communications received late in the evening produce less emotional response and less work-to-nonwork conflict than those earlier in the evening when people are likely focused on nonwork activities. Additionally, electronic communication received in the morning before work may serve as an "affective prime" that sets the stage for affective experiences throughout the workday (Rothbard & Wilk, 2011).

Our findings confirm the value of exploring relevant social context and receiver factors as boundary conditions of electronic communication effects. Although we positioned abusive supervision as a central aspect of "bad" relational dynamics that can exacerbate negative emotions and diminish positive emotions, "good" relational dynamics may also play a role. There is clear evidence that LMX can compensate for employees' negative experiences in the workplace (Kimura, 2013; Loi, Ngo, Zhang, & Lau, 2011). Integrating our findings with the LMX literature suggests a fruitful opportunity for future research is to explore the relative importance of abusive supervision and LMX as moderators of the effects on emotions. Receiver factors such as career ambition and empowerment may also affect one's reactions and should be examined. On a day-by-day basis, people may also possess an expectation to work at home after regular business hours, which may simultaneously enhance the effects of affective tone on emotional reactions and weaken perceived work-to-nonwork conflict. Because of this potential paradox, future studies might benefit from investigating daily "work at home" expectations.

Finally, results from our supplemental analyses warrant further exploration. Byron (2008) contends that too little is known about the factors that influence the perceptual accuracy of perceived emotional content in electronic communication, but our results suggest that perceptual accuracy may not be a concern as it pertains to detecting affective tone. Unlike previous studies that have shown people respond with a variety of different emotions to the same standardized situation (Siemer, et al., 2007), electronic communications may exhibit a high degree of situational strength and provide clear signals regarding the appropriate emotional response (Meyer, Dalal, & Hermida, 2010). To explore this possibility, future research might use an experimental design to manipulate elements of electronic communication and measure the differences in receiver perceptions of affective tone as well as differences in emotional reactions.

CONCLUSION

Our study highlights the importance of examining electronic communications during nonwork time as event-by-event occurrences comprised of elements that employees appraise favorably or unfavorably and react emotionally to accordingly. In turn, we show that resulting anger relates to episodic work-to-nonwork conflict. We also show how relational dynamics (abusive supervision, communication sender) and segmentation preference influence these within-person relationships. As a whole, our results extend research on electronic communication during nonwork time in new directions and suggest a number of promising areas for future work

that are highly relevant in an era when communication technologies connect employees' work and nonwork domains ever so tightly.

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