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Psychological and neurological predictors of abusive supervision

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Abstract

Although the negative effects of abusive supervision are well documented, less is known about the individual differences that drive supervisors to be abusive. We use a self-control perspective to understand the unique roles of both psychological and neurological characteristics of supervisors in the prediction of abusive behavior. Specifically, we find a positive relationship between narcissism and abusive supervision, whereas political skill and intrinsic neurological connectivity in executive control regions of the brain negatively relate to abusive supervision. Our results further show that the relationship between narcissism and abusive supervision diminishes for those who are strong in terms of political skill. In addition, neurological executive control moderates the relationship between political skill and abusive behavior. When connectivity in executive control regions of the brain is lower, political skill becomes a more important factor in reducing the display of abusive behavior. Overall, we demonstrate how combinations of characteristics (both psychological and neurological) can provide a more in-depth understanding of the emergence of abusive supervision.

Abusive supervision is a topic that continues to receive attention from policy makers, as well as scholars in the organizational literature, because of its detrimental effect on followers and organizations (Healthy Workplace Bill, 2013; Mackey, Frieder, Brees, & Martinko, 2015). Abusive supervision is the extent to which supervisors engage in "the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact" (Tepper, 2000, p. 178). The negative effects of abusive supervision are estimated to be $23.8 billion annually and include increased employee healthcare costs, absenteeism, and reduced productivity (Tepper, Duffy, Henle, & Lambert, 2006). Thus, it is vital to understand how to reduce abusive supervision in the workplace by illuminating its antecedents. To date, most of the extant research on the antecedents of abusive supervision focuses on resource depletion explanations or identifying the characteristics of employees who provoke or receive the abuse rather than the traits or dispositional characteristics of the managers[1] themselves who deliver the abuse (for reviews, see Tepper, 2007; Zhang & Bednall, 2016). Our understanding is thus limited in terms of knowing why some managers become abusive based on individual characteristics that might instigate, or alternatively temper, such behavior.

We use integrative self-control theory (SCT) as an overarching theoretical framework for the current investigation (Kotabe & Hofmann, 2015; Lian, Yam, Ferris, & Brown, 2017). According to SCT, self-control resolves conflicts between an impulsive desire (e.g., venting anger or frustrations) and adherence to a higher order goal, and enables one to refrain from acting upon the desire in favor of the higher goal (Yam, Fehr, Keng-Highberger, Klotz, & Reynolds, 2016). It specifically entails "the overriding or inhibiting of automatic, habitual, or innate behaviors, urges, emotions, or desires that would otherwise interfere with goal-directed behavior" (Muraven, Shmueli, & Burkley, 2006, p. 524). SCT points toward abusive supervision as stemming from a supervisor's lack of capacity to control the frustrations and aggravations that are commonly faced in dynamic workplaces in order to remain composed and suppress desires to abuse those who might evoke their anger (Kotabe & Hofmann, 2015). In the current research, we examine two markers of capacity that enable supervisors to exercise control to suppress abusive behavior: (a) political skill as an acquired capacity and (b) neurological self-control as a relatively more basic or innate capacity.

Thus, it is important to recognize that, based on their individual differences, different supervisors would experience unequal impulses to be abusive in the first place. Various authors have noted that supervisor traits and characteristics are underrepresented in attempts to understand the antecedents of abusiveness (Kiazad, Restubog, Zagenczyk, Kiewitz, & Tang, 2010; Lian et al., 2017; Tepper, 2007). Here, we consider narcissism to help form an understanding of psychological characteristics that might be predictive of abusiveness. We focus on narcissism based on its central theoretical relevance to the goal and desire aspects of SCT and its measurability. Narcissism is a personality dimension that involves a self-centered outlook, feelings of superiority, and a strong desire for personal power and esteem or adulation from others (Paulhus & Williams, 2002; Rosenthal & Pittinsky, 2006). As such, narcissism may pose interesting possibilities in relation to abusive supervision using an SCT framework. Specifically, narcissistic supervisors are likely to face a conflict in terms of competing goals that are relevant to self-regulation. Like other supervisors, they may have a higher level goal of maintaining good relationships with others (e.g., subordinates), albeit for a self-centered purpose of having influence and ensuring their own success. But at the same time, narcissists are likely to have a strong goal of achieving adulation in the eyes of others in order to maintain their egos. Feeling entitled to such adulation, narcissists are often very sensitive when others do not display the admiration that narcissists feel they deserve (Morf & Rhodewalt, 2001; Wheeler, Halbesleben, & Whitman, 2013). As a result, the unmet goal of continuous adulation, or at least perception of adulation, may supersede the longer term goal of maintenance of building good relationships. Although this longer term goal could give the supervisor the power and influence that he or she craves, the unmet goal of continuous adulation will likely prevail, thus leading to the more short-term desire to lash out if not constrained.

Second, we examine political skill as an acquired, interpersonally based control capacity within our SCT framework. Political skill refers to a set of developable social competencies composed of social astuteness, interpersonal influence, networking ability, and apparent sincerity (Ferris, Davidson, & Perrewé, 2005). Ferris et al. (2007) emphasized that supervisors with higher political skill put forth greater effort to develop and maintain positive social relationships. As such, it evokes a strategic approach to achieving higher order, long-term social goals, primarily through building and maintaining positive relationships (Ferris et al., 2005). We thus suggest that political skill may interact with (i.e., temper the effects of) narcissism in predicting abusive supervision. Narcissists who simultaneously possess political skill may be best suited to deal with conflicts between goals as discussed above and thus counteract their impulsive desires that could lead to abusiveness.

Third, we examine a neurological basis of control capacity. Although control capacity has been largely considered in state-like terms (e.g., temporary ego depletion due to lack of sleep), Lian et al. (2017) recently encouraged more trait-like research, including inquiries into intrinsic, neuroanatomical differences between individuals. As a unique aspect of our research, we add to a growing body of knowledge in organizational cognitive neuroscience (Lee, Senior, & Butler, 2012; Senior, Lee, & Butler, 2011). By applying neuroscience to organizational phenomena like abusive supervision, we can enhance both theoretical understanding and prediction of such behavior. In essence, neuroscience theory and methods allow researchers to "examine problems within a wider analytic framework, which in turn allows for the development and testing of additional hypotheses" (Senior et al., 2011, p. 806). Further, neuroscience-based assessment can realize a greater level of ecological validity in measurement procedures, as compared to traditional, survey-based approaches (Waldman, Balthazard, & Peterson, 2015). This advantage is especially salient in light of measurement

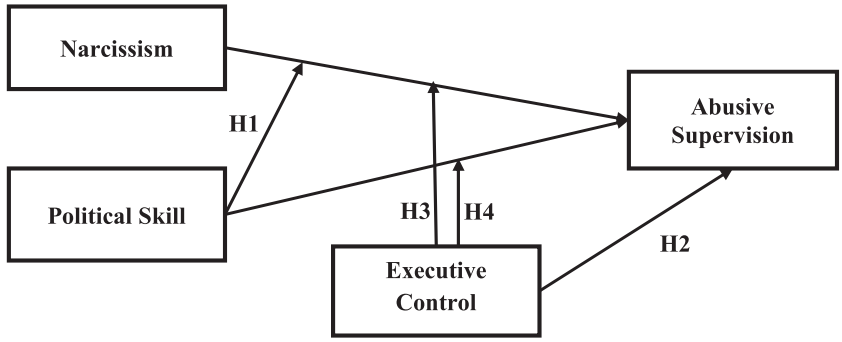

FIGURE 1 Theoretical model and hypotheses

problems associated with psychometric measures of self-control (Marcus & Schuler, 2004; O'Boyle, Forsyth, Banks, & McDaniel, 2012).

In line with recent empirical efforts to apply neuroscience to leadership-related phenomena (e.g., Hannah, Balthazard, Waldman, Jennings, & Thatcher, 2013; Waldman, Wang, Hannah, & Balthazard, 2017a), we examine intrinsic, executive control functioning (or the lack thereof) as a direct precursor to abusive supervision. We also consider the extent that such functioning moderates the relationship between narcissism and abusive supervision; specifically, whether a stronger negative relationship may occur when executive control is weak, thus making the individual even less able to constrain the abusive impulses stemming from narcissism. Further, we examine the potential moderating effect of executive control on the relationship between political skill and abusive supervision, assessing whether this basic form of self-control may combine with and accentuate the effects of political skill. As such, we provide evidence in terms of how these capacity factors work separately and in combination in the prediction of abusiveness.

In sum, we use SCT to examine traits or characteristics that are either reflective of control capacity (i.e., executive control and political skill) or interact with control capacity (i.e., narcissism) in the prediction of abusiveness. First, by examining supervisor narcissism, we theorize an important, but heretofore underresearched, antecedent of abusive supervision. Doing so helps expand our limited knowledge of the supervisor-focused, psychological antecedents of abusive supervision and contributes further understanding about the consequences of narcissism, expanding the nomological networks of both constructs. Second, by incorporating organizational neuroscience theory and methods, we broaden the determinants of abusive supervision through taking into account innate control capacity (i.e., intrinsic, neurological executive control) in an ecologically valid manner. Third, an examination of political skill not only enhances our understanding of SCT, but in addition, it provides an example of how traits and an acquired, interpersonal competence interact to predict important aspects of supervisor behavior. This study thus provides a nuanced view of how abusive supervision may be mitigated or self-regulated based on a combination of psychological and neurological factors. Practically speaking, together these findings may help enable organizations to better understand, select, and develop supervisors to reduce the occurrence of abusive supervision in work settings. We present our model in Figure 1.

1 | THEORY AND HYPOTHESES

1.1 | Narcissism and abusive supervision

Research is relatively sparse on the characteristics that are antecedent to abusive supervision (Kiazad et al., 2010). Recent meta-analytic efforts (Zhang & Bednall, 2016) have documented that emotional intelligence, sense of power, and Machiavellianism are supervisor characteristics that past research has considered, but only emotional intelligence has shown a consistent significant relationship with abusive supervision. However, the lack of strong findings with regard to Machiavellianism may have been due to power issues in the Zhang and Bednall (2016) research. In his review of the abusive supervision literature, Tepper (2007, p. 282) recommended that researchers focus on supervisor

narcissism as a potential antecedent of abusive supervision because it "involves a grossly unrealistic sense of entitlement," and it has known connections to hostility (Burton & Hoobler, 2011). Although some limited research has included both narcissism and abusive supervision (Burton & Hoobler, 2011; Park, 2012), there is a need to explicate their theoretical connection. Although there is certainly both theoretical and empirical evidence that narcissism is connected to the broader concept of counterproductive work behavior (O'Boyle et al., 2012), the specific theoretical connection between narcissism and abusive supervision is underdeveloped. As described below, we argue that SCT can provide a framework for understanding the role of narcissism, specifically with regard to prompting abusive supervision.

Narcissists view the social arena as a primary means to bolster the self (Morf & Rhodewalt, 2001). A number of authors have characterized narcissists as lacking empathy, and as having dominant, hostile, and even cruel tendencies toward others (Burton & Hoobler, 2011; Farwell & Wohlwend-Lloyd, 1998; Raskin, Novacek, & Hogan, 1991; Ruiz, Smith, & Rhodewalt, 2001; Watson, Grisham, Trotter, & Biderman, 1984). For example, Westphal and Deephouse (2011) reported a link between narcissistic CEOs and retaliatory behavior directed toward journalists who report negative information about firms and their leaders. Retaliation manifested itself in passive-aggressive terms, specifically by limiting or cutting off future communication with offending journalists. This suggests that unless narcissists perceive adulation, retaliatory behavior may follow.

In line with a growing body of research on narcissism in the workplace (e.g., Galvin, Waldman, & Balthazard, 2010; Owens, Wallace, & Waldman, 2015), we propose that this characteristic creates a proclivity for abusive supervision. Our arguments are based on the *"goal-goal"* conflict that is considered in the SCT put forth by Kotabe and Hofmann (2015, p. 619). The idea is that individuals have multiple goals that may pose an internal conflict for the individual (Karoly, 1993). That is, narcissistic supervisors, like their less narcissistic counterparts, may have the higher order goal of maintaining good relationships with followers in order to achieve their personal influence and success. But at the same time, they also have a very strong goal of maintaining their egos through the adulation provided by others. Indeed, narcissists feel entitled to such adulation, and they are highly sensitive when they perceive it to be not forthcoming (Morf & Rhodewalt, 2001; Wheeler et al., 2013). When narcissists' self-esteem is threatened by a lack of perceived adulation, negative feedback, and so forth, all else being equal, this latter goal is likely to win out over the longer term goal of maintenance of good relationships, thus leading to the activation of desire to lash out. That is, the "desire may be so strong as to 'blind' the [narcissist] of his or her higher order goals" (Kotabe & Hofmann, p. 630), which may hold less importance in the narcissist's hierarchy of goals (Karoly, 1993). This blindness to other goals suggests that they experience less goal tension, leading to little restraint of enacting their hostility or revenge (Burton & Hoobler, 2011).

It is important to emphasize that as narcissists feel deserving of adulation (Morf & Rhodewalt, 2001; Wheeler et al., 2013), their ire may not only come as a response to a precipitating act of *commission* (e.g., someone disrespecting them) but also from *omission*, such as someone not giving them praise or homage. Thus, all else being equal, those higher, as opposed to lower, in narcissism would tend to experience reactive impulses to lash out at a greater rate in the workplace. The resultant demonstration of hostility and revenge could be overt and direct, or more passive and indirect. That is, abusive behavior could be direct in nature, such as sharp criticism or ridiculing of an individual in front of others. Alternatively, the narcissist might enact more passive-aggressive actions associated with abusive supervision such as taking credit for others' successes, rather than sharing the limelight, while attributing failures to others in order to maintain a sense of superiority and esteem.

1.2 | The tempering effect of political skill

Abusiveness is inherently a social phenomenon. At a minimum, abusive supervision is dyadic, involving a social interaction between supervisor and subordinate. However, it oftentimes occurs in the presence of others (e.g., those who are not the direct object of a supervisor's abusiveness) or reports of acts of abuse are rapidly spread through social information sharing and gossip (Aryee, Chen, Sun, & Debrah, 2007; Tepper, 2007). We maintain that the effect of narcissism on abusive supervision may hinge on socially focused characteristics of the supervisor, specifically political skill or "the ability to effectively understand others at work, and to use such knowledge to influence others to act in ways

that enhance one's personal and/or organizational objectives" (Ferris et al., 2005, p. 127). It was originally labeled as a *skill* because of how it is associated with a set of social competencies (i.e., social astuteness, interpersonal influence, networking ability, and apparent sincerity) that can be developed. As such, political skill reflects a developed level of social intelligence, social self-efficacy, and self-monitoring (Ferris, Perrewé, Anthony, & Gilmore, 2000). Consistent with SCT, Ferris et al. (2007, p. 301) emphasized the relational effort of political skills in terms of it providing "political will." Although originally conceived as a predictor of positive outcomes for leaders, Ferris et al. (2005, p. 149) also suggested the potential moderating effect of political skill on other, more negative qualities, referring to political skill as "an antidote of sorts." Indeed, Perrewe et al. (2004) demonstrated that political skill reduced the negative effects of role conflict on various indices of strain for supervisors (e.g., psychological anxiety and physiological strain).

Within the framework of SCT (Kotabe & Hofmann, 2015; Lian et al., 2017), we view political skill as an acquired interpersonal competence enabling relational goals that may temper the hostile desires that could otherwise drive abusiveness on the part of narcissistic supervisors. In other words, political skill represents an acquired, goal-oriented competence that enables narcissistic supervisors to productively temper impulses or desires to be abusive. Research by Epitropaki and Martin (2004) shows that behaviors associated with abusive supervision (what those authors labeled as "tyranny") are commonly held in individuals' leader *anti-prototypes*—one's implicit theory of a poor leader. Such behaviors are thus antithetical to achieving a positive image and reputation as a leader, thus diminishing one's power and influence. Although narcissistic supervisors may experience abusive desires, those with the capacities associated with political skill would be more equipped to override those impulses in favor of long-term goals for power and influence (Mischel, 1996), thereby managing their frustrations using more appropriate means.

Narcissistic, yet politically skilled, supervisors may fit what scholars have labeled as constructive or productive narcissists (Galvin et al., 2010; Kets de Vries & Miller, 1997). The stated difference between counterproductive and productive or constructive narcissism appears to be the acquired ability to control the more toxic expressions of narcissism (Kets de Vries & Miller, 1997). Although such supervisors may still possess extreme levels of self-confidence, ambition, pride, and stubbornness, their concomitant political skill motivates them to avoid acting in an abusive manner when disappointed or angered by others (Kets de Vries & Miller, 1997). That is, they are likely to temper the potentially strong narcissistic fallout that may be socially toxic or harmful to others, such as the deleterious behaviors that are reflected in the construct of abusive supervision. In total, our discussion would suggest that:

Hypothesis 1: Supervisor political skill will moderate the relationship between supervisor narcissism and abusive supervision, such that the positive relationship will be reduced when individuals have higher levels of political skill.

1.3 | Executive control and abusive supervision

Executive functioning can best be conceptualized as a family of multiple, neurologically based functions: (a) inhibition, (b) working memory, and (c) cognitive flexibility (Diamond, 2013). Inhibition involves the ability or capacity to control thoughts, emotions, and behavior, thus making it less likely that a person will act impulsively. Working memory is critical to holding information in mind and mentally working with that information in order to make sense of things that unfold over time. Cognitive flexibility entails being able to change perspectives, either spatially or interpersonally. Although these subfunctions are somewhat separable in terms of neurological activity, they work in conjunction to deal with complex problems and decisions (Alvarez & Emory, 2006). For example, "You must hold your goal in mind [through working memory] to know what is relevant or appropriate and what to inhibit" (Diamond, 2013, p. 8). Indeed, if inhibition capacity is lacking, self-regulatory goals are likely to be lost from working memory, resulting in lower self-regulation (Hofmann, Friese, Schmeichel, & Baddeley, 2010).

Lian et al. (2017) considered how control capacity could be characterized in both state and trait terms, and specifically suggested the potential relevance of neuroanatomical differences with regard to the latter. Such differences align with what is known as the relatively enduring, intrinsic structure of the brain (Waldman, Ward, & Becker, 2017b). The assessment of individual differences pertaining to intrinsic brain structures is becoming increasingly recognized for its

importance in predicting cognition, emotions, and behavior (Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012; Raichle & Snyder, 2007; Waldman et al., 2017b), including the assessment of executive control (e.g., Hofmann et al., 2010; Mazoyer et al., 2001). The intrinsic brain reflects the stable and *relatively* permanent capacity of the individual in terms of mental functioning and behavioral potential. Although based on the principle of plasticity, the intrinsic brain typically changes and maturates over time (Cacioppo et al., 2003; Raichle & Snyder, 2007). As an example of recent research based on the intrinsic brain model, Hannah et al. (2013) showed how an at-rest assessment of intrinsic neurological leader complexity could complement a psychometrically based measure of complexity in predicting adaptive leadership.

Because of its direct relevance to the control capacity element of SCT (Hofmann, Schmeichel, & Baddeley, 2012; Kotabe & Hofmann, 2015; Lian et al., 2017), we focus on the inhibition or control aspect of executive functioning, hereafter referred to as executive control. Intrinsic, neural executive control manifests itself through more unconscious or automatic neurophysiological processes, which although evident in definitions of self-control (e.g., Muraven et al., 2006), have been underemphasized in self-regulatory research (Lord, Diefendorff, Schmidt, & Hall, 2010).

Social cognitive neuroscientists have made progress identifying the neuroanatomy of social cognition, including brain regions spanning the temporal cortices, amygdala, anterior cingulate, and the prefrontal cortex (PFC; e.g., Adolphs, 2001, 2003; Anderson, Bechara, Damasio, Tranel, & Damasio, 1999; Bechara, 2004; Bechara, Damasio, & Damasio, 2000; Couper, Jacobs, & Anderson, 2002; Fiske & Taylor, 2013; Frith & Frith, 2008, 2012). Specifically, these regions have been shown to be involved in a variety of affective and cognitive processes that contribute to social behavior, such as: (a) emotion recognition (e.g., Critchley et al., 2000), (b) social self-awareness and understanding others' mental states (i.e., theory of mind) (e.g., Moriguchi, Ohnishi, Mori, Matsuda, & Komaki, 2007), and (c) moral judgment and decision making (e.g., Greene & Haidt, 2002). Such research led Liang et al. (2016) to suggest that there may be specific neurological underpinnings of impulsive or uncontrolled responses in social contexts that could lead to abusive supervision.

Eslinger (1996, p. 389) considered socially related problems arising from damage to the PFC, such as "demanding and self-centered behavior, lack of social tact and restraint, impulsive speech and actions, disinhibition, apathy and indifference, and lack of empathy, among others." Along similar lines, recent research has demonstrated that the PFC undergoes a prolonged course of maturation that extends well after puberty, and impediments in its development may result in a lack of proper social behaviors, possibly leading to abusiveness (Amodio & Frith, 2006; Moriguchi et al., 2007). More specifically, neuroimaging studies have implicated the right hemispheric, ventrolateral PFC as a critical substrate of self-control (Aron, Robbins, & Poldrack, 2004). As such, we theorize that neural activity patterns in the right lateral PFC (ventral and dorsal) will predict abusive supervision tendencies. This neural region is involved in the inhibition of inappropriate or habitual/automatic responses, such as aggressive outbursts or impulsiveness, which can entail abusive behavior (Alvarez & Emory, 2006; Kanske, Heissler, Schönfelder, Bongers, & Wessa, 2011; Kober et al., 2008; Lieberman et al., 2007; Ochsner & Gross, 2005; Wager, Davidson, Hughes, Lindquist, & Ochsner, 2008).

However, the amygdala works in concert with the right ventrolateral region of the PFC to form a larger network with regard to self-control (Berkman & Lieberman, 2009; Heatherton & Wagner, 2011; Hoshi et al., 2011; Lezak, Howieson, & Loring, 2004). Following the functional organization of the PFC into ventral and dorsal pathways that were described by O'Reilly (2010), we also expect that the ventral portions of the right lateral PFC monitor and make sense of stimuli originating from the amygdala and/or the environment, whereas the dorsal portions of the right lateral PFC coordinate the response. If deficient, this could limit self-control with a possible end result being higher abusive behavior.

Our consideration of the brain regions that may be especially relevant to abusive supervision is in line with the work of Lindquist et al. (2012), who described what they termed a psychological constructionist approach to connecting neurological functioning to behavior. The essence of this approach is that instead of attempting to localize discreet cognition or emotions into particular brain regions, a combination of emotions (e.g., fear, disgust, and anger) and cognition may result from activity in a wider brain network. This activity may coalesce to produce psychological events and behavioral phenomena, such as abusiveness. It is also important to note that neural regions like the ventral/dorsal, lateral PFC cover a wide swath of brain matter. We purposefully include these expansive areas to align with social cognitive neuroscience literature (e.g., Lindquist et al., 2012) and to acknowledge that cognitive functions like self-control

may sometimes require neural activity in a number of regions working concurrently to achieve the outcome. In sum, our goal is not to "localize" a function to a relatively small brain area but rather to define the boundaries of a neural network that links behaviors to a more complex neural mechanism.

In light of what we currently know about neural functioning and our theoretical purpose, this begs the question: How exactly do the specific brain regions mentioned above work together to produce more, versus less, abusive behavioral tendencies? In line with the neuroanatomical basis of control capacity that was considered by Lian et al. (2017), we examine the neurological phenomenon of connectivity. Connectivity involves the degree to which activity in various portions or regions of the brain operate in a synchronous manner (i.e., activating together at the same time in a network to produce a response) (Hannah et al., 2013). Regarding intrinsic, executive control in the brain, Heatherton and Wagner (2011) pointed to connectivity in PFC regions and the amygdala as being key to understanding the emotional responses that are elicited by various stimuli. As described in detail below, we used electroencephalography (EEG) to assess connectivity in these regions in this study. EEG connectivity (a metric called *coherence* in neuroscience literature) measures the extent of similarity between the electrical signals of two (or more) different brain regions occurring synchronously (Thatcher, North, & Biver, 2008). High connectivity is indicative of a strong network of neurons working synchronously, whereas low connectivity indicates *differentiation* or neurons working independently.

In this study, we posit that high connectivity in the activations throughout the right lateral PFC and the amygdala will indicate greater capacity for executive self-control. That is, greater connectivity in the relevant brain areas would reflect neurons working together effectively to drive self-control. As a corollary, low connectivity or differentiation in activations throughout the right lateral PFC and the amygdala (i.e., the right lateral PFC network) will predict abusive supervision tendencies because this neural activity would have lesser capacity to inhibit inappropriate or habitual/automatic social responses, such as aggressive outbursts, leading to abusive behavior. Dynamic organizations inherently impose stressors, aggravators, and other sources of tensions that at various times can promote anger and frustration. Those individuals with higher control capacity can better override these tendencies such that they do not manifest in periodic displays of abuse. Specifically, we propose that:

Hypothesis 2: Higher intrinsic connectivity in the right lateral PFC network is negatively associated with abusive supervision.

1.4 | Executive control as a moderator

Research in organizational neuroscience is beginning to emerge showing how individual characteristics may interact with various stimuli to produce neurological reactions. For example, Dulebohn et al. (2016) used functional magnetic resonance imaging (fMRI) to investigate gender differences in how men and women process and respond neurologically to procedural and distributive justice stimuli. They found that the relationship between procedural justice information and activation in the salience subsystem of the brain (i.e., insula, anterior cingulate cortex, and ventral striatum) is stronger for women. However, questions remain as to whether a neurological variable like executive control may interact with a psychological variable like narcissism in producing behavior.

We argue that in addition to being moderated by the relatively more acquired capacity of political skill, the effect of narcissism on abusive supervision may also be moderated by more innate, neurological executive control capacity. That is, although narcissism can create the short-term desire to be abusive, high levels of neurological executive control may essentially override those desires, thus minimizing tendencies toward actually engaging in abusive actions. Conversely, if executive control is lacking, the capacity to control abusive desires may diminish. It follows that the narcissist's desire to lash out against others (e.g., subordinates) for a perceived lack of adulation would then be uninhibited. Thus, we propose that narcissism will be more highly associated with abusiveness when executive control is low. Specifically, it follows that:

Hypothesis 3: Supervisor intrinsic connectivity in the right lateral PFC network will moderate the relationship between narcissism and abusive supervision, such that the relationship will be more positive when individuals have lower levels of intrinsic connectivity.

As argued earlier, we theorize that political skill largely reflects an acquired interpersonal competence of a supervisor to achieve influence through relationship management (Ferris et al., 2005, 2007). This is conceptually distinct from intrinsic neurological self-control, which concerns the intrinsic brain capacity (i.e., control capacity) to enable regulation of emotions and cognitions. Although it is clear that both an acquired interpersonal competence and relatively innate control capacity are relevant to self-control, what is not so evident is how these elements operate together to predict the behavioral phenomenon of abusive supervision.

We suggest that neurological executive control will interact with political skill in the prediction of abusive supervision in that political skill will enable some strategic or effortful control over abusive impulses when more automatic, executive control is lacking. Research has shown that a high level of internal control may be key to understanding a lack of counterproductive work behavior (Marcus & Schuler, 2004). Accordingly, high levels of executive control may alone be sufficient, with acquired competencies such as political skill less relevant or necessary, to prevent abuse. Thus, there is not likely to be a strong relationship between political skill and abusive supervision at high levels of executive control. However, it may be possible for an individual with relatively low self-control capacity to nevertheless refrain from abusiveness if sufficiently capable of employing political skills in pursuit of higher level goals of relationship building. In essence, this more deliberate or effortful application of skills becomes more important when the supervisor lacks more innate self-control capacity. Thus, political skill may be especially necessary to redirect executive attention to higher level goals in working memory when control capacity is lacking, which might otherwise lead to unproductive reactions such as abuse (Hofmann et al., 2010). In short, the negative relationship between political skill and abusiveness should be stronger when executive control is weak. It follows that:

***Hypothesis 4*:** Supervisor intrinsic connectivity in the right lateral PFC network will moderate the relationship between political skill and abusive supervision, such that the relationship will be more negative for individuals who have lower levels of intrinsic connectivity.

2 | METHODS

2.1 | Participants and procedures

Participants came from both the active duty military as well as business organizations in the United States.[2] Regarding the former, we approached 30 mid- and senior-level U.S. Army officers (i.e., majors, lieutenant colonels, and colonels) who were attending a leadership training program. We also approached 30 EMBA students who were in supervisory positions representing a variety of industries including health care, financial services, and so forth. Our final sample consisted of 56 supervisors,[3] including 27 from military and 29 from business sectors, from a total of 60 supervisors who were invited to participate (93.3% response rate). Among these individuals, 83.6% were male. Ages ranged from 30 to 69 years, with 42.9% 30–39 years, 46.4% 40–49 years, 5.4% 50–59 years, and 5.4% 60–69 years old. In terms of ethnicity, 1.8% were Asian, 5.5% were African American, 9.1% were Hispanic, and 83.6% were White/Caucasian.

Using Internet-based procedures, two sources were used for survey data collection: (a) focal supervisor and (b) subordinates or peers. Supervisors first completed a self-survey measuring their own narcissism. Supervisors' subordinates or peers (if the supervisors were between assignments when in training and had no current subordinates) then answered a second survey measuring focal supervisors' political skill and abusive supervision. Subordinates and peers were both specifically asked if instances of abusiveness were directed toward them. Although researchers have predominantly focused on subordinates' perceptions of abusive supervision, there is increasing attention in the literature on peer ratings (e.g., Wheeler et al., 2013). If certain supervisors are predisposed toward aggression as we have theorized here, there is little reason to believe that such behavior would be isolated toward subordinates. An average of around three individuals completed the second survey, with a range of 2–6 raters (although one leader had 15 raters). Approximately 62% of ratings came from peers, and 38% came from subordinates, for a total of 148 responses. Overall, there were no mean differences (Pearson $\chi^2 = 20.39$ [df = 15], $p > .05$) between subordinate and peer ratings with

regard to abusiveness. In addition, we compared abusive supervision ratings for those leaders who had ratings from both sources ($N = 19$), and there were no mean differences with regard to rating source (i.e., $t = 1.64$, $p > .05$). Further, for those leaders, the interrater agreement of abusive supervision was high, with mean r_{wg} larger than .90. In total, these three tests suggest that the peer and subordinate ratings can be reliably pooled.

Both survey measures were completed within a few weeks after the neurosensing procedure, described next, was completed. Our use of multiple rating sources in combination with neural-sensing methodology provides a multisource/multimethod procedure that minimizes common method bias concerns (Podsakoff, MacKenzie, & Podsakoff, 2012).

2.1.1 | Neural-sensing assessment

The focal supervisors in this study also engaged in an intrinsic EEG assessment process. The basic method to capture the profile of the intrinsic brain is to assess EEG when the brain is in a resting, but wakeful, state; that is, when the brain is not charged with completing a specific task. We screened each individual for issues that would warrant exclusion, such as mental health, brain injuries, and use of any psychotropic drugs. No potential participant was subsequently eliminated. After this screening, a cap with a set of 19 electrodes was fitted to their scalps, and EEG data were collected in accordance with the International 10/20 protocol. We assessed EEG activity in multiple frequency bandwidths, including Δ(1–4 Hz), θ (4–8 Hz), α (8–12 Hz), β (12–30 Hz), and γ (30–100 Hz). As part of an eyes-closed, at-rest (but alert) procedure, EEG segments of at least 240 seconds were recorded at a digitization rate of 128 Hz (e.g., Waldman & Balthazard, 2015; Waldman et al., 2017a).

We visually examined and edited each EEG recording to remove artifacts (e.g., eye movement and tension in facial muscles) or occurrences where EEG voltages in any of the 19 channels exceeded the norm for patterns in the respective participant's EEG. We then conducted split-half and test–retest reliability analyses on these edited EEG segments. Split-half reliability is based on the ratio of the variance of the even 1-second samples of the edited segments of EEG divided by the odd 1-second segments. Test–retest reliability is the ratio of variance in the first half of the EEG segments versus the second half of the segments. Higher variability represents a decrease in the split-half reliability and is indicative of occurrences of nonbrain sources of artifact (e.g., eye blinks and movement of the head). Moreover, higher variability indicates drowsiness or a brain that is not in an alert state, preventing accurate assessment of the at-rest, intrinsic brain. When reliabilities achieve a 95% threshold, the EEG reading is appropriate for further quantitative analysis, such as computing brain connectivity indices (Hannah et al., 2013). As such, only portions with greater than 95% reliabilities, representing at least 60 seconds of artifact-free recording for each participant, should be retained for subsequent, quantitative EEG spectral analysis described below. All of our participants passed this test and were retained.

2.2 | Survey-based measures

2.2.1 | Narcissism

Narcissism was measured using the 34-item Narcissistic Personality Inventory (Raskin & Terry, 1988), scaled from 1 = *strongly disagree* to 5 = *strongly agree*. Sample items are "People always seem to recognize my authority" (authority); "I am going to be a great person" (self-sufficiency); "I think I am a special person" (superiority); "I like to be the center of attention" (exhibitionism); "I find it easy to manipulate people" (exploitativeness); "I insist upon getting the respect that is due me" (entitlement). The Cronbach's α was .92.

2.2.2 | Political skill

Subordinates or peers rated their supervisors' political skill using the 18-item scale developed by Ferris et al. (2005). Sample items are "He/She always seems to instinctively know the right things to say or do to influence others," "He/she tries to show a genuine interest in other people," and "He/She spends a lot of time at work developing connections with others." Items were rated on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*, with a Cronbach's α of .93.

2.2.3 | Abusive supervision

Subordinates or peers rated respective supervisors' abusive supervision using 10 items from Aryee et al. (2007). Sample items include: "He/she makes negative comments about me to others," and "He/She ridicules me." Items were rated on a 5-point scale, from 1 = *never* to 5 = *very often*. The Cronbach's α for this measure was .92.

2.2.4 | Control variables

Age and gender were included as controls in the analyses, as these variables have been found to relate to narcissism and abusive supervision (e.g., Aryee et al., 2007; Eagly, Makhijani, & Klonsky, 1992; Grijalva et al., 2015). We also added a dummy coding of occupation (0 = military supervisors, 1 = business supervisors).

2.3 | Neural executive control index

We used power spectral analysis derived from the EEG to form a score for executive control, specifically focusing on the theorized right lateral PFC network, as depicted in Hypothesis 2. To do so, we employed low-resolution brain electromagnetic tomography (LORETA) to assess electrical, neuronal activity in our participants (Pascual-Marqui, 1999; Pascual-Marqui, Michel, & Lehmann, 1994). LORETA calculates a three-dimensional distribution of 2,394 "voxels" (i.e., small, three-dimensional parts of the human brain) of $7 \times 7 \times 7$ mm that can be combined to *virtually* reconstruct the brain and report on the characteristics of electrical activity in various regions, or connections between regions (e.g., coherence). Regions are identified by using the labeling of Brodmann Areas (BAs), a widely used brain mapping atlas that is based on cellular structure and divides the brain into right and left hemispheric regions, 53 cortical areas, subcortical structures, and the limbic system where the subcortical structures meet the cerebral cortex (Jasper, 1958).

The lateral PFC network regions referred to in Hypothesis 2 correspond to BA 44, 45, and 47 (i.e., the posterior, mid, and anterior subregions) on the ventral axis, and the neighboring BA 46 on the dorsal axis. Relatedly, the amygdala is a limbic system structure that lies deeper in the brain and is involved in many of our emotions (i.e., fear, anger, disgust, pleasure; Lindquist et al., 2012). Thus, we operationalized neural executive control by calculating the average connectivity in the right lateral PFC brain network represented by BA44, BA45, BA46, BA47, and the right hemisphere amygdala (O'Reilly, 2010).

Similar to prior research (e.g., Carrillo-de-la-Pena & Garcia-Larrea, 2007; Waldman, Balthazard, & Peterson, 2011), we targeted average coherence or connectivity in the higher *beta* frequency range. The higher *beta* frequencies are relevant to the wakeful or alert brain and have been used in related research dealing with leadership phenomena (e.g., Waldman et al., 2011). Coherence is a percentage that assesses the extent to which any two brain voxels operate together in a synchronous manner (Thatcher, Krause, & Hrybyk, 1986). As such, coherence has a possible range of 0–100, with "0" reflecting no connectivity within the network, and "100″ reflecting complete connectivity, wherein all included brain voxels in the five areas mentioned above would be firing with an identical pattern on the high beta frequency simultaneously. The coherence values that we report below for executive control reflect overall coherence in the five brain areas of interest. Accordingly, it represents the average level of coherence between voxels in those areas. In this study, high coherence would indicate a network of neurons in the right lateral PFC region and amygdala that work in concert, thus providing higher capacity for executive control. Low coherence would indicate that the network of neurons was not working in tandem, and thus reflect lower neurological, self-control capacity.

2.4 | Aggregation tests

We assessed the interrater agreement (Bliese, 2000; James, Demaree, & Wolf, 1993) for the two other-rated variables: political skill and abusive supervision. For political skill, the mean and median $r_{wg(j)}$ were .96 and .98, with intraclass correlation coefficients (ICC)(1) = .20, ICC(2) = .47. For abusive supervision, the mean and median $r_{wg(j)}$ were .99 and .99, respectively, with ICC(1) and ICC(2) .25 and .52, respectively, providing statistical support for aggregation.

3 | RESULTS

Table 1 presents means, standard deviations, and correlations among all variables. We used path modeling in M-Plus 8 (Muthén & Muthén, 2017) to test the hypotheses (see Figure 1). MLR estimator (maximum likelihood estimation with robust standard errors) was used to adjust for nonnormality and nonindependence of the data (Asparouhov & Muthen, 2006).

The path model results are shown in Table 2. We report one-tailed test results because all of our hypotheses were theory driven and directional (Jones, 1952, 1954; Kimmel, 1957). Hypothesis 1 suggests that political skill interacts with narcissism in the prediction of abusive supervision. Political skill and narcissism were centered before being entered into the analysis. As shown in Model 2, the standardized interaction coefficient was significant ($\beta = -.20$, $p < .01$), and the interaction added 4% in terms of explained variance. Simple slope tests suggested that when supervisors have high political skill, the relationship between narcissism and abusive supervision is not significant ($b = .05$, $p > .10$). In contrast, when supervisors have low political skill, the relationship between narcissism and abusive supervision is positive and significant ($b = .30$, $p < .01$). The difference between high and low unstandardized coefficients is $-.25$, $p < .05$. The simple slope plot is shown in Figure 2. Therefore, Hypothesis 1 was supported.

Hypothesis 2 suggests that executive control is negatively related to abusive supervision. As shown in Model 1, executive control (i.e., higher connectivity) is negatively related to abusive supervision ($\beta = -.24$, $p < .05$). Thus, Hypothesis 2 was supported. Hypothesis 3 suggests that the relationship between narcissism and abusive supervision will be moderated by executive control. Narcissism and executive control were centered before being entered into the analysis. As shown in Model 3, the interaction coefficient was not significant ($\beta = .03$, $p > .10$). Therefore, Hypothesis 3 was not supported.

Hypothesis 4 suggests that political skill interacts with executive control to predict abusive supervision. Supporting the separate nature of political skill and neural executive control that we argued earlier, these variables are not

TABLE 1 Means, standard deviations, and correlations

	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	3.73	0.80	–												
2. Gender	0.84	0.37	−.02	–											
3. Occupation	0.52	0.50	−.17	−.25	–										
4. Default mode network	52.64	9.10	.21	.16	−.72**	–									
5. Attention	46.80	4.61	−.12	−.27	.09	.05	–								
6. Sound	85.44	1.85	−.17	−.16	−.07	.08	−.11	–							
7. Visual function	50.40	3.23	.01	−.15	.01	.06	.55**	−.20	–						
8. Somatosensory	58.99	2.04	.01	.35*	−.20	.05	−.45**	−.15	.04	–					
9. Social cognition	90.73	2.43	.21	−.01	.27*	−.11	.04	.09	.03	−.23	–				
10. Neural executive control	72.06	4.85	−.01	.02	.07	.01	.08	.02	.11	.11	.13	–			
11. Narcissism	3.01	0.48	−.26	−.07	.61**	−.42**	.05	−.19	−.07	−.23	.08	−.02	*.92*		
12. Political skill	4.20	0.35	−.11	.21	−.05	−.07	.09	.06	.19	−.01	.32*	.18	.03	*.93*	
13. Abusive supervision	1.18	0.30	−.17	−.02	.18	−.02	.13	.05	−.02	−.15	−.13	−.33*	.27	−.45**	*.92*

Notes: $N = 47–56$ due to missing data. Age categories ranged from 1 = less than 20, 2 = 20–29, 3 = 30–39, 4 = 40–49, 5 = 50–59, and 6 = 60–69 years old. Gender: 0 = female, 1 = male. Occupation: 0 = military supervisors, 1 = business supervisors. *$p < .05$, **$p < .01$. We examined the pattern of correlations between abusive supervision and the higher beta coherence indices in the right hemisphere for other known neural networks, including default mode network (see Waldman et al., 2017a), attention (i.e., BA 7, BA 39), sound (i.e., BA 22, BA 41, BA 42), visual functions (i.e., BA 17, BA 18, BA 19), and somatosensory networks (i.e., BA 1, BA 2, BA 3, BA 5, BA 40) (Raichle & Snyder, 2007), as well as social cognition (i.e., BA 11, BA 24) (e.g., Lavin et al., 2013). Variables 1–3 and 10–13 are used in our hypothesis testing.

TABLE 2 Model results in the prediction of abusive supervision

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Controls						
Age	−.19*	−.18**	−.19*	−.19*	−.19*	−.20*
Gender	.10	.11	.10	.09	.10	.10
Occupation	−.02	−.00	−.03	.02	.05	.05
Independent variables						
Narcissism	.26*	.27*	.26*	.25***	.24*	.24*
Political skill	−.45**	−.49**	−.45**	−.48**	−.53**	−.54**
Executive control	−.24*	−.24*	−.22***	−.01	.09	.11
Narcissism*political skill		−.20**			−.20**	−.22**
Narcissism*executive control			.03		.08	.08
Political skill*executive control				.30***	.35*	.40*
Narcissism*political skill*executive control						.06
R^2	.38**	.42**	.38**	.41**	.45**	.45**
R^2 change		*.04*	*.00*	*.03*	*.07*	*.00*

Notes: MLR estimator (maximum likelihood estimation with robust standard errors) was applied. Standardized coefficients are reported here. R^2 change of model 2, 3, 4, and 5 are based on model 1. R^2 change of model 6 is based on model 5.
*$p < .05$, **$p < .01$, and ***$p < .10$, one-tailed test.

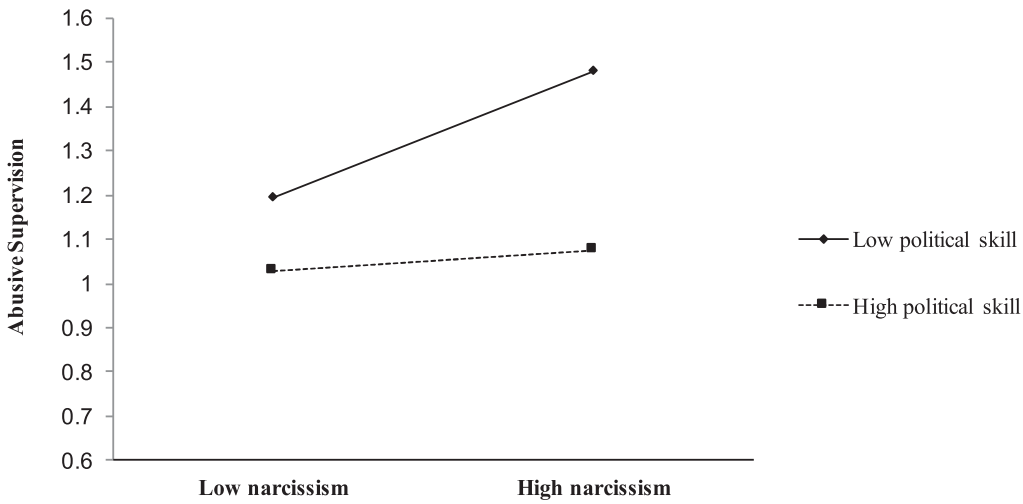

FIGURE 2 Simple slope plot of the interaction between narcissism and political skill

significantly correlated in Table 1. Both variables were mean centered before being entered into the analysis. As shown in Model 4, the interaction coefficient was significant ($\beta = .30$, $p < .10$, whereas $b = .05$, $p < .05$),[4] and the interaction added 3% in terms of explained variance. Moreover, the simple slope test suggested that when supervisors have high executive control, the relationship between political skill and abusive supervision is not significant ($b = -.16$, $p > .10$). In contrast, when supervisors have low executive control, the relationship between political skill and abusive supervision is negative and significant ($b = -.65$, $p < .01$). The difference between high and low executive control is .50, $p < .05$. The simple slope plot is shown in Figure 3. This plot illustrates that political skill is more negatively related to abusive supervision when there is low neural executive control (i.e., low connectivity). Therefore, Hypothesis 4 was supported.

As shown in Model 6 in Table 2, we further explored the possibility of a three-way interaction of Narcissism × Political Skill × Executive Control in the prediction of abusive supervision. Such an interaction could be plausible if the

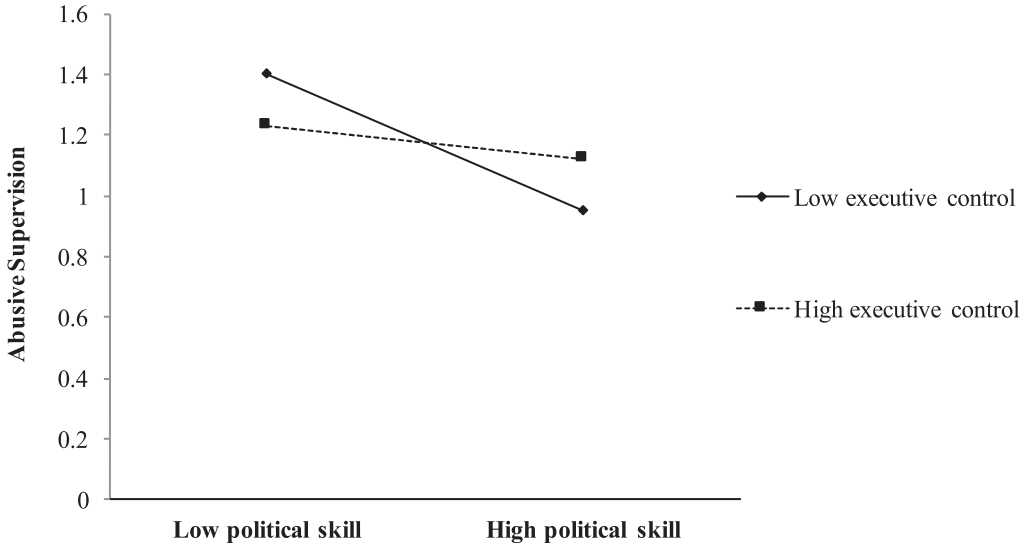

FIGURE 3 Simple slope plot of the interaction between political skill and executive control

moderating effect of political skill on the relationship between narcissism and abusive supervision is dependent upon the level of neurological control capacity that a supervisor has. For example, it could be that a narcissistic supervisor would be less able to employ political skills to combat impulsive tendencies if lacking in such capacity. This test, however, was not significant.

3.1 | Supplemental analyses

We conducted several, post hoc analyses to further illuminate and reinforce our results. First, we explored potential differences in findings based on whether abusive supervision ratings came from subordinates versus peers. The correlations between narcissism and abusive supervision were .34 and .23 for subordinate and peer data, respectively. The correlations between neural executive control and abusive supervision were −.30 and −.34 for subordinate and peer data, respectively. These correlations are not significantly different using the Fisher's *Z*-test. Accordingly, the rating source did not appear to be an important factor in our analyses.

We also conducted several supplemental analyses to assess the discriminant validity of our neural executive control index. First, we formed the neural executive control variable using the *left* hemisphere BA values for the lateral PFC and amygdala. Brain lateralization refers to the fact that the two hemispheres are not exactly the same in terms of effects on cognition and behavior, and each has functional specialization. Considerable evidence indicates that specific forms of cognitive control are associated with the left ventrolateral PFC (e.g., BA 44, BA 45, BA 47), including memory in the form of controlled access to stored conceptual representations (Badre & Wagner, 2007). However, there is insufficient theoretical or empirical evidence linking the left ventrolateral PFC to self-control. Indeed, our analysis showed that the left hemisphere index did not produce a significant relationship with abusive supervision. This reinforces the importance of the right hemisphere for focus in this study.

Second, we examined the pattern of correlations between abusive supervision and high beta coherence indices in both hemispheres for other known neural networks. They included the default mode network (see Waldman et al., 2017a; Raichle & Snyder, 2007), attention (i.e., BA 7, BA 39; Pugh et al., 1996), sound (i.e., the processing of auditory information; BA 22, BA 42, BA 41; Pickles, 1988), visual (i.e., functions that capture the information that is received through one's eyes; BA 17, BA 18, BA 19), and somatosensory (i.e., the processing of sensory body inputs such as pressure, pain, and movement; BA 1, BA 2, BA 3, BA 5, BA 40; Nelson, 2001). Table 1 shows the correlations between the right hemispheric measures of these alternate networks and our study variables. Further supporting the discriminant

validity of our focal *right* lateral PFC network index (Miller & Cohen, 2001), none of these other indices correlated significantly with abusive supervision. One interesting finding is that the measure of the default mode network is significantly and negatively correlated with narcissism. This finding is not unexpected, given the work of Waldman et al. (2017a), who reported a positive correlation between default mode network and ethical leadership. Indeed, narcissism has been shown to be positively related to socially undesirable behavior, such as counterproductive work behaviors (O'Boyle et al., 2012), which is antithetical to ethical leadership.

In further analyses, we sought to discriminate the underlying basis for neurological self-control from that of political skill and narcissism. To do so, we first attempted to identify a neural predictor of political skill. There is evidence that the anterior cingulate region of the brain is relevant to cognition in social interactions (Etkin, Egner, & Kalisch, 2011; Lavin et al., 2013). Relatedly, this region is relevant to observing fairness/unfairness in social-economic interactions (Boksem & De Cremer, 2010), delineating interactions with someone from an in-group versus someone from an out-group (Ibanez et al., 2010), and empathy-related responses (e.g., Lamm, Decety, & Singer, 2011). Based on the work of these authors, we formed a measure of *social cognition* by examining the coherence value in the higher beta range for regions BA11 and BA24. These BAs delineate connectivity in the anterior portion of the cingulate and the frontal lobe. As shown in Table 1, our neural measure of *social cognition* correlated positively with political skill ($r = .32$, $p < .05$) but not significantly with narcissism, abusive supervision, or our executive control index. Overall, these supplemental tests suggest that the neural antecedents for narcissism and political skill are both distinct from that of executive control.

4 | DISCUSSION

We proposed a model based on SCT to better understand the antecedents of abusive supervision. Our findings revealed that political skill not only had a direct, negative relationship with abusiveness, but also significantly tempered the deleterious effects of narcissism on abusive supervision. Further, neural executive control directly predicts abusive supervision, and it moderates the relationship between political skill and abusiveness. Only when executive control is low is the negative relationship between political skill and abusive supervision significant. Below, we discuss the implications of our findings.

4.1 | Theoretical implications

The current research extends our understanding of the antecedents of abusive supervision in several meaningful ways. First, extant research has placed a large focus on employee-based antecedents of abusive supervision (Liang et al., 2016; Tepper, 2007). An understanding of the employee conditions and characteristics that invite or promote abuse is meaningful. Yet, as abusive behavior is inappropriate, even when certain follower characteristics make it more likely that they will receive abuse, the central root of this significant workplace problem lies arguably in the supervisor him or herself and that person's underlying ability to exert self-control over abusive tendencies or impulses. Within the framework of SCT, state-like phenomena of supervisors themselves (e.g., sleep deprivation) have provided resource depletion explanations for abusive supervision (Barnes, Lucianetti, Bhave, & Christian, 2015). However, Lian et al. (2017) argued that the focus on resource depletion could lead to an overemphasis on situational phenomena. Our research illuminates the importance of supervisor characteristics that are relevant to the self-control of abusive supervision. We thus extend the nomological network of abusive supervision by incorporating supervisor characteristics that are relevant to desire, goals, and capacity. As such, our model takes into account how control failure can arise from a confluence of multiple factors, including narcissistic tendencies, a lack of interpersonal competence, and limited innate capacity (Lian et al., 2017).

Second, with regard to narcissism, political skill appears to enable a narcissist to control inclinations to lash out when they receive ego threat or do not receive the adulation from others that they seek, in favor of the longer term goal of maintaining relationships, thereby achieving influence. In other words, the potentially deleterious effect of narcissism on abusiveness is likely to be tempered by political skill. However, contrary to expectations, we did not find any such tempering effect on the narcissism-abusiveness relationship for executive control. One possible explanation is

that narcissists' abuse of others is not particularly the result of an impulsive lack of control. Instead, the lack of control may be more thought-out, planned, or the result of intentioned spite. Indeed, as argued earlier (e.g., Westphal & Deephouse, 2011), narcissists may oftentimes engage in more passive-aggressive acts of abuse, which may be strategic and deliberately planned and thus not as contingent on more automatic, executive control capacity.

Third, by adding a neurological component, we directly tap a trait-based, neurological control capacity aspect of SCT, rather than relying on psychological proxies, such as emotional stability and conscientiousness (Lian et al., 2017). This neurological component allows for a broader theoretical and ecologically valid lens to be applied to SCT-based considerations of abusive supervision (Powell, 2011; Senior et al., 2011). Indeed, neurological methods avoid many self-assessment problems that are associated with psychometric measures (O'Boyle et al., 2012).

Fourth, various authors have pointed to the need to look more in depth at control capacity in the understanding of self-control (or lack thereof) and its manifestation through such behaviors as abusiveness (Lian et al., 2017). Specifically, beyond an innate capacity like executive control, it is also important to examine acquired competencies and goal-directed, relational effort. We contribute to SCT by illuminating the combined, interactive roles of political skill and executive control, thus shedding light on how two forms of capacity may work together in the prediction of a phenomenon like abusive supervision (Kotabe & Hofmann, 2015). As expected, the negative relationship between political skill and abusive supervision occurred only at low levels of executive control. Further as expected, Figure 3 reveals that the greatest tendency toward abusive supervision occurs when both executive control and political skill are low, as the supervisor lacks both the capacity and acquired competence to control abusive acts.

But perhaps counterintuitively, the point of greatest prediction of low abusiveness occurs when high political skill combines with low executive control (see Figure 3). This unexpected finding could be due to the relatively small sample size. Another plausible explanation is that individuals who are low in executive control are cognizant of that fact, and they may rely even more so on deliberate employment of their political skill or other factors (e.g., use stress management or meditation techniques) to counteract abusive tendencies. Overall, our results provide a deeper and more complex understanding of the self-control of abuse, including somewhat surprising findings that could lead to additional future research.

4.2 | Practical implications

Fundamentally changing a supervisor's level of narcissism may not be feasible, at least in the short term. With that said, our research suggests that efforts to develop or select supervisors for the social competencies reflected in political skill may help supervisors to appropriately temper abusive tendencies that they may have (Ferris et al., 2005). For example, Ferris et al. (2007) insisted that political skill can be developed through mentoring, helping supervisors gain experience and contextual knowledge pertaining to developing and maintaining relationships, forming network connections, and so forth. If indeed organizations can develop supervisors' social competencies as represented by political skill (Ferris et al., 2000), they might enable supervisors to better mollify the effects of narcissistic tendencies and thereby minimize abuse. Moreover, given the effects on abusiveness shown here, organizations should of course also attempt to identify excessive narcissism in talent selection and promotion processes.

The neurological findings of this study further present some interesting practical implications. We recognize that abusive supervision may be, at least in part, a very deeply rooted, neurological issue that has its genesis in a lack of proper development of the brain as a child or adolescent. For example, as mentioned earlier, developmental trauma to the PFC can negatively impact the subsequent development of self-control (Eslinger, 1996; Moriguchi et al., 2007). Accordingly, abusive supervision tendencies may represent a difficult issue to resolve, and interventions that do not address its root causes may not fully succeed.

With that said, it may be possible to modify or correct neurological tendencies that might engender supervisor abusive behavior. Specifically, as outlined by Waldman et al. (2011), a neurofeedback protocol could be potentially applied to essentially alter the brain's intrinsic neurological structures, and specifically targeted aspects of connectivity in the brain (Heatherton & Wagner, 2011). Thus, it is plausible that such techniques might increase the brain's capacity for

executive self-control, thereby reducing abusive supervision tendencies. Neurofeedback is based on the science of brain plasticity and the notion that targeted operant conditioning protocols can alter intrinsic brain structures to be more in line with a healthy profile. Researchers have suggested that neurofeedback can be used as a means to facilitate and support techniques such as meditation (Brandmeyer & Delorme, 2013) or help psychotherapy protocol development (Linden, 2006; van Outsem, 2011). In relation to the current findings, neurofeedback could eventually be used as part of a broader leadership development program to achieve greater levels of coherence in the right lateral PFC areas of the brain that are associated with greater capacity for self-control. With that said, additional research would first be necessary to further validate the neurological profile that we have initially identified here before a neurofeedback protocol could be optimized to specifically counteract the lack of self-control that may engender abusive supervision behaviors.

Finally, given the nature of brain plasticity, neuroimaging techniques such as those used in the current research could be potentially employed through repeated measures over time to track the development of individuals' self-control capacity. Specifically, if self-control training is successful, it may lead to observable increases in connectivity in the neural network identified here.

4.3 | Limitations and future research

Some appealing features of the current research include multiple sources for survey-based measures, involving self-ratings of narcissism, and ratings by followers or peers for political skill and abusive supervision. Further, we used a somewhat unique methodology in organizational research to assess the intrinsic brain structures of our participants. With that said, we recognize three potential limitations. First, our sample was relatively limited in size, although being equivalent to, or larger than, other recent research in the organizational neuroscience realm (see Dulebohn et al., 2016; Vul, Harris, Winkielman, & Pashler, 2009b). We suggest that our findings be replicated, doing so in a broad range of supervisory positions and organizational levels. Second, we measured political skill and abusive supervision using a single source. In line with arguments by Podsakoff et al. (2012), we do not view single-source bias as a significant problem, as political skill was treated as a moderator in the relationship of narcissism and abusive supervision. Moreover, the interaction of political skill and executive control is based on highly disparate methods. Accordingly, in each instance, our interpretation of moderating effects should not be affected. That is, the single-source issue pertaining to political skill and abusive supervision should not have resulted in spurious, significant interaction effects (Siemsen, Roth, & Oliveira, 2010).

Third, neuroscience represents an emerging area through which organizational researchers might conceive research issues and measure variables. As such, we recognize that organizational neuroscience is still at a nascent stage of development and may not be readily understood by many organizational researchers (e.g., the nature of appropriate technologies, variables that can be produced through brain scanning methods, and so forth). As noted by Jack, Rochford, Friedman, Passarelli, and Boyatzis (2017), quantitative EEG (qEEG) and fMRI constitute the two most commonly used methods in organizational neuroscience. Although an extensive comparison of the two techniques is not feasible here, as compared to qEEG, a potential advantage of fMRI is spatial resolution; that is, pinpointing activity in very precise areas of the brain (Balthazard & Thatcher, 2015). However, research focusing on qEEG assessment of the intrinsic brain has better temporal resolution (i.e., assessing the sequential activity of neurons in millisecond increments) and has been able to show theory-based correlates of activity in networks of brain regions with important cognitive and behavioral phenomena (e.g., Hannah et al., 2013; Waldman et al., 2017a).

Accordingly, spatial resolution may not be as large of an issue in organizational research as it might be, for example, in medical research where doctors may need to pinpoint very specific neurological anatomy to make nuanced diagnoses for physical maladies. Further, qEEG is highly conducive to the assessment of brain connectivity (i.e., synchronous activation of voxels at the same time, amplitude, and frequency), as was used in the current research. In addition, while data collection with qEEG is somewhat complex and involved, it can more readily overcome the factors (e.g., extremely high cost and difficulty recruiting subjects who are willing to undergo an MRI) that lead to the small sample sizes commonly associated with fMRI (cf. Vul, Harris, Winkielman, & Pashler, 2009a, 2009b). That is, although somewhat time and

resource-consuming, qEEG data collection is relatively more efficient, less expensive, and less intrusive, as compared to fMRI. Further, qEEG allows participants to be in a relatively natural state (i.e., seated comfortably, as opposed to being fixed in a confined MRI tube). Finally, qEEG is most appropriate when used in hypothesis-driven research that is guided by prior work in neuroscience (Jack et al., 2017). In this study, we formed hypotheses based largely on prior work using fMRI to guide our understanding of brain regions that should be relevant to executive control. In sum, like traditional methods in organizational research, both fMRI and qEEG methods have strengths and limitations that researchers should consider and then select a method based on their research questions, setting, and neurological phenomena of interest.

Based on our approach, we have several further recommendations for future research. First, our results should promote additional future research on abusive supervision as viewed by peers. Our sources included both subordinate and peer ratings of abusiveness. Multiple tests showed that there were no significant differences between ratings of peers and subordinates with regard to abusiveness of the same supervisor, interrater agreement was sufficient, and key predictive findings were similar regardless of rating source. These results suggest that supervisors who are predisposed to being abusive due to the set of factors observed here are likely to lash out not just downward to subordinates, but also laterally to peers. Although it would be simple to assume that supervisors would be more likely to abuse those with lower power, our results across both military and business participants suggests that to not be the case. Consistent with SCT, it appears that individual characteristics are powerful predictors in a loss of self-control. Our findings are particularly important given that as abusive supervision was initially introduced by Tepper (2000), a number of authors have increasingly considered the relevance of peers leading peers, or what has become known as shared leadership (Denis, Langley, & Sergi, 2012; Wang, Waldman, & Zhang, 2014). Accordingly, we argue that the inclusion of peer ratings of abusiveness is timely and that future research should continue such efforts.

In sum, our results highlight that one need not practice *abusive supervision* (of those lower in power being supervised) to still be an *abusive person in a supervisor role*—a person in a formal position of authority who abuses others, regardless of power differentials. However, our findings do not inform incidents of abusive behavior toward those with higher levels of positional power. Indeed, given the potential repercussions, political skill may be an even more prominent factor in overriding abusive impulses directed at those of greater power, especially as political skill involves the desire to maintain positive influence in the organization. This logic suggests an opportunity for testing the current model across lower, similar, and higher power targets of abuse.

Second, there is a need for research to examine how both supervisor and subordinate characteristics interact to predict abusive supervision. In line with the bullying literature, targets who are seen as weak (i.e., are high in negative affectivity or have an avoidant conflict management style) or disliked (i.e., are overly aggressive in response to environmental cues) are more likely to receive abuse or feel victimized at work (Tepper, 2007). It may be meaningful to develop and test theoretical pairings about which characteristics, of both the supervisor and the target of abuse, may interact to predict the "perfect storm" for abusive behavior. For example, narcissistic supervisors (especially those lacking in political skill) may be more likely to abuse weak employees or peers to reinforce their sense of superiority in relation to others. Further, supervisors with injustice perceptions may be more likely to displace their frustration and retaliate against aggressive or disliked targets.

Third, other research has shown that general depletion of self-control capacity, such as physiological depletion from a lack of sleep (Barnes et al., 2015), may lead to higher levels of abusive supervision. It would thus be important for researchers to study how the bolstering of intrinsic, neurological self-control capacity proposed here may interact with more state-like or situational levels of sleep, stress, ego-depletion, and other factors that may work together to reduce overall self-control capacity in predicting abusive supervision (Baumeister, Gailliot, DeWall, & Oaten, 2006).

Fourth, research has shown that individual, self-control factors are predominant, as compared to situational or contextual factors, in the prediction of counterproductive work behavior (Marcus & Schuler, 2004). Nevertheless, we suggest that future research might consider contextual variables in relation to the type of individually based variables contained in our model. For example, it is quite likely that narcissists may rarely perceive enough adulation emanating from others in their work environments (Morf & Rhodewalt, 2001; Wheeler et al., 2013). However, if within particular contexts narcissists do perceive sufficient adulation, their tendencies toward lashing out and being abusive should be

minimized. Further, executive control may have its largest effects on abusive supervision in contexts that put a strain on one's inhibition. For example, high stress contexts (e.g., emergencies or pressure environments) might facilitate how a lack of supervisory executive control capacity could result in abusiveness. Overall, we encourage research to examine potential contextual influences on the relationships that we have modeled.

Finally, our current focus was on the neurological basis of control capacity, targeting inhibitory or control aspects of executive functioning, which we found to be directly linked to abusive supervision. Although not the primary focus in this study, it may be fruitful for future research to form a better understanding of the neurological bases of narcissism, as well as political skill. The neurological index of executive control that was developed here was not expected to be, nor was significantly correlated with, either variable. This suggests that different underlying neural networks are predictive of narcissism and political skill. As argued by Lindquist et al. (2012), behavior may be largely a function of multiple neurological processes (e.g., networks of activity) that interact in the brain. Moreover, Lindquist et al. (2012) described how portions of the brain, such as the regions that we implicated in our measure of neural executive control, could be relevant to multiple aspects of cognition and behavior.

Table 1 suggests that the default mode network, one of six alternate brain networks that we tested to demonstrate the discriminant validity of the neurological executive control network, is negatively associated with narcissism. The default mode network is highly relevant to self-identity and the maintenance of the self (Hannah et al., 2013), which may have logical relevance to the ego and sense of self-importance that is associated with narcissism. Further research on the association of the default mode network and narcissism would thus seem warranted. Moreover, in our supplemental analyses, we found that neurological activity in the anterior cingulate cortex, an area previously associated with social cognition, was significantly related to political skill. Our focus was not on determining the antecedents of narcissism or political skill, but these initial exploratory findings should encourage further research on the association between brain activity and both constructs.

5 | CONCLUSION

Abusive supervision is an important workplace problem that incurs significant costs to organizations (Tepper et al., 2006). In this research, we have examined new and seemingly important supervisor-based antecedents of abusive supervision, including psychological and neurological predictors. Our hope is to advance an understanding about the sources of abusive supervision and effective ways to prevent this toxic behavior in the workplace.

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NOTES

[1] Unless referring to the leadership literature as a canon of research, throughout this paper we use the terms "supervisor" or "manager" as opposed to "leader" to describe a person appointed to a formal position of authority who abuses others. Further, we use the term "supervision," rather than "leadership," to describe their method of influence. We do so as we believe that the label "leader" is earned through the establishment of credibility and trust (DeRue & Ashford, 2010; Hollander, 1992), and that abusive supervision, although a form of influence (e.g., coercion), is not a *positive* form of influence, as leadership is typically defined to be (Bass & Bass, 2008).

[2] The data for this study were used in part in Waldman et al.(2017a). However, none of the variables that were theoretically modeled in the Waldman et al. (2017a) research overlap with those that were theoretically modeled in the current study.

[3] Given issues pertaining to cost, complexity, and difficulty, large sample sizes are not common in neuroimaging research (e.g., Dulebohn et al., 2016; Hannah et al., 2013). For example, Vul et al. (2009a, 2009b) point to the common practice of having *N*-sizes of less than 20. However, the current sample size of $N = 56$ far exceeds such practice. For further discussion of sample size issues in neuroimaging research, see Vul et al. (2009a, 2009b) and Button et al. (2013).

[4] Baguley (2009) suggested a preference to use unstandardized coefficients, but both unstandardized and standardized coefficients can be reported. The simple slopes test is based on unstandardized coefficients and reinforces the significance of the interaction.

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