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Deontic Justice and Organizational Neuroscience

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Abstract According to deontic justice theory, individuals often feel principled moral obligations to uphold norms of justice. That is, standards of justice can be valued for their own sake, even apart from serving self-interested goals. While a growing body of evidence in business ethics supports the notion of deontic justice, skepticism remains. This hesitation results, at least in part, from the absence of a coherent framework for explaining how individuals produce and experience deontic justice. To address this need, we argue that a compelling, yet still missing, step is to gain further understanding into the underlying neural and psychological mechanisms of deontic justice. Here, we advance a theoretical model that disentangles three key processes of deontic justice: The use of justice rules to assess events, cognitive empathy, and affective empathy. Together with reviewing neural systems supporting these processes, broader implications of our model for business ethics scholarship are discussed.

Keywords Affect and cognition · Deonance · Deontic justice · Empathy · Organizational justice · Workplace fairness · Organizational neuroscience

Abbreviations

aCC	Anterior cingulate cortex
DMN	Default Mode Network
EEG	Electroencephalography
fMRI	Functional Magnetic Resonance Imaging
IFG	Inferior frontal gyrus
OFC	Orbitofrontal cortex
pCC	Posterior cingulate cortex
PET	Positron Emission Tomography
PFC	Prefrontal cortex
PMC	Posteromedial cortex
qEEG	Quantitative electroencephalography
rTPJ	Right temporoparietal junction
TMS	Transcranial Magnetic Stimulation
TPJ	Temporoparietal junction
vmPFC	Ventromedial prefrontal cortex

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Organizational justice is important to workers. When they feel fairly treated, employees tend to report less stress and better health (Cropanzano and Wright 2011), as well as more positive attitudes toward their jobs (Cohen-Charash and Spector 2001). Employers also benefit through higher worker job performance (Colquitt et al. 2001), more organizational citizenship behaviors (Fassina et al. 2008), and lower turnover intentions (Aryee and Chay 2001). In this paper, we seek to describe the underlying psychological processes—and supporting neural systems—that employees use when evaluating whether an event was fair or unfair. In particular, we focus on deontic justice, the

view that justice is of value for its own sake. Toward this end, we present and discuss a theoretical model that disentangles the psychological mechanisms involved in the formulation of these fairness judgments and review these processes through an analysis of relevant neural correlates. Overall, we argue that individuals evaluate fairness by applying normative criteria called justice rules (Cropanzano et al. 2015; Scott et al. 2008). As we shall see, these fairness judgments are moderated by both affective and cognitive processes. However, people are most likely to make the effort to apply justice rules, when they experience both cognitive empathy and affective empathy toward another person.

To refine and extend our understanding of these complex mechanisms, we will review the principal brain regions involved in both justice rules and in these two types of empathic processes. In order to accomplish these objectives, we first examine the available research on organizational justice, paying particular interest to the various reasons why workers care about fairness. We then focus in more detail on deontic justice, which is the principal concern of this paper. Afterward, we discuss the three main components of our model—application of justice rules, cognitive empathy, and affective empathy. Throughout, we consider the implications of our model for research and practice.

Organizational Justice

While research strongly suggests that justice matters to employees, scholars have proposed multiple explanations of why this is so. There has been some degree of convergence on the idea that justice matters to employees for multiple reasons (Cropanzano et al. 2001); yet, traditionally, three main theoretical frameworks have been proposed: The instrumental approach, the relational approach, and the deontic approach (e.g., Colquitt and Greenberg 2001; Folger and Salvador 2008).

Overview of the Three Motives for Justice

The *instrumental model*, which is historically the oldest, maintains that individuals prefer justice because it provides them long-term control over valued outcomes (for discussions, see Greenberg 1990; Tyler 1997, 2006). As one might expect, empirical evidence supports this view: Employees are egocentrically biased to view decisions that favor them as more fair (Cropanzano and Moliner 2013) and their views on justice are positively related to outcome favorability (e.g., Ambrose et al. 1991).

A subsequent view, the *relational framework*, refers to a set of theories—the group-value model, the relational model, and the group engagement model—that focus on and emphasize the relationship between the individual and his or her workgroup (Blader and Tyler 2015). Together, these three models posit that justice, and especially procedural justice, is central because fair treatment signals that an individual is respected and regarded within a significant social group that he or she values (Lind and Tyler 1988). This concept is consistent with, and supported by, empirical tests within organizational settings (e.g., Tyler and Blader 2000; Tyler et al. 1997).

While research strongly supports the existence of instrumental and relational concerns, these do not appear to be the only reasons why workers care about organizational justice. A third approach, the *deontic model of justice* (Folger and Glerum 2015; Folger and Salvador 2008), argues that employees often maintain ethical standards or moral principles (Blader and Tyler 2001), sometimes called 'justice rules,' that guide the moral treatment of others. As of result of these normative criteria, they adopt a moral duty (*deon* = duty) to uphold their principles (Folger 2001, 2011; Hannah et al. 2014). In this way, justice is valued for its own sake, not simply because of the personal benefits that it may bring to a person (Folger et al. 2005; for additional empirical evidence, see O'Reilly et al. 2016; Skarlicki and Rupp 2010; Skarlicki et al. 2008).

While deonance does not seem to be the only justice motive (cf. Folger et al. 2013), it does appear to be a notable one. For example, reactions to justice are partially influenced by personality dispositions indicative of trait morality (Colquitt et al. 2006). Likewise, research on 'altruistic punishment' (Fehr and Gächter 2002), shows that individuals will sacrifice economic benefits in order to punish someone who violates social norms (Fehr and Fishbacher 2004; Fehr and Gächter 2002; Fehr et al. 2002). Interestingly, the same act, even if it is equally hurtful, will be punished more harshly if it violates a group norm and less harshly if it does not (DaGloria and DeRidder 1977, 1979; DeRidder 1985).

Research among management scholars is consistent with this notion (cf. O'Reilly and Aquino 2011). Turillo et al. (2002) found that individuals will punish an unjust coworker, even when the victim is a stranger (for similar findings, see the studies reported by O'Reilly et al. 2016). Likewise, managers who are high in moral identity are more likely to punish transgressors than managers low on this measure (Skarlicki and Rupp 2010), though this may depend somewhat on the dimension of moral identity under examination.

Similarly, when people feel that they have been harmed by an immoral action, evidence suggests that they prefer a resolution outcome that validates their normative beliefs (Reb et al. 2006; for related findings, see Skarlicki et al. 2008). Evidence of this kind suggests that deontic justice provides a critical account of why employees care about justice: They do so, in part, because they possess moral

standards and duty to uphold them (Folger and Glerum 2015; Folger and Salvador 2008; Hannah et al. 2014).

Despite evidence that organizational justice can be motivated by something other than self-interest, this notion has been met with some skepticism (e.g., Greenberg 2001; Colquitt and Greenberg 2001). In a sort of conceptual 'path dependence,' these concerns appear to be rooted in the history of ethics scholarships. Hatfield and colleagues (Hatfield et al. 1978, pp. 128–129) maintained that 'the majority of scientists […] interpret apparent altruism in cost-benefit terms, assuming that individuals […] perform those acts that are rewarded […] and […] avoid those acts that are not. Either self-congratulation or external reward, then, must support apparently altruistic behavior.' Likewise, Gillespie and Greenberg (2005, p. 205) assert that 'the *only* ultimate goal(s) of individuals [is/]are self-directed' (italics added). On this view, the concern is not limited to justice. Rather, people appear to be incapable of motivated behavior that is not self-interested (for a review and critique, see Cropanzano et al. 2007).

Deontic Justice and the Question of 'How?'

A close look at the literature suggests that scholars have yet to fully investigate and explain the intrapersonal mechanisms responsible for deontic justice. Fortunately, scientists from several disciplines have begun to focus attention on the underpinnings of human justice. In particular, cognitive neuroscience has recently offered remarkable insights on the neural basis of moral behaviors (e.g., Greene et al. 2001; Moll et al. 2005); at the same time, business ethics has begun to explore the value of neuroscience methods and findings to advance theory on organizational justice (Beugré 2009; Dulebohn et al. 2009; Massaro and Becker 2015; Robertson et al. 2007; Salvador and Folger 2009). Despite such vibrant and compelling interest, relatively little is clearly known regarding the processes by which one's brain can be 'recruited' for another person's justice. We call this the 'how?' question—*How* can deontic justice be realized in an individual's brain? And what are the related implications for business ethics?

Deontic Justice and Organizational Neuroscience: An Overview

We shed light on these matters by integrating a set of psychological processes, and supporting neural systems, into a unique theoretical framework that aims to advance our current understanding of deontic justice. In other words, we aim to elucidate core mechanisms by which a worker comes to care about the moral principles that have been applied (or violated) for another individual through the lens of *organizational neuroscience* (Becker et al. 2011). Thus, our contribution aims to go beyond an ordinary exploration of what we might learn individually from the dedicated organizational, neuroscience, or psychology literatures. Rather, we aim to cross-fertilize among these disciplines in order to create an integrated model of deontic justice for business ethics.

In this paper, we explicate and defend a single proposition: *Deontic justice, and in particular the ability to take into account the ethical quality with which others are treated, is grounded on a set of three largely integrated processes: The use of justice rules to assess events, cognitive empathy, and affective empathy.* We acknowledge that this is a bold proposition, not yet commonly held in the business disciplines. For this reason, we devote considerable attention to supporting our foremost argument—that workers take justice seriously even when they are not selfishly benefited—by introducing neuroscience evidence. As we shall see, our brain is a complex organ consisting of many structures working synchronously and simultaneously to produce thoughts, feelings, decisions, and actions, including the ability to morally relate to others. As such, there is not a single brain center for justice, rather, justice is a whole-brain affair that relies on the integration of cognitive and affective neural systems and psychological processes (Casebeer 2003; Tancredi 2005; Yoder and Decety 2014).

Overview of the Present Model

Our primary aim is to provide a much needed, but largely neglected, theoretical rationale for how a set of synergistic processes provide an explanatory account for deontic justice. Our reasoning is substantiated by merging evidence from several literatures. The resulting theoretical model depicted in Fig. 1 underscores the conceptual challenges.

This figure is only intended to provide a cursory summary and guide to our model of deontic justice. We have not yet provided an account of specific neural systems supporting our model. Rather, here we describe how individuals make justice judgments (Cropanzano et al. 2015). Notice that people are often motivated to make sense out of a salient but harmful event. Moreover, the degree of empathy frequently impacts how these events are evaluated (Scott et al. 2008). As mentioned above, a key insight of deontic justice theory is that an unfortunate or harmful event is evaluated with respect to some 'normative criteria' (Cugueró-Escofet and Fortin 2014, p. 2) or '*justice rules*' (Hollensbe et al. 2008, p. 1099) or 'moral intuitions' (Greene and Haidt 2002, p. 517). When a transgressor's behavior toward another violates these rules, the observer or witness believes that the victim has been treated unfairly (Cropanzano et al. 2015; Rupp and Paddock 2010). As we shall see, justice rules are emotionally weighted and they can be distinguished from simple social conventions, which

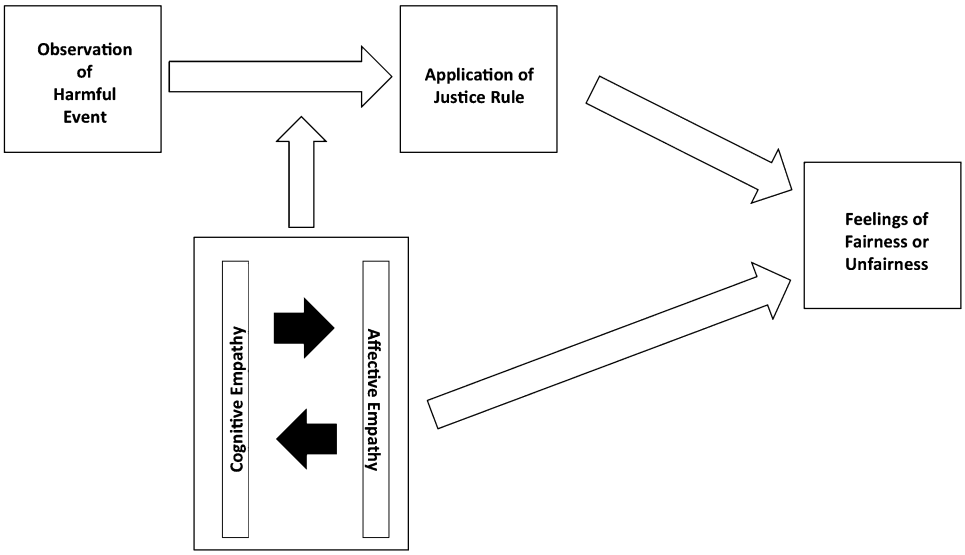

Fig. 1 Theoretical model of deontic justice. Notice the three critical elements: Application of justice rules, cognitive empathy, and affective empathy. Note also that empathy has both a moderating and a main effect

are instead situational and somewhat arbitrary (e.g., Smetana et al. 1993).

Yet, a key challenge for deontic justice theory lies in explicating the extent to which a justice rule will be applied and the extent to which it will not. All events in business organizations are not necessarily evaluated with respect to moral principles (Folger and Cropanzano 1998, 2001). For example, it is not uncommon for people to ignore mistreatment received by others, especially when individuals are part of different social groups (Greene 2013). This allows for callous disregard in relation to 'out group' individuals (Hein et al. 2010). Thus, if businesspeople could increase their circle of regard, more people would receive fair treatment (cf., Clayton and Opotow 2003).

By introducing neural systems associated with these psychological processes, we advance knowledge of how a worker's disinterest in the needs of others may result from what we could call a 'breakdown' in his or her empathic system (i.e., the capacity to understand what another person is experiencing from within the other person's frame of reference) (Greene 2013). Supported by this and other evidence, we argue that justice rules in the workplace are more likely to be applied when the third-party observer or witness has a sense of empathy for the victim (e.g., Blader and Tyler 2001; Patient and Skarlicki 2005). In particular, we suggest that two interrelated types of empathy are relevant: Cognitive empathy and affective empathy.

Cognitive empathy involves knowing the contents of other people's feelings through deliberate thought. That is, one must understand what others are thinking and feeling in order to know when they are distressed (for an overview on empathy, see e.g., Walter 2012). However, 'knowing' per se is insufficient. When a worker observes a coworker in distress, he or she may experience affective empathy without any deliberate thought or intention. *Affective empathy* involves automatic sharing in the emotional experiences of others (e.g., Walter 2012). Cognitive and affective empathy reinforce one another (Zaki and Ochsner 2012).

Closing Thought and Looking Ahead

In the sections that follow we further unravel the model presented in Fig. 1. We begin with a review of the evidence related to justice rules in the next section. Subsequently, we turn our attention to the two forms of empathy, beginning with cognitive and moving later to affective. While we treat cognitive and affective empathy separately in order to facilitate our discussion of the brain regions reviewed, we emphasize that both these and the related psychological processes are highly interconnected.

Recognizing and Applying Justice Rules

Research on deontic justice suggests that individuals make their moral decisions by observing or becoming aware of a triggering event—e.g., a potential mistreatment by a work supervisor, and evaluating this event with respect to some justice rule. A '*justice rule*' is a 'self-based standard, or expectation, derived from individuals' socialized or internalized values, regarding the moral obligations of individuals in a specific context' (Lau and Wong 2009, p. 281). This rule is used as a sort of measuring device to evaluate the moral appropriateness of the event (Scott et al. 2008). Because this type of assessment is based on the use of moral principles, it has also been called 'principlism' (e.g., Batson 1999, p. 303; Blader and Tyler 2001, p. 235). These judgments are not 'context free,' and various elements of

the decision environment can impact the evaluations (for empirical evidence, see Nicklin et al. 2011; for a review, see Cropanzano and Moliner 2013). While context effects are important, they are somewhat beyond the scope of the present article, which aims to understand the underlying intrapersonal processes of deontic justice.

Historically, justice rules have been organized into three families (Cropanzano et al. 2015): Distributive justice, which pertains to the outcome allocation; procedural justice, which relates to the decision-making process; and interactional justice, which concerns the interpersonal treatment received from another person. Some researchers have found it useful to further divide interactional justice into two sub-dimensions (e.g., Colquitt et al. 2001). In this approach, interpersonal justice relates to the dignity and respect that one receives, whereas informational justice pertains to keeping people informed, providing explanations, and so forth. Each of these types of justice has its own set of justice rules (cf. Colquitt and Rodell 2015).

While research is still ongoing (e.g., Hollensbe et al. 2008), we consider it a useful taxonomy (Colquitt 2001) to understand what 'justice rule' means. According to this categorization, there are at least three just ways to distribute outcomes. These are equity (to each according to contributions), equality (to each the same), and need (Deutsch 1975, 1985). Likewise, a just procedure should be bias-free, consistently applied, accurate, correctable, representative of all, and ethical (Leventhal 1980). Colquitt (2001) adds that interpersonally just treatment is polite, dignified, respectful, and contains no inappropriate remarks, while informationally just communication is candid, thorough, timely, and tailored to individual needs.

While future research may yield additional standards, Colquitt's (2001) work provides a good sense of what is intended by a 'justice rule.' Overall, within deontic justice theory, justice rules are essentially seen as a type of moral norm (Folger 2001, 2011; Folger and Salvador 2008). As with other moral norms, these do not depend on the opinion of an authority figure (i.e., tend not to change due to third-party norm enforcement), and their violations warrant punishment (Smetana 1981, 1984, 1985, 1989).

Development of Moral Norms

Social and developmental psychology research has offered important insights to further understand this concept by suggesting that human beings recognize and apply moral standards from a very early age. For instance, in a study conducted by Hamlin and Wynn (2011), toddlers watched a puppet show in which the characters behaved either helpfully or unhelpfully toward other puppets. Children, as young as 5 months, preferred the kindly puppets to the disobliging ones (for a review, see Bloom 2013; Hamlin et al. 2010).

These childhood preferences reflect an 'innate' distinction that persists into adulthood—that between moral norms and social conventions (for a discussion on innateness and morality, see Haidt and Joseph 2007; Suhler and Churchland 2011). A social convention is a rule of behavior that, while making community life potentially more efficient, is not seen as correct for its own sake (Nucci and Nucci 1982). To at least some degree, children as young as three or four can distinguish social conventions (e.g., eating with fingers, standing during nap-time) from moral transgressions (e.g., pushing, stealing, hitting), and by age five they are quite good at telling the two apart (Smetana et al. 1993).

Moral Norms and Neuroscience

We will now turn our attention to neuroscience evidence that elucidates how our brain applies moral norms. We begin with a focus on the prefrontal cortex (PFC) and review studies of moral decision-making that highlight its involvement in two different types of moral violations. We then cover additional brain regions, such as the insulae, which are involved in emotional responses and in the application of justice rules.

The Trolley Problem, the Prefrontal Cortex, and Two Types of Moral Violations

Greene et al. (2001) conducted a functional Magnetic Resonance Imaging (fMRI) study inspired by moral dilemmas that are often used in ethics research. One of the most remarkable dilemmas that influenced this research is the trolley problem (Thomson 1986). Usually, researchers present participants a scenario showing a runaway trolley with five people on it, which are tied and unable to move. If the trolley were to proceed on its path it would kill its occupants. The only way to save them is to activate a control that would switch the trolley's path. When people are asked whether they are ought to press the button to save five people at the expense of one, most say yes. Yet, when people are posed with a different scenario their decisions are likely to be opposite. In this case, the participants are told that they are standing next to a stranger on a bridge obstructing the trolley's path. The only way to save the five people is to push this stranger off the bridge causing his or her death. Although the ultimate result, from a rational perspective, is the same in both scenarios, people are less willing to save the five others by pushing the stranger.

Research on the trolley problem suggests that business ethics should attend more closely to a distinction between two different types of moral breaches—personal and impersonal. According to Greene and Haidt (2002), violations of moral norms are especially salient when the

misbehavior is *personal*. These are behaviors that do relatively serious harm to a specific individual and that do so through the direct agency of the transgressor. In contrast, *impersonal* violations lack the aforementioned criteria. Moreover, Greene and colleagues (Greene et al. 2001, 2004) showed that personal transgressions are processed in areas of the brain pertaining to emotions, while those that are impersonal are processed in brain regions that pertain more strongly to cognition. Specifically, brain regions associated to emotions, like medial frontal gyrus, posterior cingulate gyrus, and angular gyrus, were more activated in the personal condition rather than in impersonal and even non-moral scenarios; parietal lobes, among other regions associated to cognition, were instead significantly less active in the personal condition than in the other paradigms (Greene et al. 2001).

Interestingly, Greene et al.'s (2001) findings closely parallel long standing observations by organizational justice researchers that interpersonal justice violations tend to generate greater outrage than do other types of injustices (Folger and Cropanzano 1998; Skarlicki and Folger 2004). Individuals with strong moral identities are especially likely to retaliate when observing interpersonal injustice (Skarlicki and Rupp 2010; O'Reilly et al. 2016). Likewise, interpersonal injustice, as opposed to other types, is more strongly related to workplace deviance (Colquitt et al. 2001; Judge et al. 2006). Research based on the trolley problem suggests that *the importance of interpersonal justice may be 'hard wired' into our brain functioning*.

This research (Greene et al. 2001) also revealed that reaction times were longer when participants judged personal violations as morally appropriate, as compared to when subjects judged them to be wrong, suggesting a key role for 'executive control' brain regions. Thus, in a follow-up study, Greene et al. (2004) focused on brain activity in the subjects' *prefrontal cortex* (PFC), while deliberating over similar scenarios. The PFC is the anterior part of the frontal lobes of the brain—an area crucial for integrative, executive, and goal-directed functions (Fuster 2001). Research has often focused on the subdivisions of the PFC, in particular the ventromedial or vmPFC (Damasio 1996), orbitofrontal (Rolls 1996), and dorsolateral (Goldman-Rakic 1987) (for a more extensive review, see Christoff and Gabrieli 2000). While these regions have a vast network of connections and intertwined functions, speaking generally, the dorsolateral PFC is more critical for cognitive control (e.g., attention), while the orbitofrontal and vmPFC are largely associated to emotional processes and affective decision-making (Damasio et al. 1990; Gray et al. 2002; Rolls and Grabenhorst 2008).

In the trolley problem just described (Greene et al. 2001), researchers found increased ventromedial and decreased dorsolateral PFC activity in response to personal (i.e., bridge scenario) as opposed to impersonal (i.e., switching the trolley's path) moral choices; the difference between these two situations also related to the salience of the victim. Moreover, in Greene et al. (2004) the dorsolateral PFC showed increased activity for difficult, as compared to easy personal dilemmas. Further, Luo et al. (2006) showed increased vmPFC activity in response to more critical moral transgressions compared to less severe (see, Blair 2007). What is more, lesions to the PFC create impairments for these types of moral decisions, supporting its essential role in applying moral rules (Ciaramelli et al. 2007; Koenigs et al. 2007).

Additional Brain Regions Involved and Justice Rules

Moll et al. (2002) provided additional insights into the relationship between human moral rules and emotions. They asked subjects to read short statements and judge them as being either right or wrong. In this way Moll and his colleagues forced participants to take a stand irrespectively of the content of the sentences. Some of the statements described either emotional situations provoking moral responses, others were emotionally negative scenarios with no moral substance, and others were non-emotional situations. These researchers found that moral judgments associated with negative emotions prompted activation in the antero-medial orbitofrontal cortex (OFC)—whose activation correlates with subjective emotional experiences. In support of this finding, injury to this part of the OFC impairs emotional behavior (for a review, see Rolls and Grabenhorst 2008). Non-moral judgments associated with unpleasant emotions induced activation of the lateral OFC and the *amygdalae*. The amygdalae have traditionally been associated with processing emotionally arousing stimuli and with sharing others' emotions (Adolphs et al. 1994). In the study of Moll and colleagues, somewhat surprisingly, the amygdala did not show increased activation in the moral judgment condition. The researchers suggested that this is because the medial OFC 'controls' the amygdala's activity (see also Baxter et al. 2000). Thus, the OFC could be critical for integrating our moral knowledge with emotions that reinforce moral actions.

Another brain region particularly salient to 'justice rules' is the anterior part of the *insulae*. This region is highly engaged in our emotional life, in particular when we experience disgust (Krolak-Salmon et al. 2003) and when we observe other people feeling disgust (Wicker et al. 2003). This basic emotion, which seems to have benefited our ancestors by helping them avoid unhealthy experiences, might have been co-opted by evolution to serve a moral purpose (Haidt 2003, 2006). In fact, it is common for people to respond to certain moral violations, especially those involving a perception of impure contamination, with

a sense of disgust (e.g., Schnall et al. 2008, 2009; Skarlicki et al. 2013). Given such indication, one would expect involvement of the insulae when people make moral assessments on unfair events. Indeed, this seems to occur.

Sanfey et al. (2003) offered support to this claim by employing the Ultimatum Game in an fMRI study. In this game, a proposer gets an amount of money by the researchers and suggests how to divide the sum with another player. The receiver chooses to either accept or reject the proposal. If the second player accepts, then the money is divided accordingly. Otherwise, neither party gets any money. According to a rational choice perspective (e.g., Tversky and Kahneman 1986), the second player should accept any offer given, since this would always provide more money than what they originally had; however, in practice, divisions seen as unfair are often rejected. In Sanfey and colleagues' experiment (2003), those offers judged as unfair elicited activity both in participants' brain 'cognitive' areas (e.g., the dorsolateral PFC), as well as in the 'emotional' areas, such as the anterior insulae (and in particular the right insula). Of interest here, this region showed higher activity on rejected unfair offers compared with fair offers, thereby suggesting, once again, a key role for emotional involvement in judgements of what is fair and what is not.

Finally, neuroscience research focusing on empathy and on Theory of Mind has also investigated how people make judgments about others' actions (see e.g., Van Overwalle and Baetens 2009). For one, Singer and colleagues (2006) investigated how brain empathic responses are modulated by the affective link between individuals. These researchers measured brain activity of people observing confederates receiving pain when the accomplices had participated in a previous fairness game. Singer et al. (2006) found that subjects showed activation in fronto-insular and anterior cingulate cortices toward fair players who were allegedly being hurt. However, these responses were significantly reduced when people observed an unfair confederate receiving pain. In contrast, for unfair accomplishes the participants showed an increased activation in brain areas associated to reward. This evidence resonates with the idea of altruistic punishment, which, as we shall see later in more detail, is consistent with our theoretical model of deontic justice.

Conclusions and Research Needs

Overall, the studies described above provide a good example, not only of how recent neuroscience research has investigated neural correlates of justice paradigms, but also of how these insights advance business ethics by revealing that neural systems involved in both emotional and cognitive processes are relevant in the appraisal of moral rules. Moreover, this evidence suggests that ethical behavior involves an alignment between cognition and affect. Interestingly, the observation that ethics involves the *right* thoughts for the *right* reasons has long been observed by virtue ethicists (e.g., Annas 2011). This suggests that affect should play a larger role in business ethics, an idea that is consistent with theories of deontic justice (Folger et al. 2005).

Business ethicists should also take into account the implications of the trolley problem because there are different patterns of neural activation sustaining two distinct types of moral breaches—personal and impersonal (Greene et al. 2001). This has implications for a number of ethical problems. For example, consider the problem of white collar crime. Though white collar crime is far more costly to society than so-called 'street crime,' citizens persist in viewing white collar offenses as less problematic (Friedrichs 2010). In particular, the impersonal nature of white collar corruption may make it seem less troublesome than face-to-face misconduct. Subsequently, this could pose a challenge for ethical training and even law enforcement.

Closing Thoughts on Justice Rules

Organizational and psychological research suggests that justice rules are a type of moral norms: They are often deeply held universal standards, which emerge early in life (Smetana 1985, 1989). However, consideration of the experiments exploring the neural substrates of moral rules allows us to disentangle their meaning because it suggests that justice rules involve key brain regions that are relevant both to discriminating between personal and impersonal scenarios and to cognitive and affective experiences (Greene 2013). The latter evidence is particularly important for deontic justice theory for another reason relevant to the organizational life. Indeed, while justice rules can be seen as internalized standards for assessing the fairness of events, workers (and humans more generally) often fail to make use of them (Folger and Cropanzano 1998; Cropanzano et al. 2015). It is important to understand why this is the case.

As we shall see, we argue that this relationship is moderated by an individual's empathy for others. When people feel empathy for others, they are more likely to treat them justly and respond to their unjust treatment by others (Blader and Tyler 2001; Hoffman 1994; Lerner and Goldberg 1999). If workers are not able to appreciate, internalize, and share others' feelings, it becomes difficult to judge whether they are being treated justly and thereby to act accordingly. What is more, empathy relies on a dissociable cognitive *and* emotional neural system, which can moderate and also directly promote deontic justice.

Deontic Justice as an Empathic Process

Empathy, as the term is used here, refers to the set of processes that allows a person to share the psychological experience, both thoughts and feelings, of another individual (Batson 1999; Hoffman 1994). A rich body of research suggests that, when individuals feel empathy for others, they become more altruistic and cooperative toward them (e.g., Batson 2006; Batson and Ahmad 2001). Hoffman (2000, p. 3) has this sort of evidence in mind when he remarks that empathy is 'the spark of human concern for others, the glue that makes social life possible.' Additional evidence supporting the role of empathy in human morality has been explored by social psychologists (Batson 2009; Eisenberg and Fabes 1990; Tyler et al. 1997; Wispé 1986), philosophers (Churchland 2011; D'Arms 1998), and natural scientists (Decety and Lamm 2006; de Waal 2008; Preston and de Waal 2002). Likewise, Aderman et al. (1974) found that individuals are less prone to blame victims for their own moral adversity when they empathize with them.

While this work is impressive, research suggesting that empathy makes us behave more justly toward other people is even more relevant to business ethics and deontic justice theory. Patient and Skarlicki (2010) investigated the impact of empathy on justice judgments in the workplace, arguing that workers care more about justice when they share the other person's emotions. In their first experiment, managers completed a role-playing scenario taking the perspective of someone who was downsizing an employee. Those who scored higher in empathy reported that they would behave more justly than did those who scored lower. In their second study with undergraduate participants, the authors also found that empathy induction increased the justice with which subjects behaved.

Empathy: Some General Remarks

In psychological research, the term *empathy* has been defined in various ways, some of which are not entirely consistent with one another (Batson 1995). Some scholars, for example, appear to treat empathy as a specific emotional state, which involves mindfulness of, and responsiveness to, another individual's concerns (cf., Bagozzi and Moore 1994; Batson et al. 1995). However, it is more common to view empathy as a 'vicarious emotion,' which is associated with particular types of motivated behavior (Batson et al. 1987, p. 19). For example, people who feel empathy are more likely to assist a distressed individual, even if they are provided with an opportunity to exit the situation (Batson 1995). Other definitions of empathy are somewhat more rational, referring to understanding another person's thoughts and feelings, rather than the sharing of their affect (Cohen and Strayer 1996).

These are important conceptual matters, but it is beyond our scope to thoroughly discuss all of empathy's definitions here (for a comprehensive review, see Batson 2009). For the purposes of our model, and without gainsaying other approaches, we are primarily concerned with empathy as the sharing of other people's feelings (Batson 1995), including the comprehension of their psychological contents (Cohen and Strayer 1996). In this way, we also incorporate the recognized distinction between cognitive empathy and affective empathy (e.g., Ang and Goh 2010; Hogan 1969). The former refers to understanding the contents of another person's thinking and feeling (Pecukonis 1990). The latter refers to sharing the affective experiences of another individual (Hoffman 1994, 2000).

Consistent with this distinction, the neuroscience literature provides further evidence for disentangling these two types of empathy (e.g., Shamay-Tsoory 2011; Walter 2012; Zaki and Ochsner 2012). According to recent research with imaging and lesion studies (i.e., studies that enable the association of impaired brain areas to specific functions; Massaro 2015), there are two dissociable neural systems for empathy: One cognitive and the other emotional (Shamay-Tsoory et al. 2009). The two are highly related and both are important. A fully empathic experience involves (at least) components of affective sharing, cognitive self-awareness, and self-other distinction (Baron-Cohen and Wheelwright 2004; Blair 2005).

Remarkably, business ethics has not generally made this distinction explicit. For example, references to Batson's (2009) definition of empathy appear to be more closely associated with cognitive empathy; Patient and Skarlicki's work (2010) instead investigates affective empathy. To address this important concern for deontic justice theory, here we refer to *cognitive empathy* as the deliberate psychological process of recognizing and understanding another person's thoughts and feelings. On the other side, *affective empathy* captures the similarity of feelings between one person and another, the so-called 'experience sharing,' which is more automatic and non-reflective (Walter 2012; Zaki and Ochsner 2012). We argue here that both types of empathy are critical for deontic justice.

Cognitive Empathy: Understanding the Victim's Psychological Experience

As discussed earlier, deontic justice hinges on the way a person has been disadvantaged due to a violation of a social norm (Folger and Cropanzano 1998, 2001). In many situations, we gain such information through our evaluation of what the victim is thinking and feeling. Cognitive empathy provides the mechanism by which we evaluate another person's psychological point of view (Frith and Singer 2008). Notice that the adjective 'cognitive' may be a bit

misleading here, since it refers to how the observer *understands* the contents of another individual's mind and feelings, not the accuracy of that understanding. Accordingly, our representation of other persons' cognitions and emotions allow us to make inferences regarding their reactions to events. Relative to deontic justice, if we witness another person who is angry or frustrated by unfair treatment, cognitive empathy provides our appraisal of their feelings and the appropriateness of those feelings. However, it does not extend to sharing those feelings: Cognitive empathy, per se, maintains a sort of emotional distance between the victim and the third-party observer (e.g., Walter 2012).

As we shall show, current neuroscience research has begun to reveal key brain regions involved in cognitive empathy: the temporoparietal junction (TPJ), the posteromedial cortex (PMC), the prefrontal cortex (PFC), and the cingulate cortex. Next, we review evidence for each of these regions.

Temporoparietal Junction (TPJ)

The TPJ is that area of the brain where the parietal lobe meets the temporal lobe. Several studies indicate that the right TPJ (rTPJ) in particular is involved in our representations of other people's cognitions and meta-cognition (Decety and Lamm 2007; Saxe 2006) and that the responses in this area peak just at the time when someone's thoughts are described (Saxe et al. 2009; Young et al. 2007). For instance, Saxe and Wexler (2005) asked research participants to consider their feelings when evaluating two different types of information. First, they considered socially relevant information, which was presented as a scenario involving another person. Second, they considered a description of what that person 'wanted' or 'believed.' Their results showed that the rTPJ response was low when subjects were reading descriptions of the social background and rose when the psychological state of the protagonist was described. Moreover, the response in the rTPJ was higher when the protagonist's background and the psychological state were incongruent, as compared to when they were consistent (Saxe and Wexler 2005).

While rTPJ activation seems to be aligned with the cognitive empathic idea that 'people's feelings have to be predicted from their own subjective desires' (Terwogt and Rieffe 2003, p. 74), recent research indicates that fairness is also strongly related to activation of the rTPJ. Specifically, the hemodynamic response (i.e., a parameter employed to measure brain activation in fMRI research) in rTPJ shows a differentiation between morally good and bad actions before such response arises in other regions, such as the dorsolateral PFC (Yoder and Decety 2014). This supports the overall insight that rTPJ likely plays an anticipatory role in the cognitive empathic processes involved in deontic justice.

Posteromedial Cortex (PMC)

Another relevant brain area involved in cognitive empathy is the posteromedial cortex. This is an architectonically discrete region, which has been often understudied because of its anatomical location (Cavanna and Trimble 2006). Interestingly, this complex area has been just recently identified as the most active brain region during the so-called 'resting state' (Cauda et al. 2010)—that state when brain activity is measured in the absence of a task or experimental stimuli (Mastrovito 2013). Positron Emission Tomography (PET) studies, which are able to couple functional analyses with metabolic ones (for a methodological overview, see Massaro 2015), showed that PMC consumes about 40 % more glucose than the hemispheric mean, providing support for this view (Raichle et al. 2001).

While the resting state typically represented a control condition in early fMRI experiments, this view changed drastically with the discovery of functionally relevant information from resting-state activity (Biswal et al. 1995). Specifically, the *Default Mode Network* (DMN), a network of regions active during resting state has been identified using an array of recording techniques (Shulman et al. 1997; Mazoyer et al. 2001; Raichle et al. 2001). The DMN includes areas of the PMC, the inferior parietal cortices, as well as the dorsal and ventral areas of the medial frontal cortex (Uddin et al. 2009). A core characteristic of the DMN is that *it consistently exhibits increased activity at rest,* and decreased activity during task performance. The reliability of this observation, together with those on the brain's metabolism, suggest that deactivation may be a way for the brain to sustain self-oriented psychological processes (Fransson 2005).

Of particular interest for our aims is the flexibility of the DMN. Indeed, the literature has revealed that tasks that activate the DMN share core processes, but differ across content and goals. For instance, Greene et al. (2001) observed that certain forms of moral judgment—the personal *cognitive* moral dilemmas—activate brain regions involved in the default network. Hence, deciphering moral dilemmas seems to be a situation where people cognitively empathize by a psychological understanding of events occurring to others (for related discussion, see Moll et al. 2005). The DMN as a whole likely plays an important role in forming a cognitive judgment of how fairly others are treated.

Prefrontal Cortex (PFC)

As discussed earlier, the *prefrontal cortex* is important for justice. Because it provides executive and goal-directed functions (Fuster 2001), this region is also be heavily involved in cognitive empathy (Shamay-Tsoory et al. 2003). Both the dorsolateral and ventromedial regions of the PFC have been related to morally just behavior (Carrington and

Bailey 2009; Moll et al. 2005). vmPFC is particularly relevant to empathic processes according to evidence from neuroscience experiments involving pathological subjects. Shamay-Tsoory and Aharon-Peretz (2007) studied individuals with lesions in the ventromedial PFC and found that the ability to cognitively represent other people's emotions was impaired. Yet, brain damage did not have the same disruptive effects when an individual was thinking about another person's cognitions. Speaking more generally, damage to the vmPFC tends to impair decision-making by disrupting emotional processing (Bechara et al. 1997, 2000). These neurological subjects cognitively understand the situations they face, but lose the 'affective signal' that helps healthy brains to make 'good' choices (Damasio et al. 1990). These findings suggest that the vmPFC mediates the process of affective, though not cognitive, empathy.

Moreover, Greene et al. (2004) showed engagement of the dorsolateral PFC in moral cognitive control, and damage to the orbitofrontal PFC has been associated with misinterpretation of social situations and socially inappropriate behavior (Rolls 1996), supporting the PFC's overarching empathic role in deontic justice evaluations. This feature of the PFC is supported further by a recent study investigating brain activity during empathy for social exclusion, which showed how individuals who have more empathy for others experiencing negative social treatment will make greater efforts to help and support the victims in these situations (Masten et al. 2011).

Cingulate Cortex or Cingulum

Another important region for cognitive empathy is the *cingulate cortex*. This area integrates inputs from different sources and influences activity in other brain regions by modulating motor, endocrine, and visceral responses (Bush et al. 2000). It is subdivided into three regions: anterior, posterior, and medial. While, the anterior cingulate cortex (aCC), a large region around the rostrum of the corpus callosum, is generally involved in emotional awareness (Devinsky et al. 1995), a recent meta-analysis of neuroimaging research on empathy found that the left dorsal anterior mid-cingulate cortex is specifically pertinent to cognitive empathy (Fan et al. 2011). Similarly, the posterior cingulate cortex (pCC) appears to be engaged when individuals infer others' feelings. For example, Maddock et al. (2003) found in an fMRI study that the pCC showed increased activation when research participants considered words (hence, *understood*) related to emotion.

A Complex Outlook

While the regions described above are 'key players' in cognitive empathy, other brain areas appear to be also relevant. For instance, the *superior temporal sulcus* has shown activation peaks in tasks evaluating our understanding of the intentions and goals of other people's actions (Lee et al. 2014; Pelphrey et al. 2004). People are concerned with intentionality attributions (Lyons et al. 2006) when assigning moral blame to others. Individuals are less likely to be held responsible for a potential injustice if their alleged transgression was made with no intention to harm (Hewitt 1975; Karniol 1978; Miller and McCann 1979; Umphress et al. Umphress et al. 2013).

Thus, it is important to note that other brain areas and psychological processes may be crucial for our overall deontic justice experience, including outcome prediction, associative learning, and flexible evaluation of contingencies (Moll and de Oliveira-Souza 2007; Rolls 1996). However, while the interaction of these complex cognitive abilities with justice is surely a novel and fascinating area of research, evidence to support a more multifaceted framework in this respect is just beginning to appear (Moll and de Oliveira-Souza 2007), thus inevitably falling beyond the scope of the current work.

Affective Empathy: Sharing the Victim's Psychological Experience

While cognitive empathy refers to the understanding of other people's responses to injustice, this does not necessarily mean that we internalize these emotions in our moral behavior. In order to truly partake in another person's plight, it is therefore essential for us to *share* their feelings. Affective or emotional empathy promotes such response (Davis 1994) and is often believed to be a largely involuntary, vicarious response to affective cues from another person (Decety and Jackson 2006; Hoffman 1994). As such, it is an affective state, elicited by the emotive non-verbal cues of the other(s), oriented toward such person(s), and similar (or isomorphic) to his or her state (Walter 2012).[1] Moreover, it includes some sort of meta-knowledge about both the self and the other. As explained below, four brain areas appear to be particularly relevant to affective empathy in relation to deontic justice: the anterior insulae, the amygdalae, the somatosensory cortices, and the inferior frontal gyrus (IFG).

[1] Interestingly, scholars have debated whether or not affective empathy involves emotional contagion. Some researchers have argued that emotional contagion is a distinct construct because it indicates the lack of awareness as to whether the source of the experienced state is the self or another person (e.g., Fan et al. 2011; Walter 2012). Other scholars have instead supported the view that affective empathy holds characteristics similar to those of emotional contagion (e.g., Zaki and Ochsner 2012). Such debates may result from the different definitions that researchers give to empathy and its forms (Batson 2009). We cannot resolve this issue here, but it illustrates the sort of interesting research questions still remaining.

Anterior Insula

In each brain hemisphere, the *insula* is located at the interface of the frontal, temporal, and parietal lobes; it is densely connected with several regions including the dorsolateral PFC, amygdala, and cingulate cortex (Augustine 1996; Mesulam and Mufson 1982). Neuroscience research has widely shown that several emotions—including anger, disgust, fear, sadness, and also happiness, a positive emotion (Phan et al. 2002)—are associated with insular cortex's activation, supporting the understanding that this region, and in particular the right insula, has a key role in affective empathy (Bernhardt and Singer 2012; Fan et al. 2011; Singer 2006).

Moreover, connectivity data support the idea that the insula plays an important integrative role in affect: Patterns of connectivity in resting-state functional neuroimaging studies suggest a key function of its anterior part in combining interoceptive and affective information (Critchley et al. 2004). These models propose that the anterior insula enables a subjective affective experience and global 'feeling state' (Cauda et al. 2011; Craig 2009). This is consistent with studies showing its role in sensitivity to moral justice, such as social exclusions (Masten et al. 2011; Robertson et al. 2007).

Amygdala

In each brain hemisphere, the *amygdala* is located near the temporal pole and has traditionally been associated with fear, among other emotions (Fanselow and Gale 2003; Phillips and LeDoux 1992). Fear, in our case, is relevant in relation to normative conformity because the fear of retribution can promote compliance toward others (Pfaff 2007). Adolphs et al. (1996) found that damage to the amygdala made it more difficult for individuals to correctly feel fear and other negative emotions, like anger and sadness. Interestingly, however, the ability to feel happiness was not harmed (Adolphs et al. 1994). As Gazzaniga (2008) points out, if damage to the amygdala makes us less able to feel an emotion, then we are correspondingly less able to share it with others. Indeed, the amygdala has also been found to be central in fairness and emotionally weighted moral decision-making (Blair 2007; Greene and Haidt 2002; Moll et al. 2002). Along these lines, there is increasing evidence from both neuroimaging and genetics studies that impairment of the amygdala may be involved in the etiology of antisocial (and even criminal) behavior (DeLisi et al. 2009).

Somatosensory Cortices

The human *somatosensory cortices* may also play an important role in our emotionally shared responses to deontic justice. These insights emerge from studies on pain. Indeed, our ability to experience another's pain is a key characteristic of affective empathy (Singer et al. 2004). Singer et al. (2004) assessed brain activity while research subjects underwent a painful stimulus, and compared this activity to that elicited when the same subjects observed their beloved partners (who were present during the experiment) receiving similar pain stimuli. While the first-hand experience of pain resulted in the activation of the subjects' somatosensory cortices, these regions showed no significant activation in response to the observation of the partners experiencing pain. The authors concluded that the aCC and bilateral anterior insula were affective mediators of empathy for pain, while the somatosensory cortices were not. In another fMRI study (Morrison et al. 2004), participants were presented images of hands and feet in painful or neutral situations and asked to envisage the level of pain that these conditions would produce. Once again, no signal change was detected in the somatosensory cortices, while there were significant activations in the cingulate cortex and in the insula.

However, at odds with these findings is a Transcranial Magnetic Stimulation (TMS) study in which individuals observed needles penetrating hands or feet of a human model and in objects. Avenanti et al. (2005) reported that the observation of pain does involve sensorimotor representation. Specifically, the results showed empathic inference about the sensory qualities of others' pain together with an embodiment in the research subjects' motor systems. This evidence is noteworthy because the TMS method is more sensitive to detection of subtle changes in cortical activity than fMRI techniques (Decety and Lamm 2006). Thus, this evidence suggests that observing another individual in a painful situation may yield 'empathic responses' in the somatosensory cortices. Moreover, overlaps between first-hand experiences of pain and perception of pain in others seem to reveal some degree of correspondence between self and others' experiences (Decety and Lamm 2006).

There is more to add to this. The brain network involved in the perception of pain in others is also implicated in disgust and in situations involving risk. These are occurrences that spark visceral and somatosensory responses. Similarly, activation in the somatosensory cortex is not necessarily exclusive to the emotional appraisal of pain. Hence, it seems likely that neural responses in these areas are coupled with broader behavioral mechanisms, such as aversion and retraction (e.g., Decety and Lamm 2006; Singer and Lamm 2009), which are also typical of deontic justice. In support of this view, aversive representations similar to those observed in anticipation of, and response to, negative outcomes trigger activation in the somatosensory cortices (Bechara and Damasio 2005; Knutson and Greer 2008; Shenhav and Greene 2010). Overall, these cortical areas may play an important role in our sharing of others' feelings following a 'painful' and unfair situation.

Inferior Frontal Gyrus (IFG)

Finally, one other brain region deserves our attention when discussing affective empathy. Neuroimaging studies of empathizing with people suffering serious threat or harm (Nummenmaa et al. 2008) reported the involvement of the Inferior Frontal Gyrus (IFG) in affective empathy (Shamay-Tsoory 2011). In particular, research has shown evidence for the existence of *mirror neurons* in the human IFG (Kilner et al. 2009). Mirror neurons are a class of visuomotor neurons, originally discovered in an area of the monkey premotor cortex, that are electrophysiologically responsive when an individual observes another individual performing a particular action and then does a similar behavior (for a thorough review, see Rizzolatti and Craighero 2004).

Despite the intense debate on this topic (for a primer, see Keysers 2009), a growing number of neuroimaging studies show that the IFG has activation peaks when a person sees another person experiencing an emotion. This supports the idea that this area could also be a principal neural site for empathy. Specifically, IGF activation has been reported in negative emotional responses and decision-making in conditions of justice dilemmas (Majdandžić et al. 2012), suggesting its relevance for deontic justice.

Cognitive and Affective Empathy Working Together

In normal healthy adults, cognitive and affective empathy, whose main supporting neural systems are summarized in Table 1, tend to work in concert (Pessoa 2014).

Both are engaged in moral behavior (Zaki and Ochsner 2012), with each playing important and complimentary roles. In short, cognitive empathy allows us to appreciate other people's minds, including both their thoughts and their emotions, while affective empathy allows us to share their emotional experiences, softening the boundaries that separate individuals (Pfaff 2007). We can illustrate this idea further by considering evidence from clinical and neuropsychological research. Koeings et al. (2007), for instance, found that individuals with a damage to their vmPFC, which prevented the normal processing of affective information, tended to make moral decisions in a 'cold' logical way, which these authors term 'utilitarian.'

Similarly, psychopaths have reasonably sound abilities to make cognitive inferences (Brüne and Brüne-Cohrs 2006), but appear to be emotionally disinterested in the suffering of others (Baron-Cohen 2011). Thus, in psychopathy only affective empathy is impaired, while cognitive empathy is maintained and possibly heightened (Blair 2005; Shamay-Tsoory et al. 2010). Autistic patients instead seem to have deficiencies in both their cognitive and affective empathy (Baron-Cohen and Wheelwright 2004). Notice that the moral comportment is impaired in both psychopathy and autism, though the resulting patterns of behavior are different for each condition. In any case, moral thinking can be impeded if either type of empathy is diminished (Moll et al. 2005). This suggests that the two types of empathy help people to behave justly. This is important for deontic justice in organizations because a wide variety of organizational contexts (culture, training, leadership, etc.) can influence the manifestation of each type of empathy.

Table 1 Summary of main neural systems involved in cognitive and affective empathy

Cognitive empathy	Affective empathy
Temporoparietal junction	Anterior insulae
Posteromedial cortex	Amygdalae
Prefrontal cortex	Somatosensory cortices
Cingulate cortex	Inferior frontal gyrus

This said, when making fairness judgments regarding others, cognitive and affective empathy work closely in a 'bi-directional fashion' (see Fig. 1). Neuroscience research has suggested that a dual-path—'top-down' and 'bottom-up'—system may be relevant in processing human morality and empathy (Table 2) (Walter 2012; Zhan et al. 2013).

This remark resonates with other neuroscience and psychological perspectives on dual processing systems. For instance, much debate has focused on how emotions arise (Lazarus 1984; Zajonc 1984) via low-level processes—that provide quick, bottom-up affective considerations of stimuli—or via high-level—top-down cognitive appraisal processes that draw upon stored knowledge. Speaking generally, dual process mechanisms are believed to be recurrent ways of processing information in the brain.

Similarly, cognitive empathy may act as the 'high road' or 'top-down' processing, while affective empathy as 'low road' or 'bottom-up' processing of deontic justice. The 'low road' path essentially means that some basic features of an individual, representing strong affective states or suffering conditions (i.e., facial expressions, body movements, or obvious features like injuries), trigger an automatic response. Conversely, the 'high road' to empathy suggests that it also relies on higher cognitive mechanisms, like reasoning based on logical and contextual relations and situations, that cascade in a top-down process.

Specifically, we argue that cognitive and affective empathy are reinforcing mechanisms for each other, which can differently elicit evaluations of justice rules. Thus, the 'high road' processing implies that workers are consciously evaluating the mistreatment of others. By doing so, they

Table 2 Possible role of the PFC in the 'top-down' and 'bottom-up' processing of justice and empathy

Process	Role of PFC
Top-down	The frontal cortex 'represents' moral goals that control the information flow in other cortical and subcortical areas when an automatic response needs to be overcome (see e.g., Miller and Cohen 2001)
Bottom-up	vmPFC stores links of subcortical 'somatic markers' and action knowledge in posterior brain areas. This would explain problems with decision-making after brain lesions (see e.g., Bechara et al. 2000)

will consequently engage affective empathy. On the other side, when empathy takes the 'low road' employees may first experience affective empathy. This intuitive and automatic process can then powerfully engage their cognitive empathy.

Conclusions and Research Needs

While the two forms of empathy are experimentally dissociable, we shall stress that they normally work in concert. Moreover, neuroscience insights are gradually yielding toward a merged perspective holding that both top-down and bottom-up processes are involved and important for our information processing (for affective processing, see Ochsner et al. 2009; for justice processing, see Moll et al. 2005). In this way, knowledge of sequences of social actions or events would be 'filtered' in brain regions like the PFC and the cingulate cortex, in turn enabling emergence of just behavior (Moll et al. 2005; Zhan et al. 2013). Folger and Salvador (2008) and Folger and Glerum (2015) have argued that researchers have paid insufficient attention to the role of intuitive, bottom-up ethical judgments. These researchers appear to be making an important argument that is consistent with the neuroscience evidence we have reviewed. This would seem to be an important direction for future business ethics research. In addition, the distinction between cognitive and affective empathy is important for deontic justice research in organizations because a wide variety of organizational contexts (culture, training, leadership, etc.) can influence the manifestation of each type of empathy. Future research can draw on insights and methods from neuroscience to investigate the unique effects further.

Empathy's Direct Effects on Behavior: Too Much of a Good Thing?

We have thus far emphasized empathy as a complex moderator of the relationship between an event and the application of a justice rule. As we have discussed, empathizing with others tends to make workers behave more fairly (Patient and Skarlicki 2005). However, there is more to the matter. When others are in distress, we are also more likely to render empathic altruistic assistance (Batson 1995, 2006; Masten et al. 2011). We have represented this effect in Fig. 1 by the inclusion of a direct link from empathy to fairness. We explore this possibility below.

Empathy and the Potential for Preferential Treatment

To better illustrate this case let us consider the work of Batson et al. (1995). In their initial experiment, these scholars had undergraduate research participants work with two other students. In the critical conditions, research subjects were read a note from one of the other individuals in the experiment. The note came from a 'Participant C.' The experimenter instructed them to either *'imagine how this* [Participant C] *student feels,'* whereas others were told to '*take an objective perspective*.' The former instructors promoted empathy, while the latter did not. The subject was then given the opportunity to assign the other students—either Participant C or Participant B—to a task with positive consequences or else to a task with negative consequences. When empathy had been induced for Participant C, then the subject was more likely to assign that individual to the positive task, at the expense of leaving the negative task for the other student. These findings were replicated in a second experiment. Thus, empathy directly caused decision-makers to show unfair preferential treatment. That is, while empathy (both cognitive and affective) will often motivate us to behave altruistically (Batson 1995), it will *not* motivate us to treat everyone consistently.

Empathy-Induced Preferential Treatment and Justice

Thus far, our account of empathy-induced preferential treatment would suggest that employees who feel empathic concern for another person would ignore issues of justice. However, that does not seem to be the case—at least not from the perspective of the individual enacting the behavior. In an important contribution, Blader and Rothman (2014) present four studies which replicate the relationship between empathic concern and preferential treatment. However, these authors offer two additional insights.

First, they found that if a decision-maker was held accountable by a third party, then he or she would not tend to show preferential behavior when empathy was high. Second, Blader and Rothman (2014) measured fairness perceptions. They found that fairness mediated the effects of empathy. That is, high-empathy participants believe that they made fair choices, both when they exhibited preferential treatment (in the low accountability conditions) and when they did not (in the high accountability conditions).

These findings are very important to our model (see also Blader and Tyler 2001). Individuals who empathize believe that they are behaving fairly, *even when they show preferential treatment.* Or, one might say, even when they violate rules of even-handed justice (e.g., consistent treatment, equity). While this could be a significant problem for organizations, Blader and Rothman (2014) offer a solution. The disinterested perspective of an informed third party may serve to counterbalance the biased viewpoint of an empathic individual. Organizations may wish to design interventions that include active third parties that monitor decisions where their might be conflicts of interest created by empathy (Bazerman and Tenbrunsel 2011).

Discussion

Historically, most theories of justice in business ethics have argued that workers want to be fairly treated because it benefits them, either through long-term instrumental control or else through enhancing their social status (Cropanzano et al. 2003; Folger and Butz 2004). In contrast to these earlier models, deontic justice emphasizes the notion of 'oughts' (Folger and Glerum 2015). Other people should be treated in a way that they deserve, in accordance with standards of fairness (Folger 2001, 2011). While evidence favoring a deontic model of justice has been steadily increasing (e.g., Colquitt et al. 2006; Folger et al. 2013; Reb et al. 2006; Turillo et al. 2002), skepticism remains (e.g., Colquitt and Greenberg 2001; Gillespie and Greenberg 2005; Greenberg 2001).

We argue that this skepticism could be better addressed, at least in part, by articulating a model of deontic justice, supported by current neuroscience evidence, to explain how a worker can transcend self-interest by being concerned with the plight and needs of others (Folger and Salvador 2008). To address this theoretical need we have focused on three interrelated psychological processes and reviewed supporting neural systems:

- *Justice rules* People sometimes interpret events in ethical terms. As such, individuals distinguish between practical, but somewhat arbitrary social conventions (e.g., drive on the left side of the road in the United Kingdom, but the right side in the United States), and moral principles (i.e., Thou shalt not kill!). When compared to social conventions, justice rules (a) tend not to be based on social authority, and (b) their violations warrant punishment (Smetana 1985, 1989).
- *Cognitive empathy* This implies that individuals understand and recognize the contents of others' minds. That is, they shall 'cognitively comprehend' what others are thinking and feeling when victims of injustice.
- *Affective empathy* 'Knowing' is not the same as 'caring.' Individuals also emotionally connect and share the affective state of potential victims of injustice. When they experience the pain that other people feel due to unfair treatment, it becomes more substantive and important to them.

According to our model, we argue that deontic thinking involves using a justice rule to make sense out of an unfortunate situation for others. If the rule was violated, then the worker is apt to conclude that unfairness occurred. This rule is most likely to be applied when one experiences cognitive and affective empathy toward the victim. Though, at times, when empathy is strong, an individual may bypass the justice rule and preferentially intervene to help a colleague.

Theoretical and Practical Implications

In this paper we have outlined a novel theoretical model for business ethics suggesting that deontic justice—our concern with other people's just treatment—arises from a set of psychological processes which, to speak loosely, are 'hard wired' into our brains (Tancredi 2005). This also suggests that justice—or its absence—could impact employees on a more fundamental level than is often recognized. As alluded to earlier, workers who feel that they have been unjustly treated experience poorer health (Cropanzano and Wright 2011) and are likely to seek revenge even when doing so is personally costly (Fehr and Gächter 2000). This is not surprising, given the robust processing and salience of fairness-related information.

A related insight for deontic justice theory is that, while human beings are concerned with their self-interest, they are also concerned with their moral principles (Folger 2001, 2011). The research evidence we have reviewed here supports these contentions. Justice, as well as ethics more generally, is a central concern in human existence (Cropanzano et al. 2007). For this reason, justice matters beyond particular individuals. Third parties often care about how others are treated even when they are not directly impacted (Skarlicki and Kulik 2005). Given this, the pernicious effects of injustice are likely to be spread rapidly through an organization, as some employees

become displeased with the treatment and experiences of their coworkers (Skarlicki et al. 2015). Indeed, justice in its deontic form appears to be relevant beyond focal employee-manager interactions: It may push employees to exhibit negative behaviors and attitudes toward the organization if they witness their peers encountering moral adversity (Skarlicki et al. 1998). Hence, proactive organizations should account for deontic justice as a part of the organization's overall culture, rather than through a piecemeal series of one-on-one interventions (Monin et al. 2013). To achieve this goal, organizations could begin by designing management systems that conform to justice rules (Fortin and Fellenz 2008), such as providing voice and respectful interpersonal treatment (Cugueró-Escofet and Rosanas 2013). In this way, valuable behaviors, such as organizational citizenship or whistleblowing will be more likely to occur (Umphress et al. 2010).

As explained throughout, incorporating neuroscience evidence into accounts of organizational justice strongly suggests that ethical decisions are often influenced by intuition and affect, *as well as* by moral reasoning (e.g., Greene 2013). This observation has a somewhat different emphasis than most traditional accounts of business ethics, which focus on moral reasoning as opposed to more intuitive and affective processes (cf. Salvador and Folger 2009). The present model suggests that these two views of business ethics should be re-balanced, because incorporating an organizational neuroscience perspective reveals that implicit empathic processes play a significant role in shaping the observed behaviors in response to the unfair treatment of others (Becker et al. 2011). For example, Masten et al. (2011) showed that witnessing social mistreatment of others required both forms of empathy to produce action. What is more, the present model explains that *empathy should be considered as a dual construct rather than a single concept*, showing relevance of our model, not just for ethical thinking, but also to organizational research at large. Previous research has sometimes considered empathy as either one type (e.g., affective sharing) or another (e.g., cognitive understanding). Supported by neuroscience research, we maintain that this 'either/or' approach should be replaced with 'this and that.' That is, there are two types of empathy and both are important.

Thus, from a practical perspective, our conceptualization may explain why training and other interventions to influence organizational justice, which are often based on rational 'cold' approaches, sometimes produce disappointing results (Ludwig and Longenecker 1993). Among other possibilities, our present model suggests that ethical conduct at work could be enhanced by training people in empathy (Pecukonis 1990). For instance, among health care professionals, there have been promising findings with these types of programs (e.g., LaMonica et al. 1976; Riess et al. 2012), and we would recommend that they be considered more broadly. It also reinforces the value of compassionate organizational culture (Barsade and O'Neill 2014; Karakas and Sarigollu 2013).

Along these lines, neuroscience research itself provides practical information on how deontic justice can be 'manipulated' in our brain. For one, Knoch et al. (2006) employed Transcranial Magnetic Stimulation (TMS), a non-invasive method used to inhibit small regions of the brain by low-frequency stimulation (O'Shea and Walsh 2007) while subjects were playing the Ultimatum Game. They found that one third of the participants whose right dorsolateral PFC was inhibited, accepted all the offers, even those clearly unfair. Similarly, the 'manipulation' of socio-moral behavior has been explored with neuro-pharmacological approaches, like those involving intranasal administration of oxytocin (Kosfeld et al. 2005). Oxytocin-treated subjects increased trust while performing a trust game (i.e., they assigned more money to the trustees) if compared to the control group. While the application of these approaches has not yet been employed in the workplace, their potential use will necessarily require a priori and shared ethical guidelines ensuring real benefits for workers.

Finally, we readily recognize that each of the different neuroscience methods we have mentioned in our paper will hold specific informative power in future testing of our model. For one, if neuro-pharmacological approaches may promote empathy and fairness, fMRI will be able to further inform on the neural substrates activated during justice-related experimental tasks or games. Yet, we hope that the cross-disciplinary nature of our framework will not only promote novel investigations on the highlighted brain regions of interest, but will also encourage the integration of this neuroscience information with more traditional business research methods as a means to comprehensively advance future research on deontic justice.

Limitations and Further Research Avenues

We should remark that in this work we have sought to advance current theory on deontic justice by proposing an interdisciplinary framework, rather than suggesting replacement of existing accounts of organizational justice exclusively with neuroscience research. Indeed, despite the promises of neuroscience to advance organizational justice research, we must point out a number of related limitations and cautions. Neuroscience research in these areas is still in its relative infancy (Zhan et al. 2013). As such, business ethics scholars need to be wary of placing too much weight on any single study or on a unique methodological approach. Several methodological avenues will likely contribute to advance the understanding of the neural

substrates and psychological processes involved in deontic justice. For instance, Electroencephalography (EEG) has the potential to add ecological validity to deontic justice research. For one, Stikic et al. (2013) have already assessed engagement and leadership at both the individual and team levels in a social responsibility scenario.

Other research has also shown that EEG investigations can inform decision-making strategies (Jacobs et al. 2006) and help to disentangle affective and cognitive processes (Knyazev and Slobodskaya 2003; Pfurtscheller and Da Silva 1999). Moreover, coherence analysis—a measure of the degree to which EEG signals at two distinct scalp locations are linearly related to one another—is often associated with studies on individual traits (Harmon-Jones et al. 2010), thus suggesting promising avenues to appreciate individual differences in deontic justice.

Overall, the employment of interdisciplinary approaches will provide a viable opportunity for researchers to move the field forward. In parallel, we also recommend that organizational neuroscience should attempt to offer further meta-analytical evidence and ensure reproducibility of existing findings. Only then will nuanced theoretical business propositions and ecologically comprehensive paradigms match a multidisciplinary effort to further refine theoretical frameworks, such as the one presented here.

In concluding, our model suggests that there are at least two broad paradigms for future research. The first of these concerns issues regarding individual differences. It is a point of everyday experience to recognize that some people care more about morality than others (Shao et al. 2008). Our review suggests that these differences can be reflected in neural differences among people (Baron-Cohen 2011; Kiehl 2006). Moreover, as deontic justice is heavily moderated by both cognitive and affective constructs, individuals' impairments in any link of this chain will reduce deontic justice in predictable ways. However, neuroscience evidence suggests that situational context and conditions are also important. For example, the cognitive empathy system may 'fail' due to strong out-group attributions (Haney et al. 1973), the framing of an ethical problem (Bazerman and Tenbrunsel 2011), or the type of violation (Greene et al. 2001). Future theoretical and empirical extensions of our model shall explicitly take these cues into account. In this regard, our present framework will serve as a helpful opening roadmap.

Finally, while future research may yield novel findings in this area, we suggest that organizations should always attend closely to the work environment, designing it so that organizational justice, as a whole, is not inadvertently restrained by structural or procedural flaws. In this regard, our model might also help inform future interventions. For example, as much of the information that influences ethical behavior is also processed outside of workers' cognitive awareness (i.e., affective empathy), organizations should build cues into the environment that reinforce empathy while avoiding signals that unfair behavior is acceptable (Bazerman and Tenbrunsel 2011).

Conclusions

Our moral lapses (Batson 2006; Batson et al. 1997) and self-deceptions (Batson et al. 1999) notwithstanding, deontic justice suggests that justice is important for its own sake, even when it does not directly serve our self-interest. This appears to involve at least three psychological mechanisms: Cognitive empathy, affective empathy, and our ability to evaluate and apply moral rules. As seen, these processes are associated with neural systems working together to form and direct an internalized sense of deontic justice.

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