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Pathologizing the Healthy But Ineffective: Some Ethical Reflections on Using Neuroscience in Leadership Research

Dirk Lindebaum[1]

Abstract

A number of studies seek to integrate leadership research with the field of neuroscience, arguing that neuroscience can aid scholars and practitioners to identify and develop leaders with what I refer to as socially desirable brain characteristics, whereas those leaders not equipped with such characteristics can be subjected to interventions based on neuroscientific principles or methods. Scrutinizing an emerging body of research, I argue that many leadership scholars and practitioners overlook the wider ethical implications of neuroscientific approaches to identifying and developing effective leaders. Given the mounting interest in the topic, I also outline a number of useful sources and debates to better respond ethically to the use of neuroscience in leadership research.

Keywords

leadership, neuroscience, ethical implications, leader development

Introduction

Research of groundbreaking nature in social science is rather rare, and when scholars ask whether a certain method of assessment or intervention is key to optimizing individual performance, or revolutionizing our understanding of a social phenomenon, then it is likely to generate curiosity among scholars and practitioners of that particular field. Linking leadership research with neuroscience, several writers have recently suggested that neuroscience may be the key to optimizing individual performance (Boyatzis, 2011; Boyatzis et al., 2012; Cooper, 2000; Goleman & Boyatzis, 2008).

In this respect, research has shown the neural correlates of personality traits, such as extroversion (Canli et al., 2001). Meta-analytic evidence suggests a strong link between extroversion and transformational leadership (Bono & Judge, 2004), which has been shown to be a form of effective leadership (Rowold & Heinitz, 2007). Others have explicitly asked whether scholars can "revolutionize the way that inspirational leaders are identified and developed" by using neuroscience (Waldman, Balthazard, & Peterson, 2011, p. 60). Many of these studies appear to converge on the notion that the study of the human brain potentially opens up key insights into the neurological foundations of what drives leaders' behaviors. At the time of writing this article, the *Leadership Quarterly* has just published a Special Issue on the Biology of Leadership (Lee, Senior, & Butler, 2012), which is a further testament to the contemporary interests in the relationship between neuroscience and leadership.

Indeed, interest in this connection is set to grow among management scholars and practitioners (Heydenfeldt, 2010; Peterson, Balthazard, Waldman, & Thatcher, 2008; Senior, Lee, & Butler, 2008; Senior, Lee, & Butler, 2011; Waldman et al., 2011). One reason for this lies in the prospect that such studies may offer the possibility of applying scientific rigor to the study of the otherwise all too "human" mind, granting leadership scholars the confidence in the presumed proximity of their own research to the reputedly "hard" natural sciences (see Blackburn, 2011; Tallis, 2011). Although Senior and colleagues (2011) are in many respects more circumspect in their assertions than other contributors to the neuroscientific debate on leadership, they note that "integrating cognitive neuroscientific knowledge . . . with the leadership theories of organizational science, will bring us ever closer to answering the question of what *constitutes leadership*" (p. 807, italics added). Needless to say, given the debate in the leadership literature on this very question (Alvesson & Sveningsson, 2003; Antonakis, Fenley, & Liechti, 2011), the prospect of getting closer to both finally and objectively understanding leadership is appealing. Such sentiments fall in fertile soil especially in the United States and Europe, which are gripped by the fear of losing their political and

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economical power to emerging economies like China and Brazil (Moïsi, 2009). It is in such environment that the claim to have found an "objective" and reliable indicator of leadership capability is readily—perhaps too readily—taken on board by scholars and practitioners in the realm of leadership development.

Perhaps not surprisingly, then, most leadership scholars and practitioners have neglected the wider ethical and social implications of their work in the rush to exploit the latest technological "fads" to reliably determine factors that can improve leadership outcome variables. Scholars within the domain of neuroethics have been aware of these implications for some time (De Vries, 2007; Illes & Bird, 2006; Illes, Tairyan, Federico, Tabet, & Glover, 2010). In this field, neuroethics is defined as being "concerned with ethical, legal and social policy implications of neuroscience, and with aspects of neuroscience research itself" (Illes & Bird, 2006, p. 511), and scholars have pointed to the potential misuse of data stemming from neuroscientific research. They also stress the possibility of findings being misunderstood and misinterpreted, especially in light of nonclinical commercial applications (Illes, De Vries, Cho, & Schraedley-Desmond, 2006). In consequence, it is my intention in this article to critique some existing debates and studies linking neuroscience and leadership in terms of how they can impinge on wider ethical and social practice within organizations.

It *is not* my intention here to scrutinize three related but more tangential issues in this article. First, I do not examine the causal link (if it exists) between brains scans obtained from neuroimaging techniques and leader performance (see Tallis, 2011; Zundel & Lindebaum, 2012), because this topic is more of a technical nature. Second, although I acknowledge that leadership per se remains for some scholars a problematic phenomenon due to its multiple ontological loci (see Alvesson & Sveningsson, 2003; Antonakis et al., 2011; Barker, 1997; Fairhurst, 2008; Schyns & Schilling, 2011, for reviews), this article does not seek to contribute to this debate. Third, even though one might categorize neuroscience (a complex science) as yet another management fad, there are profound differences insofar as these changes are more likely to resemble paradigmatic changes (Burrell & Morgan, 1979). This is because the field of study is radically revised when both the objects of study (i.e., the human brain rather than attributions) as well as the methods of investigation change (i.e., hard and objective brain scans rather than interviews, for instance, see Latour, 1987).[1] Given the nature and complexity of these issues, it shall be understood that any detailed treatment of them is outside the scope of this article.

In pursuing this article, I heed Özbilgin's (2010) caution that scholars need to "spend more time considering the ethical aspect of [our] scholarship more rigorously and revealing the possible social impact of [our] scholarship than playing instrumental games . . . to get . . . papers published" (p. 4). By extension, scholars need to appreciate more to whom they are accountable and how they understand their own moral agency in the uptake of new technology (Nicholas, 2001). As a scholar, I feel obliged to draw attention to a debate that, in my view, leaves many ethical questions unanswered (see also Adler & Hansen, 2012, for a discussion on caring for the scholarship one pursues).

In the remainder of this article, I will first briefly outline why neuroscience attracts such considerable attention from the leadership community, coupled with examples of recent studies. Note that ethical implications remain the focus of this article, although I refer on two occasions to methodological issues too. This is both plausible and germane given that methodologically flawed designs (relative to a study's conclusions) then feed into the very ethical implications I am concerned with here. Next, I detail why neuroscience research into leadership raises ethical issues. Third, I scrutinize the wider ethical implications that flow from the aforementioned studies. Finally, I outline a number of useful sources and debates to better respond ethically to the use of neuroscience in leadership research.

Neuroscience and Leadership

Given that leadership studies often cannot explain more than 10 % of variance in outcome variables (Bass & Bass, 2009), there is a continuing quest to determine hitherto unexplored factors that help identify factors capable of predicting further variance. According to several scholars and websites (Waldman et al., 2011),[2] neuroscience holds that promise as a tool to identify and develop effective leadership. The underlying assumption can be summarized along these lines. Neuroscience helps us realize and grasp the relationship between "organizational behavior and our brains and allows us to dissect specific social processes at the neurobiological level and apply a wider range of analysis to specific organizational research" (Senior et al., 2011, p. 804). In leadership research, this signifies that brain activities associated with leadership capabilities are identified using neuroimaging technologies, such as functional magnetic resonance imaging (fMRI) or quantitative encephalography (qEEG), which are then used as a starting point to develop new (more effective) neural pathways in leaders (see Bear, Connors, & Paradiso, 2007, for more technical information on neuroscience). More specifically, neuroscience can shed light on how individuals think and make decisions, the social nature of the brain, and how they can influences others (Senior et al., 2011). To accommodate the exponential interest into neuroscientific studies and leadership, a journal was recently established.[3]

In practical terms, a growing body of research speculates about the validity of claims derived from interventions guided by neuroscientific findings (Goleman & Boyatzis, 2008; Heydenfeldt, 2010), or those applying neuroscientific

principles, such as neurofeedback sessions (Waldman et al., 2011), as a tool to develop leadership capacity. Neurofeedback has been defined as

> a process in which sensors are placed on the scalp and devices are used to monitor and provide moment-to-moment information that is fed back to the individual about his or her physiological brain activity for purposes of improving brain functioning. (Hammond et al., 2011, p. 55)

For instance, Goleman and Boyatzis (2008) suggest that the brain's social circuitry can only be enhanced if individuals engage in the "hard work" of changing their behavior. Therefore, if organizations wish to boost leadership capability, they need to single out motivated individuals and have them "undergo a thorough diagnostic assessment, akin to a *medical workup*, to identify areas of social weakness and strength . . . where developing better social skills will have the greatest payoff" (Goleman & Boyatzis, 2008, p. 78, italics added) for an organization. Observe how the reference to a medical workup implies a pathology on the part of the individual, as current behavior not boosted by cognitive enhancement does not reputedly yield these organizationally desired pay-offs. I will revisit this point later in the article.

Another example stems from a study of 50 business executives, who have been examined using qEEG in conjunction with an assessment of vision statements and traditional leadership questionnaires (Waldman et al., 2011). Specifically, while the participants in the Waldman et al. study underwent the qEEG examination, they were instructed to engage in a vision task, which these scholars claim is a typical activity to conceptualize inspirational leadership. The researchers garnered perceptions of inspirational leadership by way of a questionnaire survey from three to six direct reports of each executive.

As a mode of assessment, qEEG uses advanced signaling processing techniques to retrieve data about brain activities through the skull and scalp. Several electrodes are placed on specific locations to this effect (see Waldman et al.'s article for more information). The particular leadership component of interest pertains to inspirational leadership, which these researchers claim is the most frequently researched form of effective leadership. Results suggest markedly different activities in the right frontal brain region that set inspirational leaders reputedly apart from those who are not. Moving on to applying their neurological findings to leader development, they note the following:

> We have found a small sub-group of managers to have one or more *brain profile deficiencies*. Unfortunately, such condition can limit an individual from reaching his/her leadership potential—including being seen as inspiring in the eye of followers. (Waldman et al., 2011, p. 69, italics added)

They also describe how one participant was "weak" in managing his anger. Following a series of neurofeedback sessions, he was able to "rearrange neuro-pathways in the affected area, create new pathways with healthy neighbouring neurons, and largely correct the problem . . . He was able [as a result] to become a more effective leader" (Waldman et al., 2011, p. 69). Thus, Waldman et al. report that a series of neurofeedback sessions *sufficed* to rearrange neural pathways and turn an ineffective leader into an effective one.

However, the above quotes are problematic for two reasons, the first of which is grounded in personality research. Although Waldman et al.'s research revolves around changing leader behaviors (i.e., turning an uninspirational leader into an inspirational one), a plausible link with personality research can be established to challenge the above quotes. To begin with, extroverts experience and express positive emotions, which likely leads to the display of inspirational leadership (Judge & Piccolo, 2004). Indeed, inspirational leadership has been found to consistently correlate with extroversion in previous studies (Bono & Judge, 2004; Judge & Bono, 2000). Based on this established relationship between extroversion and inspirational leadership, I argue that behavioral changes, such as those indicated by Waldman et al., do not typically occur in a rapid fashion in healthy human beings. Comprehensive meta-analytic evidence supports this view. Although not entirely fixed, personality traits tend to be more stable than fluid. Holding time interval constant at 6.7 years, test–retest correlations indicate an increase from .41 in childhood, to .55 at the age of 30, to peaking at about .70 at the age of 50 to 70 (see Caspi, Roberts, & Shiner, 2005). From this follows that, at the time individuals actually move into formally assigned leadership roles, radical changes in personality become ever less likely. In other words, it is unlikely to convert an extrovert into an introvert individual to draw in analogy on Waldman's view on effective or ineffective leaders, respectively.

Second, on a point of methodological detail, the above claim that this manager could rearrange neuropathways to become an effective leader following a series of neurofeedback sessions *cannot* be demonstrated by Waldman et al.'s study design. To make such claim, they would need to conduct a pretest–posttest experiment (including a control group and interjected neurofeedback sessions) in terms of documenting the status quo of the independent variable (i.e., neurological brain profile) and dependent variable (i.e., leader effectiveness) at Time 1, and whether a significant change occurred at Time 2. However, the study did not follow this principle and, therefore, cannot claim that neurofeedback sessions helped rearrange neuropathways in the manager. To state elsewhere then that "the concept has been proven . . . now we have to go beyond the proof of concept into operationalization. Then, we will move into the delivery of products and services" (Balthazard, 2011) is unintelligible at best, and misleading at worst in the context

of the above design issue. To be fair, perhaps neurofeedback can have the aforementioned effect in the safe environment of the laboratory. Yet, unless scholars can demonstrate conclusively that interventions based on neuroscience can deliver lasting behavioral changes outside the laboratory in the real world, using rigorous methodological approaches, scholars need to exercise caution in such interpreting findings. This is all the more imperative as the ethical implications can be extremely sensitive in nature.

Why Does Neuroscience Raise Ethical Issues?

One reason why neuroscience raises ethical issues for leadership and leadership development is because it assumes the possibility to invade the privacy of the human mind (Farah, 2005). More specifically, De Vries (2007) argues that the brain is home to our sense of being, self, and soul, just as it is the source of our conscience and consciousness. With the aid of neuroscience (and especially, neuroimaging techniques), individuals can now not only be measured by their actions but also by their thoughts and preferences (Farah, 2005). Yet, Blackburn (2011) adds that the prospect of deriving new insights on what individuals feel and think through brain scans is "unlikely to be derailed by such epistemological quibbles" (p. 42).

Some caution that the alteration of the brain with a view to cognitive enhancement is sharply on the rise (Farah, 2005; Sahakian & Morein-Zamir, 2007). Although Sahakian and Morein-Zamir (2007) do not argue against the use of cognitive-enhancing drugs in cases of patients with severe memory and concentration problems, they hint that, for healthy children or in competitive settings (e.g., in entrance exams to university or at work), the use of cognitive-enhancing drugs should be prevented or regulated. Both Farah (2005) and Sahakian and Morein-Zamir (2007) concur that, no matter how cognitive enhancement is achieved in *healthy* individuals (e.g., by way of drugs or neurofeedback sessions), it raises important philosophical questions in terms of whether it undermines our appreciation of equity at work, personal accomplishment, autonomy and effort, as well as the value of *individuals* as opposed to mere *objects*. For instance, even though some clinical applications of neurofeedback therapy or the use of cognitive-enhancing drugs may help individuals in light of neuropsychiatric disorders (Moore, 2000; Sahakian & Morein-Zamir, 2007), Farah (2005) ponders whether healthy individuals are cheats when they use these tools and whether they can still take credit for their improved outputs. Or, in the case of inspirational leaders mentioned earlier, are individuals still the same person when they are converted from being an uninspirational to inspirational leader? Can we really afford to disregard the reactions of the social environment, such as family, friends, or even colleagues? Any affinity one might enjoy with others is likely to have evolved over time owing to one's present natural characteristics.

I would imagine that for some researchers the collection of data based on neuroimaging techniques is ethically no more a sensitive issue than other sources of data, such as sexual orientation or extent of drug usage. Having had conversations with scholars involved in the field of neuroscience and leadership, it would appear that for some the psychological impact of using neuroscientific methods on individuals is more an empirical issue rather than a philosophical or ideological one. These philosophical or ideological concerns are regularly dismissed with reference to a "scientific standpoint" from which the debate should continue to evolve (Lee et al., 2012).

However, such sentiments ignore our own moral agency in the construction of knowledge (Ghoshal, 2005; Nicholas, 2001). By implication, scholars need to anticipate any ethical consequences of our research in the first place (Özbilgin, 2010). What merits have calls for empirical testing on perceived ethically sensitive issues when there is an emerging consensus that scholars need to act with ethical circumspection (De Vries, 2007; Illes & Bird, 2006; Illes et al., 2010)?

Ethical Implications for Leadership Scholars and Practitioner

The above discussion has important ethical implications for leadership development of scholars and practitioners who wish to boost leadership capability. That is, in considering the thesis that neuroscience can help them identify and develop effective leadership, scholars need to be mindful of the potential ethical outcomes for individuals. These arise, first and foremost, due to that fact that cognitive enhancement challenges individual authenticity like no other topic in neuroscience (Illes & Bird, 2006). Interestingly, even advocates of applying neuroscience to the work context admit that it is not difficult to discern that approaches to optimize the workforce can potentially be construed as dehumanizing employees (Senior et al., 2008). As elaborated on later, by dehumanizing employees, I mean the neurological modification of employees for the benefit of the organization.

But to say that leadership scholars and practitioners are exclusively interested in pursuing the above thesis is just half of the story; managers may not only be enticed to follow but also are already demanding and applying testing that entails the collection of biological data using the latest technological innovation. The observation below from the field of genetics underpins this account:

> In the current competitive business environment, it makes sense for organizations to use all feasible technological innovations to select employees who have a greater likelihood of being successful on the job. (Murry, Wimbush, & Dalton, 2001, p. 371)

Of course, biological data (e.g., neurological brain profiles) are not the same as genetic data, because "everything that is genetic is biological, but not all things biological are genetic" (Gottesman & Hanson, 2005, p. 265). This is an important distinction, as biological factors with regard to brain plasticity imply susceptibility to being modified, whereas genetic factors tend to constitute a natural boundary that is impossible or difficult to be changed via interventions (Gottesman & Hanson, 2005). Yet, the ramification can be the same, as it implies a shift from observable behaviors to biological factors as desirable features for organizations. Again drawing on Murry and colleagues (2001), they offer a critically important caution:

> When we move genetic screening from its primary mission of health to one of exclusion, particularly in the workplace, the social construction becomes one of social bias . . . In a sense we move the model for genetic testing from that of a therapeutic model to one of competition where the interest of one is sacrificed for the interest of others. In the competitive model the individual with a genetic mutation is displaced in favor of the competitive economic interest of the organization. (p. 373)

With respect to Waldman et al.'s study discussed above, this would imply that having a physiologically insignificant lack of heightened activities in certain brain areas (i.e., not being an inspirational leader) constitutes a *socially undesirable* condition. By extension, it becomes increasingly attractive that scholars and practitioners commence screening for those leaders who comply with these s*ocially desirable* brain conditions (because they are predictive of effective leader behaviors), whereas those lacking these conditions should attend interventions based on neurofeedback training protocols (Waldman et al., 2011). This would seem to follow a certain argumentative formula on which many management fads continue to thrive, succinctly expressed as *X* is related to higher individual effectiveness at work, and there is evidence that *X* can also be developed by way of intervention schemes. Many management fads, like emotional intelligence, continue to flourish on that premise (see Lindebaum, 2009).

Yet, I should note again that the individual and social implications in the case of neuroscience are considerably more profound compared with traditional management fads. Specifically, as hinted earlier, the application of neuroscience is likely to entail paradigmatic changes, as the objects of study and methods used to evaluate these are radically different from traditional screening methods, such as general mental ability (GMA) or personality testing. In this respect, it should be noted that the management and psychological literature has a long-lasting interest in attitudinal or behavioral modifications (Kunda, 1992; Makin & Cox, 2004). Yet, neurological modifications would appear to be distinct insofar as the brain provides most impulses for human behavior. As Becker, Cropanzano, and Sanfey (2011) note, the study of neuroscience can "elucidate particular networks of brain systems and processes *responsible* for the workplace attitudes and behaviors that organizational scholars have observed. Neuroscience can allow us to finally go inside the brain and investigate these *primal causes* of behavior" (p. 934, italics added). In consequence, if one accepts this observation, then the focus shifts to the causes of behavior at the time of measurement (i.e., the human brain) and away from its effects (e.g., GMA and personality). In the wake of this epistemological shift lie considerable ethical implications for individuals. For instance, tests of GMA are based on rule-bound and formal systems that unequivocally stipulate whether an answer is true or false. Generally, a clear rationale for justifying the veridicality of an answer exists, which in most cases will be relatively accessible to individuals (Matthews, Roberts, & Zeidner, 2004). By the same token, I maintain that it is quite different to brief an individual on his or her personality assessment compared with informing him or her that the brain scan suggests that one has no leadership capability (i.e., scan shows a pattern of an uninspirational leader). The traditional view on personality testing is such that there is no right or wrong answer (Wallace, 1996). This very insight may help individuals react relatively calmly to the briefing. Of course, personality dimensions may be subject to the same social bias that I am concerned here (i.e., an organization may seek more conscientiousness individuals rather than introverts), but the ultimate question here is really of emancipatory nature; by stipulating brain scans as sources for selection, one restricts accessibility to a few knowledgeable experts. In contrast, ordinary individuals will probably lack sufficient understanding of the topic to build an informed judgment given the complexity of the subject in terms of technological sophistication and philosophical implications. In this regard, scholars have cautioned that members of society may lose interest and trust in scientific pursuits if neuroscientists fail to disseminate information and awareness about their field, while members of society do not have the opportunity to inform scientists regarding the translation of neuroscientific findings into therapies, practices, and policies (Morein-Zamir & Sahakian, 2009). Thus, being poorly informed on the subject of neuroscience and what findings thus generated might entail for individuals may well lead to a sense of crisis for individuals due to the sensitive nature of the data.

Interestingly, Waldman et al. draw largely on examples from clinical studies to justify their claim to apply neurofeedback therapy in leadership intervention sessions. Specifically, they refer to clinical studies that use neurofeedback therapy to remedy the effects of attention deficit disorders and anxiety, for instance. Without any consideration for the possible transference of findings obtained from clinical studies to leadership research, Waldman et al. (2011) claim that "neurofeedback represents a form of operant conditioning" and that "the

brain (unconsciously) learns to adapt to the *desired* patters of performance" (p. 69, italics added). As another example, Goleman and Boyatzis (2008) describe the case of "Janice," a top marketing executive within a Fortune 500 company. One asset that got her hired was that she had a "reputation as a straight talker" (Goleman & Boyatzis, 2008, p. 79), although later she was seen as aggressive, opinionated, and careless about what she would say to more senior managers. A psychologist was entrusted the task to resolve the issue, and following evaluation and coaching sessions, in which various mental preparations were trained, the authors suggest that Janice could activate the social circuitry of her brain and strengthen the neural connections one needs to act effectively. The authors add that "companies can clearly benefit a lot from putting people through the kind of program Janice completed" (Goleman & Boyatzis, 2008, p. 80).

Three items are worth highlighting here. First, the above example is prone to the same methodological weakness outlined earlier (i.e., no control group and no measurement at Times 1 and 2). Second, the two examples provided highlight that the outcomes of such neurofeedback therapy or coaching aimed at changing the social circuitry of the brain are solely portrayed in terms of organizational benefits, even though individuals behave in their daily lives in ways that can be considered *nonpathological*. In a very concrete sense, even "normal" or "healthy" individuals may then be pathologized due to their "ineffectiveness." This begs some serious questions. For instance, who possesses the moral and ethical authority to stipulate what a socially desirable brain profile might be or look like? As there is a risk that organizations might discriminate against those individuals with socially *un*desirable brain profiles, how will discrimination laws at work impinge on this development? Are we, as scholars, really advancing a line of inquiry in ethically responsible ways or inviting a lot of tribunals on the grounds of employee discrimination? If researchers refer to socially undesirable brain profiles, to what extent do we—those who manipulate units of analysis to our liking—actively delegate those respective individuals to the margins of a productive workforce? As Chambers (1997) remarks, "Those who manipulate these units are empowered and the subject of analysis disempowered: counting promotes the counter and demotes the counted" (p. 54). In this light, it is not hard to imagine a potential marginalization of uninspirational individuals in future. Third, in addition to the impression that individuals are merely manipulated into adopting socially desirable behaviors (i.e., being seen as an inspirational leader), the wholesale portrayal of an angry manager as "ineffective" (Goleman, 1998; Prati, Douglas, Ferris, Ammeter, & Buckley, 2003) is overly simplistic, often inaccurate, and deplorably too widespread. Recent studies have challenged this notion and highlighted that contextual concerns can affect whether being angry at work is an ineffective or effective behavior. For instance, contextual benefits of using anger are underlined by observations associating the use of anger to settings where it is "considered normatively appropriate" (Gibson & Callister, 2010, p. 74). Inherent in the above outline is thus the legitimacy of anger, and Lindebaum and Fielden (2011) report a qualitative study where the use of anger was seen as role-obligatory behavior of achieving male construction project managers in the United Kingdom. Of course, studies have also shown that gender plays a role as to whether the display of anger is acceptable. For instance, Lewis (2000) finds that female leaders receive lower effectiveness ratings when expressing either sadness or anger compared with male leaders. These received only lower effectiveness ratings when expressing sadness. Thus, anger appears to be a more acceptable behavior for men than for women.

Future of Neuroscience in Leadership Research

Efforts to further introduce neuroscience to, and apply it in, the various domains of management are gaining momentum (Boyatzis et al., 2012; Lee et al., 2012). Despite my reservations from an ethical perspective, I have no doubts that neuroscience will influence leadership research considerably in the years to come. Farah (2005) notes that it is not a question whether or not but how and when it will form and shape our future. All the more it is important that scholars and practitioners in leadership research need to recognize the extra responsibility that comes with neuroscientific knowledge—irrespective of how many years of experience in neuroscience they can claim. Neuroscience research is ethically a sensitive issue, and a few fleeting comments hinting that neuroscience should not be used to nurture manipulative leaders (Waldman et al., 2011) seem to be a somewhat narrow reference to an issue that is both wider and deeper in its implication.

In congruence with the injunction that scholars need to be more mindful of the role of ethics in the execution of research projects (Bell & Bryman, 2007), it is vital that doctoral programs across the globe address these newly emerging ethical issues in sufficient depths. Likewise, leadership development programs in universities and organizations should pay more attention to the wider ethical implications when they tout neuroscience as key to effective leadership. For instance, some commentators note that "neuroscience research is helping fill in critical gaps . . . in reshaping how we define leadership, select leaders and design leadership development programs."[4] Similarly, when Becker and colleagues (2011) argue that the human brain is the primary site of analysis (as it is responsible for workplace attitudes and behaviour) without directly touching on the ethical implications this might entail, then I am reminded of the late Sumantra Ghoshal (2005). He pertinently observes,

> Management theories at present are overwhelmingly causal or functional in their modes of explanation. Ethics, or morality, however, are mental phenomena. As a result, they have had to be excluded from our theory, and from the practices that such theories have shaped. In other words, a precondition for making business studies a science as well as a consequence of the resulting belief in determinism has been the explicit denial of any role of moral or ethical considerations in the practice of management. (Ghoshal, 2005, p. 79)

Neuroethicists have already identified that ethics training for researchers involved in this type of research is a matter of priority (Illes et al., 2010), a notion others also extend to teaching these issues on MBA programs (Morein-Zamir & Sahakian, 2009). The framework for research ethics (FRE) issued by the U.K. Economic and Social Research Council (ESRC, 2010) may be a helpful starting point to consult for those responsible for doctoral training or those involved in leadership development programs, as it delineates research projects of a less risky nature in terms of ethical ramifications from those that are considered carrying more than minimal risks. The latter comprises the collection of biological data, for which neuroscientific data indeed qualify. The FRE also describes the processes that should be followed if more than minimal risks are involved. Other informative sources to consult include the ethical guidelines issued by the American Psychological Association (APA; 2010), which highlight the three interrelated issues of informed consent, debriefing, and explanations of results. According to these guidelines, informed consent[5] to research participation includes, inter alia, that participants are informed about

> (1) the purpose of the research, expected duration, and procedures; (2) their right to decline to participate and to withdraw from the research once participation has begun; (3) the foreseeable consequences of declining or withdrawing; (4) reasonably foreseeable factors that may be expected to influence their willingness to participate such as potential *risks, discomfort, or adverse effects*. (APA, 2010, section 8.02, italics added)

Thus, with the latter highlighted issues in mind, scholars need to appreciate how some individuals might react when confronted with test results and need to be explicit toward participants prior to the experiments that potentially adverse reaction might—but need not—arise.

Some scholars have already argued along similar lines, illustrating a heightened imperative to debrief participants on and explain the "meaning of . . . test results [and] the underlying . . . condition" (Hodge, 2004, p. 68). So when it comes to neuroscientific studies suggesting that one has *not* the brain characteristics of an effective leader—and recall that this is a socially desirable condition that focuses on nonclinical applications of neuroscience for commercial purposes—it may well be that same individuals experience the discomfort or adverse effects mentioned above (e.g., a sense of inferiority or helplessness). Of note, Murry and colleagues (2001) elaborate further on the psychological impact of testing involving the collection of biological information on individuals, stating that "the ability of organizations to have sensitive biological information about employees, either knowingly or unknowingly, creates for employees a crisis in confidence with the employers and with themselves" (p. 373). That is, as individuals operate within a working environment, the results can become available to line managers. Such a circumstance may spur a sense of crisis owing to the line managers' power to "make or break careers." It is then questionable whether individuals have complete freedom to decline participating in research programs involving neuroscientific methods (see Hamilton, Messing, & Chatterjee, 2011). In light of such a potential crisis, Murry and colleagues go on to demand that "necessary support mechanisms that mitigate any adverse psychological impact" (p. 373) on individual and their families must be provided. With the more widespread application of neuroscience in management, it may well be germane and timely to *explicitly* articulate such support mechanisms in the ethical frameworks and guidelines that govern our conduct as social science scholars.

At this juncture, I would like to add another complication. Once neuroscientific methods move from the laboratory and enter the real world, they also leave a relatively controlled environment of ethical protocols, rules, and guidelines that apply to us as academic researchers. That is, research projects will undergo close ethical scrutiny by an institutional review board prior to approval being given. On inception, scholars should, depending on their subject domains, also abide by the ethical frameworks designed by their respective associations (e.g., APA). Yet, once applied in the commercial market, these methods, legitimized by us academics—but no longer controlled by us —will be used by laymen, such as line managers as hinted above. My concern is that their ability or incentive to provide the type of support demanded by Murry and colleagues (2001) may be questioned. Importantly, the point I wish to raise here does not pertain to the divide between academics and the real world. The rigor–relevance debate has a long tradition in the management field (e.g., Gulati, 2007). However, my concern here rests with the controllability of applying neuroscientific research outside the scientific laboratory, which is closely governed by ethical procedures. In other words, scholars will have then no control over how research procedures are enacted in the commercial world and whether they comply with the ethical protocols that so closely (and so necessarily) govern our conduct as scholars.

In practice, when it comes to leadership development studies involving, for instance, neuroimaging techniques, the

need for more transparency should manifest itself in how we address these ethical issues in our publications, however briefly given space constraints within journals. This added transparency will be instrumental in addressing the provocative question "who will guard the guardians" in neuroscientific research (De Vries, 2007, p. 1). After all, De Vries also notes that the mere presence and application of technology does not automatically require the creation of a bioethics specialty to arbitrate ethical questions.

Such contemplations also gain weight when one looks closely at funding sources of research into neuroscience and leadership. Although people may have varying degrees of unease, it does concern me when organizations, such as the U.S. Defense Advanced Research Projects Agency (DARPA), fund research projects of this type (e.g., Balthazard, Waldman, Thatcher, & Hannah, 2012). What are the practical applications of neuroscience and leadership in the context of the military, when commentators in that context reason that "as combat systems become more and more sophisticated and reliable, the major limiting factor for operational dominance in a conflict is the warfighter" (Groopman, 2001, p. 55). Note that this statement is derived in the context of using wakefulness drugs on military personnel. However, it is not difficult to see that identifying and developing "effective" leaders using neuroscience in the context of the military may follow a similar rationale.

Conclusion

Using neuroscientific methods and principles to identify and develop high performance leaders at work is ethically an extremely sensitive issue, all the more if the associated claims cannot be derived from the study's design and, therefore, are misleading. In this response to a nascent debate on the utility of neuroscience in leadership research, I have sought to scrutinize the following interrelated issues. First, I outlined why neuroscience exercises such considerable attraction to leadership scholars and practitioners, and highlighted the basic assumptions behind this attraction, coupled with some recent examples of studies. Second, I sought to draw attention to the question why neuroscience raises ethical issues *a priori*. Third, I cast a scrutinizing eye on the wider ethical and social implications if leadership development researchers and practitioners follow the recommendations of those studies examined here. Finally, I cautioned that, because the mounting prominence of neuroscience in leadership research may continue unabated, scholars need to ensure that their ethical understanding (and indeed maturity) is keeping pace with this development, albeit I recognize the potential difficulty inherent in this suggestion.

The combined impact of these issues on leadership research can be summarized along these lines. Effective or inspirational leaders can be reliably identified via neuroimaging techniques (e.g., their neurological brain profiles), whereas those with "deficient" profiles can be "sorted out" or even "cured." That is, being turned into inspirational leaders by subjecting them to neurofeedback therapies akin to those used in clinical research, even though there is nothing strictly pathological about their behavior. Therefore, this is a cautionary response to a body of research that may, without intervening clarification on the misleading claims and ethical issues involved, be too readily be taken on by managers in the pursuit of "optimizing" their workforce. Central to my response lies the tendency for technological advances to evolve considerably swifter than our ethical understanding of their consequences for individuals and society at large (Nicholas, 2001).

Future debates on the topic will show whether the issues I raised are as vitally important as I portrayed them, but I take some reassurance in the fact that there are already signs that managers struggle to discern "the moral dimensions of business" (Freeman, Wicks, & Parmar, 2004, p. 367; see also Holt, 2006). Any absence or underdevelopment of moral maturity can raise the potential for abuse by managers (see Brown, 1996; Murry et al., 2001). To prevent any misinterpretation or abuse of findings, I have suggested that, in cases where research touches on sensitive issues, it would be desirable if scholars were more transparent and circumspect in recognizing the wider ethical implications of their work. This would enable a climate wherein proper checks and balance among scholar and practitioners are established. As De Vries (2007) posits, scholars need to create space for some misfits (in the sense of scholars challenging the status quo), namely, those "academics and lay people who will shoot them [the neuroethicists] every minute of their organizational lives" (p. 4). Such scholars, De Vries ponders, will aid other researchers in the realm of neuroethicists to benefit from a range of critical perspectives from other domains and disciplines, so as to develop a more reflexive attitude toward their work. It is my sincere hope that this article will create at least some misfits within the leadership community—sooner rather than later.

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Notes

1. I nevertheless briefly revisit this point later to highlight the epistemological differences between obtaining brain scans and

traditional screening devises, such as general mental ability (GMA) and personality.

2. For instance, an interview with Pierre Balthazard is posted on this website: http://knowledge.wpcarey.asu.edu/article.cfm?articleid=1997. A dedicated website to the topic in question has also appeared: http://www.neuroleadership.org (both accessed May 29, 2012).
3. See http://www.neuroleadership.org/journal/index.shtml (accessed May 29, 2012).
4. See http://www.psychologytoday.com/blog/your-brain-work/201103/the-neuroscience-leadership (accessed on May 29, 2012).
5. Crucially, informed consent in most overtly conducted experiments or surveys clearly conveys to participants what the aim of the study is, how the data will be used, and what will happen with it, among others. Yet, in the case of brain scans obtained from functional magnetic resonance imaging (fMRI), these scans show considerably more information than researchers set out to obtain. For instance, if researchers wish to explore the link between brain activation and arousal to certain stimuli, they may also notice a history of depression or other illnesses, which leave marks on the brain (Farah & Wolpe, 2004). Thus, conclusions can be drawn from individuals' brain scans without their consent or knowledge. Thus, there is a need to explore to what extent current guidelines and frameworks require revision to accommodate these circumstances.

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Bio

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