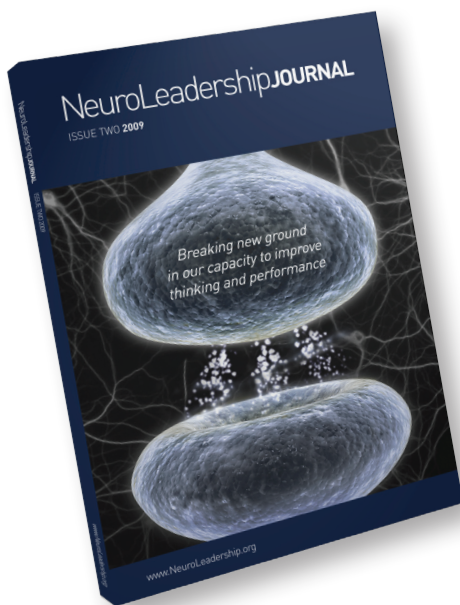


Defining NeuroLeadership as a field

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This article was published in the

NeuroLeadership **JOURNAL**

ISSUE TWO 2009

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Defining NeuroLeadership as a field

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Introduction

At the start of any new field of study there are important discussions about how to organize the ideas within that field, and the overall value that field may have. In the opening paper of the first NeuroLeadership JOURNAL, we outlined an organizing framework for the NeuroLeadership field, based on four domains: decision making and problem solving, emotional regulation, collaboration, and facilitating change (Ringleb and Rock, 2008). This organization appears to be standing the test of time as a robust way of dividing up the areas of interest within NeuroLeadership. The goal of this paper is to provide understanding as to why leadership scholars should study the brain, to assist researchers and practitioners understand the deeper philosophical debates that exist within this leadership subfield of study, and to point to additional issues that may need further discussion or research.

As a starting point, it is fair to assume that both leadership scholars and practitioners would agree that studying the brain for its own sake does not provide sufficient rationale for creating a NeuroLeadership subfield. Conversely, it is equally fair to assume that both leadership scholars and practitioners would agree that if neuroscience measures are able to better assist people in managing themselves and in improving performance and well-being, that would provide sufficient rationale for its creation. As a starting point, we would like to look at what it means for NeuroLeadership to be a subfield of the leadership field of study, and some of the challenges facing it, and other fields of study, as neuroscience research continue to provide interesting insights.

NeuroLeadership as a subfield of leadership study

The placement of the term 'neuro' in front of an existing field of study, as in *neuroeconomics* or *neuromarketing*, typically focuses the scientific inquiry on people's emotions in those situations involving the subject of the existing field, often using fMRI technology.

At the start of any new field of study there are important discussions about how to organize the ideas within that field, and the overall value that field may have.

For example, 'neuro' in front of the existing field of marketing becomes neuromarketing and is defined as the study of how people's brains respond to advertising and other marketing

messages by scientifically monitoring brain-wave activity. Neuroeconomics involves the study of people's brain systems in economic situations, in current research typically as the person makes decisions.

...traditional leadership scholars have the choice to consider or not to consider information on the brain flowing from the neurosciences.

The intent of the research is to understand the mental activity associated with a person's interaction with the subject of the field, including mental representations, emotions, expectations, learning, memory, and behavior. As a scientific discipline, the intent of research is to observe social phenomena, collect data relating to the observations, establish workable theories to explain the phenomena, test hypotheses about the validity of those theories, and develop models for applications of the new learning to improve performance. Scientists publish their work so that other scientists can perform similar experiments to double-check conclusions. The results of this process enable a better understanding of past events, with the expectation to better predict future events of the same kind.

Relative to existing fields of study, the rate of acquisition of knowledge in neuro-based subfields is considerably slower. Explained in part by the fact that most of these subfields are less than one decade old, there are relatively few social scientists with the credentials to undertake neuro-based research without the assistance of a neuroscientist. In the area of neuroeconomics, for example, there are fewer than 200 neuroscientists and economists active in the field with a 2:1 mix of neuroscientists to economists. Further compounding personnel limitations are the costs associated with neuro-based experiments; a well-constructed neuroscience experiment can cost in excess of \$100,000. As a consequence, much of the thinking is being driven by both practitioners and those scientists who are taking neuroscience and social psychology findings and proposing interventions, explanations, and models consistent with (some would argue) a field of practice as opposed to a field of study.

Within the leadership field of study, NeuroLeadership is a subfield. The leadership field of study involves undertaking scientific research on 'the interpersonal influence relationship among leaders and followers who intend real changes and outcomes which reflect their shared purposes' (Rost, 1993). NeuroLeadership can be defined as the study of the biological micro-foundations of that relationship. As in other fields, the number of active NeuroLeadership scholars is quite small relative to the number of traditional leadership scholars. Given the significantly larger outlays by business on leadership development relative to other disciplines, it would not be surprising to find the number of practitioners calling themselves 'leadership consultants' to also be larger. With the typical neuroscience-based experiment into specific leadership hypotheses being considerably more expensive than typical social science experiments on the same or similar issues, it is not surprising to find practitioner 'inquiries' to be exceeding scholarly 'inquiries.' Still, those same leadership scholars are accustomed to building hypotheses based on research in psychology, social psychology, and sociology among other fields where research findings have an influential affect on leadership theory. As is the case with those influential fields, traditional leadership scholars have the choice to consider or not to consider information on the brain flowing from the neurosciences. In viewing NeuroLeadership as a subfield of leadership in its infancy, those scholars and others have made the following arguments for and against the inclusion of brain-based research in traditional leadership research.

The skeptics in any field of study can be formidable and resistive...

Traditional arguments against creating the subfield

Not surprising, in the informal process of getting recognized as a field of study nearly all neuro-based subfields found, or are finding, themselves simultaneously both embraced by curiosity and repelled by skepticism. The skeptics in any field of study can be formidable and resistive, stonewalling serious consideration of perspectives or viewpoints novel to the field's core knowledge. For example, with the advent of behavior economics in the last two decades economics has begun to once again embrace insights from psychology after nearly a century of separation (Camerer *et.al*, 2005). In the particular case of neuro-based subfields, skepticism is further fueled by the requisite degree of expertise required to conduct meaningful research, all but necessitating

interdisciplinary research teams. Generally speaking, resistive assertions to the development of subfields take one of the following directions:

- This subfield would only repackage existing knowledge.
- This subfield would be interesting but would not create new knowledge.
- This subfield generates information that may be interesting in the lab but is not appropriate for the real world.
- This subfield is not supported by empirical data sufficient to drive research.

This subfield would only repackage existing knowledge

Of all assertions, the 'repackaging existing knowledge' assertion seems the least compelling. Many practitioners and academicians, including the authors, have noted anecdotally that students more firmly grasp the traditional leadership development notion of personal intentional change when it is couched in discussions about their brain (Rock, 2009). Empirical research has shown similar findings that when a research article includes a picture of the brain, the article is considered by readers to be more authoritative and compelling (Miller, 2008). If we make the difficult assumption that NeuroLeadership will not add to existing knowledge on leadership and leadership development, then the empirical question still remains as to whether presenting traditional leadership concepts through the lens of neuroscience increases a person's confidence in those concepts and thus brings about improved results.

...students more firmly grasp the traditional leadership development notion of personal intentional change when it is couched in discussions about their brain...

This subfield would not create new knowledge

The authors are aware that most traditional leadership concepts do not meet expectations (Boston Consulting Group, 2008), and most change initiatives within companies are unsuccessful (Beer and Nohria, 2000). However these facts alone are not sufficient to warrant the assertion that new knowledge will be created, and an extensive discussion of the need for leadership, the leadership 'crisis', 'leadership meltdown', or the leadership 'vacuum' is of little value here. Most readers are quite familiar with the need for leadership and leadership development based on its coverage in the media, the number of business schools placing the word 'Leader' in their mission statement (Snook, 2007), the number of executive development programs containing the word 'Leadership' in their title (DeAngelis, 2008), and the number of books defining its laws (Maxwell, 2007), authenticity (George, 2007), accountability (Dive, 2008), secrets (Slater, 2002), important questions (Young, 2008), experience (Thomas, 2008), principles (Adair, 2009), and other attributes.

Most readers are quite familiar with the need for leadership and leadership development based on its coverage in the media...

There are over 50,000 neuroscientists in the world and knowledge is being gained rapidly. According to *Nature Neuroscience* magazine, 'It has now been more than two decades since the first fMRI paper was published. In 1992 just four such papers were published; in 2007 there were eight published per day.' (Nature Neuroscience, 2009). With eight studies a day being published, we are able to make more than just basic statements about the functioning of the brain and its applications to NeuroLeadership.

This subfield will generate information interesting only in the lab

This assertion has in its origins the belief that as the ultimate 'black box', the actual functioning of the brain would very

likely not be known, or more precisely, capable of being measured directly. Social scientists in the leadership area, as in other social science areas, devised experiments with the intent to indirectly measure human feelings. Neuroscience research tools have effectively opened the door a little to this black box and have given us the ability to more closely measure human feelings.

Using an fMRI, social cognitive neuroscience experiments seek to identify the brain region or regions involved in a process of interest – essentially, where the brain ‘lights up’ when engaging in a specified social psychological process. There can be no face-to-face interactions with fMRIs – research subjects must keep their heads absolutely still during imaging and cannot speak. Typical experiments require the research subject to watch through video goggles and respond to computer tasks by pressing buttons on a small keypad. Because the signals detected in the brain by the fMRI in the performance of such tasks are ‘noisy’ signals, a subject normally must perform the same task several times before good information is extracted. In those situations where the research objective will depend upon a large number of research subjects each performing a task one time, this task repetition may result in loss of meaning. As a consequence, there are some leadership and leadership development questions that cannot be addressed easily through the use of fMRI research data.

...the use of fMRI research data makes significant contributions to leadership and leadership development research.

On the other hand, there are several ways in which the use of fMRI research data makes significant contributions to leadership and leadership development research. For example, there are leadership situations that practically and experimentally produce similar behavioral results but which actually rely on different underlying brain mechanisms. In very meaningful ways fMRI research allows the researcher to clearly distinguish between those two underlying brain mechanisms, something very difficult

to do using traditional social science behavioral methods which often rely on self-reported measures and reaction time measures to test hypotheses. Similarly, fMRI research will allow leadership researchers to identify processes that one would not believe rely on the same brain mechanisms, when in fact they do.

...fMRI research may allow the researcher to infer some of the mental processes in which a subject is engaged just from looking at the activity of his/her brain...

Finally, in contrast to traditional behavioral research, fMRI research may allow the researcher to infer some of the mental processes in which a subject is engaged just from looking at the activity of his/her brain as opposed to interrupting the subject and asking how they feel to determine their mental state. This should prove useful because the subject may not want to report his/her mental state, may not accurately remember what state he/she was in before the researcher asked, and, perhaps more importantly, simply reporting his/her current state may change the subject’s current state or affect how the subject performs on the remainder of the experiment. In this way, fMRI research can be combined with more traditional experimental and survey methods to gain a better understanding of social and affective processes.

At the same time, many neuroscience studies have recently been replicated in social settings, specifically by the social cognitive neuroscience field (Ochsner and Lieberman, 2001). For example, Butler *et.al*, (2003) repeated James Gross’ studies on emotional regulation, showing that suppression increased limbic arousal, this time in real settings. It will be important for NeuroLeadership principles to focus on research that has come from real settings, not just fMRI experiments alone.

This subfield is not supported by empirical data sufficient to drive research

With eight studies a day being published, we are able to make some basic statements about the brain. For example, there is enough evidence to say that current ways of trying to bring people to insight are likely to be ineffective, whereas questions that enable people to notice subtle signals are more likely to work (Jung-Beeman, 2008). We also now have ways of testing the brain to validate interventions. These tests are thoroughly validated themselves (Gordon, 2008). Another example is the way suppressing the expression of emotions actually increases limbic system arousal, which inhibits clear thinking (Ochsner, 2008). Yet suppression is the strategy of choice for many leaders.

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Brain research is providing fresh insights about maximizing attention (Rock and Schwartz, 2006), managing expectations (Coghill, McHaffie and Yen, Y. 2003), increasing innovation (Jung-Beeman, 2008), regulating emotions (Ochsner, 2008) and many other leadership skills. Within the research are discoveries about the brain that open up ideas for new types of interventions to improve the content of leadership programs. For example, a study showed that just 100 minutes of mindfulness training in a week created a 30% to 50% reduction in cortisol levels, a marker of stress, against a control group (Tang and Posner, 2008). Before this study, it was generally understood that the benefits from

mindfulness took significantly longer. Mindfulness can give leaders deep benefits toward emotional regulation, and help leaders make better decisions. As another example, research on the social brain points to the real pain of social threat (Lieberman and Eisenberger, 2008), which points to the central driver of why performance reviews are often ineffective, and how we could improve their effectiveness (Rock, 2009).

Mindfulness can give leaders deep benefits toward emotional regulation, and help leaders make better decisions.

There are also situations where laboratory research is providing hard data, rigorously tested, that is applicable to the real world. One example is the MyBrainSolutions brain training tool. Based on the world's largest database of brain research, this system is able to assess an individual's brain functioning then give people activities for improving specific skills, delivered by internet only (Gordon, 2008). This kind of NeuroLeadership research is highly applicable, and scalable. It gives people the ability to understand and change their brain, based on solid brain research.

...there is significant value to be gained in exploring leadership and leadership development through the lens of neuroscience.

Conclusion

In summary, we propose that while the field is still emerging, there is significant value to be gained in exploring leadership and leadership development through the lens of neuroscience. While indeed there is some 'marketing' value in being able to talk about the brain, there is clearly significant value above and beyond marketing. Through having neuroscience as a framework we can increase the effectiveness of existing interventions, be able to show hard evidence of the impact of interventions, develop new delivery mechanisms for interventions, and develop totally new leadership interventions. All of this can help us create more effective leaders, who can create better functioning organizations that can then deliver more fully on their promises.

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