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Neural imaginaries and clinical epistemology: Rhetorically mapping the adolescent brain in the clinical encounter

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ABSTRACT

The social work of brain images has taken center stage in recent theorizing of the intersections between neuroscience and society. However, neuroimaging is only one of the discursive modes through which public representations of neurobiology travel. This article adopts an expanded view toward the social implications of neuroscientific thinking to examine how neural imaginaries are constructed in the absence of visual evidence. Drawing on ethnographic fieldwork conducted over 18 months (2008–2009) in a United States multidisciplinary pediatric pain clinic, I examine the pragmatic clinical work undertaken to represent ambiguous symptoms in neurobiological form. Focusing on one physician, I illustrate how, by rhetorically mapping the brain as a therapeutic tool, she engaged in a distinctive form of representation that I call *neural imagining*. In shifting my focus away from the purely material dimensions of brain images, I juxtapose the cultural work of brain scanning technologies with clinical neural imaginaries in which the teenage brain becomes a space of possibility, not to map things as they are, but rather, things as we hope they might be. These neural imaginaries rely upon a distinctive clinical epistemology that privileges the creative work of the imagination over visualization technologies in revealing the truths of the body. By creating a therapeutic space for adolescents to exercise their imaginative faculties and a discursive template for doing so, neural imagining relocates adolescents' agency with respect to epistemologies of bodily knowledge and the role of visualization practices therein. In doing so, it provides a more hopeful alternative to the dominant popular and scientific representations of the teenage brain that view it primarily through the lens of pathology.

1. Introduction

Recent work in science and technological studies has documented how neurobiological discourses have suffused sociological constructs like person, self, and identity, affording new ways of theorizing the relationships between the individual and the social world (cf. Dumit, 2004; Rose, 2007; Rose and Abi-Rached, 2013; Vidal, 2009). The social work of brain images, as cultural symbols that provide a critical interface between the natural and social world, has taken center stage in this literature. As conduits of self-understanding, rhetorics of truth, and agents of moral legitimacy, brain images offer a key platform for inquiry into the sociocultural and ethical implications of contemporary biotechnologies (Roskies and Sinnott-Armstrong, 2011; Beaulieu, 2002; Buchman et al., 2013; Dumit, 2003). Yet as Pickersgill (2013) points out, neuroscientists make use of a much wider range of tools and techniques than imaging technologies. Neuroimaging is thus only one of the tools by which we inscribe social difference onto brain structures, and only one of the discursive modes through which public representations of neurobiology travel.

In keeping with this expanded view of the social implications of neuroscientific thinking, this article examines how neural imaginaries are constructed in the absence of visual evidence. By playing with the close affinities between "imaging" and "imagining," I explore the rhetorical uses to which clinical imaginings of the brain might be put. Drawing on 18 months of ethnographic research in a United States multidisciplinary pediatric pain clinic, I examine the pragmatic clinical work undertaken to represent ambiguous symptoms in neurobiological form. Focusing on one physician, I illustrate how, by rhetorically mapping the brain as a therapeutic tool, she engaged in a distinctive form of representation that I call *neural imagining*.

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As a conceptual technology, neural imagining represents brains through techniques of language by enrolling materiality as a rhetorical resource. The concept draws on the function of the imagination as an alternative mode of representation that resists the verisimilitude of diagnostic imaging technologies in favor of the creative forms of expression and pliability of meaning that bring depth to the life of the mind. Here, imagining offers a corrective to the fact that pain cannot be seen through traditional forms of imaging. In the cases that I will examine, the boundary between imaging and imagining is intentionally blurred, highlighting the playful dimensions of clinical (and particularly, pediatric) discourse. In developing this line of thought, I draw inspiration from Evelyn Fox Keller (2002), who has argued that scientific models often emerge from a process that she calls "theoretical imagining" rather than empirical observation. While these models may idealize and simplify scientific truths, Keller suggests, they also contribute to conceptual clarity and enable the development of new knowledge.

In shifting my focus away from the purely material dimensions of brain images, I juxtapose the cultural work of brain scanning technologies with clinical neural imaginaries in which the teenage brain becomes a space of possibility, not to map things as they are, but rather, things as we hope they might be. These neural imaginaries rely upon a distinctive clinical epistemology that privileges the creative work of the imagination over visualization technologies in revealing the truths of the body. By creating a therapeutic space for adolescents to exercise their imaginative faculties and a discursive template for doing so, neural imagining relocates adolescents' agency with respect to epistemologies of bodily knowledge and the role of visualization practices therein. In doing so, it provides a more hopeful alternative to the dominant popular and scientific representations of the teenage brain that view it primarily through the lens of pathology (Choudhury et al., 2012).

2. Foundations of bodily knowledge

Anthropological studies have revealed a multitude of ways in which people use their bodies as a source of knowledge (Lock, 1993). For example, Kathryn Geurts (2003) beautifully illustrates how Anlo-Ewe-speaking people in southeastern Ghana rely on a kinesthetic sense to make sense of the world surrounding them. In biomedicine, however, vision is a privileged epistemological mode. From their earliest experiences in the cadaver lab, neophyte physicians are socialized into new ways of seeing the body, which shape, in turn, how they see the world (Good, 1994). As Foucault (1994[1973]) pointed out, biomedicine's reliance on this way of knowing is not a natural fact, but rather the product of a specific set of cultural and historical conditions that generated a crucial epistemological shift—from a view in which text-based learning generates medical knowledge to one in which knowledge emanates from the physician's ability to penetrate the body and see underlying, hidden truths.

Technology bolsters this professional vision (cf. Goodwin, 1994), expanding the perceptual range of the human eye while augmenting its objectivity (Kirmayer, 1992). Diagnostic imaging technologies materialize symptoms in visual form to confirm or deny the presence of disease. In this way, imaging technologies serve a critical role in mediating between bodily epistemologies and ontologies: in order to know that something is "real," we need to be able to see it. From this perspective, it is not difficult to see why chronic pain, which all too often evades visual representation through imaging technologies (Rhodes et al., 1999) occupies such a precarious status in biomedicine. That is, it is pain's invisibility that casts its existence into question and renders it (potentially) "unreal" (Jackson, 1992; Trnka, 2007).

Yet vision, and especially the sort of vision that is facilitated by imaging technologies, is just one epistemological mode among many. Other examples of clinical epistemologies might include the ideology of inner reference so prevalent within American therapeutic settings (cf. Carr, 2006; Lester, 2009). The ideology of inner reference suggests that clinicians privilege what people say about their self-experiences as a window onto their inner states, and specifically, their mental health. This idea stands in striking contrast to cultural norms around the world which stipulate that sufferers ought to hide their inner states from others (cf. Throop, 2010), or that sick people (and women, particularly) are not reliable or appropriate narrators of their own suffering (cf. Chua, 2012; Wilce, 1995).

A *medicine of the imagination*, a term proposed by Laurence Kirmayer (2006), is suggestive of another such clinical epistemology. Where vision, as an epistemological mode, relies on images of the body "presumed to be more or less isomorphic to reality, directly encoding facts about the world," (Kirmayer, 1992, p. 327), a medicine of the imagination relies instead on the creative capacities of the mind to generate healing. A medicine of the imagination promotes a flexible view of bodily knowledge in which thoughts and expectations produce real physiological effects. Such effects are common in psychosomatics such as hypnotherapy, but also appear in more mundane contexts. A key example is the placebo effect, or what Daniel Moerman (2002) has called the "meaning effect," underscoring the ways in which therapeutic response hinges on the meanings we assign to medications. Insofar as these transformative effects yield parallel changes in what we know about our bodies, bodily truths may, in a sense, be thought into existence.

Pediatric settings are particularly well suited for a medicine of the imagination, insofar as children are especially adept at responding to and enacting imaginative practices with respect to illness, medicine, and healing (Clark, 2004; Mattingly, 2008; Buchbinder, 2008). The opportunity for children and adolescents to take on an active, creative role in the therapeutic process through imaginative enterprises is particularly important in light of recent attempts to re-theorize children's agency with respect to illness and the body, and neurocentric models of the body, more specifically. In light of growing concerns about how brain images help to perpetuate logics of biological determinism (Beaulieu, 2002; Dumit, 2004; Martin, 2000; Vidal, 2009), social scientists have tracked the increasing tendency for scientists and parents alike to explain children's developmental variation in terms of brain differences (Rapp, 2011). At the same time, other scholars have demonstrated that children and adolescents evince complex, fragmented, and ambivalent identities despite increasing exposure to neurobiological explanations for identity and behavior (Choudhury et al., 2012; Singh, 2013a, 2013b). "At the level of discourse," Singh (2013b, p. 823) writes, "children do not tend to subjugate the 'I' or behavior to brain-based explanatory models. Rather, children tend to narrate 'I' – brain relations that emphasize their capacity and desire for personal agency." In line with such views, the account developed here suggests that neural imaginaries need not be reductive technologies of self. Instead, I focus on the generative potential of neural imaginaries to facilitate children's agentive healing.

3. Background and methods

This article is based on 18 months of ethnographic fieldwork (2008–2009) that I conducted in a multidisciplinary pediatric pain clinic located in a metropolitan region of the western United States.

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