The ADHD Paradigm in Medicine, Science, and Society: Its Legitimization and Its Critique

Background. Attention-deficit/hyperactivity disorder (ADHD) is among the mental disorders classified in psychiatry's diagnostic manual, the *Diagnostic and Statistical Manual of Mental Disorders*. Diagnosable individuals have symptoms of inattentiveness, hyperactivity/impulsivity, or both. Scientists and clinicians almost unanimously agree that ADHD is caused by a neurologic abnormality, but the nature of the dysfunction is still at issue. Prominent ADHD researchers estimate that as many as 8 percent to 12 percent of children have the disorder; half of those diagnosable, they say, will remain symptomatic in adulthood, with high economic and social costs (Biederman, 2005). This predominant ADHD paradigm has been integrated into scientific research, clinical practice and social policy. However, minority views criticize this understanding of ADHD-associated traits on cogent scientific, medical, sociopolitical, and ethical grounds. My dissertation explores philosophically both the emergence of the relative consensus concerning ADHD—its legitimization—and the ongoing controversies that surround the diagnostic category.

My approach draws on ongoing discussions in the philosophy of science. One such conversation concerns the nature of "kinds" (e.g., Hacking, 1998; Haslam, 2003). Many practical, ethical, and theoretical issues ride on whether ADHD-diagnosable individuals constitute a sharply demarcated or a loosely definable kind. Literature concerning theory change and explanatory adequacy raises additional important questions, concerning the standards by which theories and explanations of ADHD are judged (e.g., Murphy, 2006). Equally important is a long philosophical conversation concerning the nature of "mental disorder" in medicine, such as the extent to which these concepts can be value-free. Feminist philosophers broaden the discussion of values in science. Longino, for example, argues that scientific data and sociopolitical concerns may be mutually influential (e.g., Longino, 1990). Finally, while I do not adopt Bruno Latour's "actor-network theory" wholesale, his view that scientific facts are declared as such not just on the basis of data, but also on the basis of needs, alliances among interested parties, and relative power of the fact-makers provides a useful framework for examining ADHD (e.g., Latour, 1987). For example, while scientists have helped shape understanding of the disorder, it appears that pharmaceutical marketers, government officials interested in controlling delinquency, stressed teachers and parents, and symptomatic individuals have done so as well.

3) Goals and objectives. Isolating single aspects of ADHD's legitimization—concentrating only on scientific data, for example—leaves aside other forms of legitimization. A parallel case can be made for isolating single arguments against the paradigm. Analyzing interactions among the reasons supporting and contesting the predominant paradigm provides a helpfully contextualized perspective. Thus, although I divide the analysis into rough categories of medical, scientific, sociopolitical, and ethical issues, I anticipate that I can demonstrate that the interplay of priorities, methods, and assumptions at work in each category is of theoretical significance. Although further research may alter my views, to date I believe that my conclusions are not likely to be antiscience, but rather in favor of a science more aware of the influence of pragmatic and ethical concerns, and more open to alternative methodologies, levels of investigation, and interpretations concerning ADHD-associated phenomena.

4) Design and methodology. Framing the central questions of the project in terms of "legitimization" and "critique" of ADHD allows me to describe the reasoning of

the multiple relevant groups and individuals according to their own standards, as opposed to analyzing it according to independently specified epistemic standards. The organization of the six-chapter dissertation also reflects the multiple perspectives. Chapter 1 will introduce the issues and the methodology of the dissertation. As is typical of philosophy, the methodology will consist primarily of analyses of literature, although I also discuss issues with those involved with ADHD—for example, researchers, clinicians, and school psychologists (I do not plan to speak formally with ADHD-diagnosable individuals, as this would require ethical review. Instead, I read testimonials available online and in popular literature, and listen carefully to clinicians' understanding of their patients'/clients' experiences.) I examine a range of work, including literature from the neurosciences (especially psychiatry and psychology), education, sociology, and philosophy, along with selected popular literature. In Chapter 2, I briefly examine the history of the ADHD category, then consider whether the current ADHD paradigm is value-free. I argue that it cannot be. Chapter 3 reviews the best current scientific evidence that ADHD is a biological phenomenon, including data from molecular and behavioral genetics, studies of performance on cognitive tests, and neuroanatomic and neurophysiological findings. It then explores assumptions and reasoning of those researchers supportive and those critical or skeptical of aspects of the predominant view. Chapter 4 concerns sociopolitical context, assessing the role of social factors in legitimization and criticism of the ADHD construct. Such factors include ADHD research funding, education and special education funding, pharmaceutical marketing, and social and economic pressures on individuals. Chapter 5 examines ethical issues concerning ADHD, such as the appropriateness of pharmacotherapy and concerns that ADHD diagnosis "essentializes" individuals, emphasizing ADHD-associated traits to the detriment of other aspects of behavior or character. Chapter 6 will integrate themes and distinctions detected in the preceding chapters.

But good philosophical work is to a large extent done in the process of revision. It is then that weaknesses in arguments and need for alternative interpretations becomes most evident. In revising my work, I will strengthen and clarify my arguments, and respond to criticisms of readers and interlocutors. This will require presentation of my work in multiple venues, continued immersion in the philosophical literature, and updating and conversation in the disciplines related to the dissertation's subject matter.

5) Potential significance of the research. The fields of neuroscience—behavioral neuroscience, psychopharmacology, psychiatry, and dozens more—are rapidly progressing. Scientists in these fields offer new explanations of cognition and behavior framed in terms of biological mechanisms. Often the data challenge received beliefs, such as those concerning responsibility for character and action, and the nature of mental illness. The sharp debates concerning the legitimacy of ADHD provide insight into these shifts in beliefs, goals, and values prompted by neuroscientific research. Analysis of the disagreements will contribute to theory in philosophies of science and medicine (see "Background"), and to the movement within philosophy of science that encourages politically and ethically informed analyses. It contributes also to the new field of neuroethics, which concerns the consequences of neuroscientific findings for human self-understanding and action. Finally, in its sensitivity to context and practical implications, the analysis also addresses sociopolitical issues such as options for education, mental health care, and allocation of government research funding.

6) Progress to date; schedule for completion. This year (2006-2007), I hold the University of Minnesota's Mark and Judy Yudof Fellowship, which has allowed much

greater depth and breadth in my research than would otherwise have been possible. Similarly, I would use the opportunity of a Doctoral Dissertation Fellowship to hone my analysis. My plan is to write a rough draft of the entire dissertation by May 31, 2007. I am currently on track to achieve that goal, having drafted Chapters 2, 3, and 4, and having a solid start on Chapter 5. During Spring and Summer 2007, I will prepare sections of these drafts for presentation at professional meetings. I will also begin revising Chapter 3. In summer 2007, I plan to teach an undergraduate course at the University of Minnesota.

My plans for 2007-2008 are to thoroughly rework each chapter (see "Design and methodology"). I will give Chapter 3 a first revision before the fellowship year begins, and will do for the remainder of the dissertation by January 31, 2008. I will devote most time to core chapters 2 and 4 (three months) and the remaining time to 1, 5, and 6 (two months). Final reworking based on adviser and reader comments and additional research will be completed by March 31, 2008, in time to defend the dissertation by April 30, 2008. Final editing and submission of the dissertation will take place before May 31, 2008.

7) Key References: Basic Science and Clinical Practice:

American Academy of Pediatrics: Subcommittee on Attention-Deficit/Hyperactivity Disorder: Committee on Quality Improvement: Clinical Practice Guideline: Treatment of the School-Aged Child with Attention-Deficit/Hyperactivity Disorder." Pediatrics 108.4 (2001): 1033-44.

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Sagvolden, Terje, et al. "A Dynamic Developmental Theory of Attention-Deficit/Hyperactivity Disorder (ADHD) Predominantly Hyperactive/Impulsive and Combined Subtypes." Behavioral and Brain Sciences 28.3 (2005): 397-468.

Thapar, Anita, et al. "Refining the Attention Deficit Hyperactivity Disorder Phenotype for Molecular Genetic Studies." Molecular Psychiatry 11 (2006): 714-20.

Key References: Philosophical and Social Analyses:

Bussing, Regina, et al. "Parental Explanatory Models of ADHD: Gender and Cultural Variations." Social Psychiatry and Psychiatric Epidemiology 38 (2003): 563-75.

Greene, Ross W., et al. "Are Students with ADHD More Stressful to Teach? Patterns of Teacher Stress in an Elementary School Sample." Journal of Emotional and Behavioral Disorders 10.2 (2002): 79-89.

Hacking, Ian. Mad Travelers: Reflections on the Reality of Transient Mental Illnesses. Charlottesville: University Press of Virginia, 1998.

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Longino, Helen E. Science as Social Knowledge: Values and Objectivity in Scientific Inquiry. Princeton, NJ: Princeton University Press, 1990.

Murphy, Dominic. Psychiatry in the Scientific Image. Philosophical Psychopathology: Disorders in Mind. Series eds., Owen Flanagan and George Graham. Cambridge, MA: The MIT Press, 2006.

Personal statement,
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My primary field is philosophy of biomedical science; I also have a concentration in ethics. My goal is to investigate scientific and medical research and practice and their effects on people's lives. Currently, I am focusing on issues concerning mental health, in which the many fields of modern neuroscience are rapidly changing the ways in which we view ourselves and others. Analyzing the controversies that arise as new studies are done and new remedies posed for personal and social ills has potential to shed light on educational, political, and personal issues that affect all of us.

I studied philosophy, literature, and religion in college, but settled on a major in biology followed by more than two years of medical school. This breadth of background is helpful in understanding the scientific and medical literature relevant to my research, the issues that clinicians face in practice, and interpretations of human behavior and experience that differ from those of the scientists and clinicians. Medical-school rotations in a psychiatric hospital and clinic have given me some small hands-on experience with serious mental illness. I also had a 13-year career in medical editing prior to beginning work on my PhD, finishing with 5 years as an executive editor. In this work I increased my knowledge of medicine and of clinical needs, and in addition gained valuable experience planning content and production of the journal, managing a staff, and working with an international editorial board. Finally, I am a parent of three now-grown children who were educated in the Minneapolis public schools. Awareness of issues they faced, and more particularly those that their less-privileged fellow students faced, also gives context to my current work. Broadly speaking, I chose philosophy because its analytical tools are suited to understanding the conflicting assumptions and conclusions of the various perspectives in which I've had some experience. I hope that my work might in some way clarify such issues for others as well.

In Fall, 2005 I had the opportunity to teach Philosophy of Psychology to undergraduates with a wide range of backgrounds. Their response encourages me to think that people are eager for discussion of the kinds of issues my field takes up. I have begun presenting my work at conferences, and an article based on the expressly ethical portion of my dissertation will appear in a peer reviewed journal in 2007. After completing my dissertation, I plan to rework the material as necessary to publish it as a book suitable for an educated general audience. In these ways I hope to become involved in the broader discussion of the important ethical and policy decisions affected by current neuroscientific research, as well as in the closely analytic methods and goals of philosophical study. I will seek employment in a position where I can continue research, writing, and teaching that forwards socially, politically, and ethically engaged philosophy of biomedical science—that is, philosophy of biomedical science that may help people more clearly understand the roles of science and medicine in their individual lives and in society.