The Research Domain Criteria and the Social Practice of Psychiatric Science

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<u>Abstract</u>

In 2009, the National Institute of Mental Health (NIMH) launched the Research Domain Criteria (RDoC) initiative. As the largest funding body for mental health research in the world, and in response to concerns with the existing systems of psychiatric classifications such as the Diagnostic and Statistical Manual of Mental Disorders (DSM), the NIMH wanted to promote a better understanding of some of the core issues facing psychiatry to restructure the discipline on a more robust foundation. While many have written on the theoretical assumptions of the initiative, this thesis focuses on some of its scientific practices and argues that they seem to be problematic on both epistemological and normative grounds regardless of one's views on the nature of mental suffering. The first chapter argues that RDoC as a framework is open to a wide variety of scientific research in psychiatry. RDoC is not committed to specific understanding of biological causation or ontology, but its scientific practices have so far been restricted to a reductionist position on these issues. The second chapter defends that these scientific practices are epistemologically and normatively problematic. On one hand, they do not allow for sufficiently diverse array of theories to be tested, which at the level of a scientific community is not conducive to reaching valid consensus on correct hypothesis. On the other, they fail to provide psychiatric patients with enough influence in determining its funding priorities. The second chapter also defends that the funding priorities of RDoC could be partially explained by the influence of neoliberalism on psychiatry and psychiatric research in the United States. The final chapter argues that the NIMH would benefit from incorporating a modified lottery-based system to determine its funding priorities. This would provide sufficient structural guarantees to adequately fund an epistemically diverse array of theories, while protecting from political influence, and providing psychiatric patients with a voice to influence the allocation of research funds on issues that are important to them.

<u>Résumé</u>

En 2009, la National Institute of Mental Health (NIMH) lance le Research Domain Criteria (RDoC). En tant que plus grand organisme subventionnaire de recherche en psychiatrie au monde, et en réponse aux critiques soulevées par les systèmes de classifications psychiatriques actuels tels que le manuel diagnostique et statistique des troubles mentaux (DSM), la NIMH vise par cette initiative à promouvoir une meilleure compréhension des enjeux fondamentaux de la pratique psychiatrique contemporaine. L'idée est de restructurer la discipline sur de nouvelles et plus robustes fondations théoriques. Alors que plusieurs ont décrié les présuppositions conceptuelles de l'initiative, ce mémoire vise plutôt à mieux cerner les pratiques scientifiques qui en découlent depuis sa genèse. Plus spécifiquement, il vise à défendre que ces pratiques posent de nombreux problèmes d'ordre épistémiques et normatifs, et ce indépendamment de la perspective privilégiée sur l'ontologie et l'étiologie de la souffrance psychique. Le premier chapitre a comme objectif de présenter l'initiative en défendant qu'elle est, en théorie, ouverte à de nombreuses perspectives théoriques, mais qu'en pratique la quasitotalité des projets de recherche qu'elle finance se limite aux bas niveaux d'analyse (gènes, circuits neuronaux, etc.). Le second chapitre vise à défendre que ces pratiques scientifiques sont épistémiquement problématiques en raison du trop peu de place réservée à une diversité d'approches, ce qui mine à l'échelle de la communauté de recherche sa capacité à produire des résultats valides. De plus, elles sont normativement problématiques en raison du manque de consultation des patients et patientes dans la détermination des priorités de recherche. Finalement, le second chapitre défend que l'influence du néolibéralisme sur le financement de la recherche est partiellement responsable des pratiques scientifiques de la NIMH. Le troisième chapitre, quant à lui, vise à proposer un nouveau modèle de financement au sein de l'organisme fondé sur l'usage d'une loterie pour distribuer les fonds aux chercheurs et chercheuses. En théorie, cette proposition permettrait d'adéquatement répondre aux critères épistémiques, moraux, et politiques d'une bonne structure de financement de la recherche en psychiatrie.

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This thesis concerns the social practice of science as done by scientists who depend on certain institutional conditions to properly do their work. Therefore, I would be remiss not to recognize the value of the work produced by all the authors I'm citing throughout this research. Often under difficult conditions in the social sciences and in philosophy, they still succeed at contributing to our collective understanding of the world we live in. For that, I am incredibly grateful.

Finally, I would like to thank my supervisor Ian Gold for his comments and for having given me the autonomy needed to perform this work. I also need to thank Professor Phoebe Friesen for her support and her tremendous help in preparing the original idea for this thesis. Lastly, I must thank the Social Sciences and Humanities Research Council of Canada (SSHRC) as well as the Fonds de Recherche du Québec (FRQSC) for their financial support which was instrumental in me being able to complete this work. "Can of Strongbow, I'm a mess Desperately clutching onto a leaflet on depression Supplied to me by the NHS It's anyone's guess how I got here"

- Sleaford Mods, Jobseeker

Introduction

In 1998, shortly before committing suicide at the age of 28, British playwright Sarah Kane wrote her final work titled *4.48 Psychosis*. Largely autobiographical, and in the form of a long monologue, the play relates her experience with mental suffering, suicidality, and the relative powerlessness of psychiatry to address it. In a particularly striking passage, the protagonist reads off the notes from their doctors describing the various drugs they've been prescribed and how none of them ever worked to alleviate their pain. It reads: "Lofepramine 70mg, increased to 140mg, then 210mg. Weight gain 12kgs. Short term memory loss. No other reactions. [...] Citalopram, 20mg. Morning tremors. No other reactions. [...] Thorazine, 100mg. Slept. Calmer." (Kane 2000, pp. 22 - 23).

The passage ends with the character refusing further treatment, and, following the same format, a clinical and detached account of a suicide attempt: "100 aspirin and one bottle of Bulgarian Cabernet Sauvignon, 1986. Patient woke in a pool of vomit and said 'Sleep with a dog and rise full of fleas'. Severe stomach pain. No other reaction" (Kane 2000, p. 23)

Kane was not and is not alone in experiencing that relative powerlessness of psychiatry to alleviate mental suffering. While indeed many patients do benefit from the current pharmacological tools offered by the discipline, far too many do not. Today, the once canonical "chemical imbalance" theory to explain depressive symptoms by a serotonin abnormality for example has been largely rejected (Ang, Horowitz, and Moncrieff 2022); the pharmaceutical industry, citing lack of results, is also increasingly cutting funding for research on new psychiatric drugs (Glannon 2019), and some the theoretical and practical tools that form the very foundation of psychiatric practice and research are being questioned or rejected.

This uncertainty has led some to argue that psychiatry is going through a period of "extraordinary science" (Poland and Tekin 2017). Borrowing a phrase from philosopher of

science Thomas Kuhn, extraordinary science refers to periods of scientific development that follows a crisis in the acceptance of some of the core theoretical frameworks, tools, and results of a given discipline. These are generally periods that are ripe for scientific breakthroughs which, in the case of psychiatry, could lead to the development of better tools to help alleviate the suffering of patients. The possibility of these breakthroughs nevertheless depends on research being conducted under the right conditions.

How should scientific research be conducted is precisely the type of questions that those who do social epistemology of science are interested in. Debates within that branch of philosophy are varied and concern a range of issues, including more general topics such as the influence of social and cultural factors on scientific process (Harding 1995; 1991; Longino 1990), to more precise concerns such as the role and efficacy of peer reviewing (Heesen and Bright 2021). Some of those debates also centre on the influence of scientific funding on science itself and the results it produces. The core topic of this thesis is to apply that work to the scientific practices of the National Institute of Mental Health (NIMH), a federal funding agency (the biggest of its kind for psychiatric research) in the United States to see if they are epistemically and morally right.

More specifically, this thesis will analyze the scientific practices of the NIMH's Research Domain Criteria (RDoC) initiative and its effect on the psychiatric research community overall. The goal is to see if they are consistent with a series of concerns in social epistemology of science. At its core, it will argue that RDoC's current practices are both epistemically and normatively problematic and are therefore not conducive to producing the kind of scientific breakthroughs that the discipline needs. It will also explore some possible avenues to remedy these problems by using a randomized element in the funding mechanisms at the NIMH. The first chapter explains what RDoC is. First, it will contextualize the genesis of the initiative as part of the debates that surround the prominent place that the Diagnostic and Statistical Manual of Mental Disorders (DSM) occupies in 20th and 21st century psychiatry. Issues of validity and vagueness in the current diagnostic categories of the DSM are, at their core, some of the main driving forces behind the creation of RDoC as a means to liberate researchers to pursue novel and potentially better theoretical alternatives.

Second, this first chapter argues that RDoC as a theoretical framework is largely consistent with that goal and open to accommodating a wide variety of theoretical approaches to the nature and etiology of mental suffering. Nevertheless, through an analysis of its actual scientific practices and the discourses that surround the initiative, it seems that this openness is poorly utilized and research on low-level mechanisms (neurotransmitters, brain structures, genes, etc.) occupy much of the funding portfolio of the agency.

The second chapter starts by describing in what way these funding practices seem problematic. First, it argues that they pose an epistemological problem insofar as they've failed to include a sufficient diversity of approaches to be tested. The argument that I defend here is based on the notion of transient diversity. In short, the idea is that good scientific practices must allow for a wide array of theories to be researched in order to prevent hastily reached consensus and ensure the validity of the results produced by the scientific community (Zollman 2010). It seems, as I will argue, that RDoC pose a specific problem in that regard, and that this problem is independent of any view that one might have about the validity of reductionism in psychiatry.

For the purpose of this thesis, as it concerns scientific funding and practices, I will understand reductionism as any approach to mental suffering or illness that favours the study of low-level mechanisms (neurones, genes, neurochemistry) above or at the expense of other levels of analysis (culture, first-person patient perspectives, political concerns and so on). My first claim, in this second chapter, is that the lack of diversity in the funding priorities of RDoC poses an *epistemic* problem regardless of your position on the nature and etiology of mental suffering.

The second argument in this chapter is that the scientific practices of the NIMH also seem to pose a *moral* problem insofar as they've failed to include the voice and concerns of psychiatric patients¹ as part of its funding portfolio. From the perspective of certain theories of equality and starting with the idea that establishing funding priorities for public research agencies is a democratic concern, I argue that these practices would therefore be considered unjust.

Finally, the second chapter argues that part of what may explain the focus on low-level mechanisms in the funding priorities of the agency is the influence of neoliberalism on public institutions in the United States over the past forty years. Based on the later work of Michel Foucault and the more recent work by Wendy Brown (among others) I will argue for the close connection between certain forms of reductionism in psychiatry and neoliberal political rationality that could explain why the NIMH focuses on this theoretical approach.

The third chapter is exclusively dedicated to examining solutions to the problems noted in the first two chapters. First, it describes some of the goals that one might be aiming for in terms of a good attribution of funds in psychiatric research. Then, it examines a common solution to the problem of transient diversity in science with the introduction of a randomized

¹ Throughout this thesis, the term "patient" will be used and contrasted with "scientists" and the views they might hold about research priorities in psychiatry. One must nevertheless keep in mind that this usage of the concept is not without difficulties. For example, there is a wide array of views that can coexist *among* patients, and scientists can themselves be psychiatric patients. For brevity and clarity in the arguments I'm defending in the first two chapters, I will only address the lack of sharp boundaries between patients and scientists, the heterogeneity of views that may exist among patients, as well as related issues with these conceptual distinctions in the last chapter of this thesis.

element in the allocation of funds for scientific research. It argues that while a strict version of randomized funding might meet some of the desired features of good scientific funding, it fails on others (namely the meaningful inclusion of patients in the funding decisions).

In the end, the final chapter concludes with a proposal for an amended and weighted lottery at the NIMH as a response to the problem of finding an optimal funding mechanism at the agency. This lottery would, in part, have the property of being weighted in favour of studies on the various dimensions of mental suffering requested by psychiatric patients. This would allow for the right balance between the political, epistemological, and moral concerns inherent in research funding in psychiatry.

Chapter I: RDoC Between Theory and Practice

Introduction

In 2009, the National Institute of Mental Health (NIMH) launched the Research Domain Criteria (RDoC). Through this initiative, the NIMH aimed at "incorporating data on pathophysiology in ways that eventually will help identify new targets for treatment development, detect subgroups for treatment selection, and provide a better match between research findings and clinical decision making" (Insel et al. 2010). In essence, the proponents of RDoC wanted to break away from the traditional psychiatric categories found in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and rebuild the discipline on a different and arguably more robust foundation.

This chapter will introduce RDoC through the historical context which enabled its creation. First, I will present the debates surrounding the DSM and the specific problems that the proponents of RDoC were trying to answer with the initiative. This includes issues of validity and vagueness within biomedical research and clinical practice in psychiatry, and the perceived need to reject the DSM categories to address these problems. Then, I will introduce the theoretical framework of RDoC and show how it tries to avoid the inadequacies noted earlier. More specifically, I will argue that the initiative, at least in theory, is open to a much wider variety of research on mental distress than what has been argued for in the past. Finally, I will examine the actual scientific practices of RDoC and the discourse around the initiative since its inception in 2009. I will argue that the initiative, in practice, uses this relatively open framework to produce research that is, in fact, quite limited in scope. The proponents of RDoC and the projects that the agency choses to fund are limited to a somewhat reductionist

understanding of mental illness, understood strictly or primarily as brain dysfunctions. As a result, and despite the theoretical openness of the framework, this means that research on other aspects of mental distress (cultural, environmental, and so on) are left largely underexplored within the initiative. Subsequently, this contextualization of the debates around RDoC and its theoretical assumptions will structure the analysis of the following chapters. There, I will try to understand some of the reasons behind the gap between what RDoC *is* in theory and what it *does* in practice.

1. Historical Background

1.1. The Diagnostic and Statistical Manual of Mental Disorders (DSM)

1.1.1. Early Developments

The history of psychiatry is largely one of continuous crisis. Debates on the classification of mental illness, its ontological nature, or the social and political function of the discipline have been raging at least since the 19th century onward (*see* Scull 2015; Shorter 1997; Foucault 1988). To understand the historical context which gave rise to RDoC, and subsequently provide an analysis of its scientific practices, I must first contextualize it within those general debates of the discipline. For that purpose, a good starting point is to examine the leading role of the Diagnostic and Statistical Manual of Mental Disorders (DSM) within Western psychiatry in the last century, and the debates that emerged as a result.

Introduced in 1952 by the American Psychiatric Association (APA), the DSM has been for the past 50 years the dominant tool used both in psychiatric research and clinical practice in North America (and to an extent throughout the world) (Thornton 2016). Faced by the late 1940s with unstable and fractured systems of psychiatric classification, the goal of the DSM was to provide a unified nosology of mental illnesses that could be accepted by all practitioners and researchers alike (Blashfield et al. 2014). In addition, some psychiatrists found that the models which they used to classify mental illness were largely incapable of accounting for the symptoms they were observing in soldiers coming back from the World Wars. These models were developed in asylums and mental hospitals and couldn't easily track psychiatric disorders emerging as a result of individuals being exposed to brief but intense wartime experiences (Horwitz 2014; Scull 2015).

The first editions of the DSM were heavily influenced by psychoanalytic theory (Horwitz 2014). This framework was perceived at the time as capable of both making sense of those symptoms and of producing a satisfyingly unified account of mental illness. In DSM-I and DSM-II, diagnostic categories were nevertheless defined using relatively vague and short descriptions. For example, in the second edition of the manual introduced in 1968 "depressive neurosis" was defined exclusively as "[...] manifested by an excessive reaction of depression due to an internal conflict or to an identifiable event such as the loss of a love object or cherished possession" (American Psychiatric Association 1968) without any clear indications of what constituted an "excessive" reaction nor an internal conflict. The general idea was to rely on the experience of clinicians to determine whether patients satisfied those descriptions.

In keeping with the original goal of the DSM which was to stabilize and unify psychiatric research and practice, the use of these clinical categories led to several issues. For example, in the 1970s, the DSM was noted for its poor inter-rater reliability² (understood as the ability for the same patient, presenting the same symptoms, to be given the same diagnosis by distinct clinicians) (Blashfield et al. 2014; First 2012). It was believed that part of the reasons for this

 $^{^{2}}$ See (Kendell 1971) for what was an influential analysis of the limits of inter-clinician reliability across psychiatrists in the UK and the US at the time.

lack of reliability was the relative vagueness of the categories in the DSM-I and DSM-II, as well as the overreliance on the interpretations of clinicians when making a diagnosis.

Around the same period, and largely driven by developments in somatic medicine (namely the discovery of the DNA in the early 1950s), but also by the relative efficacy of new psychiatric pharmaceuticals (First 2012), a new type of psychiatry also emerged within universities and research centers. This new approach, which in a sense had pre-existed the dominance of psychoanalysis (*see* Garson 2022), was interested in finding biological grounding for mental disorders. In turn, these psychiatrists and researchers hoped to develop treatments to correct biological dysfunctions perceived as responsible for those disorders. To achieve this goal, it was important to use reliable and predictable tools capable of appropriately screening patients for biomedical research, and of producing replicable results (Horwitz 2021, 45 - 46). The categories used in DSM-I and DSM-II, however, were deemed too vague and unreliable to achieve these goals. Calls for reform were therefore issued, and a new model emerged in the third edition launched in 1980. This model largely remained in use with subsequent editions of the DSM.

1.1.2. From DSM-III to DSM-5

DSM-III represents a significant shift in psychiatric nosology. Rather than relying on relatively vague categories influenced by early 20th-century psychoanalytic theory, this new edition of the guide makes use of precise diagnostic criteria and isn't committed to a particular etiological approach to mental disorders (a theory of the *causes* of mental illness) (First 2012). As it states in the introduction, the goal of the DSM-III was to describe "the clinical features of the disorders" through "easily identifiable behavioral signs or symptoms, such as disorientation, mood disturbance, or psychomotor agitation" (American Psychiatric Association 1980, 7). In principle, this approach leaves open the possibility for a variety of etiological theories on

mental illness, but nevertheless provides a satisfyingly unified account of psychiatric nosology (insofar as the categories are clearly defined) that can be useful in both research and clinical practice, thereby responding to the concerns with past editions of the DSM.

In short, rather than letting individual clinicians determine what constitutes, for example, an "excessive reaction" (in the case of depressive neurosis), the 3rd edition of the DSM provides specific criteria by which patients are uniformly evaluated. In the DSM-III (which is roughly 500 pages long, compared to 130 for DSM-II), the same depressive neurosis – now called dysthymic disorder – which was defined in the previous manual in one short paragraph, takes three pages and is described using specific diagnosis criteria (American Psychiatric Association 1980, 220 - 223). To be diagnosed as suffering from dysthymic disorder, a patient must present at least three symptoms from a list of thirteen (including insomnia, decreased attention or concentration, and so on) during their depressive period.

Importantly, as the introduction of the third edition makes it clear, the diagnostic categories of the DSM are not describing sharply discrete pathological entities (American Psychiatric Association 1980, 6). The goal of the manual was to provide *operational* diagnostic categories that are useful for clinical practice and biomedical research, it was not to carve nature at its joints. Many of the categories of the DSM overlap, and because of its lack of commitment to any etiological theories, the manual allows, in principle, for two or more clusters of symptoms to be the result of the same causal mechanisms. For example, it isn't clear if anxiety and depression are comorbidities (two distinct pathologies) or different symptoms of the same pathology. I will further explain this concern in the following section.

Since the 1980s, the APA has updated the manual on a few occasions. As of 2022, the latest version is the DSM-5-TR (which is a revision of the DSM-5 released in 2013). Following DSM-III, subsequent editions of the manual kept the same general model but through a

process of public deliberations, expert panels, review of the current literature and so on, various thresholds, criteria or actual symptom clusters were either added, modified, or removed. For example, in the DSM-5, close to 160 new diagnostic categories were added compared to the fourth edition, for a total of 541 (Blashfield et al. 2014; American Psychiatric Association 2013).

1.2. From DSM to RDoC

The model of classification used by the DSM since its third edition has been described as "topdown" (Krueger and Eaton 2012) because it starts with the APA (through expert consultations, public debates and so on) defining clinically relevant or operational symptom clusters that are then classified within the DSM as mental disorders. Following this classification, researchers are invited, for example, to find biomarkers that are common to those who exhibit these symptoms (a reduced level of a specific neurotransmitter, genetic mutations, etc.). In clinical practice, psychiatrists are collecting relevant information about their patient to see if they satisfy the same operationally defined categories and thus merit a diagnosis of a specific mental illness.

To give an example, DSM-5 defines the diagnostic threshold of major depression as the presence, in a 2-week period, of at least 5 or more symptoms in a list of 9 (including insomnia, fatigue, feeling of worthlessness and so on) (American Psychiatric Association 2013, 160 - 161). Clinicians note the presence of these symptoms in their patients, and researchers try and find commonalities within the class of individuals who correspond to these criteria. More generally, governmental agencies, educational material, insurance companies and virtually all other organizations who deal with mental illness in one way or another are also structured around the categories of the DSM. If one needs a definition of major depression in essentially any institution within the United States (and to an extent throughout the world), they will most

likely use the one provided by the DSM (Poland 2014; Horwitz 2021, 144 - 145). As a result, the DSM has a considerable influence on a number of social institutions, and it is therefore especially important to understand some of its limitations.

This general structure of psychiatric practice and research with the DSM at its core has been described as "conventional psychiatric practice" (CPP) by Jeffrey Poland (Poland 2014) and leads to a number of issues. Some of them are at the heart of what has driven the creation of RDoC by the NIMH. The original goal of the DSM which has structured all subsequent revisions was to mirror developments in somatic medicine by providing psychiatry with a unified set of operational diagnostic categories to maximize inter-rater reliability and inform research on mental illness. As such, the approach was always agnostic with respect to any etiology. One of its only major commitment is to the notion that the categories described in the DSM are *pathological* in nature (Poland 2014). It is within that general framework, then, that issues of *validity* and *vagueness* are of central concern.

1.2.1. Validity and Vagueness

The notion of validity in biomedical research is both central and heavily debated. On the surface, validity can be understood as the ability of a concept or a pathological category to adequately *pick out a real entity*. The goal, in other words, is for our concept of depression, for example, to pick out something real in the world that can be studied, understood, and ultimately treated. More specifically, the type of validity that biomedical research (and psychiatry by extension) aims at achieving is known as *etiopathological* validity (Hoffman and Zachar 2017; Hyman 2010) – the idea that different pathological entities (or categories) ought to be distinguished from each other according to their distinct *causes*. Depression is a distinct condition from anxiety which is distinct from eating disorders because of their different causal origins (whichever they might be).

A "top-down" system of classification (such as the DSM) in which categories are first operationally defined according to clinically relevant and observable symptoms before being studied for their causes will always be at the very least in tension with the goal of etiopathological validity. This is because, as we saw, when creating categories, the APA tries to remain agnostic with respect to etiological explanations and does not account for the vast amount of overlap between them. It remains unclear whether comorbidities (the presence of two or more pathologies in one patient) are the result of two distinct pathologies coexisting or are in fact the same condition mistakenly defined as distinct.

There has been considerable debates on the specific nature biological causation, and its relation to mental states and psychiatric pathologies (*see* Maung 2021; Bolton and Gillett 2019; Plutynski 2018). The biopsychosocial model of causation, for example, understands mental illnesses as caused by a plurality of phenomena (such as a brain dysfunction, plus some social phenomenon, and so on). The interaction between those different causal pathways to mental suffering is subject to a number of discussions that, although interesting, are not relevant for the purpose of this thesis. What is relevant to the issues noted with the DSM that the proponents of RDoC are trying to solve is that *whichever* way you conceptualize causality in psychiatry or medicine, to start from operationally defined categories is potentially non-conducive to finding its true nature, and at the very least hasn't led to any major breakthroughs in now more than 40 years of research.

The general problem of "top-down" classification and etiopathological validity is also compounded by issues of vagueness in diagnostic thresholds. As we saw, the presence of a particular mental illness in the DSM requires that various symptoms be present. Usually, each category lists a series of symptoms, but a patient only needs to satisfy *some* of them to be considered as suffering from a specific illness. In the case of major depression, for example, one needs to satisfy five out of nine symptoms. Post-traumatic stress disorders (PTSD) requires six out of twenty (American Psychiatric Association 2013). This means that two patients who are diagnosed with the same condition may not have any symptoms in common.

This phenomenon leads to what is known as *combinatory vagueness*. In short, it stipulates that within the DSM there will always be some level of indeterminacy when determining whether a patient *truly* suffers from a given condition (Keil, Keuck, and Hauswald 2016). We saw earlier that one of the driving forces behind the creation of DSM-III was precisely to avoid the problem of vagueness by giving clear diagnostic criteria. But the question of how many criteria a patient must satisfy to be diagnosed as suffering from a mental illness (and, with respect to each criterion, the question of whether a patient satisfies them or not), remains open. Some see a solution to this problem through a better integration of neuroscience in psychiatric nosology (*see* Murphy 2006). In other words, combinatory vagueness is, for them, first an epistemic issue, and once we have a clearer understanding of the underlying causal mechanisms responsible for mental illness, this issue of combinatory vagueness will disappear³.

In the end, issues of validity and vagueness (among many others) have led to a perceived lack of clarity in the DSM categories, which in turn is seen as undermining medical research and clinical practice. Of those who claim that these are serious issues, some believe that to solve them, psychiatry must leave behind the DSM as a tool and reconstruct psychiatry on different and more stable theoretical foundation. This is what I will examine in the following sections.

³ Many have also argued that combinatory vagueness (and vagueness in general) is an inherent and unavoidable part of psychiatry as a discipline (*see* Zachar and McNally 2016). However, as I am here interested in the way these debates have impacted the creation of RDoC, I will not develop these views in further details.

2. What is RDoC?

2.1. <u>Theoretical Framework</u>

The Research Domain Criteria initiative is as an attempt by the National Institute of Mental Health (NIMH) to answer these problems by breaking away from some core aspects of conventional psychiatric practice as defined earlier. The NIMH is a federal agency within the United States tasked with managing public funding for mental health research. It is also the largest funding body for mental health research in the world (Teachman et al. 2019). As such, the goal of RDoC is not to be a new DSM but is to provide a framework within which novel studies could be funded. These studies are novel insofar as they are not bound by the traditional categories of the DSM (Sanislow 2016). The main core commitment of the initiative is to the idea that psychiatric classification shouldn't be "top-down" in nature (starting from operationally defined categories) but should start from the "bottom-up" with an understanding of the functioning of various sociological and neurobiological systems to then reshape psychiatric categories.

Ultimately, this means that a better understanding of the ways in which these systems work is necessary to create valid diagnostic categories. The NIMH and the proponents of RDoC have been hesitant to comment on the specific shape that this new psychiatric classification would take (Faucher and Goyer 2017). This is because our understanding of the functioning of these dimensions, which is ultimately what will guide this revision in psychiatric nosology, is still relatively underdeveloped.

Starting from the bottom up then, the NIMH as a funding body seeks to fund research in psychiatry on the dimensions of functioning of the human mind *across various levels of analysis*. Currently, RDoC includes six different domains (negative valence systems, positive valence systems, cognitive systems, social processes, arousal and regulatory systems, and sensorimotor systems) which are then broken down into specific constructs and subconstructs (National Institute of Mental Health 2022c). As with the DSM revision process, these domains of analysis are regularly subjected to revision by the NIMH Workgroup through the incorporation of the latest research in neuroscience, psychology, psychiatry, sociology and so on (Sanislow 2016).

As an example, the "arousal and regulatory systems" domain is broken down into three constructs: "arousal", "circadian systems" and "sleep-wakefulness". These, in turn, can be studied through different levels of analysis. These go from lower levels such as genes, molecules, cells, circuits, or physiology, to higher levels such as behaviour, self-reports, paradigms, development, and environment (National Institute of Mental Health 2022c; Faucher and Goyer 2017). The intersection of constructs and levels of analysis forms a grid known as the RDoC matrix within which research funded through the NIMH are to be placed in specific cells (point where a construct meets a level of analysis).

A study within the domain of arousal and regulatory systems could be interested, for example, in finding the influence of genes or of environmental factors on the *range or spectrum* of functioning of circadian systems. RDoC uses a *dimensional* approach, it is therefore interested in the continuum of functioning of a given construct rather than on determining sharp binary boundaries of what constitutes function and dysfunction. Within the matrix, there is no commitment to the idea that certain (even extreme) variations in the functioning of a specific construct are to be considered as pathological. The goal is more so to map out the range of functioning of these various functions across multiple levels of analysis to better understand the causal origin of its variation. This is, as we saw, one of the main differences with the DSM.

Importantly, while this may not be reflected in practice, the theoretical framework of RDoC makes no assumption that certain levels of analysis are more suitable than others to

provide an adequate explanation. Different levels of analysis may interact, and some may be more relevant than others, but this a conclusion that is for the scientific community to reach through research. RDoC does not, *theoretically*, mandate that certain levels be studied, and others be ignored.

In other words, circadian systems for example are understood to be operating along a continuum where a variety of patterns are possible. RDoC is interested in examining what is responsible for variations along this continuum at different levels of analysis. Again, the idea is that once we have a better understanding of what influences the range of functioning of the various subconstructs of the RDoC matrix, we will have the necessary tools to restructure psychiatric nosology in a way that avoids issues of validity and indeterminacy.

2.2. <u>RDoC, Pathology, and Theoretical Openness</u>

Even though the proponents of initiative are explicitly seeking to restructure a more robust theoretical foundation for our understanding of mental *illness* in general, it is not clear that the theoretical framework of RDoC is also committed to this idea. We saw earlier that the general goal of medical nosology is etiopathological validity. Etiopathology concerns both the study of the causes (*etio*) and of illnesses (*pathology*). What RDoC seems to be committed to is to a better understanding of the various causal mechanisms which give rise to a variety of phenomena (the range of functioning of the arousal systems along a dimensional approach for example), but nevertheless seem to remain neutral on the question of *illness*.

This is partly because of the immense difficulty in determining precisely what constitutes a *pathological* state. This is one of the central questions in philosophy of psychiatry, and these debates go far beyond the subject of this thesis. However, some of what emerged as a result of that literature is of central importance for the openness of RDoC to a variety of theoretical options on the ontology and etiology of mental suffering. Hoffman and Zachar (2017) have previously highlighted the difficulty in locating pathological states solely at a low level of analysis (genes, brain circuits, molecules, cells, and so on). In somatic medicine, for example, once you locate the presence of a virus in an organism, you can provide antiviral medication without any references to certain higher levels of analysis (the subjective experience of the patient, the social perception of the symptoms, and so on). For some, including those that I've described earlier who claim that issues of vagueness in psychiatry would be solved by a better integration of neuroscience, the goal for psychiatric therapy is to *reduce* higher levels of analysis to lower levels and emulate this model. However, it's not clear that psychopathologies operate in the same way.

This is because, assuming researchers are capable of locating a specific and unusual pattern of brain activity that effectively correlates with extreme variations in the arousal domain, for example, nothing tells us that this pattern is in fact a problem or a pathology. To describe it as such, one needs to relate it to various "cultural, social, rational, and other norms of mentation and behavior" (Hoffman and Zachar 2017). Hoffman and Zachar cite as an example Wakefield (2014) who describes the fact that brain patterns during sleep are highly unusual, but sleep is nevertheless a normal part of biological functioning and not a disorder⁴. Without references to cultural norms of expected behaviours, for example, any brain pattern, however unusual it might be, cannot be described as pathological.

If one is committed to the notion that mental illnesses are illnesses that can be described *solely* in reference to lower-level mechanisms of the brain and their *dysfunctions*, this can be a problem. As we will see in the next section, this seems, to an extent, to be the way the

⁴ Importantly, Hoffman and Zachar (2017) are also critical of the possibility of correlating brain patterns (or indeed any patterns at a lower level of analysis) with *specific* reports at a higher level. While this represents a fundamental theoretical challenge to RDoC as a framework and its relation to philosophy of mind, it goes beyond the topic of this thesis as I'm solely interested in the ways in which those debates have impacted the creation of initiative.

proponents of RDoC are conceptualizing it (and the way the NIMH presents the initiative). However, when taking the theoretical framework of RDoC in isolation, there's no commitment to this idea. The structure of the RDoC matrix can be an opportunity for novel research on alternative theoretical frameworks for the understanding of mental suffering.

The neurodiversity movement, for example, has argued in recent years that what has been traditionally categorized as autism (or autism-related pathologies) may be better understood as non-pathological variations in ways of experiencing and being in the world (Sarrett 2016; Kapp et al. 2013). While there are strong and lively debates among neurodiversity theorists and advocates, there is also a general agreement on the fact that the human experience exists along a continuum, and being autistic doesn't necessarily involve suffering from a pathology or a dysfunction. It may just be a different and non-pathological way of existing compared to those whose experience is consistent with the cultural norms of expected behaviours, thoughts, cognition, feelings and so on (known, within the neurodiversity movement as *neurotypical* individuals) (Kapp et al. 2013; Ortega 2009). From that idea usually follows a series of political and social concerns about medicalization, normalization, representation in the medical field and so on. For the purpose of this thesis, however, I won't concentrate on these questions.

However, what is relevant for the purpose of my argument is the possibility of integrating neurodiversity research within the RDoC matrix. As I said earlier, the matrix has the property of not drawing sharp boundaries between normal and pathological states. In fact, part of the appeal of the initiative is precisely to map out those various ways of being (through the range of functioning of various functions) without being bound by the DSM categories or by preconceived notions of what it means to be a "normal" or "healthy" human. In theory – and this may contrast with the way the initiative has been used thus far – neurodiversity

researchers could find room within RDoC to perform their research. One could, for example, study the ways in which various modes of social processes (the ways of perceiving and understanding social cues, for instance) exists along a continuum without any reference to "autism" as a discrete pathology or any indications that individuals exhibiting these various ways of being are themselves dysfunctional and in need of treatment compared to their neurotypical peers (Mandy 2018). Because RDoC makes no a priori judgement on what is a normal functioning human, it provides a protection against research structured around "cultural backdrop of neurotypical norms and expectations" (Heasman and Gillespie 2019) which is one of the central concerns for the neurodiversity movement. In that sense, RDoC's theoretical framework could represent a significant and useful tool for neurodiversity researchers and advocates.

Likewise, researchers interested more broadly on the influence of cultural or social factors in mental well-being could equally find room for their perspectives within the initiative. There is a considerable literature surrounding the effect of cultural norms or sociopolitical factors on psychopathologies or on the experience of various psychiatric symptoms (*see* Kirmayer, Gomez-Carrillo, and Veissière 2017; Kirmayer et al. 2020; Kitanaka 2011; Woods 2011). As with the related debates on reductionism, this is one of the central questions in philosophy of psychiatry and I cannot go over all the various ways in which these considerations have been integrated within cultural and transcultural psychiatry. However, for the purpose of my argument, it seems clear that – in theory again – the RDoC matrix wouldn't be an obstacle to the integration of these dimensions within psychiatric research at the NIMH.

As an example, nothing within the matrix precludes the NIMH from funding research on the influence of economic or cultural factors on, for instance, various subconstructs of the negative valence domain (fear response, anxiety, loss and so on) (National Institute of Mental Health 2022a). The way the experience of fear or anxiety may be mediated by social forces, or a specific cultural context is very much part of the type of studies that could be integrated within the initiative. Researchers could design a study to better understand how racial oppression may influence the perception of danger in racialized individuals and find room within the matrix to place it.

Other more radical views may also be integrated in the RDoC matrix. Recently, for example, Justin Garson (2022) has argued (based on a tradition that he claims was forgotten in the history of psychiatry) that perhaps what we understand as mental illnesses are not, strictly speaking, illnesses (as in *dysfunctions* of normal human functions). They might better be described, in some cases, as evolutionarily adaptative behaviour that may have served a purpose in our evolutionary past but may not serve one today. As such, they are not malfunctions or dysfunctions of, for example, brain systems, but are selected and normal functions which could serve as strategies for "navigating interpersonal conflict, [...] detaching from unrealistic life goals [...] remaining vigilant to potential threats in hostile environments [or] coping with perceptual abnormalities" (Garson 2022, 9 - 10). He calls this view "madness-as-strategy" which he contrasts with this notion of "madness-as-dysfunction" that corresponds to what is the traditional view in contemporary psychiatry.

Despite his claims that RDoC represents the opposite of his view and the "inevitable fruition" (Garson 2022, 9) of "madness-as-dysfunction", based on the framework I've described thus far there doesn't seem to be anything that precludes research on "madness-as-strategy" within RDoC. Research funded within the RDoC matrix might, for example, describe the ways in which various extreme variations on negative valence systems (such as fear or anxiety) are correlated with different brain patterns but are nevertheless adaptative in nature and serve a specific evolutionarily selected function. As the initiative is not committed,

at least in theory, to the notion that these extreme variations in negative valence systems are pathological, there doesn't seem to be an opposition between the theoretical commitments of RDoC and "madness-as-strategy".

If we go back to the driving forces behind the creation of RDoC, validity and vagueness, research on madness-as-strategy could also help with the issues noted with the DSM. Whereas it wouldn't be *etiopathological* validity because the notion of pathology isn't applicable to madness-as-strategy⁵, the categories created (assuming RDoC would lead to new categories) would be clearer and a better understanding of their etiology would eliminate the issue of overlap and combinatory vagueness. For example, whereas anxiety wouldn't be considered as pathological in nature, we would nevertheless have a clearer understanding of its causal origin and could therefore distinguish this condition from others with better accuracy. Potentially, such research would also yield some form of treatments as well⁶.

While Garson's view is relatively fringe (compared to neurodiversity or cultural psychiatry for example), it showcases how open the framework seems to be to a wide array of theoretical approaches in psychiatry. Indeed, RDoC *can* accommodate reductionist perspectives, but it is not *committed* to understanding mental illness as dysfunctions of brain circuits.

The fact that RDoC as a theoretical framework makes no commitment to pathologies being located strictly at lower levels of analysis doesn't necessarily mean, either, that the notion

⁵ Garson (2022) nevertheless leaves open the possibility that perhaps not *all* currently described psychopathologies could be explained in terms of strategies. Certain clinical symptoms might still be pathological in nature.

⁶ This is not something explicitly discussed by Garson, but even though madness-as-strategy conceptualizes madness as adaptative, it doesn't claim that madness is innocuous. The pain that may be caused by those strategies could be alleviated following an approach to treatment that doesn't aim at fixing dysfunction but aims at reducing suffering – something along the lines of Joanna Moncrieff's drug-centered model which conceptualizes psychiatric drugs as agents capable of producing subjective effects without "fixing" underlying dysfunctions (Yeomans, Moncrieff, and Huws 2015; J. Moncrieff 2018).

of psycho*pathology* is rejected. One way to accept it is to integrate various levels of analysis together, and find correlates so that pathological states are determined through the relation between lower-level analysis and higher levels such as subjective experiences, developmental factors and so on (Patrick et al. 2013; Stoyanov, Telles-Correia, and Cuthbert 2019; Eronen 2021). A pathological state could be one in which a brain state plus a reference to some norm of expected behaviour is correlated with an extreme variation along the dimensional aspect of self-reports within given subconstruct of the RDoC matrix. For example, an unusual pattern of brain activity may be correlated with self-reports that constitutes an extreme variation along the arousal domain, and this variation is deemed pathological following a reference to some set of norms.

This remains an open question, but through the integration of various levels of analysis (and without assuming that pathological states are located strictly at lower levels), one could presumably determine that certain extreme variations in the functioning of various dimensions of the human mind are, in fact, pathological⁷. This is, in a way, similar to researchers in somatic medicine that may study the range of functioning of specific organs and use some reference to a norm in order to determine a pathological state. Again, these examples are to illustrate that RDoC is theoretically very open to a wide variety of research, including some that aim at discovering the etiology of various *dysfunctions* in different dimensions of the human mind. It may be the case that in practice no data supports this hypothesis, or even that there are theoretical limitations that would make it impossible to find out data to support this hypothesis in the case of psychiatry. For the purpose of this thesis, I don't need to further explore these debates and will remain agnostic on this question.

⁷ For a discussion on these theoretical issues, and especially on the notion of "patchy reductionism" see (Faucher and Goyer 2017; Sanislow et al. 2010; Kendler 2015)

In the end, as Sanislow puts it, RDoC is perhaps best understood as a "scaffold to organize findings, and on which a nomological net may be constructed" (Sanislow 2016). In theory, RDoC makes no *a priori* commitments to any theory of pathology, biological causation, or on the nature of which treatments (if any) are suited to respond to mental distress. In theory again, a wide variety of research could be integrated within the RDoC matrix to better clarify these problems. In practice, however, the situation is vastly different. The discourse that surrounds the initiative as well as the scientific practices that emerged from it seem committed to a relatively narrow understanding of mental suffering.

3. <u>RDoC in Practice</u>

In contrast to the portrait of RDoC I presented in the last section, the literature on the initiative emphasizes its commitment to reductionism. Much of the debates surrounding RDoC seem to be in agreement to the fact that RDoC is *somewhat* committed to it (although there are dissenting opinions on precisely to what extent) (Faucher and Goyer 2017; Juriako and Malatesti 2020; Pernu 2019). It appears, however, like the theoretical framework is much more open to various types of research than what has been traditionally described. I suspect this is in part because most of the criticism that surrounds RDoC are using papers and comments written by the proponents of the initiative (or the documentation provided by the NIMH) as a source to criticize it. As a result, there is a lack of engagement with its theoretical framework taken in isolation (and the potential for a diversity of approaches to coexist within it). I believe that this overreliance on the comments written by the proponents of RDoC is what leads to some uncertainty in precisely identifying the theoretical commitments of the initiative.

In other words, the impression that many commentators have that RDoC is committed to reductionism may be the result of a confusion between the theoretical framework *itself* and the way people at the NIMH have *talked* about the framework and *used* it. Debates on precisely to what extent RDoC is "committed" to reductionism may be relative to the interpretation that one might have of the discourse that surrounds the initiative.

To say that RDoC is open in theory to research on a strictly reductionist understanding of psychopathology, and that the proponents of the initiative are committed to such an understanding, is not to say that the framework itself is *limited* to it. In this section, I will show that there exists a gap between what RDoC *is (or could be)* and the *discourse* and *practices* that emerged as a result of the initiative. Explaining the reasons behind this gap is ultimately what will be the core focus of the rest of this thesis.

3.1. <u>Public Discourse</u>

By far the most often cited pieces of evidence on RDoC come from various papers and comments written by Thomas R. Insel, head of the NIMH when the initiative was first introduced. When trying to understand the discourse that surrounds the initiative – and not necessarily the framework *itself* – analyzing Insel's comments is especially important. This is due to the structure of the NIMH, and the type of management he was responsible for while he was at its head.

In a recent study on the perception of RDoC among senior figures in psychiatric research in the United States and the United Kingdom, sociologist Martyn Pickersgill discussed the central role of Insel in shaping the priorities of the NIMH. He notes that within the scientific community in mental health research, there is a prevalent sentiment that RDoC, and the specific ways in which Insel perceives it, is imposed upon researchers and is *prescriptive* in nature (Pickersgill 2019). In other words, if you wish to receive funding for your research at the NIMH, you must make it compatible with the requirements of RDoC *as understood* by Insel and the agency overall. This is seen as the result of Insel's more proactive approach in shaping

the allocation of resources and the scientific priorities of the agency compared to previous heads of the NIMH. Pickersgill notes that many perceive him as having "acted somewhat unilaterally over the release of RDoC" (Pickersgill 2019) by consolidating his power, and determining the overall funding priorities. As such, his comments represent more than his opinion on these matters and reflect, in a sense, the views of the agency as a whole.

Again, we must be careful when examining these comments as not the framework *itself* but the interpretation and the intent of the individuals that make up the NIMH. They can be better read as a window into the ways in which RDoC was perceived within the funding agency, and the purpose it was expected to serve in psychiatric research more generally.

Recall that earlier I presented RDoC as a tool to respond to the issues noted with the DSM, but the way in which these issues ought to be resolved is still an open question. By doing away with the categories of the DSM, in theory RDoC's framework leaves open the possibility that psychopathologies are not pathologies but adaptative strategies, are illnesses located at various levels of analysis, are conditions influenced by the environment or the culture, or a combination of all these approaches. As we will see, Insel and others involved with the development of RDoC usually have a much narrower understanding of those debates.

Early in the process, and in a series of papers, comments, and blog posts, Insel detailed his views on the function and purpose of RDoC. In the introduction, I cited one of those comments published in 2010 in which he (along with other members of the NIMH) defends the need for RDoC as a framework and for the rejection of the DSM. There, after arguing that the manual is unreliable (for the reasons I mentioned earlier), he presents what he sees as the three core assumptions of RDoC: 1. mental illness are brain disorders, 2. clinical neuroscience is the appropriate tool to identify these dysfunctions, and 3. the data obtained from genetics and clinical neuroscience will supplement data on clinical symptoms and aid in their treatment (Insel et al. 2010). As we saw in the last section, it's not clear that any of these commitments are actually part of the framework *itself*. The RDoC matrix makes no assumptions about biological causality, theories of psychopathology, nor on appropriate treatments or modes of patient assessment in clinical practice. Nevertheless, it seems that right from the beginning, Insel and others at the NIMH were committed to these ideas and saw RDoC as a tool to advance them.

In 2013, Insel published another important blog post as the head of the NIMH during the time when the APA was releasing its fifth edition of the DSM. There, he reiterated his criticism of the manual, and presented RDoC as a project "to transform diagnosis by incorporating genetics, imaging, cognitive science, and other levels of information to lay the foundation for a new classification system" (Insel 2013). While the mention of "other levels of information" may appear tentatively like an admission to the effect that mental illnesses are not to be studied solely at lower levels of analysis, he also clearly states again that "mental disorders are biological disorders involving brain circuits" (Insel 2013) thereby committing himself to a similar position to the one he was defending three years earlier.

A year later, Insel published another comment in which he reiterated again the same theoretical commitments. Two details are nevertheless interesting in these later comments. First, he explicitly defends the idea that RDoC's ultimate goal is "precision medicine for psychiatry" (Insel 2014). This is important because of the theoretical commitments that are embedded within precision medicine. In short, this is an approach to medical treatment that seeks to tailor clinical interventions to each specific patient rather than to provide generic treatments to those presenting with the same broad condition. Under that approach, treatments are based on the relationship between a specific variation in a given biomarker (usually genetic) and an intervention. In psychiatry, as Kateryn Tabb has argued, to see precision medicine as the ultimate goal is to commit oneself to prioritizing the study of lowlevel mechanisms above everything else since they "act as both therapeutic targets and diagnostic tests" (Tabb 2020)⁸. Therefore, the explicit focus that Insel places on precision medicine is another way of arguing that RDoC, in practice, is committed to the study of lowlevel biomarkers above anything else.

The second interesting detail in Insel's 2014 comment is his explicit acknowledgement of the fact that the initiative does not "yet incorporate the critical role of development, environmental exposures, or the evolution of psychopathology over time" (Insel 2014). He attributes the lack of attention to these levels of analysis to the relative underdevelopment of the initiative, claiming that these aspects will be better studied once "tools improve, and the clinical database expands". This again reinforces that idea that the NIMH perceives RDoC's focus to be on lower-level biomarkers above anything else, and any analysis at higher levels are seen as an addition to the framework rather than a core component.

Since 2016 and the departure of Insel, the NIMH has been led by Joshua Gordon. A year after he was appointed, he published a comment on his understanding of the state of RDoC and the future of the initiative within the agency. There, Gordon is perhaps more careful than Insel in especially endorsing specific theoretical perspectives (i.e., mental illness being *brain* disorders, for example). He talks about the hypothesis of "neurobiological explanations for psychopathology" (Gordon 2017b) as *strictly* a hypothesis (albeit "compelling") that has yet to be properly refuted or accepted. He notes that it is too early to say that RDoC has succeeded in its goal of reshaping psychiatric research and calls for the

⁸ Tabb (2020) is quite critical of the possibility of applying precision medicine to psychiatry. Again, as with the debates on reductionism and the links between mental states and brain states, these are important theoretical challenges. However, as I am focused on the evolution of RDoC and its practices I will not expand on these debates. See Lemoine (2016) for further discussions on this issue.
general continuation of the initiative. Nevertheless, he mentions the need for debates on the constructs and subconstructs of the matrix, as well as a better integration of big data (large datasets of patients in research) to achieve the general goal of precision medicine within psychiatry. For this purpose, he calls for closer links between the NIMH and the "All of Us" initiative of the National Institute of Health (NIH) in which large health databases of patients can be used for biomedical research (National Institute of Health 2022). Whereas Gordon doesn't seem as insistent as Insel might have been on lower-level analysis being the sole priority of RDoC, his appointment as the head of the NIMH doesn't appear to represent a paradigm shift in the research priorities of the agency, but more a cautious continuation of the same goals.

This is reflected in his continued support for precision medicine in psychiatry, his further comments made in the following years (Gordon 2020b; 2020a; 2017a), as well as in the NIMH's Strategic Plan for Research for 2020-2025. There, the first goal of the agency is to "Define the Brain Mechanisms Underlying Complex Behaviors" (National Institute of Mental Health 2022b). The plan, which is composed of three other goals⁹ divided into *objectives* and then *strategies* to achieve these objectives, makes it clear that the funding priorities of the agency are targeting the "circuits involved in complex behaviour" with some room for "nongenomic factors (e.g., the environment, experience, the microbiome) and their impact on the risk for mental illnesses" (National Institute of Mental Health 2022b). However, the objectives of that goal and the strategies to achieve these objectives are almost exclusively focused on genes and brain circuits. In fact, out of the eleven strategies included in the first goal, only one (strategy 1.3.B) mentions the study of the influence of environmental factors on neural activity patterns

⁹ The other 3 goals are, in order, to "Examine mental illness trajectories across lifespan", to "Strive for prevention and cures" as well as to "Strengthen the public health impact of NIMH-supported research" (National Institute of Mental Health 2022d).

during various cognitive functions, social cognition, emotional regulation, and so on (National Institute of Mental Health 2022b). This is important when one considers that when the NIMH talks about the study of low-level mechanisms, they almost exclusively refer to studies that do not necessarily use human subjects but "animals, cell cultures, brain slices" (Hoffman and Zachar 2017). A study on brain circuits could relate that activity to higher-level analysis (selfreport, environmental factors and so on), but this is usually not what the agency has in mind.

We saw in the last section that, theoretically, there is no clear obstacle to integrating the environmental and developmental aspects in research funded through RDoC, but researchers at the NIMH have nevertheless acknowledged that historically there has been some difficulty in doing so. Environmental and developmental analysis have been largely left aside from the official documentation provided by the agency, leading "investigators [to infer] that these important aspects were omitted from the framework" (Sanislow et al. 2022). I mentioned earlier that Gordon wanted to review the definitions of constructs and subconstructs, and one of the incentives for doing so was to define constructs that are better suited for the study of their development across the lifespan of an individual. It was noted that some of the constructs were reflecting "mature functions, such as language or cognitive control, as opposed to developing capabilities that might differ in function and neural circuitry" (Sanislow et al. 2022). Addressing this issue was the purpose of a workshop in November 2019 at the NIMH¹⁰, but it would be too early to claim that this, again, represents a significant shift in the priorities of the agency. At best, we can infer from these discussions that the NIMH demonstrates *some* openness without radically changing its perspective.

¹⁰ One influential proposal during these discussions was to consider the developmental and environmental aspect as a *third dimension* to the RDoC matrix. In other words, to see each cell of the matrix, or each point where a subconstruct meets a level of analysis (e.g. the study of circadian systems along the genetic level) as influenced by the environment and through the development of the function. As such, the integration of these levels remains secondary with respect to the study of lower level mechanisms which is still seen as central (see Mittal and Wakschlag 2017)

In short then, the discourse that surrounds RDoC since its inception, as well as the documentation provided by the NIMH and its strategic plan, makes explicit theoretical commitments to the idea that mental illness is best understood as brain dysfunctions and ought to be targeted through precision medicine. As such, research on low-level mechanisms of the brain is favoured, while environmental, cultural, or alternative understanding of mental distress (such as madness-as-strategy) are left aside. While Insel was the head of the NIMH these commitments were made explicitly with little room for dissenting opinions. Today, Gordon seems more open to change in that area, but despite some claims in the literature that the "[...] initiative started as a poster child of explanatory reductionism, [but] has quickly matured into a truly integrative framework focused on neurobiological, psychological, developmental, and environmental elements of mental health systems" (Fried 2022) the positioning of the agency and its funding priorities remain largely unchanged.

3.2. <u>Research Funding</u>

It seems clear that those at the NIMH were and to an extent still are committed to the notion that psychopathologies are pathologies that can be understood as dysfunctions of brain circuits. Based on this, they aim at providing psychiatry with the tools for precision medicine by prioritizing research on lower levels of analysis. The remaining question is whether this perspective is reflected in any way in the studies the NIMH choses to fund through RDoC.

Answering this question is relatively complex. The NIMH as a funding agency directly provides funding for research through RDoC-specific funding opportunity announcements (FOAs), but researchers are free to integrate (and indeed do integrate) RDoC's framework in their research funded elsewhere (within the funding portfolio of the NIMH or not). For example, researchers might submit a funding application for the study of the influence of genes on fear response, and make use of the RDoC matrix as part of their study design, without applying for an RDoC-specific FOA. However, gathering data on this wide range of studies is far more difficult than RDoC-specific studies since researchers might use the RDoC matrix in unconventional ways and without direct or explicit acknowledgements.

In a recent meta-analysis of studies funded by the NIMH on neurodevelopmental factors in mental health (Pacheco et al. 2022), researchers made use of natural language processing algorithms to compare research funded through RDoC-specific FOAs with research that made use of the RDoC framework elsewhere. They determined that when a study's "title, abstract, and specific aims of the grant" were at least 66% similar to previously funded research through RDoC-specific FOAs, it could be understood as being sufficiently *RDoC-informed* to be studied as part of the initiative within the funding portfolio of the NIMH. Following this screening process, they analyzed a sample 664 grants between 2009 and 2019.

Since the studies they analyze were directly funded by the NIMH (albeit largely outside RDoC-specific FOAs), their results provide some evidence for the purpose of this thesis¹¹. First, they provide evidence on the hegemony of RDoC within the NIMH which is central to the analysis of the following chapters. The researchers note that at its height in 2017, 75% of the research funded on the development of various functions of the human mind within the NIMH did so in an *RDoC-informed* way (within the general parameters of the initiative) (Pacheco et al. 2022). As we saw earlier, this gives credibility to the impression that many researchers have that constructing your research in a sufficiently RDoC-informed way is perceived as an *imposed* prerequisite to receiving funding through the NIMH (Pickersgill 2019).

¹¹ It is worth nothing that the study is concerned with research funded *by the NIMH* (outside RDoC-specific FOAs). Other federal agencies within the United States, and research funded elsewhere in the world that are *RDoC-informed* are not included. It would be interesting to see if researchers making RDoC-informed studies outside of the United States are more open to studies targeting higher level analysis. This would provide more evidence on the influence of federal agencies in the establishment of research priorities. However, I am not aware of any such studies.

Second, while Pacheco *et al.* (2022) don't explicitly try to analyze the *content* of the research performed on developmental aspects within RDoC, some of their results remain informative to see if, *in practice*, the NIMH tends to favour research on lower levels of analysis in their funding decisions. As part of their conclusion, the authors mention that:

More work could be done to elucidate more culturally sensitive constructs and identify domains of functioning that may be informative for exploration across different populations and/or in different contexts. The RDoC framework may also prove useful in understanding how social drivers of mental health 'get under the skin' by acting on specific processes and brain circuits (Pacheco et al. 2022, 372)

This, as well as earlier comments made in the paper to the effect that despite their lack of integration within the matrix, environmental factors remain "important considerations" (Pacheco et al. 2022, 361) suggests, once again, that the cultural and environmental aspects of mental suffering (as well as alternative models such as madness-as-strategy) are still underexplored within RDoC. This also provides evidence of the fact that RDoC-informed studies on lower-level mechanisms funded through the NIMH are still largely focused on those mechanisms taken in isolation, rather than on their relationships to higher levels of analysis.

In 2017, another meta-analysis was performed on RDoC-related papers since the beginning of the initiative. Using a smaller sample size (48 peer-reviewed articles), researchers paid closer attention to the *content* of each of them. As with Pacheco *et al.* (2022) their sample does not explicitly target papers that were written following funding received from RDoC-specific FOAs, but they also didn't control for papers that were explicitly the result of studies funded *by the NIMH*. Their inclusion criteria are that papers "(1) empirically examined one or more identified RDoC domains, constructs, or elements; and (2) made direct reference to

the RDoC framework as part of the study rationale, interpretation of results, or implications and future directions" (Carcone and Ruocco 2017, 2).

For the purpose of this thesis, their research can nevertheless shed light on *some* of the scientific practices of the NIMH. Presumably, a majority of RDoC-related papers are funded by the NIMH, as the initiative is not as popular outside the United States (Pickersgill 2019) and the vast majority of publicly funded research in mental health is done through the agency. Nevertheless, we must be careful as not to overgeneralize these findings since their data may include papers that were written following research that wasn't directly funded by the NIMH (or, indeed, any other federal agency). That being said, Carcone and Ruocco (2017) first note that RDoC-related studies were overwhelmingly concentrated in three of the domains of the matrix (cognitive systems, positive valence systems, or negative valence systems) with almost no studies on the other ones.

Interestingly, the authors note that research on the domains of social processes, arousal, and regulatory systems were essentially absent from the literature they analyzed. They argue that these domains were absent from their sample not because of the inclusion criteria of their study, but because "different fields of study may also have been quicker or slower to adopt the RDoC framework depending at least in part on the established theories in the field that emphasize or deemphasize biological contributions to the constructs of interest" (Carcone and Ruocco 2017, 5). Studies on social processes, for example, may not be as open to research that *strictly* targets lower levels of analysis. This again provides credible evidence that there is a bias in favour of the study of biomarkers as part of the funds allocated for research within RDoC. This bias is, in turn, reflected in which domains are studied and which are ignored.

As for RDoC-specific FOAs, the archive of the previous grant offers is freely available on the online database of the NIMH. Since the beginning of the initiative and at the time of this writing, 15 FOAs have been completed and two are still accepting applications. In total, following these 15 FOAs, 104 projects were funded for a total of over \$50m USD. Looking at the specific language used in those FOAs, we note that they often mandate (or at least strongly encourage) that a particular level of analysis must be studied (usually a lower-level biomarker). For instance, RFA-MH-14-030, launched in 2013, calls for studies on eating disorders that "that use dimensional constructs to integrate biology (e.g., brain circuit or physiological pathway) and behaviour" (National Institute of Mental Health 2013). This is one of the few FOAs, however, that specifically calls for the integration of lower-level analysis with higher-levels. A more recent FOA, in 2021, is more representative of the general focus on lowlevel biomarkers. It called for research on suicidality and its relationship to positive valence systems with a specific focus on neurobiology for novel clinical interventions (National Institute of Mental Health 2021). Again, while few FOAs were interested in the relationship between different constructs at various levels of analysis, there is a strong incentive in most of them to strictly favour research on biomarkers. This seems consistent with the previous studies discussed above.

In the end, both Thomas Insel and Joshua Gordon as head of the NIMH have reiterated their commitment to precision medicine and the focus on research targeting low-level mechanism in psychiatry. Likewise, the documentation and the research plan of the agency reflect that commitment in their explicit research priorities. Furthermore, the actual allocation of funds and the papers that emerged as a result of the initiative also show a strong bias towards a type of research that by and large targets biomarkers and ignores other levels of analysis. Therefore, we can say that although the framework is open to a plurality of novel research, the actual practices of the NIMH do not reflect that openness. The agency seems committed to an understanding of mental disorder as primarily or exclusively dysfunctions of brain circuits.

Conclusion

The National Institute of Mental Health's RDoC initiative represents a clear shift from the DSM and some of its core problematic assumptions. By freeing researchers from the categories of the manual, it also represents an opportunity for truly novel research in mental health that questions some deeply embedded notions in contemporary psychiatry. In theory, the structure of RDoC leaves the door open to a wide variety of approaches and could serve as a foundation upon which a vastly different clinical practice could emerge. In practice, however, it seems like the NIMH is committed to a narrow understanding of mental illness as brain dysfunctions, which leads to research priorities that focuses solely on the brain while ignoring other causes of mental distress.

Importantly, there is little evidence, if any, that the *best* way to study psychopathology is to focus solely or primarily on brain circuits. Without dismissing these reductionist tendencies in mental health research as outright mistaken, we can say in a minimal sense that there is no broad consensus within the literature on these issues¹². As a result, it would be incorrect to view the funding priorities of the NIMH as strictly based on what is scientifically valid or sound.

¹² As with the debates on the nature of illness, the question of reductionism is also central in philosophy of psychiatry. These debates go far beyond the topic of this thesis. However, the issue of the gap between the theoretical framework of RDoC and its practices still exists whether you believe that reductionism is false or whether you think, minimally, that there is still uncertainty around this question. The minimal interpretation has the benefit of being less controversial which is why I will use it. Nevertheless, for further discussions on reductionism in psychiatry see Gold (2009), Eronen (2021), Roache (2019), and Murphy (2020)

Therefore, we must find some possible explanations for these practices elsewhere. One starting point is with the acknowledgement that the establishment of research priorities carry normative implications. In this case, they reflect certain values on the role of psychiatry and the social perception of the type of suffering traditionally handled by it. The next chapter will attempt to better understand these issues and propose a hypothesis about some of the reasons behind these normative choices.

Chapter II: The Social Practice of Psychiatric Science

Introduction

Despite the Research Domain Criteria's (RDoC) openness to a wide variety of research on the nature of mental suffering, the initiative has so far been restricted to solely researching it at lower levels of analysis (genes, mental circuits, neurochemistry and so on). Based on our current understanding of psychiatry, this strict focus on biological mechanisms of the brain doesn't seem to be epistemically motivated. In other words, there is no broad consensus in the psychiatric research community that the *best* way to understand mental suffering is to strictly focus on lower-level mechanisms. Therefore, we must find some explanation for these scientific practices elsewhere. Clarifying the various reasons for why the National Institute of Mental Health (NIMH) may have chosen to establish these priorities will then help provide some guidance on how research funding in psychiatry ought to be structured. This will be the focus of the final chapter of this thesis.

In this chapter, however, I will first significantly expand on the reasons why the current research priorities of the NIMH expressed in RDoC seem to pose a problem. I believe that my arguments will remain neutral on the questions of etiology or ontology of mental suffering. In other words, I will defend that even the most committed reductionist should recognize that the current funding priorities of the agency are problematic for *epistemic* and distinctly *normative* reasons. Epistemically, they do not seem to fund sufficiently diverse research to produce reliable knowledge in the psychiatric research community. Normatively, they've failed to include the needs and concerns of psychiatric patients.

Following that, I will offer some explanations for why the NIMH may have chosen to structure the funding priorities of RDoC in the way it has. This will be based on a view drawn

from feminist philosophy of science such as Helen Longino. According to this view, which understands science as a social practice permeated with normative considerations, I will argue that neoliberalism as a political ideology might be partially responsible for the funding priorities of the agency.

In short, while the first chapter tried to understand *what is RDoC and what it does*, this chapter will answer the question of *why the funding priorities of RDoC are a problem* as well as *what might be responsible for these priorities*. Based on that, the final chapter will be entirely dedicated to evaluating strategies to correct these issues.

4. Epistemic and Moral Issues

Before understanding the role of political values in shaping them, I must first answer the question of why the current research priorities of RDoC seem to pose a problem. In this section, I will provide two distinct arguments for the necessity of diversifying the funding portfolio of RDoC. These arguments will remain neutral on complex questions related to the nature or etiology of mental suffering. In other words, even the most convinced reductionist¹³ should be in favour of diversifying the research priorities of the NIMH for both *epistemic* and distinctly *normative* reasons.

4.1. <u>Transient Diversity</u>

¹³ There are complex theoretical differences between *reductionism* and *eliminativism*. The latter usually assumes that mental states are not metaphysically real, while the former doesn't deny their existence but claims that they can be reduced to brain mechanisms (Ramsey 2022). While these debates have some merit in philosophy of mind and in philosophy of psychiatry, in the context of my arguments, and as I've said in the introduction to this thesis, I will refer to reductionism as *any position which claims that we ought to prioritize research on low levels of analysis above or at the expense of everything else*. The questions of whether those who support that view also claim that subjective mental states are real, or precisely what *type* of reductionism is implicated in RDoC's practices, isn't relevant for my purpose.

Why are the current research priorities of RDoC epistemically problematic? From the start, as I mentioned earlier, they do not seem to be epistemically motivated. I base this assumption on the fact that the debates surrounding the ontological status of mental suffering (whether they are objective dysfunctions of the brain, evolutionarily selected functions, socially constituted constructs of symptoms, and so on) are not at all at a stage in which we can say that there is broad agreement within the literature. At the very least, the state of our understanding of these issues would not warrant that the priorities of the NIMH be established in the way they currently are.

If that's true, then the answer to the question of why RDoC's research priorities pose a problem may seem straight forward. They are problematic because they are potentially mistaken. The NIMH is narrowly focusing on one specific approach to the understanding of mental suffering, and while this approach may be correct, it is still too early to tell. Under that level of uncertainty, it appears much more rational to continue pursuing multiple lines of research into the nature and etiology of mental suffering.

One way of cashing out this problem is to use what philosophers of science call "transient diversity" (Zollman 2010) to refer to the necessity of promoting a diversity of theories and approaches to be tested in order to ultimately reach valid consensus on appropriate theoretical frameworks. If scientists within a given community are only testing and are only interested in a narrow subset of theories, they might miss important breakthroughs and settle for less successful alternatives (Zollman 2010; Borg et al. 2019; Reijula and Kuorikoski 2019). There is a trade-off, however, in the promotion of epistemic diversity. At some point, it is necessary for a scientific community to converge on true theories and explore them further. As a result, there is a need for mechanisms that can promote diversity but only

insofar as it can be epistemically beneficial, and not to the extent that it would impede the goal of reaching valid explanations (hence the *transient* nature of the required diversity).

Reaching an optimal level of diversity involves many factors. For example, one could examine how beliefs are accepted and rejected in communities of scientists or what is the optimal level of information sharing among scientists so that consensus isn't hastily reached on suboptimal theories. However, it has also been argued that an important factor to consider, which will be the focus of my argument, is precisely the impact of funding decisions on research being conducted (especially when dealing with a centralized funding body such as the NIMH) (Avin 2019b).

In the context of institutional funding for psychiatric research, the issue of failing to reach consensus as a result of *too much* diversity doesn't seem to apply. However, the NIMH is the biggest funding agency for psychiatric research in the world (Teachman et al. 2019), and as we saw there is a perceived need by researchers to make their research compatible with RDoC to receive funding within it (Pickersgill 2019). This perception is corroborated by evidence indicating that most of the studies funded by the NIMH in the last few years have been RDoC-informed (Pacheco et al. 2022). There is also data indicating that funding from the NIMH is reliably correlated with citation impact in the field (Saraykar, Saleh, and Selek 2017). In other words, because of the immense importance that the NIMH plays in psychiatric research both in the United States but also throughout the world, and because RDoC is at the center of the strategic plan of the agency, its practices and priorities can have a large influence on the psychiatric research community overall.

As a result, there is a risk that the narrow understanding of mental suffering at the heart of the funding decisions of RDoC would fail to create the necessary conditions under which an epistemically optimal level of diversity of approaches can be studied. This risk would impede the capacity for the psychiatric research community to reach viable consensus on correct theories.

One objection to this argument is that within psychiatry there are in fact researchers interested in the social determinants of mental health, the lived experience of patients, or other higher-level mechanisms to explain mental suffering. In the past few decades, for example, the field of "mad studies" which tries to understand the lived experience of psychiatric patients from the point of view of those patients has seen growing interest (Beresford and Russo 2022). However, based on what I've argued in the first chapter it is very unlikely that such research would receive funding within the current priorities of RDoC. Researchers interested in various higher-level mechanisms (lived experience, cultural factors, and so on) still represent a narrow percentage of all psychiatric research, and especially research funded by the NIMH (Teachman et al. 2019). As I argued in the first chapter, I believe that such research could nevertheless be integrated within the RDoC matrix.

There is no specific threshold for when sufficient transient diversity has been achieved, but without the institutional support of the largest funder of mental health research in the world, it is unlikely that studies on these diverse approaches to mental health would be able to alter the core beliefs of the scientific community as a whole. One should not underestimate how important the NIMH has been historically and continues to be today in shaping the priorities of the field overall (Teachman et al. 2019).

In comparison to other arguments rooted in philosophy of mind which specifically target the validity of reductionism as a thesis to criticize RDoC¹⁴, the lack of transient diversity

¹⁴ As an example, (Faucher and Goyer 2015; 2017) both clarify the specific type of reductionism that the proponents of RDoC might be committed to. It is important to note that they do not make the distinction that I made in the first chapter of this thesis between the discourse and practices of RDoC on one hand, and the framework taken in isolation on the other. Nevertheless, they root their relative criticism of RDoC on its implicit understanding of the nature of mental suffering.

within psychiatric research at the NIMH is, I believe, a less controversial approach to understand why RDoC in the way it is currently being used runs the risk of failing to deliver on its promises. As I've stated earlier, my goal is to remain as agnostic as possible on issues related to the metaphysics of mental suffering. In other words, even if one thinks that there is reason to believe that mental suffering is *best* understood in a strictly reductionist way as dysfunctions of the brain, one must also be committed to the fact that transient diversity is a necessary condition to produce reliable knowledge in a scientific community.

4.2. <u>Lived Experiences</u>

Apart from the epistemic problem of transient diversity, others have also argued that RDoC's priorities lead to distinct *moral* issues related to the lack of inclusion of one specific higher level of analysis: the lived experience of psychiatric patients. The usual argument is that since the goal of biomedical research in psychiatry is ultimately to alleviate human suffering, and because some believe that this alleviation may not necessarily come from "fixing dysfunctions in the brain" but could also come from other types of interventions more suited to the lived experience of patients, the strict focus on the human brain could fail to provide adequate clinical or social interventions (Faucher 2022). Researching the lived experience of patients could mean, for example, funding studies aimed at understanding the way suffering caused by psychosis might be socially or culturally mediated, and thus be alleviated by various types of non-pharmacological interventions (Fusar-Poli et al. 2022; Tabb 2020; Teachman et al. 2019). Note that the argument concerns both a *moral* issue (including research on patients lived experience in the funding priorities is seen as a moral good), but also an *epistemic* issue (to do so is a necessary condition for the development of valid knowledge and ultimately useful interventions).

The epistemic issue is part of those debates that I wish to remain neutral on in this thesis. Reductionists could argue that since mental suffering is the result of brain dysfunctions, then clinical interventions that would emerge from research on the brain would be the most effective for alleviating it. This is, as we saw, the position that Insel and others currently at the NIMH seem to defend (Insel 2014). Presumably, however, if reductionists are correct, then their hypothesis would be confirmed even in a research community that funds a sufficiently diverse pool of approaches to mental suffering. In fact, as we saw, the only way to *adequately* confirm their hypothesis is if they are confirmed as part of a research community that tests it alongside non-reductionist hypothesis.

Still, taken in isolation the moral issue remains relevant for the purpose of my argument. Surprisingly, few have provided arguments on a distinct *normative* necessity for the inclusion of lived experience in biomedical research. There seems to be an implicit admission that the moral necessity follows from the epistemic concern. In other words, because incorporating these dimensions is the *best* way to capture the true ontological nature of mental suffering (and develop reliable treatment), it is therefore the morally right way to perform research. This is apparent in the field of mad studies for example (Taggart 2021).

Again, however, I wish to remain neutral on the epistemic question. Therefore, I must defend that normative requirement from another perspective. If the *moral* necessity to include the lived experience of patients as part of biomedical research in psychiatry is not tied to any position on the metaphysics or etiology of mental suffering nor on the epistemology of scientific research, then perhaps even the most convinced reductionist would accept the inclusion of lived experiences in the funding priorities of the NIMH.

4.2.1. Equality, Democracy, and Psychiatric Research Funding

One way to provide a distinctly moral argument in favour of the inclusion of these aspects in the funding portfolio of RDoC is to follow Philip Kitcher in examining the allocation of public funds as a *democratic* concern. That is to say that the decision on what to fund and what not to fund ought to be made by some sort of democratic process based on the needs and interests of those with a stake in this decision.

For example, it is customary to understand the history of public funding for scientific research in the United States with the work of Vannevar Bush right after the Second World War who convinced the American government to provide funds for public agencies and let the scientists decide *for themselves* where that money ought to actually be spent (Kitcher 2007; Faucher 2022). This is based on the assumption that experts in whichever field they work in are best positioned to make the decisions on what is important to fund and what isn't.

We will see later that in the context of the NIMH at least, this hasn't been the case and political entities have had a considerable impact on funding decisions. There is also some evidence that leaving scientists on their own in such a way (what has been called the "scientific state of nature") would not lead to more diversity and better science (Kummerfeld and Zollman 2016). However, from the point of view of justice or equality, is the argument for preserving a scientific state of nature convincing?

Starting with the fact that groups of patients have long argued for the inclusion of their lived experience and their concerns in the research priorities of the NIMH, but have failed to be listened to by the agency (Faucher 2022), I believe that the current way of allocating public funds would be considered *morally unjust* under certain theories of equality¹⁵. The moral issue

¹⁵ The argument that follows concerns the moral necessity to include the worries of patients in funding decisions, and that aspect composes *part* of what is known as "participatory research". However, the concept of participatory research covers more than just funding allocation, it also argues that patients (or research

is here that the NIMH has failed to include the worries of psychiatric patients in their funding priorities, but it just so happens that part of their worries is that their lived experience ought to be studied in greater detail (or at least that lower-level mechanisms of the brain shouldn't be so disproportionately funded).

4.2.2. <u>Relational Egalitarianism</u>

To answer the question of why that is a moral issue, I must first provide some definitions. Equality is an immensely complex notion within political theory, but broadly speaking two different trends have emerged in the current literature. *Distributive egalitarians* consider that an equal society is a society in which a specific metric (opportunities, resources, well-being, and so on) is fairly distributed among individuals. For them, equality is thus the measure of a pattern of distribution (Schemmel 2012). On the other hand, *relational egalitarians* believe that equality is better understood a measure of social relations. An equal society is therefore one in which people relate to one another as equals, and in which *institutions relate to people as equals* (Miklosi 2018; Schemmel 2012; Tomlin 2014). From a relational egalitarian perspective then, institutions (such as the NIMH for instance) ought to relate to individuals with equal concern and respect to express their status as moral equals. In the context of biomedical research funding, what does that entail?

Philip Kitcher has argued that although we don't want policy makers dictating specific scientific questions, the task of determining *which questions are important* is a fundamentally different one (Kitcher 2007). For example, the decision of allocating money to space exploration is political and democratic, while the decision to study specific questions in

participants) ought to have a say in study design, specific research questions, and other precise aspects of biomedical research. Also, participatory research is sometimes assumed to be an epistemic requirement regarding the validity of the results (Tekin Forthcoming). As I am here only interested in the moral concern and in research funding, I will not cover these other aspects. Therefore, I hesitate to use the term in the context of my argument. For further discussions on these issues refer to (Abma, Voskes, and Widdershoven 2017; Wykes 2014)

material science to build rockets and reach this goal is for scientists to decide. While Kitcher defends that claim on the basis that scientists have no special expertise in understanding what is politically or socially important to study, he doesn't really provide an argument on the normative justification for why it is important to pursue scientific goals that would be, in the case of biomedical research, consistent with the worries and concerns of patients.

I believe that relational egalitarianism, compared to traditional distributive accounts of equality, can provide conceptual tools to justify that necessity. The framework of relational egalitarianism is also quite powerful as a way of examining and responding to some of the possible criticisms I will explain later.

Why should science be responsive to the concerns of the public who funds it, and in particular to the populations they study? Relational egalitarians can argue that it is because of what ought to be the nature of the relations between public institutions and individuals. It is generally admitted that one of the requirements of justice more broadly is that the rights and interests of all are given the same weight. Because relational egalitarianism is also concerned with relationships in which institutions relate to individuals as equals, it argues that the state (namely through its institutions) ought to secure "the confidence that [their] rights and interests are being given equal weight" (Hosein 2018). This is to ensure that people retain a sense of their status as political and moral equals in society.

Why is it important that people regard themselves as equals? Relational egalitarians want to establish the right relationships between individuals. In other words, they want people to see and treat each other's as equals. And to see yourself as having equal worth is understood as a *condition of possibility* for being able to relate to others as equals (Stoljar and Voigt 2021). It is impossible to relate to others as equals if you haven't been given the political and structural basis¹⁶ to see *yourself* as an equal. Therefore, the state must express, through its institutions, that individuals are moral equals to ensure that people treat and view *each other's* as equals.

How do these theoretical points relate to biomedical research funding? I believe that failing to be responsive to the worries of patients and their claims that their lived experience should be studied, amounts to failing to express their status as moral equals, and is therefore unjust. If, following Kitcher, the question of "what should be studied" is a *democratic* concern (Kitcher 2007), then psychiatric patients are equals in their demands for certain issues to be investigated. Scientists have expertise in which specific questions within those greater concerns are relevant (as this is an epistemic and not a democratic concern) but should not be given absolute power and authority over which worries are deemed worthy to be understood.

This argument goes beyond the strict need to respect the democratic rights of all in the attribution of public funds because it provides a deeper explanation of the moral wrong that would be caused by a failure to do so. By not being responsive to their worries, the NIMH (as a public institution) effectively deepens the stigma surrounding psychiatric patients by granting them an unequal social status, and therefore the state fails to do what is just.

However, under that view, *all* would have equal claims to influence the research priorities of public agencies, and not just psychiatric patients. How could we justify that psychiatric patients have *stronger* influence than others in setting up these priorities?

In theory, a minimal interpretation of that argument is that the NIMH doesn't need to assume that psychiatric patients have a stronger claim than others, but merely that the agency ought to also be responsive to their claims. In that sense, it is more a criticism of the current over-representation of certain scientists in the processes for establishing the funding priorities.

¹⁶ For further discussions on the nature of those basis, namely in relation to the notion of self-respect, see (Stoljar and Voigt 2021; Dillon 1997; Mackenzie 2020; Darwall 1977)

However, one could also argue that these patients, *in practice*, do indeed have a status that would grant them special privileges in the deliberation over the allocation of funds. To understand why, I must go back to Kitcher's argument.

4.2.3. Experiential Knowledge

Within the framework of relational egalitarianism, I believe that there are two ways in which one can argue that psychiatric patients have *stronger* claims than others in influencing the funding priorities of the NIMH. The first one concerns the type of knowledge they possess, and the second one concerns what are the stakes of the decisions being made. Together, they provide an argument in favour of including the concerns of patients as part of a diversified funding portfolio within RDoC.

First, let's consider the knowledge argument. By understanding the establishment of research priorities as a democratic concern, there is a danger that we neglect the importance of expertise in the process. This is what Vennevar Bush was worried about. He wanted the most knowledgeable people to determine what is important and allocate the funds for it. This seems correct, but we must be clear on what *type* of knowledge is implicated in such decisions. I believe that Bush misunderstood the nature of that knowledge by claiming that scientists are best positioned to make the decision on what the fund.

By conceiving answers to the question of what ought to be studied as instances of knowledge production about what appears worrying and important, Kitcher's proposal is that scientific funding should be submitted to a public forum in which all individuals have ideally the *same* claims to influence resource allocation. He argues that this public forum would be one in which people are "extensively tutored in what has already been achieved and what options are now pursuable" (Kitcher 2007) and could therefore make the right *informed* decision. This is, broadly speaking, his notion of "well-ordered science". In this context it

would entail that the NIMH should organize public deliberations on its funding priorities in which members of the public are educated on psychiatric research and the future possibilities of the discipline before reaching consensus¹⁷.

This is where my argument goes beyond that of Kitcher. He argues that this ideal can never be fully met in practice, but that we ought to aspire to it and design institutions that maximizes the degree of democratic deliberations (Kitcher 2007). However, he doesn't expand on the nature of that aspiration. I would argue that in the context of psychiatric research the type of knowledge relevant to the decision-making process is knowledge in large part possessed by psychiatric patients themselves. As patients, they have acquired experiential knowledge, or a knowledge of "what it is like" (Shapiro 2012) to suffer mentally. Devora Shapiro argues that experiential knowledge has to satisfy three conditions: 1. An experience of X (mental suffering), 2. a self-reflection on that experience, and 3. a connection of that experience with similar experiences of others (Shapiro 2012; Tonelli and Shapiro 2020). In this case, all three conditions are met by psychiatric patients who communicate their worries to the NIMH through patient groups.

As such, on the question of what is worrying or what seems important to pay attention to in psychiatric research, patients are competent knowers in the deliberations on funding allocation. Scientists can also provide knowledge relevant to the deliberations, but their expertise lies in knowing the current state of science and the various possibilities for the future. Their input, although different, is therefore very much crucial to the process as well.

¹⁷ As part of the development of its strategic plan, the NIMH does organize consultations with members of the public, but those who participate in them can only provide comments and suggestions to modify a first draft of the plan developed by an internal committee (Faucher 2022). Such practices are not comparable to the ideal of democratic deliberation defended by Kitcher.

In theory, psychiatric patients could properly "tutor" (to use the term employed by Kitcher) others in public deliberations to make them aware of their experience and what matters to them. However, in the real world, time and resources are limited. As a result, in non-ideal situations, rather than spending time educating others on their concerns as patients, it appears legitimate for them to be the ones *primarily* consulted when the NIMH decides what to fund.

To go back to the general framework of the argument, under a relational egalitarian account of equality, a failure to recognize the special expertise of psychiatric patients over their experience of living with their own condition would amount to a failure to recognize their status as equals. This is because it would deny them their equal status as competent knowers. Denying this status would form an injustice toward psychiatric patient by unduly granting scientists with absolute authority over determining the funding priorities of public agencies (in my case, the NIMH), or the general population with equivalent expertise.

In a social context in which there is a considerable amount of bias and prejudices around psychiatric patients (Perlin 2000; LeBlanc and Kinsella 2016; Sanati and Kyratsous 2015), it is especially important for the state to assure and communicate, through its institutions, that they are being viewed and treated as equals. Without the institutional and external assurance of their equal status, they cannot reasonably expect to maintain a level of self-respect (a sense that they have worth and are equal) necessary to treat others as equals (Stoljar and Voigt 2021). The NIMH being responsive to the worries of these patients is therefore a matter of justice and equality, and in a non-ideal world the best way to ensure that responsiveness is to *prioritize* the input of patient groups in the decision-making process. In a non-ideal, time sensitive, and resource-limited world, to treat the input of all in the same way without any regard for the experiential knowledge of psychiatric patients would prohibit that responsiveness. Note that the experiential knowledge argument does not need to assume that psychiatric patients have an epistemic advantage regarding what the true nature of mental illness is (which is a more controversial claim that reductionists could not endorse), but merely that they know better what it is to suffer in such a way and therefore they are better placed to inform the scientific community of what may need studying. If patient groups believe that their lived experience is worth paying attention to, then the NIMH has a *moral* duty to include those worries as part of its funding priorities because failing to do so, as a public agency, means failing to treat these patients as equals.

Likewise, from that argument does not follow that psychiatric patients should have absolute authority over every funding decision made by the NIMH. I will go back to this concern in the following chapter, but the overall goal is always to reach an optimal level of epistemic diversity, and there is a danger that in letting patients fully determine what to fund, one would introduce another type of conservatism in the funding portfolio of RDoC.

4.2.4. The Stakes of Psychiatric Research Funding

A counterargument to that claim is that for some relational egalitarians, differential weights in democratic deliberations are at odds with the ideal of treating all as moral equals. This is the view, for example, of Elizabeth Anderson (Anderson 1999) who argues that this would create hierarchies that could threaten relationships in which people view each other's as equals. By granting a particular group with more influence over democratic deliberations or political decisions, one is effectively giving them more power than others, thus creating a hierarchical power imbalance. Because of that, relational egalitarians as a general rule wish to eliminate as many hierarchical relationships as possible (Anderson 2008).

However, and in response to this claim, there is a second reason why I believe psychiatric patients have stronger claims to influence the research priorities of the NIMH. Here I follow

an argument recently provided by Andreas Bengtson on this question. He has argued that in a context in which differential voting weights are not based on the idea that some have more intrinsic worth than others, but in the fact that some groups have *different stakes* in the decision being made, then to provide those groups or individuals with different voting weights is consistent with the relational egalitarian notion of equal relationships (Bengtson 2020). The argument is that allowing for differential voting weights based on stakes can be a way of equally recognizing the interests of all (and the way these interests vary from group to group or personto-person), and thus treat all as equals. For example, a society in which people of a certain race have more votes than others would be unjust, but that wouldn't be the case for a society in which the votes of disenfranchised and underserved communities have more weight when deciding how to spend public funds in education.

In fact, Bengtson argues that in certain contexts differential voting weights is not only consistent with relational egalitarian concerns, but it is morally *required*. He argues that when those impacted by a decision have no choice but to bear the consequences of that decision, to allow them to have more influence is required to treat them as equals (Bengtson 2020). This is because *failing* to provide differential voting weight would signal to all that their varying level of interests, including those who will necessarily have to live with the consequences of the decision, are equally ranked in the eyes of the state. Thus, the state would fail to signal the equal status of all. For my purpose, the fact that psychiatric patients are the ones primarily concerned with psychiatric research to alleviate their suffering means that what is at stake in these funding decisions is what primarily impacts them. In addition, as patients they have no choice but to bear the consequences of whatever funding decisions is reached. As such, I believe that to grant all with the same claims to influence the funding priorities of the NIMH would signal that the importance that the decision may have for those who are not suffering

mentally "is ranked on the same terms" (Bengtson 2020) as it is psychiatric patients, thus expressing an unequal moral status.

Relatedly, including the concerns of psychiatric patients is also a matter of establishing trust between psychiatry as a discipline and those it is expected to help. Patients should trust psychiatry to handle their suffering properly (i.e., mental suffering is the *domain* of trust). It has been argued that one of the requirements of trusting relationships is precisely that the individual or institution being trusted is *responsive* to the needs and worries of the trustee within that domain (K. Jones 2012; Alfano and Huijts 2020). Therefore, not only is the inclusion of the worries of patients as part of the funding priorities of the NIMH required to ensure the status of patients as moral equals, but it is also morally required to ensure that psychiatry remains (or becomes) trusted by them. Trusting relationships may be a valuable good in and of itself (or may be part of what constitutes good relationships from a relational egalitarian perspective), but they are also instrumentally beneficial to continue being able to enroll research participants, for example.

If you are a committed reductionist, you might reply to my arguments that funding research in these dimensions (although requested by patients) will not yield useful results, and therefore we shouldn't devote resources to them. However, reductionists must also recognize that producing negative results is still an important part of scientific research. The lack of such results in the current state of science more generally has been criticized (Fanelli 2012; Nimpf and Keays 2020). To have a good and healthy scientific community also means to (sometimes) produce and publish research that does *not* confirm a hypothesis. Currently, while reductionists may believe that they are right, there is no broad consensus on these issues. As a result, what

patients are requesting to be studied is still scientifically viable on top of being morally justified¹⁸.

What is morally required is not to produce research that confirms what patients are thinking, what is required is to investigate their worries and provide data to better understand them. As a result, and perhaps paradoxically, in the current state of psychiatric research in which there's considerable uncertainty about the theoretical foundations of the discipline, even individual researchers who think that these questions are somewhat scientifically misguided should *epistemically* be in favour of researching them (to achieve a sufficient level of transient diversity¹⁹) and should also support their funding for strictly *moral* reasons.

In the end, both the epistemic and moral issues would be fixed by establishing the necessary conditions for transient diversity. However, to understand how to do that (which will be the focus of the final chapter), I must first explain *why might the funding of the NIMH be structured in the way it currently is.* This involves paying attention to the ways in which values permeate scientific practices and identifying *which values have influenced those of RDoC.* Only after I've answered this question can I provide some guidance on how to address these issues.

¹⁸ In a world in which what patients are requesting has been thoroughly invalidated by our understanding of mental suffering (e.g., if patients were to request that studies on the influence of astrology be included in the funding portfolio of the NIMH), the moral argument would still hold but would need to be balanced with the desiderata of researching theories that are still scientifically useful. There is also a bigger question regarding how likely it would be for patients to request studies on invalidated theories in a context where psychiatry is a trusted institution. I will go back to these issues in the final chapter of this thesis.

¹⁹ Note that the goal is to achieve a sufficient level of *diversity* in the questions that are studied. As such, there must be a balance in what is researched by the scientific community. As I've stated earlier, I am not claiming that *all* research at the NIMH should strictly be based on the concerns of psychiatric patients, but merely that the funding portfolio should adequately address and reflect their worries. Scientists also have genuine claims to influence where resources are spent. The question of where to find that balance will be part of the discussions in the following chapter.

5. <u>The Social Practice of Science and Neoliberal Psychiatry</u>

To summarize the argument thus far; despite its openness to a wide variety of research RDoC has so far restricted its funds to studies aimed at understanding lower-level mechanisms of the brain. This poses two problems. The first is the general epistemic problem of failing to provide the necessary conditions for transient diversity in psychiatric research, and the risk that this would impede the production of valid results. The second is the moral problem of failing to integrate the concerns of patients in the establishment of research priorities. Both these problems are present regardless of one's position on the metaphysics or etiology of mental suffering. Even if one thinks that we have reasons to believe that brain dysfunctions are solely responsible for that suffering, one also ought to accept that transient epistemic diversity and lack of integration for the lived experience of patients are serious concerns.

This is because, on one hand, the success of reductionism as an explanatory framework can only be confirmed when compared with other adequately studied theoretical approaches. On the other hand, based on my previous argument, the respect for patients is a moral constraint on psychiatric research more generally. The questions that remain is why do these two issues exist? Which values seem to have skewed the scientific practices of the NIMH towards prioritizing reductionism at the expense of anything else?

5.1. <u>RDoC and the Social Practice of Science</u>

Science is a social practice which is permeated by normative considerations. I argued in the last section that, morally, one of those values is that the funding priorities of public agencies should reflect the worries and concerns of the populations they study. Feminist philosophers of science have long argued that scientific practices are *necessarily* influenced by social, political, cultural, or any other normative factors (Harding 1995; Bright 2018). This is the big lesson

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from the influential work of Helen Longino. Science is a collaborative exercise produced by communities of scientists who are influenced by biases and social forces, and it is only through the right institutional mechanisms to manage these normative considerations that we can ensure the validity of its results (Longino 1990). This is the general framework I've been assuming thus far.

We saw earlier that the voice of patient groups in the funding allocation at the NIMH has failed to be heard, but this doesn't entail that historically all the funding decisions made by the agency were based on the scientific consensus of researchers left to their own device. The so-called "scientific state of nature" (Kummerfeld and Zollman 2016), whether desirable or not, has never existed. Political entities have had a large role to play in what ought to receive funding within the NIMH.

Luc Faucher (2022) has recently provided an overview of how that process took place. His account of the historical development of RDoC within the agency (and the influence of political entities) will serve as the basis for the rest of my analysis.

Faucher first notes that the role of the NIMH has shifted on numerous occasions during its history. From the moment the agency was created in 1949 until the 1960s, its role as part of the National Institute of Health (NIH) was to support the treatment of relatively less severe mental conditions that weren't treated in psychiatric hospitals. After gaining its independence from the NIH and joining the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA), from the 1970s until the early 1980s the NIMH was spending half of its budget on community centers in mental health and its research priorities were largely concentrated on the social dimension of mental suffering (Faucher 2022). Bentham S. Brown, director of the agency from 1970 to 1977, was in the 1960s a leader in the movement towards deinstitutionalization (the move from coercive care in psychiatric hospital to community-based

services in mental health) (Watts 2020). As head of the agency, the social aspect of mental health care thus had major importance.

In the 1980s, the nature and focus of the NIMH drastically changed. The Reagan administration didn't want to fund public research on the social dimension of mental health and slashed the budget of the agency. Describing this period as an "assault on social science", David Mechanic reports that:

[The] NIMH redirected its efforts to research programs that focused on illness rather than on health and excised many of its social and preventive intervention and research programs. New attention to biological research, to the new and exciting potentialities of the neurosciences, and to diagnostic issues shifted the emphasis to discrete disorders and away from social amelioration. (Mechanic 1994)

The question of how to characterize the enthusiasm for neuroscience research at the time is very interesting in this context, and I will return to it in the next section. But the main takeaway from both Faucher and Mechanic is that the 1980s is marked by large scale and overt political influence on research funding in psychiatry that has led to a shift in focus away from the social determinants of mental health to more fundamental and lower-level research on the brain.

This trend has continued and was exacerbated in the 1990s when the NIMH joined back with the NIH and the American Congress pressured universities and public agencies to concentrate their efforts towards research aimed at discovering new (largely pharmaceutical) treatments (Faucher 2022). The goal, which as we saw is exactly what people at the NIMH viewed as the purpose of RDoC, was to emulate success in somatic medicine by focusing on biomarkers and integrating industry specialists in the research process. The overall aim is "translational research" (Rubio et al. 2010), or the acceleration of the development of pharmaceutical interventions in psychiatry towards the end goal of precision medicine for mental suffering (Faucher 2022). In parallel to these explicit political interventions in shaping the priorities of the NIMH, other groups pressured the agency to shift its focus to brain mechanisms in psychiatric research. Both Faucher and Mechanic highlight the special importance of the National Alliance for the Mentally Ill (NAMI) as part of these groups (Faucher 2022; Mechanic 1994). While the group was founded in 1979 by parents of mentally ill individuals looking for better treatments for their loved ones, it was and continues to be funded by large conglomerates of the pharmaceutical industry. In 2009, the year RDoC was launched, NAMI received over 9 million dollars in contributions. From that amount, around half came from corporate contributions including AstraZeneca, Eli Lilly, Takeda, Janssen, and many others (NAMI 2022). It is hardly surprising that these actors would have a vested interest in promoting the idea that mental suffering is best understood as brain dysfunctions susceptible to treatment by pharmaceutical interventions.

Since the 1990s – the so-called "decade of the brain" as it was designated by the Bush administration in 1989 (Goldstein 1994) – research priorities of the NIMH have been consistent in their focus on low-level mechanisms to explain mental suffering. While Faucher clearly explains how political entities have had a direct role to play in shaping these priorities, he doesn't expand on *why* these policymakers would want to prioritize such research. Identifying some of the core values that might explain this phenomenon will be the focus of the following section.

5.2. <u>Neoliberal Psychiatry</u>

To note that science is a social practice permeated with values, and that RDoC's priorities have been largely set by direct political decisions is only part of the answer to the question of why RDoC is used in the way it is. Understanding *which* political values seem to skew the funding priorities of RDoC is crucial to developing ways of fixing the issues noted in the first section. I will therefore spend the rest of this chapter examining why I believe neoliberalism to be part of the reasons that may explain why the NIMH, through RDoC, has shifted its focus to a strictly biological understanding of mental suffering²⁰.

5.2.1. What Is Neoliberalism?

To provide an argument on how some of its core commitments may have influenced the allocation of public funds in psychiatric research, I must first define neoliberalism. Usually represented by theorists such as Friedrich Hayek, Gary Becker, Milton Friedman, and James M. Buchanan, neoliberalism is a comprehensive political philosophy with distinct views on the state, the role of market capitalism, and, more fundamentally, the nature of social relations and what it means to be a human being.

Traditionally, neoliberalism has been described as a political ideology which emphasizes the importance of market capitalism and argues for a limited role of the state in wealth redistribution or welfare programs (Harvey 2011; Vallier 2022). This is based on the assumption that entrepreneurial freedom and market competition are the best tools to advance well-being on a societal level, and that some state interventions are ill suited to achieve this goal.

Hayek, for example, wrote extensively about the nature of social order. For him, communities are ordered under unpredictable spontaneous principles (Schmidtz 2019). Trade and social relationships are fundamentally a product of mutually beneficial arrangements that arise spontaneously, and are impossible to predict and control from the outside. This is

²⁰ Note that my argument here certainly isn't exhaustive. While I think that neoliberalism has had a strong influence on funding for biomedical research in psychiatry within the agency, a multitude of other factors are likely involved in the establishment of scientific priorities at the NIMH. I will not speculate here on precisely which ones, but I encourage other researchers to explore these questions in greater details.

because the information needed to provide the most efficient trade and relationships are best possessed by the consumers and producers themselves (Schmidtz 2019). Thus, state interventions in that order will always be inefficient and inferior to order generated by market forces left to their own device. In market-based social arrangements, when mistakes are made individuals can quickly learn and adapt themselves. As a result, when competition is maximized, the overall system improves gradually and in the most efficient manner possible.

Importantly, because neoliberals see the general principles of market-based competition at the *best* way to organize social relations, their influence go well beyond large-scale economic policies. They permeate all institutions on a very local level. Schools, universities, hospitals, and so on, are all to be structured by market principles (Brown 2019, pp. 19 - 20). As Matthew Eagleton-Pierce puts it in his introduction to neoliberalism, competition is "a kind of governing ethic for all individuals and organizations" (Eagleton-Pierce 2016, 33) which permeates everything. For example, when applied to universities, it entails that full-time stable employment is increasingly transformed into casual contract work (a phenomenon known as workforce casualization). This ensures the least amount of outside interference in the system by making sure employees (researchers) are always in competition with one another to maximize overall productivity (Thomas, McArdle, and Saundry 2020).

This leads to another important feature of neoliberalism. I mentioned earlier that neoliberals wish to limit state interventions in market-based social order, but this does not mean that they are skeptical of *all* forms of interventionism. A critical aspect of that general political ideal is that because "markets must be built, facilitated, propped up, and occasionally even rescued by political institutions" (Brown 2019, 20), state interventions are sometimes necessary. For example, as sociologist Loïc Wacquant argued, the growth in carceral population and penal apparatus in the later part of the 20th century can be directly tied to

neoliberal political rationality. He defends the view that those institutional structures grew out of the need to discipline and punish the poor following the gradual destruction of the welfare state brought about by neoliberalism (Wacquant 2009). As such, neoliberals are not in principle opposed to all forms of state intervention.

In contrast, the interventions about which neoliberals are skeptical are interventions aimed at controlling the *effects* of markets by redistributing wealth for example or rectifying any inequality created by market forces. But to create the necessary conditions for markets to emerge and sustain themselves, neoliberals need the state. This is also a point of distinction between neoliberalism and classic forms of libertarianism or anarcho-capitalism. In short, neoliberals are usually in favour of both *regulatory actions* (acting within markets to sustain its existence, for example by breaking up monopolies), and *organizing actions* (acting on populations and individuals to create the necessary conditions for markets to emerge) (Tanke 2022; Foucault 2008, pp. 130 - 135). I will suggest in the following section, and in a similar way as Wacquant does for imprisonment, that a reductionist approach to psychiatry may also have a role to play in that political rationality.

At the heart of this general approach to political theory and social relationships also lies a conception of what it means to be a human being. This will be of central importance once we discuss its impact on psychiatry in the following section. Both Michel Foucault in his influential lecture at the *Collège de France* on the birth of biopolitics in 1978 – 1979, and more recently Wendy Brown who draws significantly from Foucault in her analysis, have provided a compelling analysis of some of the core *anthropological* commitments of neoliberalism.

The key concept at the heart of those commitments is the idea of *homo-economicus*. In short, as Joseph Tanke recently put it: "neoliberalism produces a normative understanding of human reason, one which is both the correlate of these social policies and the target for its

environmental interventions" (Tanke 2022). What is that normative understanding of human reason? As we saw, neoliberals see a net good in all individuals being in competition with one another. It is for them the best way to ensure that society is well structured. To be a human being, for them, is to be self-interested, productive, and in competition with others to maximize one's interests in trade – the basis of all forms of human relationships (Foucault 2008, 226). This is the definition of *homo-economicus*, and it leads to humans, under neoliberal political rationality, being perceived and treated as "entrepreneurs of [themselves]" (Foucault 2008, 226 - 227), or self-producers of their own satisfaction and well-being.

Why is that important? Since one of the state interventions sanctioned by neoliberalism involves making sure that all humans abide by the idea of being a self-interested agent, the state must therefore intervene on a very local and individualized level to ensure that everyone is able to constantly maximize their self-interested behaviour and their level of competition with one another. This involves transforming the structure of existing institutions (by workforce casualization in academia for example), but also direct *biological* interventions in individual human beings.

This is why Foucault was so interested in neoliberalism in the context of, as the title of his lecture suggests, the *birth of biopolitics*. The notion of biopolitics, theorized by him around the same period, refers to the idea of state or institutional power "whose task is to take charge of life" (Foucault 1978, 144) to achieve some political ideal. The type of organizing interventions to ensure the necessary conditions for self-interested behaviour by individual subjects fits within that general picture of state power under neoliberalism. I will expand on this in the following section to understand its relationship to reductionist psychiatry.

Neoliberalism thus not only transforms all institutions to establish the necessary conditions for market competition, but believes that all human endeavour is best understood

as a way of positioning oneself favourably in a competitive marker-based social order, thereby "[reframing] issues like getting married, having a child, or committing a crime in economic terms" (Tanke 2022). This is apparent in the way James M. Buchanan defends the notion of *homo-economicus* as not necessarily the accumulation of wealth by individuals, but the maximization of essentially any beneficial aspects of one's life as seen through the prism of absolute competition with everybody else (Brennan and Buchanan 1981; Vallier 2022). The notion of *homo-economicus* and of being an entrepreneur of ourselves are thus, in essence, the core normative anthropological commitments of neoliberal political rationality.

Historically, neoliberalism has dominated much of the political landscape since the 1980s. Figures such as Ronald Reagan in the United States, Margaret Thatcher in the United Kingdom or Brian Mulroney in Canada have all been associated with the rise of that political ideology during that period (Harvey 2011). This trend has continued to this day with many arguing that its core philosophical principles still dominate policy decisions in the global north. The austerity measures put in place in response to the economic crisis of 2008 and the rise of far-right nationalism in the late 2010s have all been linked to the hegemony of neoliberalism in the past few decades (W. Brown 2019). Its contemporary omnipresence, coupled with its overt claim to justifiably influence a vast array of social institutions makes it a particularly interesting candidate to examine how some of its core principles may have impacted our collective understanding of psychiatry and mental suffering. In turn, this could explain, at least partially, why political actors were so eager to skew the research priorities of public agencies in the way they progressively did, leading to the current scientific practices of RDoC.

5.2.2. Neoliberalism, Selfhood, and Mental Suffering

How are these general principles of neoliberalism related to psychiatry? First, I must be clear that neoliberalism did not invent research on low-level mechanisms of the brain in psychiatry.
I showed in the first chapter how this reductionist endeavour has been a trend since the beginning of the discipline. For example, it is often forgotten that Freud himself, in the late 1890s, was trying to find explanatory mechanisms for mental phenomena in brain structures and neurones, a project he later abandoned (Freud (1895) 1954; Woody and Phillips 1995).

As such, it would be a mistake to think of neoliberalism as the driving force behind all reductionist tendencies. Perhaps a better way of understanding the way it impacted the research priorities of the NIMH is that among the possible theoretical candidates for explanatory mechanisms of mental suffering, and in a field like psychiatry which is and has been riddled with crisis and instability, the reductionist proposal presented several *political* advantages for neoliberalism to further advance its interests. In other words, *it is (partially) a political ideal of what the future of clinical psychiatry should look like that has driven these priorities*, rather than a moral concern for the worries of patients or an epistemic desire to research the right questions.

What is that political ideal? First, there is an obvious argument to explain why neoliberals would be so interested in the study of brain mechanisms over social forces in its impact on mental well-being. The type of clinical intervention that would emerge from those studies is primarily pharmaceutical in nature (hence the ideal of precision medicine in psychiatry). In turn, this would further open the market to the pharmaceutical industry and generate competition and profit. In other words, nothing can be financially gained by learning if or how precarious social conditions may be responsible for mental suffering, but wealth can be created if you learn that "faulty" brain circuits can be corrected by pharmaceutical interventions. As such, if you think that maximizing market competition is the best way to structure any social policy, you have a vested interest as a political actor to prioritize public funding for psychiatric research on low-level mechanisms of the brain. This is perhaps what is also driving those

pharmaceutical conglomerates to invest millions in groups such as NAMI to influence the research priorities of the NIMH.

This argument, in essence, is what Joanna Moncrieff describes when she talks about the "marriage of convenience" between biopsychiatry and neoliberalism (Joanna Moncrieff 2008). Also, a similar argument can be found in the work of Bruce Cohen when he highlights the financial incentive for pharmaceutical companies to push for a strictly biological understanding of mental suffering under neoliberalism (and their influence on research policies) (B. M. Z. Cohen 2016). Similarly, Esposito and Perez's recent work highlights the idea that neoliberalism commodifies mental health and understands it as a matter of individual consumer choice. The idea is that a large pharmaceutical market for products to alleviate suffering makes psychiatry a profitable enterprise (Esposito and Perez 2014).

While this general argument which focuses on the profitable nature of a reductionist understanding of psychiatry seems broadly correct, I believe that there is also a bigger question about the nature of mental suffering at the heart of the philosophical commitments of neoliberalism that is still deeply undertheorized in the current literature. Most commentators have based their analysis of the links between neoliberalism and psychiatry on the work of David Harvey which I cited earlier. While his approach, heavily influenced by Marxism, is deeply informative, he also tends to focus on large-scale policy decisions rather than on the "micropower" (to borrow a term from Foucault) of the neoliberal political rationality on local institutions and on individuals. Going back to Foucault's framework gives us, I believe, a more powerful and comprehensive conceptual toolkit to make sense of the intricate links between neoliberalism and psychiatry.

Economists use the term "externalities" to refer to side effects of economic activities on other agents outside of market exchanges (Herzog 2021). For example, to produce certain goods a factory might pollute the waterways of a community. That pollution, which will impact others who are not consumers nor producers of that good, will be called a "negative externality". Under neoliberalism, an externality of market-based social order might be the concentration of wealth in a small group of individuals, the stress on workers caused by workforce casualization, or any form of oppression brought about by social relations understood purely in terms of competition. If these externalities are the result of a well-ordered market, then the neoliberal state ought not to intervene to remedy them, because, as we saw, any intervention aimed at counteracting the effects of markets is normatively illegitimate.

In essence, researchers interested in the social dimension of mental suffering, or the lived experience of patients, are trying to understand (at least partially) what the effects of these externalities may have on individuals. For example, a researcher may try to understand how unemployment or precarious social conditions may influence depressive symptoms (or reward systems in the RDoC matrix, for instance) (Bolton and Bhugra 2021) or how the experience of psychosis may be mediated by a cultural or economic context. But for neoliberals, to do that is not asking the right questions.

This is because, under neoliberalism, and in a well-ordered market, external circumstances are never to blame for one's difficulties or suffering. Individuals who suffer haven't been able to adapt to the new circumstances brought about by the dynamic of market-based social order and are thus individually responsible for it. They are, in essence, poor entrepreneur of themselves. Because one can't control external circumstances (and, indeed, it is undesirable to want to control them), the only task of psychiatry as an institution is to intervene to bring back your inner entrepreneur and regain productivity and competitiveness. By suffering in that social order, you have individually failed to live up to the normative standards of *homo-economicus*. This is, basically, the logic behind what David Mechanic described

as an "assault on social science" (Mechanic 1994) in psychiatric research funding during the Reagan era.

Precise, individual, and biological interventions are thus the *only* suitable remedy for mental suffering. Any other forms of intervention run the risk of destroying the natural balance of market-based social order. I believe that to be one of the ways of understanding the enthusiasm that surrounds a reductionist picture of neuroscience research in psychiatry. If it is true that one can reduce these complex phenomena to brain structures, then neoliberals would possess another biopolitical tool for state interventions that would maximize market competition on an *individual* level. This would be incredibly powerful and useful to achieve the goals of the neoliberal political rationality.

Some have argued that this individualization of mental suffering is a form of "depoliticization" (Fisher 2009, 43) of psychiatry. However, I would argue that understanding this focus on lower-level brain mechanisms from the prism of neoliberalism allows us to better conceptualize it as a radical form of *politicization*. There's nothing inherently depoliticized about ignoring the social dimension of mental suffering when you consider how it fits within a comprehensive political ideology such as neoliberalism.

5.2.3. <u>Co-opting RDoC</u>

Against the background of a neoliberal conception of the self, a conceptual tool like RDoC can be quite easily co-opted by neoliberal political rationality. This is the case first, because, as we saw, institutionally the NIMH makes the decisions on what to fund almost purely internally (and relatively opaquely). Therefore, that process can be subjected to considerable and overt political pressure. As Faucher argues, by determining the limits of what the NIH or the NIMH ought to study, political actors effectively drives the field in a particular direction (Faucher 2022). Secondly, because the openness of the framework means that it can easily accommodate

virtually any approach on the etiological or the ontological nature of mental suffering. If the process for funding allocation within RDoC and the NIMH was managed differently, then this could be a tremendous opportunity for radically new and diverse research. However, in the current institutional structure of the agency, this simply provides enough leeway to political actors to ensure that the framework is used in whichever way seems to fit with their political agenda. I will return to this question in the final chapter.

There is another question, which deserves further attention in the literature, related to the effects of neoliberalism on the structure of academia itself and how it may impact RDoC's place in psychiatric research. I mentioned earlier that universities are also organized around neoliberal principles, and this has the effect of promoting competition among researchers for positions. That competition is usually a matter of publications (whoever publishes more is usually better positioned in the job market). This is a phenomenon usually known as "publish or perish" (Rawat and Meena 2014). It has been argued in the past that this environment creates incentives for researchers to pick research questions that are not based on what they think is interesting or promising, but on what may give them funding and publishing opportunities (Bhakuni, van der Graaf, and Abimbola 2022).

If, as I argued in the first chapter, the NIMH is primarily awarding funding to RDoCinformed studies (Pacheco et al. 2022), and if funding from the NIMH is prestigious and is correlated with publishing opportunities (Saraykar, Saleh, and Selek 2017), then this is another way in which the funding priorities of RDoC could drive the field in a particular way – not because RDoC is seen as the *best* approach to study mental suffering, but because it provides individual researchers with opportunities to further advance their careers. As such, researchers who pursue questions on the basis of how they fit within the current uses of the RDoC matrix may not be individually motivated by neoliberalism but may be indirectly influenced to abide by neoliberal principles by the structure of academia itself, coupled with funding opportunities decided by political entities.

With that in mind, and to go back to the effects of neoliberalism on psychiatry itself, Faucher talks about the fact that RDoC is based on a "negative" account of mental health in which well-being is defined by an absence of disease (or dysfunctions) (Faucher 2022). This seems generally consistent with the way I've presented the uses of the matrix in the last section of the first chapter. From a neoliberal perspective, what a dysfunction is may amount to what stops us from living the truth of our human nature as competitive self-interested creatures. If being human is being in competition with others, then anything which stops us from competing can be reframed as a dysfunction that needs to be corrected. Distress is thus a matter of failing to make the proper calculations to further one's interests. Understood that way, the social role of psychiatry is therefore not to rectify the effects of markets. As a result, it forms part of the type of state interventions that would be normatively justified under neoliberalism.

Within that framework, not only can we understand the enthusiasm for precision medicine in psychiatry²¹, but we can also better understand the recent enthusiasm that surrounds neuroenhancements. In short, neuroenhancement drugs or "cognitive enhancing drugs" (CEDs) are "a class of drugs used primarily as technologies for self-improvement" (Mann 2022). We can think of stimulants such as methylphenidate (Ritalin) for example which are used, often clandestinely, by academics and students to enhance their performance in a competition-based institutional structure like contemporary academia. From a neoliberal

²¹ It is worth noting that I am not making a normative judgement on psychiatric precision medicine *per se*, I am more interested in the political dimension of this concept and why certain political actors may be interested in developing it. There might be some other ways of justifying and using precision medicine outside of a neoliberal context. The only normative concern I have here is with the way this political rationality has impacted the structure of scientific funding and lead to the moral and epistemic issues I presented in the first section of this chapter.

perspective, both neuroenhancements and psychiatric precision medicine are perhaps best seen as similar. They both aim at maximizing competition and productivity, but while precision medicine is concerned with conditions outside the realm of "normalcy" (along, for example, the dimensional aspects of the functions described in the RDoC matrix), CEDs are used by people without "dysfunctions" who nevertheless wish to maximize their productive output and out-competition others.

One can't speculate on the intent of those at the NIMH who defended this way of using the RDoC framework. Perhaps Insel and others are *genuinely* convinced of the validity of reductionism as a thesis to explain mental suffering, and truly believe that better pharmaceutical interventions are the future of clinical psychiatry. For the purpose of this thesis, I will remain neutral on the validity of this approach. Perhaps, as I suggested earlier, they were motivated by the career opportunities that follows from researching these questions. Nevertheless, their enthusiasm also serves a political purpose, and can easily be co-opted by political interests. The influence of neoliberalism on *their* decisions is much less overt and direct, and much more a question of who political actors and private conglomerate choses to prioritize. In other words, the more interesting objects to study are not Insel or Joshua Gordon's beliefs, but rather the outside influences on institutions such as the NIMH so that people like them are the ones making these funding decisions.

Conclusion

In this chapter I have tried to answer two questions related to the current scientific practices of RDoC highlighted in the first chapter. First, *why are those practices problematic?* I argued that, firstly, that they pose a problem because they fail to provide the necessary conditions for transient diversity. By focusing almost entirely on low-level brain mechanisms, the NIMH through RDoC fails to provide enough space for a diversity of theories to be tested, and therefore runs the risk of failing to deliver valid results. Secondly, they pose a problem because they do not integrate the worries of patient groups in the funding portfolio of the agency. From the point of view of relational egalitarianism, and by understanding the allocation of funds for scientific research as a democratic concern, the scientific practices of the NIMH are therefore unjust.

Second, I tried to understand *which values are responsible for those problematic scientific practices.* I argued that the influence of neoliberalism on our political institutions is at least partially to blame for the shift in research priorities of the NIMH. Because this political rationality is based on the premise that the state ought not to intervene to rectify the effects of market-based social order on inequalities, oppression and so on, the role of psychiatry becomes individualized. Coupled with that is the idea that human beings, from a neoliberal perspective, ought to be self-interested agents in constant competition with one another. As such, precision medicine, and a reductionist understanding of psychiatry could become powerful political tools to advance the goals of the neoliberal social agenda.

From that point, the final chapter will try to analyze ways of structuring scientific funding that are consistent with my arguments thus far. In short, new ways structuring the funding priorities of RDoC ought to 1. provide a sufficient space for a diverse array of theories on the ontological and etiological status of mental suffering to be studied, 2. allows for the worries and concerns of patient groups to be included as part of the studies that are funded through the agency, and 3. provide sufficient structural guarantees to prevent neoliberal political rationality to *dominate* the funding decisions within the NIMH.

Chapter III: Structuring Funding in Psychiatric Research

Introduction

In the first chapter of this thesis, I analyzed the nature and uses of the Research Domain Criteria (RDoC) initiative. I argued that the framework is far more open to a diversity of research than has been described in the past. Nevertheless, its actual scientific practices are restricted to understanding mental suffering at a low level of analysis (genes, brain circuits, neurochemistry, and so on). In the second chapter, I argued that the current scientific practices of RDoC are epistemically problematic because they fail to include a sufficient diversity of theoretical approaches. I also claimed that they are normatively problematic insofar as they've failed to include the concerns of patients in their funding allocation. Finally, I argued that part of what may explain the priorities of the National Institute of Mental Health (NIMH) is the influence of neoliberalism on the structure of scientific funding in the United States.

In this final chapter, I will explore a few solutions to both the epistemic and the moral issue raised earlier. To do that, I will first expand on the desiderata of scientific funding in psychiatry. I will then further explain the notion of transient diversity to analyze various methods of promoting it that were proposed in the literature. More precisely, I will examine the proposal of incorporating a randomized element in the attribution of research funds to promote epistemic diversity.

Because part of what is needed in psychiatric research is a way of reaching transient diversity whilst also respecting the normative constraint of including the voice of patients, I will evaluate these various methods relative to their capacity of doing so in the funding allocation process. After analyzing some of the limitations with the integration of patients in strict randomized funding in psychiatric research, I will argue in favour of using weighted lotteries in the context of RDoC at the NIMH.

6. The Desiderata of Research Funding in Psychiatry

Before examining various ways of addressing the issues of transient diversity and the integration of patients, I must first describe what we desire in terms of research funding allocation in psychiatry. As I've stated in the previous chapters, these desiderata certainly aren't exhaustive. Research funding is immensely complex, and there are indeed many other factors to consider when one wants to establish the right practices. However, I believe that these desiderata are significant in their influence on reaching the proper kind of scientific practices at the NIMH, but also throughout the psychiatric research community overall.

In this section, based on what I've argued thus far, I will argue that the funding allocation structure within RDoC ought to be consistent with at least three different considerations. First, it must provide sufficient funding for the study of a diverse array of theories and approaches to reach transient diversity. Second, it must include the worries and concerns of patient groups as part of its priorities. Third, it must provide sufficient structural assurance that political actors and private conglomerates do not dominate the determination of its priorities.

6.1. <u>Reaching Transient Diversity</u>

To reiterate what I've described in the previous chapter, part of what is desirable in a scientific community is that a wide array of theories and approaches be tested (Zollman 2010). This is to ensure that scientists do not accept less successful theories by being blind to other novel and potentially better alternatives. Zollman (2010) uses the example of the debates on the etiology of stomach ulcers in the early 20th century (whether bacteria or stomach acid causes ulcers). Because of flawed data published in the mid 1950s, and subsequent lack of research

on alternative theoretical possibilities, many believed that bacteria couldn't survive in the stomach, and this led to a false consensus on the idea that acid was the real culprit. It is only in the 1980s, when other approaches were finally studied, that this error was corrected.

While it is beneficial to examine a wide range of theories, the optimal level of epistemic diversity ought to be *transient* in nature. That is to say that it is also necessary for a scientific community to reach some form of valid consensus on certain theories and explore them further. In other words, a scientific community must reach an epistemically optimal level of diversity that allows the exploration of novel theories whilst still allowing for consensus to be formed.

Importantly, reaching transient diversity is not purely reducible to funding allocation. However, a good distribution of financial resources is part of the structural basis for it. Understanding the way individual scientists reject and accept theories (Borg et al. 2019), the influence of information sharing within a scientific community (Zollman 2010; Kummerfeld and Zollman 2016), or the role of imagination and novel thinking in research are equality important issues that would need to be addressed in the context of psychiatric research. As a preliminary thought, I would argue that from the point of view of these other considerations not related to research funding, the openness of RDoC makes it a particularly interesting theoretical framework for the promotion of epistemic diversity in psychiatric research. This may be part of makes it appealing for the future of psychiatry as a discipline. I would encourage other researchers to further explore these issues. For the purpose of this thesis, and because RDoC is first and foremost a funding mechanism, I will nevertheless concentrate my efforts on the influence of funding allocation on transient diversity at the NIMH.

6.2. Political and Moral Issues

Another takeaway from my arguments in the previous chapters is that the NIMH has a moral duty to ensure that the worries and concerns of patients are well represented in its funding portfolio. By considering the allocation of funds as a democratic concern, and by acknowledging the experiential knowledge of patients in determining what appears worrying in psychiatric research, it follows that RDoC ought to be responsive to what they are requesting to be studied. Including these voices is also a matter of fostering trust between psychiatry as an institution and the patients it is expected to help.

Two things are worth keeping in mind when considering this moral concern. First, it is important to understand it as separate from the epistemic concern. Including the voice and concerns of patients may be a way of promoting diversity, but it can also lead to another form of conservatism if patients control the *entirety* of the funding portfolio of the agency. In other words, there could be a tension between the epistemic and moral desiderata and the arguments that follow in this chapter aim at finding the proper *balance* between these concerns.

Second, from that follows that scientists should also have a say in how funds at the NIMH are to be distributed. Recall how in the previous chapter I mentioned that one of the desiderata of scientific research more generally is also not to waste resources testing scientifically useless hypothesis. Because funds are limited, it is also necessary to ensure that they are generally directed towards approaches that are somewhat scientifically valuable (Faucher 2022). This is where scientists, as experts in the current state of the literature in whichever discipline is concerned, have an important role to play. I will describe in greater detail their precise role in the following sections.

Despite the importance of considering the perspective of patients, it is very difficult to ensure that this perspective is *always* consistent with the current state of science. In other

words, it is possible that there could be a conflict between the desideratum of scientific usefulness and that of responding to the worries of patients. However, as I've hinted previously, one of the ways we can safeguard against that possibility is by fostering trust between psychiatry and its patients. If the latter are trusting of scientists and their conclusions, and if they are adequately informed, it appears much more unlikely that they would request invalidated theories to be studied. As I've shown in the last chapter, one of the ways to develop and maintain trust is precisely by being responsive to the needs and concerns of patients (K. Jones 2012; Alfano and Huijts 2020). As a result, if we consider that some patients (and by extension patient groups) may currently distrust psychiatry (Brown and Calnan 2016; Brown et al. 2009), there *might* be a temporary period of adjustment in which the scientific community will produce some negative results on relatively invalidated theories that nevertheless are requested to be studied by patients. However, in the long term, and based on our current understanding of the mechanisms of trust, this situation is unlikely to persist.

Importantly, there is also some evidence that promoting the study of relatively suboptimal theories is in fact *beneficial*. While this may seem counterintuitive, at the level of a scientific community it can serve as a means to reach an optimal level of epistemic diversity (Kummerfeld and Zollman 2016). Promoting, through funding, what Kummerfeld and Zollman call "risky science" (or the study of theories that perhaps fail to be considered fully scientifically viable by the community) ensures that epistemic diversity is preserved in a community. This is due to the fact that scientists researching suboptimal theories effectively serve as a protection against hastily reached or premature consensus. As a result, the fact that patients may request risky theories to be tested is not itself an issue and may in fact be beneficial for the community as a whole. There is a social and political cost in not wasting public resources on useless science, but what constitutes useful science may not be as straight forward

as funding whichever theory happens to be promising at first glance within a scientific community. This is especially true in the current state of psychiatry in which consensus is far from clear, hence the notion of "extraordinary science" that I mentioned in the introduction to this thesis (Poland and Tekin 2017).

As such, a better way of spelling out the scientific desideratum is perhaps to say that it *is desirable to fund research that would be scientifically beneficial for the community*, rather than scientifically "credible". The notion of scientific credibility may be overstated and relative to a false consensus. Nevertheless, it is also undesirable to *strictly* perform research on risky theories. One must always maintain a sufficient level of diversity. This example was to illustrate that funding suboptimal theories is not, by itself, an epistemic vice. I will go back to this issue in the following section.

Another takeaway from the previous chapter concerns the need to establish structural safeguards ensuring that neoliberal political and economic concerns do not *dominate* the allocation of funds at the NIMH. The reasons for this are, again, to ensure that a sufficient level of epistemic diversity is maintained within the funding portfolio of the agency. Based on what I've previously argued, this involves maintaining a much lower degree of direct power from political actors on the funding portfolio of the NIMH, whilst also protecting against the overt and covert influence of pharmaceutical conglomerates on the allocation of research funds. To do that, one must have the capacity to distinguish between genuine groups who share the experiential knowledge of patients and therefore can help drive the funding priorities in the right direction, from groups such as NAMI (see chapter II) who claim to represent the interests of patients but nevertheless may act, in practice, as lobbyists for the pharmaceutical industry (Cooper 2017).

In short then, I've described at least three desiderata for scientific research funding in the context of the NIMH; 1. psychiatric research ought to fund a diverse array of theories and approach on the nature and etiology of mental suffering, 2. part of that array ought to reflect the needs and worries of psychiatric patients, and 3. there must be some institutional safeguards to ensure that neoliberal political rationality does not dominate the funding portfolio of the NIMH. Note that this list, as I said earlier, is not exhaustive. There are certainly more issues than what I will consider in this chapter. However, these seem to form a good starting point to at the very least ameliorate the scientific practices of RDoC.

7. Examining Solutions to the Problem of Transient Diversity

One common way of examining solutions to the problem of transient diversity is to develop models that simulate the behavior of scientific communities and test, via complex network simulations, the effect of various policy change or other variables on epistemic diversity and the formation of viable consensus (Wu and O'Connor 2023). Again, the idea behind transient diversity is that research on a wide array of theories is a precondition to the formation of *viable* consensus in a scientific community. As such, in his influential work on the topic Kevin Zollman focuses his attention on the role of communication between epistemic agents in a community and its impact on the rejection or acceptance of particular theories (Zollman 2010; Kummerfeld and Zollman 2016). By modeling how scientists communicate with one another, one can simulate the effect of the introduction of certain variables on the process by which consensus is reached within a given field. One can simulate, for instance, how more or less communication impacts how groups of scientists coalesce on the right scientific theory and do not hastily accept other less suitable alternatives. The task of performing these simulations is technically complex, resource intensive and goes far beyond the scope of my arguments. However, what may be relevant for the purpose of this thesis is to make use of those models and their conclusions to examine some of the proposed solutions to the problem of transient diversity in the literature and see; 1. how might they be implemented in the context of funding for research at the NIMH in the RDoC initiative, and 2. if that implementation is consistent with the moral and political desiderata I previously highlighted. Answering both these questions will therefore be the focus of the remainder of this chapter.

7.1. <u>Random Allocation of Funds</u>

As I mentioned earlier, the difficult task of reaching transient diversity is not purely reducible to funding allocation. There have been a number of policy recommendations in the literature to reach transient diversity that are not related to centralized funding agencies. For example, Zollman (2010) has argued for limiting the information sharing in a scientific community to promote risky scientific exploration and limit the possibility for hasty consensus. However, as I'm here interested in the NIMH and RDoC, I will focus my attention on the literature surrounding the role of scientific funding in these debates. In that literature, the proposal of using some form of *randomized funding* for scientific research is central and occupies much of the contemporary discussions.

Before examining randomized funding, however, I must first reject what may seem like a relatively straight forward answer to the problems I've described thus far. One may argue that in response to the epistemic and normative issues with the current scientific practices of RDoC, the obvious solution is to diversify the Funding Opportunity Announcements (FOAs) of the NIMH to include a sufficiently diverse array of theoretical approaches. This diversification of FOAs could be conducted with the input of patients to ensure that their requests are also adequately taken into consideration.

While this would certainly ameliorate the funding practices of the agency, it would also leave the NIMH structurally vulnerable to the influence of political actors or other biases. This solution would preserve the structure of the agency in which individuals, in the end, still make the final decisions on what type of studies are or aren't funded. As a result, the possibility of failing to abide by the three desiderata (epistemic diversity, patient inclusion, and independence from political actors), would remain.

In other words, under that solution the right distribution of funds will always depend on the good will of the decisions makers at the NIMH and the politicians in the United States government. Rather than keeping the existing structures and relying on people to make the right decisions, the goal, if possible, would be to establish mechanisms and procedures for the distribution of funds that, by design, have the property of meeting the three desiderata. As I will argue, I believe that randomized funding has that property which I why I will examine it in greater details.

Currently, the most common way of allocating funding (including at the NIMH) is through peer reviewers evaluating research proposals to determine which is most deserving of receiving funds. In that context and noting a number of issues with the current system, many have argued for some form of randomized funding in scientific research. Those arguments have come from a variety of positions, and not just as a way to tackle the issue of transient diversity (Avin 2018). Some, for example, have defended randomization as the best way to maximize efficiency and lower the cost of managing research funds (Gillies 2014; Avin 2019a). However, randomized allocation of funds for research also seems to be consistent with the general argument of Kummerfeld and Zollman (2016) on the specific need for scientific communities to provide funding for risky science to reach transient diversity. This is, in essence, because evidence suggests that peer reviewing is vulnerable to biases that favour already established theories and discourage novel approaches (Gillies 2014; Avin 2019a; Shaw 2022).

For example, Shahar Avin has recently performed model simulations to understand the effects of random fund allocation on epistemic diversity. What he found is that funding mechanisms based on peer reviews perform worse than lottery-based funding to promote diversity and ultimately reach viable consensus (Avin 2019b). There are a number of ways of understanding the introduction of a randomized element in resource allocation, but typically lottery-based funding proceeds by first submitting research proposals to a very limited review (Wu and O'Connor 2023) to ensure their general feasibility, coherence, cost, length, and I would add (in the case of biomedical research on humans) compliance with ethical norms. Then, the subset of proposals that passes this minimal first review are then randomly allocated funds. This is what Shaw (2022) calls a "partial" lottery in the sense that not all submitted proposals are able to receive funding. There is still some necessary minimal review before winners are drawn.

Although the *philosophical* literature on random allocation of funds in scientific research is relatively recent (its first mention was in the mid 2010s) (Avin 2019a), allocating funds for research using a lottery is not just a matter of theoretical interests. In 2013, the Health Research Council of New Zealand (HRC) became the first major public funding agency in the world to introduce a lottery-based system. In the context of HRC, lotteries are used for the "Explorer Grant Project" which aims to fund research on novel and transformative approaches in health science that are not necessarily compatible with other grants awarded by the agency (Liu et al. 2020). Two things are worth keeping in mind when examining HRC. First, while studying its practices might tell us something about the general applicability of lottery-based systems, their influence on transient diversity are quite limited. This is both because the initiative is restricted to one type of grant, and also because the HRC, unlike the NIMH, is not one of the most important funding agencies in the world. Second, on top of being quite restricted in scope, the initiative is rather recent and its full impact on the scientific community overall is difficult to evaluate.

Nevertheless, early evidence suggests that a majority of grant applicants in New Zealand hold favorable attitudes towards randomized funding (in the case of the explorer grant, but also more generally) (Liu et al. 2020). The government of New Zealand has also expanded the program to almost five times as many grants today as the first round of offers in 2013 (Liu et al. 2020; Avin 2019a). Plus, the system appears more cost-effective and generally more efficient (because of the lack of peer reviewers) at handing out grants for scientific research. In practice, using a lottery therefore seems to be, at least in terms of its day-to-day functioning, a realistic approach to distribute funds for scientific research, however, is it morally or politically desirable for research funding at the NIMH?

7.2. <u>RDoC and Randomized Funding</u>

In the case of RDoC and the NIMH, lotteries seem to be a particularly good approach. Wu and O'Connor (2023) point out that random allocation of funds is especially useful in cases where "there is legitimate disagreement about the promise of various [theoretical] options". Based on the fact that the theoretical foundations of psychiatry are still heavily debated (perhaps now more than ever with the increasing rejection of the DSM and the introduction of RDoC) (Poland and Tekin 2017), the capacity for determining which theoretical framework is more promising is particularly difficult.

In practice, a random allocation of funds at the NIMH could take the following form. Researchers would be provided with a relatively open matrix upon which their research could be mapped. This would fit the general goal of RDoC as an initiative aimed at liberating researchers from the categories of the DSM and restructuring the foundation of psychiatric practice. Because, as I've argued in the first chapter, the matrix makes no assumption about biological causality nor on the etiology of mental suffering, researchers interested in the social determinants of health or those interested in low-level mechanisms of the brain are equally able to structure their studies within RDoC and develop a coherent research proposal. In theory, the framework itself would not be an obstacle to the promotion of epistemic diversity. In practice, the matrix would serve as a way to organize findings and structure research proposals in a consistent manner.

Once a study is proposed to the NIMH, it could be submitted to a minimal review to ensure its compliance with ethical norms, its general coherence, its realistic cost and length, as well as its feasibility. This task could very well be conducted by an existing Institutional Review Board (IRB) at the agency. Then, proposals that pass this first review would be submitted to a lottery to determine which ones will receive funding. The way in which that lottery is conducted would be made public to ensure trust and transparency with the agency managing public funds.

Interestingly, the extent of the first review could be adjusted along the way. If the scientific community starts to reach some consensus on a specific approach (if, for example, a version of reductionism starts to show clear promises for the future of psychiatry or for particular conditions or symptoms), then exceptional studies examining those mechanisms could first be prioritized before a lottery is held for the other ones. This is, in essence, what

Avin argues for when he speaks of a 10% of highly promising studies being funded before holding a lottery for the rest (Avin 2018).

As I mentioned earlier, I don't believe that psychiatry is currently in a state in which this more extensive review would be advisable. Given the considerable level of theoretical uncertainty in the discipline, the main concern is to reach *transient* diversity. This general point on the possibility of adjusting the extent of that first review is merely to illustrate that reaching scientific consensus remains possible, even when working within a lottery-based system. There is the possibility for incremental addition to the first review that would provide the scientific community with tools to explore promising theories whilst always keeping an optimal level of epistemic diversity.

In short then, if we go back to the desiderata I highlighted in the first section, a randomized funding mechanism within the NIMH and RDoC would be a viable way of allocating funds to reach an optimal level of epistemic diversity. According to the available evidence, using a lottery to distribute resources would promote a wide array of theories and approaches to be tested whilst keeping some mechanisms to ensure that consensus is still somewhat reachable. Within RDoC, this would allow the NIMH to accommodate strong theoretical disagreements about the ontological nature of mental suffering, its etiology, and what seems to be the best kind of treatment to alleviate it.

7.3. <u>The Ethics of Lotteries</u>

If we assume that Avin's simulations are correct, and therefore that randomized funding would be a viable way of promoting epistemic diversity, this nevertheless doesn't tell us anything about the moral and political issues I mentioned earlier. In this section, I will examine the proposal and its effects on the inclusion patient voice and on its ability to not be influenced by political and pharmaceutical actors.

Firstly, it seems clear that a properly run lottery-based system would partially shield the NIMH from overt or covert influence from political or pharmaceutical actors on its research priorities. The procedure to determine which theory or which approach will receive funding is random, and as a result any direct attempt to skew the research priorities of the NIMH in one specific direction is virtually impossible.

However, political actors may still have *some* control over funding for the agency overall, and therefore still exert some pressure over its practices. There are many examples of such interventions elsewhere. In the early 2010s, for instance, the federal government of Canada enacted a series of important cuts in scientific funding for environmental research whose results targeted some of the core economic activities of the country (namely the fossil fuel industry) (Barnett and Wiber 2019; Goldenberg 2015). If we imagine, for example, that the NIMH is producing research that seems to draw links between neoliberalism (free enterprise, competition, austerity measures and so on) with mental suffering, and is critical of pharmaceutical interventions in psychiatry, then the federal government, feeling that its interests are threatened, may enact similar cuts. Indeed, as we saw in the previous chapter, something similar already happened in the 1980s when the Reagan administration, in an "assault on social science" (Mechanic 1994), significantly reduced the budget for such research in psychiatry.

While this is a serious issue for the NIMH and the future of a revised RDoC, it is a much broader political question about the nature of the relationship between political entities and research funding. As long as the NIMH remains a publicly funded institution, there is very little, if anything, that can be done internally at the agency to shield itself from such political interventions. As a result, this does not constitute a counterargument to a lottery-based system for funding allocation at the NIMH.

The bigger problem for randomized funding in psychiatry concerns the inclusion of the voice of patients. While this procedure shields the agency from direct political control over its priorities, it also shields it from being responsive to the input of patients in determining what to fund. This is a comparatively underexplored issue with randomization as applied to biomedical research more generally.

Recall the argument of the previous chapter. The NIMH as a public institution has a moral duty to include the concerns and worries of psychiatric patients. By understanding the allocation of public funds for biomedical research as a democratic concern, psychiatric patients possess a particular expertise in determining what is most deserving of research about mental suffering. In turn, to recognize that expertise and to signal their status as equals, the NIMH ought to grant them more weight in the democratic deliberations on what to fund. Again, the conclusion of this argument is not that patients ought to fully determine the allocation of funds at the NIMH, but rather than they should have a sufficient power in this process.

Clearly, by randomly granting funds for scientific research in psychiatry, the NIMH cannot reliably signal to those patients that their concerns are given adequate weight. In fact, a pure lottery-based system would remove all forms of democratic deliberation on what to fund (which constitutes an advantage when one wants to preclude certain values from influencing research but is detrimental when one wants to intentionally promote specific values such as the need to include the priorities of patients).

In short then, randomized funding only seems to meet *some* of the desiderata I highlighted earlier. First, based on the available evidence it seems to be an efficient tool to promote epistemic diversity whilst keeping the possibility of reaching consensus. It could

therefore reasonably be used as a tool to reach transient diversity in psychiatric research. Second, it also seems to be effective in shielding the NIMH from direct political influence over its research priorities. However, it doesn't adequately meet the desiderata of including the voice of patients in the determination of research priorities at the agency. The question that remains is whether there is a way to modify a lottery-based system to account for that final issue.

8. A Path Forward

In this section, I will examine some ways of amending a randomized or lottery-based funding mechanism to account for this problem. It is important to note that this task is rather difficult, and I can only here provide some possible solutions. The issue is that the models used to simulate and argue for randomized funding were developed in very general terms and are in theory applicable to all branches of scientific research (physics, biology, and so on). This means that when applied to biomedical research in psychiatry (or any other biomedical science) they might not be able to account for various moral and political considerations that are inherent in that type of research. Doing research on humans with the goal of helping alleviate their suffering carries with it some important normative considerations that have so far mostly failed to be accounted for in that literature. Further, as I mentioned earlier, research on that type of funding mechanism is relatively recent and is still poorly theorized in philosophy of science. Indeed, most of the existing literature has been written by scientists and the conceptual issues are still underexplored by philosophers (Avin 2019a; Shaw 2022).

Nevertheless, I believe that there are ways of rescuing the promising aspects of randomized funding from the threat of failing to be responsive to the needs and worries of psychiatric patients by using *weighted lotteries*. In this section I will describe the general features

and advantages of weighted lotteries compared to its unweighted alternative in the context of psychiatric research funding at the NIMH. Then, I will review some possible limitations in the model I'm proposing.

8.1. Weighted Lotteries

The use of lotteries to distribute scarce goods (in healthcare, college admissions, and so on) has been argued for in the contemporary philosophical literature in bioethics and elsewhere (Vong 2020). At the center of those debates is an important paper on fairness by John Broome published in 1990 which makes the case for the moral justification of lotteries. There, Broome argues that in cases where a scarce good is distributed to people (such as limited funding for scientific endeavors), then fairness requires that claims to that good be satisfied in relation to their relative *strengths* (Broome 1990).

In my case, it would be the psychiatric patients claim to be treated equally which requires public agency to be responsive to their concerns by funding research aimed at better understanding them. It would also be the claim of scientists themselves to receive funding for research that they deem promising (which could be cashed out in terms of the more general societal claim of using public resources to adequately fund science as a public good, and in terms of respect for the expertise of scientists) (Gildenhuys 2020). I will return to defining these claims in the following section.

Nevertheless, because the good in question cannot be equally shared among these competing claims (the NIMH cannot provide partial funding to all submitted research projects²²) we are then faced with a case in which what Broome calls "surrogate satisfaction"

²² There is a distinction, in those debates, between divisible and indivisible goods. It is usually assumed that money can be divided and retain its status as a good (albeit of lower value). For instance, if one were to distribute X amount of money between two people, half of X could be given to both and still retain its status as a good.

seem appropriate. In short, his argument is that rather than satisfying the claims themselves (if satisfying all of them is impossible), then one can give all a *fair chance* to see their claims be satisfied (Broome 1990).

If the claims are of equal weights, then a lottery in which all participants have an equal chance of winning seem to provide sufficient and fair surrogate satisfaction. This is not only the argument that Broome defends, but it is also a prominent position in these debates in bioethics (equal chance is seen as the appropriate way of expressing equal concern and respect for all individuals with claims to that good) (Almeida 2017). However, argues Broome, if the claims are of different weights, then one can tweak the lottery to account for that fact and give those whose claims to that good are stronger a greater chance of winning (Broome 1990). This is, in essence, the idea of a *weighted lottery*.

In our context, because of the arguments of the previous chapter on the moral necessity for public institutions to be responsive to the needs and worries of psychiatric patients, then a lottery-based funding mechanism within the NIMH would intentionally modify the probability of studies targeting these needs to win the lottery whilst still providing all researchers with surrogate satisfaction.

To go back to the general framework, a revised randomized funding mechanism that makes use of weighted lotteries to determine the allocation of funds at the NIMH (and within the RDoC initiative) could take the following form: First, researchers would submit their proposed RDoC-informed research to the agency. Then, a first review would determine their

Whereas organs for example cannot be divided in such a way. For research funding, however, the question is not as simple. Providing (very) partial funding to all submitted research would make that money essentially useless to researchers. When one wants to fund scientific endeavors, one needs to provide researchers with adequate funding to perform that research (as requested by the scientists themselves in their application). As a result, I believe that although the distributed good is money, it is better understood in our context as an *indivisible* good. To borrow from Nathaniel Sharadin, this is a case in which "the good-making features of the thing" *doesn't* allow for divisibility (Sharadin 2016).

general coherence, appropriate cost and length, feasibility, and respect for ethical norms. Following that first review and consultations with patient groups, the NIMH would identify the research proposals that seem consistent with the needs and worries of psychiatric patients and give them a higher probability of receiving funding. Finally, a weighted lottery would take place which would randomly allocate research funds to the pool of admissible studies.

8.2. Counterarguments to the Use of Weighted Lotteries

While this seems like an interesting way of rescuing the epistemic and political benefits of randomized funding with the moral desiderata of psychiatric and biomedical research, this proposal is not without significant difficulties. In this section I will examine two of them: 1. the potential tension between the use of weighted lottery and the epistemic need to reach transient diversity, and 2. the ability or inability to precisely determine the weight of the various claims (and thus of the various probabilities of winning).

8.2.1. Weighted Lotteries and Transient Diversity

The first counterargument I would like to examine is the potential tension between the mechanisms of weighted lotteries and the epistemic goal of reaching transient diversity. Recall how one of the objectives of using randomized funding was to promote the study of a diversity of approaches on the etiology and ontology of mental suffering. While there is strong evidence, based on the model simulations I cited earlier that this would be an effective solution, there haven't been any studies conducted on the use of *weighted* lotteries to reach that goal.

To understand whether there might be a tension between weighted lotteries and epistemic diversity, I must go back to the studies on randomized funding to examine by what mechanism these seem to promote diversity. If those mechanisms are still present in a weighted lottery, then we would have reason to believe that the goal of transient diversity is still reachable using this revised mechanism.

As we saw, Wu and O'Connor make the case for randomized funding as a means to reach transient diversity with the idea that "[...] reviewers tend to be drawn to proposals that are highly promising, safe, and familiar" (Wu and O'Connor 2023) and lotteries can more easily provide funding for novel and potentially groundbreaking studies. Shahar Avin, as the main advocate for that view in the current literature (Avin 2019a; 2019b; 2018), makes a similar claim in his work. Lotteries work as a means to limit biases in the peer reviewing process for established conceptual frameworks and can therefore provide institutional support for novel approaches. Shaw (2022) also reiterates similar points on lotteries being useful at negating some of the conservatism inherent in peer reviewing.

Are weighted lotteries in tension with that general mechanism by which lotteries are said to be effective? In a sense, yes. By intentionally skewing the probabilities of winning towards a specific type of study, one is statistically introducing biases in the results (indeed that is the very objective of weighted lotteries). Nevertheless, one must also keep in mind that this statistical effect can be relatively minimal. I will go back to the question of balancing out the various claims in the following section, but the end result of a weighted lottery at the NIMH is not that studies on the various dimensions of mental suffering that patients are requesting are *guaranteed* to win the lottery. The end result is that they have a *relatively* higher probability of being funded.

As such, one can preclude the phenomenon by which another form of conservatism is introduced not as a result of peer reviewers but as a result of the over-representation of the claims of patients in the attribution of funding. As I stated earlier, while it is morally good to allow patients to have a voice in the determination of funding priorities, and because the goal is also to promote diversity, it would also be epistemically problematic to let patients make *all* the decisions on what to fund. While patients have a specific type of experiential knowledge which allows them to understand what is worrying about mental suffering, it is also not inconceivable that they might also "disincentivize innovative solutions" (Shaw 2022) that may not align with their current perspectives but would be better theoretical options in the long run. This is why promoting epistemic *diversity* is so important.

If the probability for patient requested studies to win the lottery is too high, then there is a risk of negating the potential epistemic benefits of using the lottery in the first place. However, if the probability is only slightly higher, there might be a cost in terms of efficiency, but we can presumably preserve much of the epistemic benefits of randomized funding (albeit on a longer time scale than without the weighting of the lottery). In other words, there is a possible balance to be found between the social and moral costs of using unweighted lotteries that are not directly responsive (or that do not openly signal that responsiveness) to the needs of patients, and the epistemic cost of using an overly weighted lottery that does not adequately promote epistemic diversity. Using a weighted randomized funding mechanism retains the benefit of limiting, as much as possible, the biases in the peer reviewing process for already established or familiar theories. As such, I believe that we have reason to think that most of the epistemic benefits of randomized funding on transient diversity can be preserved in an adequately weighted lottery.

Note that this argument is speculative. More model simulations and empirical work are needed to confirm this hypothesis. In general, I believe that this normative challenge to randomized funding in the specific context of medical research needs to receive more attention in the literature. Nevertheless, and in theory at least, it seems like a revised and weighted lottery could still retain much of the epistemic benefits of using a randomized funding mechanism. In practice, however, one problem persists: How might we balance the relative claims of those that take part in that lottery?

8.2.2. Balancing Out the Relative Claims

How might one weigh the claims in a lottery at the NIMH? Within that question is a common criticism of Broome's view. In short, the counterargument is that since it is virtually impossible to quantitatively determine the weight of the claims of individuals (or groups) in a given lottery on the distribution of a specific good, and since fairness cannot require that agents do something impossible, the framework itself should therefore be rejected (Kirkpatrick and Eastwood 2015).

While the argument seems rather simple, it also challenges the very real possibility of using weighted lotteries as a means to distribute scarce goods. If Kirkpatrick and Eastwood are correct, and if weighting the lottery is necessary in the context of biomedical research (to adequately be responsive to the needs and claims of patients), then perhaps randomized funding mechanisms are ill suited to psychiatry and medicine.

I believe that there are ways of rescuing lotteries from this challenge. To do that, I will use Nathaniel Sharadin's argument in response to Kirkpatrick and Eastwood on this issue. There, Sharadin argues that while it may be true that in practice one can't precisely and objectively establish quantitative weights to the relative claims of agents, that fact by itself is not sufficient to reject the approach more generally (Sharadin 2016).

Instead of rejecting the requirements of fairness as developed by Broome, Sharadin argues that we should develop "heuristic rules that approximate those requirements" (Sharadin 2016). These rules ought to be based on some of the features processed by these claims. For example, in the argument developed above which supports the view that patients have a right to have their priorities addressed in research, it is impossible to determine in absolute terms how much weight to give them. However, one can approximate an idea of the *relative* claims of each group.

Patients, by virtue of their status, and given the moral requirements of research funding in psychiatry, must have a higher *relative* claim than other groups (mainly scientists, but potentially the general public as well) in the attribution of funds. That higher relative claim, however, cannot override everything. We can't strictly attribute funding to studies requested by patients without any other considerations. The patient's claims, while weightier, must also be limited in two distinct ways. First, they must be constrained by the epistemic desiderata of promoting *diversity*. Presumably, empirical work and network simulations can provide clarity on that limit and serve to determine a limit to the weight of these claims. Second, patients' claims must also compete with the scientists' claims to be treated fairly and develop knowledge as a public good (Gildenhuys 2020). As such, the theory doesn't leave us with a completely open and unsolvable problem. There is some conceptual guidance on how the assignment of the various weights and probabilities in the lottery ought to be conducted.

Recall how I mentioned earlier that randomized funding seem to remove all forms of democratic deliberation in the process of assigning priorities in public scientific funding. This seems to go against the general framework to which I've appealed in the previous chapter. The goal, in short, is to use weighted lotteries to *reintroduce* some form of democratic deliberations whilst keeping the epistemic benefits of randomization.

Through democratic deliberations one could determine the precise weight (translated into probability of winning) that studies requested by patients ought to occupy. There are essentially three limitations that should be respected: 1. the relative weight of the patient's claims ought to be higher than others (scientists, the public and so on) to adequately respect the normative requirements of the previous chapter (hence the use of a *weighted* lottery); 2. that

weight, by being higher, should adequately signify to those patients their equal status; and 3. the relative probabilities of winning ought not to be so high that the epistemic benefits of randomized funding are completely lost.

One way of simplifying this system is to use what Jamie Shaw and Barbara Goodwin have called a "tiered" lottery (Shaw 2022; Goodwin 1992). Their view is that rather than assigning to each research proposals a specific probability of winning, proposals are ranked on multiple levels and each proposal within a given level are attributed the *same* probability of winning. In the case of the view I'm defending, for example, there could be two tiers: one for proposals that are consistent with the request of patient groups and one for all the other proposals. The former ought to be given a higher probability of winning than the latter.

8.2.3. Patients and Stakeholders

With that in mind, there are few remaining questions regarding the inclusion of patients in the determination of the funding priorities of the NIMH. For example, is there a possibility of competing claims between patient groups that might render the process more complex? So far, I've used the term "patients" as if that were a homogeneous group with relatively similar views on what seems important or concerning about their conditions, but things are far more complex in reality. Who should the NIMH listen to when trying to understand the concerns of psychiatric patients? How should that inclusion take place within RDoC?

While these issues may present themselves *differently* in the context of a weighted lottery, the overall question is if this difference makes randomized funding *especially* problematic in that regard. In other words, is there something about lotteries that makes it *more* difficult to navigate these various issues or, to the contrary, are lotteries advantageous when responding to those problems? There is a growing literature on some of the common issues with patient

involvement in mental health research that can shed light on potential ways of answering this question. In this section, and largely based on the recent empirical work done by Jones *et al.* (2023), I will analyze some of the most common problems with patient involvement in mental health research and see how they might present themselves in a lottery-based system.

First, there are some conceptual clarifications to be made. While I've used the term "patients" to speak about the importance of their experiential knowledge, the term stakeholders (which includes patients, their families, caregivers, etc.) is usually more commonly used (Jones et al. 2023). In this thesis, for clarity and brevity in my arguments, I have intentionally limited myself to patients. There is little doubt that the concepts I've appealed to (relational egalitarianism, science funding as a democratic concern, social epistemology of science, and so on) could be mobilized to defend similar arguments for the involvement of other stakeholders in the determination of research priorities at the NIMH. I will nevertheless remain neutral on this question.

Next, the dichotomy between patients and scientists also needs to be clarified. Many scientists are themselves patients (or service users) and there is a risk of negating their expertise if one were to limit themselves to the strict opposition between those categories. Indeed, this is one of the main takeaways from Jones *et al.* (2023). There is an inherent vagueness in categories such as "scientists", "patients", or "stakeholders" when one considers the fact that people can occupy different positions all at once and have a unique form of experiential knowledge that would be equally beneficial to integrate in the funding priorities of the agency.

Finally, the NIMH must resist what is known as "tokenism" (or the surface-level involvement of psychiatric patients to give the impression of genuine participation whilst their influence remains limited) (Jones et al. 2023). In the framework I'm defending, tokenism is a risk if the NIMH consults with patient groups, but institutionally still has the final say over the

determination of the relative probabilities. Determining the weight of the claims is, as I stated, a way of providing fair surrogate satisfaction to those patients, and if the process is opaque and still largely controlled by non-patient institutional actors, there is a risk that my proposal would fail to deliver on an adequate satisfaction of the moral desiderata I highlighted earlier.

These three common problems (conceptual clarification, determination of which groups to consult and tokenism) are all issues that would be present regardless of the funding mechanism if the NIMH wants to promote patient involvement in the determination of its priorities. As I argued in the second chapter, that involvement is a normative necessity for well-organized scientific funding mechanisms in psychiatry. As a result, and even if one disagrees with the idea of using lotteries to distribute funding, these issues will need to be addressed by the NIMH. The important point is that nothing seems to be *especially problematic* for a randomized mechanism in that regard.

In fact, a randomized system such as the one I'm proposing here has the benefit of being far simpler and less prone, as we saw, to the influence of peer reviewers and their biases on the overall determination of what to fund. This is also one reason to favour lotteries over a strict diversification of FOAs without meaningful structural changes at the NIMH. As Shaw (2022) points out: "[f]unding-by-lottery, it seems, has an especially wonderful opportunity to include stakeholders or the general public in screening decisions" (Shaw 2022). There is, inherent in the proposal, a large degree of openness to patient involvement considering that they are, in effect, the group that ought to have the most influence on the scientific practices of the NIMH.

While patient involvement (and stakeholder involvement more generally) is still underdeveloped the United States, there are a number of examples of relatively successful alternatives elsewhere. In Canada, Restall, Cooper, and Kaufert (2011) have highlighted various tools used by federal and provincial governments to translate the experiential knowledge of patients into actual policies. These include various levels of direct involvement by patients, the importance of education on these issues for policymakers and so on. Similarly, the United Kingdom has developed a series of standards for public involvement in scientific research which could serve as a basis for the NIMH in that regard (UK Public Involvement Standards Development Partnership 2023). Luc Faucher has also analyzed the practices of the European commission's Roadmap for Mental Health Research in Europe (ROAMER). This initiative is, in essence, supposed to provide guidance for national or transnational research funding programs in Europe. Without going into the detail of ROAMER as a whole, its practices have led to agreements "on common values and goals" (Faucher 2022) between patient groups which could serve to ameliorate the funding priorities in psychiatry. All these different initiatives, among many others could help the NIMH develop policies for meaningful integration of patients in the determination of the relative probabilities in a weighted lottery. The problems I cited earlier whilst important, are not necessarily insurmountable.

While I can only scratch the surface of the immense complexity of the debates that surround patient involvement in mental health research, the main takeaway is that randomized funding is not *particularly* ill suited for that integration. Under the right institutional conditions, and through the right kind of patient involvement, democratic deliberations can lead to a satisfying integration of their voices in the funding priorities of the agency.

One problem that remains is if whether the perception of a randomized funding mechanism is such that patients wouldn't be satisfied by the moral recognition of their status offered by a surrogate satisfaction of their claims through a lottery. This is an empirical question, but early evidence (at least on the researcher side) seems to indicate that those participating in the lottery do not feel disrespected and hold generally favorable views of that method (Liu et al. 2020). Axel Philips, in another study of the perception that scientists have of lotteries reports similar attitudes (Philipps 2021; Shaw 2022). More evidence is nevertheless needed to see if *patients* would equally feel positive about a weighted lottery in their favour.

9. The Overall Proposal

In this final section, and based on what I've argued thus far, I would like to clearly spell out the overall proposal for the future of psychiatric research funding through RDoC. To use the taxonomy provided by Shaw (2022) my proposal is a lottery that is *partial* – there is a minimal barrier to entry which requires the respect of ethical norms, cost constraints, feasibility and so on; it is *weighted* – not all research proposals are given the same probability of winning; it is *tiered* – at least 2 tiers for patient requested studies and the rest; and it remains possible to directly fund highly promising studies if a consensus starts to emerge in the literature. I believe that these features provide an adequate balance for the moral, epistemic, and political desiderata inherent in psychiatric research funding.

Using the RDoC matrix, and through direct patient involvement, the NIMH could identify which levels of analysis or which constructs seem to be especially important. For example, after consultations patients might demand, and indeed they did demand (Faucher 2022), that research on the effect of social support on mental well-being be given more attention. These priorities would then be reordered in a separate tier which would then be given a higher probability of winning. The level of granularity (whether only specific levels of analysis be part of that tier or actual cells in the RDoC matrix for example) would be determined by the patients themselves. However, to find a common ground between patient groups, one might think that too much granularity would be undesirable.
As I've stated in the first chapter, the NIMH already organizes consultations for the definitions of constructs and subconstructs (Sanislow 2016), and one could very well imagine that through these consultations the agency could also include discussions with patients on the two tiers for the eventual lottery system. This is one of the many ways in which the RDoC matrix remains an important tool to reform psychiatric practice, especially when paired with a randomized funding mechanism.

Once the tiers are defined, the NIMH could do away with precise Funding Opportunities Announcements (FOAs) and instead welcome general proposals from researchers. This is one of the ways in which adding a randomized element to research funding allows for a simpler system. These proposals would then pass a minimal review (compliance with ethical norms, cost and length, and so on) and would then be classified in the two-tier lottery system. By using the RDoC matrix as a common basis across all research proposals, this considerably simplifies the classification process.

A lottery would then take place which would select studies that passed this minimal review according to the previously established probabilities. Following what seems to be common practice in randomized funding (Avin 2019a; Liu et al. 2020; Shaw 2022), this selection would run its course until all the available funds are attributed.

If, along the way, there seems to be some theoretical approaches that appear especially encouraging to the scientific community (and to patients), then a certain percentage of highly promising research could then be directly funded by the agency. Based on the available evidence, that percentage, provided it is not too high (Avin speaks of around 10% of funded research) is not in tension with the epistemic goals of reaching transient diversity (Avin 2018; 2019b). This is speculative, but the mechanism itself is open to be adjusted along the way to account for that possibility. In that case, the minimal first review could be extended to include

some form of peer reviewing for specific promising cells in the RDoC matrix. Importantly, this would reintroduce some possibility of undesirable biases in the funding process, and if the NIMH were to directly fund promising studies, it ought to make the decision with significant (non-tokenized) involvement from patients.

In the end, this mechanism presents a number of advantages compared to traditional FOAs and peer reviewing. While not perfect, it seems to shield the agency from direct involvement in its funding priorities by political or pharmaceutical actors. It also seems to provide, based on the currently available evidence, a reliable mechanism for the funding of a diverse array of scientific approaches and theories of mental suffering to be studied. Finally, by weighting the lottery, it also allows for the recognition and inclusion of patients as part of the funding process of the agency. If what I've argued for in the second chapter is correct, then this would entail that randomized funding can be made compatible with the moral requirements of research funding in psychiatry and medicine more generally.

Conclusion

In this chapter, I developed a proposal to tackle the issue of transient diversity at the NIMH within the RDoC initiative. To do that, I first described three desiderata for scientific research funding at the agency. The funding ought to provide sufficient resources for the study of a wide array of theories and approaches to be tested in order to reach the necessary conditions for transient diversity. It also ought to guarantee that the voice and concerns of patients are adequately accounted for. Finally, it must be structured in such a way that political and private actors do not dominate the decisions on what to fund.

Secondly, I analyzed the common proposal of introducing a randomized element to research funding. Rather than relying exclusively on peer reviewing to determine which project

to fund, lottery-based funding would make use of a randomized process. While this proposal, in a basic sense, seems to be effective at promoting diversity and shielding the agency from political and private interventions, it nevertheless fails to adequately signal to patients that their worries and concerns are appropriately accounted for.

In the end, I described my proposal for a partial, weighted, and tiered lottery which I believe strikes the right balance between the various desiderata previously described. In short, this proposal would first analyze research proposals in terms of their respect for ethical norms, cost and length, and feasibility before sorting them out in two tiers (one for patient requested studies and the other for the rest) before holding a weighted lottery to determine the winner.

While in theory this seems like the right kind of system to adequately structure the attribution of research funding at the NIMH, it also leads to a number of difficulties. For example, more empirical work is needed to determine to what extent one can weigh the lottery whilst retaining the epistemic benefits of randomized funding. Likewise, the precise determination of the relative probabilities necessary to signal the equal status of psychiatric patients is, in practice, very difficult to determine. Finally, the choice of who to consult and how to do it to be properly responsive to the needs and concerns of psychiatric patients, while not unique to a randomized funding mechanism, would need to be addressed.

Conclusion

It seems clear, based on the arguments I've defended in thesis, that RDoC has an interesting potential to restructure psychiatry on a different and better foundation. From the first chapter, one can see that inherent to the initiative is an openness to researching and understanding the nature and etiology of mental suffering in a number of different ways. Researchers convinced by a version of reductionism, those that see mental suffering as adaptative and selected functions, or those who prioritize social or environmental factors in their explanatory power can find room within RDoC for their research. From the point of view of fostering epistemic diversity, this seems like a positive feature of the initiative.

While that openness and that potential exists in theory, the history of the initiative paints a different picture. RDoC has been almost exclusively used as a tool to fund research on lowlevel mechanisms of the brain. Likewise, the discourse that surrounds the initiative has repeatedly argued in favour of some form of reductionism in psychiatry as the right way to explain and treat mental suffering.

As we saw in the second chapter, this situation is epistemologically and morally problematic for various reasons. First, because of the immense importance that the NIMH has in the scientific community overall, the application of RDoC creates conditions that are not conducive to reaching transient epistemic diversity. The agency fails to provide researchers with funds to study a wide enough array of approaches and theories in psychiatry. As a result, the scientific practices of RDoC run the risk of effectively blinding the psychiatric research community to alternative and potentially better theoretical frameworks to make sense of mental suffering.

Likewise, these practices seem to be morally problematic insofar as they've failed to provide sufficient funds to research that targets the concerns of psychiatric patients. From the point of view of equality, the agency fails to do what is just. As a result of those practices, it also fails to provide the necessary conditions to foster trust between psychiatry as a discipline and the patients it is expected to help. Those are serious moral issues, regardless of one's stance on the metaphysics of mental suffering.

Why would a public agency employ scientific practices that are unjust? One explanation for the focus on low-level mechanisms in the funding portfolio of the agency is to look at the influence of neoliberal political rationality on various public institutions in the United States. It seems that, at its heart, neoliberalism naturally favours some form of reductionism and effectively negates the importance of studying higher-level mechanism in the explanation and treatment of mental suffering. As it constitutes the dominant political rationality of the past forty years in the global north, neoliberalism appears like a natural candidate to partially explain the research priorities of the NIMH.

Understanding the actual practices, why they are problematic and one of the reasons why they might exist can only get us so far. Is there a way to restructure scientific funding within the RDoC initiative to respond to that criticism? In the final chapter, I argued that certain mechanisms could be put in place to considerably ameliorate the funding portfolio of the NIMH.

Part of what is desirable in terms of public funding for psychiatric research is that a wide array of theories are tested, that patients see their concerns addressed, and that there are some structural safeguards to prevent neoliberalism from dominating the funding portfolio of the agency. In the current literature on research funding mechanisms, the idea of introducing a randomized element to the allocation of funds appears like a promising proposal to respond to these concerns. Unfortunately, a strict lottery can only partially accomplish this task. While it seems like a useful tool to promote epistemic diversity and shield the agency from political influence, it also cannot account for the need to adequately respond to the worries and concerns of patients. This entails that a strict lottery would also be an unjust mechanism if applied to biomedical research and psychiatry.

One way to amend this proposal is to use weighted lotteries. By intentionally skewing the probabilities of winning in favour of studies requested by psychiatric patients, the NIMH could, in theory, adequately balance out the epistemic, moral, and political desiderata of psychiatric research funding.

Even though this proposal seems promising, it also leads to a number of difficulties related to the ability to determine the probability of winning or the inclusion of patients throughout this process. With that conclusion, one is faced with philosophy's frustrating tendency to lead to more questions than answers. Nevertheless, these new questions appear at least like the right questions to ask, which is the first step in reaching, at some point, the correct answers.

In the case of this thesis, there seems to be a few lines of inquiry worth pursuing in the future. First, there is an empirical question related to the influence of the NIMH in the psychiatric research community overall. We know that the agency is the biggest funder for psychiatric research in the world, and we also know that it has a large influence in the community more generally, but it would be interesting to gather more empirical data on precisely to what extent its funding decisions are impactful to determine the priorities of the discipline.

Second, most of the studies on randomized funding have focused on strict randomization as a means to promote epistemic diversity. It would be important to create more network simulations on *weighted* and *tiered* lotteries to see their effects on epistemic diversity and the formation of scientific consensus in a research community. Likewise, it would be important to further examine some of the normative challenges that appear when one applies these mechanisms to biomedical research on humans. In particular, it is crucial to examine if surrogate satisfactions of claims would be sufficient to respect the moral obligations that one has over patients.

The use of lotteries to distribute funding is still a relatively new idea and is often perceived as quite radical compared to other changes that keep the existing institutional structures of science intact. While there is evidence to suggest that scientists who have participated in a lottery to receive funding still hold favorable attitudes towards them, it may nevertheless prove difficult to convince established figures in the scientific community – those who hold power and who may benefit from the conservatism inherent in peer reviewing – to accept a drastic systemic change of the sort. Similarly, political actors may be hesitant on implementing a randomized system and effectively letting go of their power over scientific research. One would hope, however, that doing what seems best for patients, researchers, science, and the very people they are elected to represent will eventually win out over the protection of their own political interests.

In short then, my conclusion doesn't lead to a fully clear path forward but may provide some tools to better understand how the NIMH ought to structure its allocation of funds. Deciding what science we should fund as a society is a deeply complex, politically charged and socially important question. As with any questions of this type, it is rare that one would find a definite answer. However, understanding the vulnerability, the pain, and the experience of patients, as well as the necessity for a scientific community to be radically open to new and potentially groundbreaking ideas seem like a good starting point.

Works Cited

- Abma, Tineke A., Yolande Voskes, and Guy Widdershoven. 2017. "Participatory Bioethics Research and Its Social Impact: The Case of Coercion Reduction in Psychiatry." *Bioethics* 31 (2): 144–52. https://doi.org/10.1111/bioe.12319.
- Alfano, Mark, and Nicole Huijts. 2020. "Trust in Institutions and Governance." In The Routledge Handbook of Trust and Philosophy. Routledge.
- Almeida, Michael J. 2017. "Chance, Epistemic Probability, and Saving Lives: Reply to Bradley." Journal of Ethics and Social Philosophy 4 (1): 1–7. https://doi.org/10.26556/jesp.v4i1.131.
- American Psychiatric Association. 1968. *Diagnostic and Statistical Manual of Mental Disorders:* Second Edition. Washington, D.C: American Psychiatric Association.
 - . 1980. *Diagnostic and Statistical Manual of Mental Disorders: DSM-III*. 3rd ed. Washington, D.C.
 - —, ed. 2013. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5.* 5th ed. Washington, D.C: American Psychiatric Association.
- Anderson, Elizabeth. 1999. "What Is the Point of Equality?" *Ethics* 109 (2): 287–337. https://doi.org/10.1086/233897.
 - ——. 2008. "Elizabeth Anderson: Expanding the Egalitarian Toolbox: Equality and Bureaucracy." *Aristotelian Society Supplementary Volume* 82 (1): 139–60. https://doi.org/10.1111/j.1467-8349.2008.00166.x.
- Ang, Benjamin, Mark Horowitz, and Joanna Moncrieff. 2022. "Is the Chemical Imbalance an 'Urban Legend'? An Exploration of the Status of the Serotonin Theory of Depression in the Scientific Literature." SSM - Mental Health 2 (December): 100098. https://doi.org/10.1016/j.ssmmh.2022.100098.
- Avin, Shahar. 2018. "Policy Considerations for Random Allocation of Research Funds." RT. A Journal on Research Policy and Evaluation V. 6 (March): N. 1 (2018): Research Policy: Insights from Social Epistemology. https://doi.org/10.13130/2282-5398/8626.
- ———. 2019a. "Mavericks and Lotteries." Studies in History and Philosophy of Science Part A 76 (August): 13–23. https://doi.org/10.1016/j.shpsa.2018.11.006.
 - ——. 2019b. "Centralized Funding and Epistemic Exploration." The British Journal for the Philosophy of Science 70 (3): 629–56. https://doi.org/10.1093/bjps/axx059.
- Barnett, Allain J., and Melanie G. Wiber. 2019. "What Scientists Say about the Changing Risk Calculation in the Marine Environment under the Harper Government of Canada (2006-2015)." Science, Technology, & Human Values 44 (1): 29–51. https://doi.org/10.1177/0162243918781269.
- Bengtson, Andreas. 2020. "Differential Voting Weights and Relational Egalitarianism." *Political Studies* 68 (4): 1054–70. https://doi.org/10.1177/0032321719889870.
- Beresford, Peter, and Jasna Russo, eds. 2022. *The Routledge International Handbook of Mad Studies*. Routledge International Handbooks. Milton Park, Abingdon, Oxon; New York, NY: Routledge.
- Bhakuni, Himani, Rieke van der Graaf, and Seye Abimbola. 2022. "Injustice in Bioethics Research Funding: Going Further Upstream." *The American Journal of Bioethics* 22 (1): 33– 35. https://doi.org/10.1080/15265161.2021.2001104.
- Blashfield, Roger K., Jared W. Keeley, Elizabeth H. Flanagan, and Shannon R. Miles. 2014. "The Cycle of Classification: DSM-I to DSM-V." *Annual Review of Clinical Psychology* 10 (1): 25–51. https://doi.org/10.1146/annurev-clinpsy-032813-153639.

- Bolton, Derek, and Dinesh Bhugra. 2021. "Changes in Society and Young People's Mental Health ¹." *International Review of Psychiatry* 33 (1–2): 154–61. https://doi.org/10.1080/09540261.2020.1753968.
- Bolton, Derek, and Grant Gillett. 2019. The Biopsychosocial Model of Health and Disease: New Philosophical and Scientific Developments. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-11899-0.
- Borg, AnneMarie, Daniel Frey, Dunja Šešelja, and Christian Straßer. 2019. "Theory-Choice, Transient Diversity and the Efficiency of Scientific Inquiry." *European Journal for Philosophy of Science* 9 (2): 26. https://doi.org/10.1007/s13194-019-0249-5.
- Brennan, Geoffrey, and James Buchanan. 1981. "The Normative Purpose of Economic 'Science': Rediscovery of an Eighteenth Century Method." *International Review of Law and Economics* 1 (2): 155–66. https://doi.org/10.1016/0144-8188(81)90013-2.
- Bright, Liam Kofi. 2018. "Du Bois' Democratic Defence of the Value Free Ideal." *Synthese* 195 (5): 2227–45. https://doi.org/10.1007/s11229-017-1333-z.
- Broome, John. 1990. "Fairness." Proceedings of the Aristotelian Society 91: 87-101.
- Brown, Patrick, Michael Calnan, Amanda Scrivener, and George Szmukler. 2009. "Trust in Mental Health Services: A Neglected Concept." *Journal of Mental Health* 18 (5): 449–58. https://doi.org/10.3109/09638230903111122.
- Brown, Patrick R., and Michael W. Calnan. 2016. "Chains of (Dis)Trust: Exploring the Underpinnings of Knowledge-Sharing and Quality Care across Mental Health Services." Sociology of Health & Illness 38 (2): 286–305. https://doi.org/10.1111/1467-9566.12369.
- Brown, Wendy. 2019. In the Ruins of Neoliberalism: The Rise of Antidemocratic Politics in the West. The Wellek Library Lectures. New York: Columbia University Press.
- Carcone, Dean, and Anthony C. Ruocco. 2017. "Six Years of Research on the National Institute of Mental Health's Research Domain Criteria (RDoC) Initiative: A Systematic Review." Frontiers in Cellular Neuroscience 11 (March). https://doi.org/10.3389/fncel.2017.00046.
- Cohen, Bruce M. Z. 2016. "Psychiatric Hegemony: Mental Illness in Neoliberal Society." In Psychiatric Hegemony: A Marxist Theory of Mental Illness, edited by Bruce M. Z. Cohen, 69– 96. London: Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-46051-6_3.
- Cooper, Rachel. 2017. "Classification, Rating Scales, and Promoting User-Led Research." In *Extraordinary Science and Psychiatry: Responses to the Crisis in Mental Health Research*, edited by Jeffrey Poland and Serife Tekin, 0. The MIT Press. https://doi.org/10.7551/mitpress/9780262035484.003.0009.
- Darwall, Stephen L. 1977. "Two Kinds of Respect." *Ethics* 88 (1): 36–49. https://doi.org/10.1086/292054.
- Dillon, Robin S. 1997. "Self-Respect: Moral, Emotional, Political." Ethics 107 (2): 226-49.
- Eagleton-Pierce, Matthew. 2016. *Neoliberalism: The Key Concepts.* Routledge Key Guides. New York, NY: Routledge, Taylor & Francis Group.
- Eronen, Markus I. 2021. "The Levels Problem in Psychopathology." *Psychological Medicine* 51 (6): 927–33. https://doi.org/10.1017/S0033291719002514.
- Esposito, Luigi, and Fernando M. Perez. 2014. "Neoliberalism and the Commodification of Mental Health." *Humanity* & Society 38 (4): 414–42. https://doi.org/10.1177/0160597614544958.
- Fanelli, Daniele. 2012. "Negative Results Are Disappearing from Most Disciplines and Countries." *Scientometrics* 90 (3): 891–904. https://doi.org/10.1007/s11192-011-0494-7.
- Faucher, Luc. 2022. "L'établissement des priorités en matière de santé mentale : un essai

d'épistémologie sociale comparée." Philosophiques 49 (1): 101-33. https://doi.org/10.7202/1090266ar.

Faucher, Luc, and Simon Goyer. 2015. "RDoC: Thinking Outside the DSM Box Without Falling into a Reductionist Trap." In *The DSM-5 in Perspective: Philosophical Reflections on the Psychiatric Babel*, edited by Steeves Demazeux and Patrick Singy, 199–224. History, Philosophy and Theory of the Life Sciences. Dordrecht: Springer Netherlands. https://doi.org/10.1007/978-94-017-9765-8_12.

—. 2017. "RDoC's Special Kind of Reductionism and Its Possible Impact on Clinical Psychiatry." In *The Routledge Handbook of Neuroethics*. Routledge. https://doi.org/10.4324/9781315708652.ch27.

- First, Michael B. 2012. "The Development of DSM-III from a Historical/Conceptual Perspective." In *Philosophical Issues in Psychiatry II: Nosology*, edited by Kenneth S. Kendler and Josef Parnas, 0. Oxford University Press. https://doi.org/10.1093/med/9780199642205.003.0020.
- Fisher, Mark. 2009. *Capitalist Realism: Is There No Alternative?* Zero Books. Winchester, UK Washington, USA: Zero Books.
- Foucault, Michel. 1978. *The History of Sexuality Volume I: An Introduction*. Translated by Robert Hurley. New York, NY: Pantheon Books.
 - ——. 1988. *Madness and Civilization: A History of Insanity in the Age of Reason*. Vintage Books Ed., Nov. 1988. New York: Random House.
- ———. 2008. The Birth of Biopolitics: Lectures at the Collège de France, 1978-79. Edited by Michel Senellart. Basingstoke [England]; New York: Palgrave Macmillan.
- Freud, Sigmund. 1954. "Project for a Scientific Psychology." In The Origins of Psycho-Analysis: Letters to Wilhelm Fliess, Drafts and Notes: 1887-1902., by Sigmund Freud, edited by Marie Bonaparte, Anna Freud, and Ernst Kris, translated by Eric Mosbacher, James Strachey, Eric Mosbacher, and James Strachey, 347–445. New York: Basic Books/Hachette Book Group. https://doi.org/10.1037/11538-013.
- Fried, Eiko I. 2022. "Studying Mental Health Problems as Systems, Not Syndromes." *Current Directions in Psychological Science*, October, 096372142211140. https://doi.org/10.1177/09637214221114089.
- Fusar-Poli, Paolo, Andrés Estradé, Giovanni Stanghellini, Jemma Venables, Juliana Onwumere, Guilherme Messas, Lorenzo Gilardi, et al. 2022. "The Lived Experience of Psychosis: A Bottom-up Review Co-written by Experts by Experience and Academics." *World Psychiatry* 21 (2): 168–88. https://doi.org/10.1002/wps.20959.
- Garson, Justin. 2022. *Madness: A Philosophical Exploration*. 1st ed. New York: Oxford University Press.
- Gildenhuys, Peter. 2020. "Lotteries Make Science Fairer." Journal of Responsible Innovation 7 (sup2): S30–43. https://doi.org/10.1080/23299460.2020.1812485.
- Gillies, Donald. 2014. "Selecting Applications for Funding: Why Random Choice Is Better than Peer Review." RT. A Journal on Research Policy and Evaluation Vol 2 (May): No 1 (2014). https://doi.org/10.13130/2282-5398/3834.
- Glannon, Walter. 2019. *Psychiatric Neuroethics: Studies in Research and Practice*. First edition. International Perspectives in Philosophy and Psychiatry. Oxford; New York, NY: Oxford University Press.
- Gold, Ian. 2009. "Reduction in Psychiatry." The Canadian Journal of Psychiatry 54 (8): 506–12. https://doi.org/10.1177/070674370905400802.
- Goldenberg, Maya J. 2015. "Whose Social Values? Evaluating Canada's 'death of Evidence'

Controversy." Canadian Journal of Philosophy 45 (3): 404–24.

- Goldstein, M. 1994. "Decade of the Brain. An Agenda for the Nineties." Western Journal of Medicine 161 (3): 239-41.
- Goodwin, Barbara. 1992. Justice by Lottery. Chicago: University of Chicago Press.
- Gordon, Joshua. 2017a. "RDoC: Outcomes to Causes and Back." National Institute of Mental Health (NIMH). 2017.
 - https://www.nimh.nih.gov/about/director/messages/2017/rdoc-outcomes-to-causes-and-back.
 - ——. 2017b. "The Future of RDoC." National Institute of Mental Health (NIMH). 2017. https://www.nimh.nih.gov/about/director/messages/2017/the-future-of-rdoc.
 - —. 2020a. "RDoC at Ten Years Part 2: The Next Ten Years." National Institute of Mental Health (NIMH). 2020.
 - https://www.nimh.nih.gov/about/director/messages/2020/rdoc-at-ten-years-part-2-the-next-ten-years.
 - ——. 2020b. "RDoC at Ten Years: Part 1." National Institute of Mental Health (NIMH). 2020. https://www.nimh.nih.gov/about/director/messages/2020/rdoc-at-ten-yearspart-1.
- Harding, Sandra. 1991. Whose Science? Whose Knowledge? Thinking from Women's Lives. Ithaca, N.Y: Cornell University Press.
- . 1995. "Strong Objectivity': A Response to the New Objectivity Question." Synthese 104 (3): 331–49. https://doi.org/10.1007/BF01064504.
- Harvey, David. 2011. A Brief History of Neoliberalism. Oxford: Oxford Univ. Press.
- Heasman, Brett, and Alex Gillespie. 2019. "Neurodivergent Intersubjectivity: Distinctive Features of How Autistic People Create Shared Understanding." *Autism* 23 (4): 910–21. https://doi.org/10.1177/1362361318785172.
- Heesen, Remco, and Liam Kofi Bright. 2021. "Is Peer Review a Good Idea?" *The British Journal* for the Philosophy of Science 72 (3): 635–63. https://doi.org/10.1093/bjps/axz029.
- Herzog, Lisa. 2021. "Markets." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Fall 2021. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/fall2021/entries/markets/.
- Hoffman, Ginger A, and Peter Zachar. 2017. "RDoC's Metaphysical Assumptions: Problems and Promises." In *Extraordinary Science and Psychiatry: Responses to the Crisis in Mental Health Research.* Cambridge, MA: MIT Press.
- Horwitz, Allan V. 2014. "DSM-1 and DSM-2." In *The Encyclopedia of Clinical Psychology*, edited by Robin L. Cautin and Scott O. Lilienfeld. Hoboken, NJ, USA: John Wiley & Sons, Inc. https://doi.org/10.1002/9781118625392.wbecp012.
- ——. 2021. DSM: A History of Psychiatry's Bible. Baltimore: Johns Hopkins University Press. Hosein, Adam Omar. 2018. "Racial Profiling and a Reasonable Sense of Inferior Political
- Status." *Journal of Political Philosophy* 26 (3): e1–20. https://doi.org/10.1111/jopp.12162. Hyman, Steven E. 2010. "The Diagnosis of Mental Disorders: The Problem of Reification."
- Annual Review of Clinical Psychology 6 (1): 155–79. https://doi.org/10.1146/annurev.clinpsy.3.022806.091532.
- Insel, Thomas. 2013. "Transforming Diagnosis." NIMH Director's Blog, 2013. https://psychrights.org/2013/130429NIMHTransformingDiagnosis.htm.
 - ——. 2014. "The NIMH Research Domain Criteria (RDoC) Project: Precision Medicine for Psychiatry." *American Journal of Psychiatry* 171 (4): 395–97. https://doi.org/10.1176/appi.ajp.2014.14020138.
- Insel, Thomas, Bruce Cuthbert, Marjorie Garvey, Robert Heinssen, Daniel S. Pine, Kevin

Quinn, Charles Sanislow, and Philip Wang. 2010. "Research Domain Criteria (RDoC): Toward a New Classification Framework for Research on Mental Disorders." *American Journal of Psychiatry* 167 (7): 748–51. https://doi.org/10.1176/appi.ajp.2010.09091379.

Jones, Karen. 2012. "Trustworthiness." *Ethics* 123 (1): 61–85. https://doi.org/10.1086/667838.

- Jones, Nev, Linda Callejas, Marie Brown, Michelle Colder Carras, Bevin Croft, Shannon Pagdon, Lindsay Sheehan, Oladunni Oluwoye, and Yaara Zisman-Ilani. 2023. "Barriers to Meaningful Participatory Mental Health Services Research and Priority Next Steps: Findings From a National Survey." *Psychiatric Services (Washington, D.C.)*, March, appips20220514. https://doi.org/10.1176/appi.ps.20220514.
- Juriako, Marko, and Luca Malatesti. 2020. "In What Sense Are Mental Disorders Brain Disorders? Explicating the Concept of Mental Disorder within RDoC." *Phenomenology and Mind*, 181. https://doi.org/10.17454/pam-1814.
- Kane, Sarah. 2000. 4.48 Psychosis. London: Methuen Drama.
- Kapp, Steven K., Kristen Gillespie-Lynch, Lauren E. Sherman, and Ted Hutman. 2013. "Deficit, Difference, or Both? Autism and Neurodiversity." *Developmental Psychology* 49 (1): 59–71. https://doi.org/10.1037/a0028353.
- Keil, Geert, Lara Keuck, and Rico Hauswald. 2016. Vagueness in Psychiatry: An Overview. Vol. 1. Oxford University Press. https://doi.org/10.1093/med/9780198722373.003.0001.
- Kendell, R. E. 1971. "Diagnostic Criteria of American and British Psychiatrists." Archives of General Psychiatry 25 (2): 123. https://doi.org/10.1001/archpsyc.1971.01750140027006.
- Kendler, Kenneth S. 2015. "Etiological Models in Psychiatry: Reductive and Nonreductive." In *Philosophical Issues in Psychiatry: Explanation, Phenomenology, and Nosology*, edited by Kenneth S. Kendler and Josef Parnas. Baltimore: Johns Hopkins University Press.
- Kirkpatrick, James R., and Nick Eastwood. 2015. "Broome's Theory of Fairness and the Problem of Quantifying the Strengths of Claims." Utilitas 27 (1): 82–91. https://doi.org/10.1017/S0953820814000259.
- Kirmayer, Laurence J., Ana Gomez-Carrillo, and Samuel Veissière. 2017. "Culture and Depression in Global Mental Health: An Ecosocial Approach to the Phenomenology of Psychiatric Disorders." *Social Science & Medicine* 183 (June): 163–68. https://doi.org/10.1016/j.socscimed.2017.04.034.
- Kirmayer, Laurence J., C. M. Worthman, Shinobu Kitayama, Robert Lemelson, and Constance A. Cummings, eds. 2020. *Culture, Mind, and Brain: Emerging Concepts, Models, and Applications.* Current Perspectives in Social and Behavioral Sciences. Cambridge, United Kingdom; New York, NY: Cambridge University Press.
- Kitanaka, Junko. 2011. Depression in Japan: Psychiatric Cures for a Society in Distress. Princeton University Press. https://doi.org/10.2307/j.ctt7rrv0.
- Kitcher, Philip. 2007. "Scientific Research–Who Should Govern?" NanoEthics 1 (3): 177–84. https://doi.org/10.1007/s11569-007-0019-2.
- Krueger, Robert F., and Nicholas R. Eaton. 2012. "Structural Validity and the Classification of Mental Disorders." In *Philosophical Issues in Psychiatry II*, edited by Kenneth S. Kendler and Josef Parnas, 199–212. Oxford University Press. https://doi.org/10.1093/med/9780199642205.003.0029.
- Kummerfeld, Erich, and Kevin J. S. Zollman. 2016. "Conservatism and the Scientific State of Nature." The British Journal for the Philosophy of Science 67 (4): 1057–76. https://doi.org/10.1093/bjps/axv013.
- LeBlanc, Stephanie, and Elizabeth Anne Kinsella. 2016. "Toward Epistemic Justice: A

Critically Reflexive Examination of 'Sanism' and Implications for Knowledge Generation." *Studies in Social Justice* 10 (1): 59–78. https://doi.org/10.26522/ssj.v10i1.1324.

- Lemoine, Maël. 2016. "Molecular Complexity: Why Has Psychiatry Not Been Revolutionized by Genomics (Yet)?" In *Philosophy of Molecular Medicine*. Routledge.
- Liu, Mengyao, Vernon Choy, Philip Clarke, Adrian Barnett, Tony Blakely, and Lucy Pomeroy. 2020. "The Acceptability of Using a Lottery to Allocate Research Funding: A Survey of Applicants." Research Integrity and Peer Review 5 (1): 3. https://doi.org/10.1186/s41073-019-0089-z.
- Longino, Helen E. 1990. Science as Social Knowledge: Values and Objectivity in Scientific Inquiry. Princeton, N.J: Princeton University Press.
- Mackenzie, Catriona. 2020. "Procedural Justice, Relational Equality, and Self-Respect." In *Procedural Justice and Relational Theory.* Routledge.
- Mandy, Will. 2018. "The Research Domain Criteria: A New Dawn for Neurodiversity Research?" *Autism* 22 (6): 642–44. https://doi.org/10.1177/1362361318782586.
- Mann, John. 2022. "Cognitive Enhancing Drug Use amongst Students in (Neoliberal) Higher Education: A Functional Response." Drugs: Education, Prevention and Policy 0 (0): 1–11. https://doi.org/10.1080/09687637.2022.2064268.
- Maung, Hane Htut. 2021. "Causation and Causal Selection in the Biopsychosocial Model of Health and Disease." *European Journal of Analytic Philosophy* 17 (2): 5–27. https://doi.org/10.31820/ejap.17.2.6.
- Mechanic, David. 1994. "Establishing Mental Health Priorities." *The Milbank Quarterly* 72 (3): 501–14. https://doi.org/10.2307/3350268.
- Miklosi, Zoltan. 2018. Varieties of Relational Egalitarianism. Vol. 1. Oxford University Press. https://doi.org/10.1093/oso/9780198813972.003.0005.
- Mittal, Vijay A., and Lauren S. Wakschlag. 2017. "Research Domain Criteria (RDoC) Grows up: Strengthening Neurodevelopment Investigation within the RDoC Framework." *Journal of Affective Disorders* 216 (July): 30–35. https://doi.org/10.1016/j.jad.2016.12.011.
- Moncrieff, J. 2018. "Research on a 'Drug-Centred' Approach to Psychiatric Drug Treatment: Assessing the Impact of Mental and Behavioural Alterations Produced by Psychiatric Drugs." *Epidemiology and Psychiatric Sciences* 27 (2): 133–40. https://doi.org/10.1017/S2045796017000555.
- Moncrieff, Joanna. 2008. "Neoliberalism and Biopsychiatry: A Marriage of Convenience." In Liberatory Psychiatry: Philosophy, Politics and Mental Health, edited by Carl I. Cohen and Sami Timimi, 235–56. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511543678.013.
- Murphy, Dominic, ed. 2006. Psychiatry in the Scientific Image. Philosophical Psychopathology. Cambridge, Mass.: MIT Press.
 - ——. 2020. "Philosophy of Psychiatry." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Fall 2020. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/fall2020/entries/psychiatry/.
- NAMI. 2022. "Major Foundation & Corporate Sponsorships." Our Finances. 2022. https://www.nami.org/About-NAMI/Our-Finances/Major-Foundation-Corporate-Sponsorships.
- National Institute of Health. 2022. "All of Us Research Program | National Institutes of Health (NIH)." All of Us Research Program | NIH. 2022. https://allofus.nih.gov/future-health-begins-all-us.
- National Institute of Mental Health. 2013. "RFA-MH-14-030: Advancing Eating Disorders

Research through Dimensional Studies of Biology and Behavior (R01)." 2013. https://grants.nih.gov/grants/guide/rfa-files/rfa-mh-14-030.html.

- —. 2021. "PAS-21-216: Identification of Positive Valence System Related Targets for Novel Suicide Prevention Approaches (R01 - Clinical Trial Optional)." 2021. https://grants.nih.gov/grants/guide/pa-files/PAS-21-216.html.
- —. 2022a. "Developmental and Environmental Aspects." National Institute of Mental Health. 2022. https://www.nimh.nih.gov/research/research-funded-by-nimh/rdoc/developmental-and-environmental-aspects.
- ——. 2022b. "Goal 1: Define the Brain Mechanisms Underlying Complex Behaviors." National Institute of Mental Health (NIMH). 2022. https://www.nimh.nih.gov/about/strategic-planning-reports/goal-1-define-the-brainmechanisms-underlying-complex-behaviors.
- —. 2022c. "RDoC Matrix." National Institute of Mental Health. 2022. https://www.nimh.nih.gov/research/research-funded-bynimh/rdoc/constructs/rdoc-matrix.
- ——. 2022d. "The National Institute of Mental Health Strategic Plan." National Institute of Mental Health (NIMH). 2022. https://www.nimh.nih.gov/about/strategic-planningreports.
- Nimpf, Simon, and David A Keays. 2020. "Why (and How) We Should Publish Negative Data." *EMBO Reports* 21 (1): e49775. https://doi.org/10.15252/embr.201949775.
- Ortega, Francisco. 2009. "The Cerebral Subject and the Challenge of Neurodiversity." *BioSocieties* 4 (4): 425–45. https://doi.org/10.1017/S1745855209990287.
- Pacheco, Jennifer, Marjorie A. Garvey, Christopher S. Sarampote, Elan D. Cohen, Eric R. Murphy, and Stacia R. Friedman-Hill. 2022. "Annual Research Review: The Contributions of the RDoC Research Framework on Understanding the Neurodevelopmental Origins, Progression and Treatment of Mental Illnesses." *Journal* of Child Psychology and Psychiatry 63 (4): 360–76. https://doi.org/10.1111/jcpp.13543.
- Patrick, Christopher J., Noah C. Venables, James R. Yancey, Brian M. Hicks, Lindsay D. Nelson, and Mark D. Kramer. 2013. "A Construct-Network Approach to Bridging Diagnostic and Physiological Domains: Application to Assessment of Externalizing Psychopathology." *Journal of Abnormal Psychology* 122 (3): 902–16. https://doi.org/10.1037/a0032807.
- Perlin, Michael L. 2000. "On Sanism." In *The Hidden Prejudice: Mental Disability on Trial.*, by Michael L. Perlin, 21–58. Washington: American Psychological Association. https://doi.org/10.1037/10379-002.
- Pernu, Tuomas K. 2019. "Elimination, Not Reduction: Lessons from the Research Domain Criteria (RDoC) and Multiple Realisation." *Behavioral and Brain Sciences* 42: e22. https://doi.org/10.1017/S0140525X18001139.
- Philipps, Axel. 2021. "Science Rules! A Qualitative Study of Scientists' Approaches to Grant Lottery." *Research Evaluation* 30 (1): 102–11. https://doi.org/10.1093/reseval/rvaa027.
- Pickersgill, Martyn. 2019. "Psychiatry and the Sociology of Novelty: Negotiating the US National Institute of Mental Health 'Research Domain Criteria' (RDoC)." Science, Technology, & Human Values 44 (4): 612–33. https://doi.org/10.1177/0162243919841693.
- Plutynski, Anya. 2018. "Causation, Causal Selection, and Causal Parity." In *Explaining Cancer: Finding Order in Disorder*. Oxford: Oxford University Press.
- Poland, Jeffrey. 2014. "Deeply Rooted Sources of Error and Bias." In Classifying Psychopathology:

Mental Kinds and Natural Kinds. Cambridge, MA: MIT Press.

- Poland, Jeffrey, and Şerife Tekin. 2017. "Introduction: Psychiatric Research and Extraordinary Science." In *Extraordinary Science and Psychiatry: Responses to the Crisis in Mental Health Research.* Cambridge, MA: MIT Press.
- Ramsey, William. 2022. "Eliminative Materialism." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Spring 2022. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/spr2022/entries/materialismeliminative/.
- Rawat, Seema, and Sanjay Meena. 2014. "Publish or Perish: Where Are We Heading?" Journal of Research in Medical Sciences: The Official Journal of Isfahan University of Medical Sciences 19 (2): 87–89.
- Reijula, Samuli, and Jaakko Kuorikoski. 2019. "Modeling Epistemic Communities." In The Routledge Handbook of Social Epistemology, edited by Miranda Fricker, Peter J. Graham, David Henderson, and Nikolaj J.L.L. Pedersen, 240–49. Routledge. https://doi.org/10.4324/9781315717937-24.
- Restall, Gayle, Juliette E. Cooper, and Joseph M. Kaufert. 2011. "Pathways to Translating Experiential Knowledge into Mental Health Policy." *Psychiatric Rehabilitation Journal* 35 (1): 29–36. https://doi.org/10.2975/35.1.2011.29.36.
- Roache, Rebecca. 2019. "Psychiatry's Problem with Reductionism." *Philosophy, Psychiatry, & Psychology* 26 (3): 219–29. https://doi.org/10.1353/ppp.2019.0037.
- Rubio, Doris McGartland, Ellie E. Schoenbaum, Linda S. Lee, David E. Schteingart, Paul R. Marantz, Karl E. Anderson, Lauren Dewey Platt, Adriana Baez, and Karin Esposito. 2010. "Defining Translational Research: Implications for Training." *Academic Medicine : Journal of the Association of American Medical Colleges* 85 (3): 470–75. https://doi.org/10.1097/ACM.0b013e3181ccd618.
- Sanati, Abdi, and Michalis Kyratsous. 2015. "Epistemic Injustice in Assessment of Delusions: Epistemic Injustice in Delusions." *Journal of Evaluation in Clinical Practice* 21 (3): 479–85. https://doi.org/10.1111/jep.12347.
- Sanislow, Charles A. 2016. "Updating the Research Domain Criteria." World Psychiatry 15 (3): 222–23. https://doi.org/10.1002/wps.20374.
- Sanislow, Charles A., Sarah E. Morris, Bruce N. Cuthbert, and Jennifer Pacheco. 2022. "Development and Environment in the National Institute of Mental Health (NIMH) Research Domain Criteria." *Journal of Psychopathology and Clinical Science* 131 (6): 653–59. https://doi.org/10.1037/abn0000768.
- Sanislow, Charles A., Daniel S. Pine, Kevin J. Quinn, Michael J. Kozak, Marjorie A. Garvey, Robert K. Heinssen, Philip Sung-En Wang, and Bruce N. Cuthbert. 2010. "Developing Constructs for Psychopathology Research: Research Domain Criteria." *Journal of Abnormal Psychology* 119 (4): 631–39. https://doi.org/10.1037/a0020909.
- Saraykar, Smita, Ayman Saleh, and Salih Selek. 2017. "The Association Between NIMH Funding and H-Index in Psychiatry." *Academic Psychiatry* 41 (4): 455–59. https://doi.org/10.1007/s40596-016-0654-4.
- Sarrett, Jennifer C. 2016. "Biocertification and Neurodiversity: The Role and Implications of Self-Diagnosis in Autistic Communities." *Neuroethics* 9 (1): 23–36. https://doi.org/10.1007/s12152-016-9247-x.
- Schemmel, Christian. 2012. "Distributive and Relational Equality." Politics, Philosophy & Economics 11 (2): 123-48. https://doi.org/10.1177/1470594X11416774.
- Schmidtz, David. 2019. "Friedrich Hayek." In The Stanford Encyclopedia of Philosophy, edited by

Edward N. Zalta, Winter 2019. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/win2019/entries/friedrich-hayek/.

- Scull, Andrew. 2015. Madness in Civilization: A Cultural History of Insanity, from the Bible to Freud, from the Madhouse to Modern Medicine. Princeton, NJ: Princeton Univ. Press.
- Shapiro, Devora. 2012. "Objectivity' and the Arbitration of Experiential Knowledge:" Social *Philosophy Today* 28: 67–82. https://doi.org/10.5840/socphiltoday2012285.
- Sharadin, Nathaniel. 2016. "Fairness and the Strengths of Agents' Claims." Utilitas 28 (3): 347–60. https://doi.org/10.1017/S0953820815000527.
- Shaw, Jamie. 2022. "Peer Review in Funding-by-Lottery: A Systematic Overview and Expansion." Research Evaluation, October, rvac022. https://doi.org/10.1093/reseval/rvac022.
- Shorter, Edward. 1997. A History of Psychiatry: From the Era of the Asylum to the Age of Prozac. New York Weinheim: Wiley.
- Stoljar, Natalie, and Kristin Voigt. 2021. "Regarding Oneself as an Equal." In Autonomy and Equality. Routledge.
- Stoyanov, Drozdstoy, Diogo Telles-Correia, and Bruce N. Cuthbert. 2019. "The Research Domain Criteria (RDoC) and the Historical Roots of Psychopathology: A Viewpoint." *European Psychiatry* 57 (April): 58–60. https://doi.org/10.1016/j.eurpsy.2018.11.007.
- Tabb, Kathryn. 2020. "Should Psychiatry Be Precise? Reduction, Big Data, and Nosological Revision in Mental Health Research." In *Levels of Analysis in Psychopathology*, edited by Kenneth S. Kendler, Josef Parnas, and Peter Zachar, 1st ed., 308–34. Cambridge University Press. https://doi.org/10.1017/9781108750349.028.
- Taggart, Danny. 2021. "The Use of Experiential Knowledge in Mental Health and Its Contribution to Mad Studies." In *The Routledge International Handbook of Mad Studies*. Routledge.
- Tanke, Joseph. 2022. "The Gentle Way in Governing: Foucault and the Question of Neoliberalism." *Philosophy & Social Criticism*, April, 019145372210796. https://doi.org/10.1177/01914537221079673.
- Teachman, Bethany A., Dean McKay, Deanna M. Barch, Mitchell J. Prinstein, Steven D. Hollon, and Dianne L. Chambless. 2019. "How Psychosocial Research Can Help the National Institute of Mental Health Achieve Its Grand Challenge to Reduce the Burden of Mental Illnesses and Psychological Disorders." *American Psychologist* 74 (4): 415–31. https://doi.org/10.1037/amp0000361.
- Tekin, Şerife. Forthcoming. "Participatory Interactive Objectivity in Psychiatry." *Philosophy of Science*. https://doi.org/10.1017/psa.2022.47.
- Thomas, Pete, Louise McArdle, and Richard Saundry. 2020. "Introduction to the Special Issue: The Enactment of Neoliberalism in the Workplace: The Degradation of the Employment Relationship." *Competition & Change* 24 (2): 105–13. https://doi.org/10.1177/1024529419882281.
- Thornton, Tim. 2016. "Psychiatric Diagnosis, Tacit Knowledge, and Criteria." In Vagueness in Psychiatry. Oxford: Oxford University Press.
- Tomlin, Patrick. 2014. "What Is the Point of Egalitarian Social Relationships?" In Distributive Justice and Access to Advantage: G. A. Cohen's Egalitarianism, edited by Alexander Kaufman, 151–79. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139940924.010.
- Tonelli, Mark R., and Devora Shapiro. 2020. "Experiential Knowledge in Clinical Medicine: Use and Justification." *Theoretical Medicine and Bioethics* 41 (2): 67–82. https://doi.org/10.1007/s11017-020-09521-0.

- UK Public Involvement Standards Development Partnership. 2023. "UK Standards for Public Involvement." 2023. https://sites.google.com/nihr.ac.uk/pi-standards/home.
- Vallier, Kevin. 2022. "Neoliberalism." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta and Uri Nodelman, Winter 2022. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/win2022/entries/neoliberalism/.
- Vong, Gerard. 2020. "Weighing Up Weighted Lotteries: Scarcity, Overlap Cases, and Fair Inequalities of Chance." *Ethics* 130 (3): 320–48. https://doi.org/10.1086/707212.
- Wacquant, Loïc J. D. 2009. *Punishing the Poor: The Neoliberal Government of Social Insecurity*. Politics, History, and Culture. Durham [NC]: Duke University Press.
- Wakefield, Jerome C. 2014. "Wittgenstein's Nightmare: Why the RDoC Grid Needs a Conceptual Dimension." World Psychiatry 13 (1): 38–40. https://doi.org/10.1002/wps.20097.
- Watts, Geoff. 2020. "Bertram S Brown." The Lancet 396 (10245): 160. https://doi.org/10.1016/S0140-6736(20)31567-1.
- Woods, Angela. 2011. The Sublime Object of Psychiatry: Schizophrenia in Clinical and Cultural Theory. Oxford University Press. https://doi.org/10.1093/med/9780199583959.001.0001.
- Woody, J. Melvin, and James Phillips. 1995. "Freud's 'Project for a Scientific Psychology' After 100 Years: The Unconscious Mind in the Era of Cognitive Neuroscience." *Philosophy, Psychiatry, & Psychology* 2 (2): 123–34.
- Wu, Jingyi, and Cailin O'Connor. 2023. "How Should We Promote Transient Diversity in Science?" *Synthese*, no. Forthcoming: 1–27.
- Wykes, Til. 2014. "Great Expectations for Participatory Research: What Have We Achieved in the Last Ten Years?" World Psychiatry 13 (1): 24–27. https://doi.org/10.1002/wps.20086.
- Yeomans, David, Joanna Moncrieff, and Rhodri Huws. 2015. "Drug-Centred Psychopharmacology: A Non-Diagnostic Framework for Drug Treatment." BJPsych Advances 21 (4): 229–36. https://doi.org/10.1192/apt.bp.114.013094.
- Zachar, Peter, and Richard J. McNally. 2016. Vagueness, the Sorites Paradox, and Posttraumatic Stress Disorder. Vol. 1. Oxford University Press. https://doi.org/10.1093/med/9780198722373.003.0009.
- Zollman, Kevin J. S. 2010. "The Epistemic Benefit of Transient Diversity." *Erkenntnis* 72 (1): 17. https://doi.org/10.1007/s10670-009-9194-6.