WHAT *IS* MENTAL HEALTH & *WHY*?

This work is dedicated to my father,
who has suffered from mental disorder far more than I can ever know.

"We shall never have a science of medicine as long as we separate the explanation of the pathological from the explanation of normal, vital phenomena."

– Claude Bernard, 1865

WHAT *IS* MENTAL HEALTH & WHY ?

By ANDREW YANG , B. H. Sc.

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AUTHOR: Andrew Yang	B. H. Sc. (McMaster University)
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ABSTRACT

The term "mental health" is everywhere, from government agendas, to educational reforms, to daily discourse. This is for good reason—hundreds of millions of people suffer from significant mental health concerns with a diagnosable mental disorder, let alone the fact that nearly all individuals have struggled with their mental health. The importance of mental health is uncontroversial, but the same cannot be said about its nature. Every practice related to mental health—which involves some of the most vulnerable people in the world—is committed to a conceptualization of mental health regardless of whether that practice is cognizant of this fact. Therefore, it is imperative to develop better answers to the questions of "what *is* mental health and *why?*" because conceptualizations of mental health systematically guide research, intervention, policy, and even how individuals strive to live their lives.

I argue that the answer to the question of "what *is* mental health?" is that mental health *is* a causal nexus of positive facts. That is, mental health is to be identified with a cluster of positive facts that regularly co-occur such as resilience, hedonistic mental states like joy, high cognitive functioning like concentration, and productivity. The answer to the question "*why* is mental health what it is?" is that the positive facts regularly co-occur due to the causal relations between them, rather than arbitrarily. For instance, resilience causes high cognitive functioning, which in turn causes resilience, which causes productivity, which causes high cognitive functioning and joy, and so forth. This explains why mental health is what it is because the causal relations between positive facts "glue" them together, causing them to regularly co-occur rather, thereby making them a stable category of existence that factors into epistemic practices such as induction and prediction. However, given the state of our knowledge, further empirical evidence is needed to elucidate the exact positive facts that constitute the mental health causal nexus and thus answer what mental health *is*. I provide a novel methodology—the anchoring analysis—that involves studying the mechanisms of causal interactions between potential positive facts to determine which are the most causally important and thus should be considered constitutive facts of mental health. Elucidating the homeostatic mechanism of the kind mental health is a daunting task; however, we only complicate matters for ourselves if we simplify the complexity of mental health.

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An unfathomable amount of causes and conditions must come together for this work to be possible—but some are more important than others:

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Thank you, Margaret Secord, for revealing layers within me that I would never have uncovered otherwise.

Thank you, Dr. Sean Park, for providing what I needed to leap outside my comfort zone.

DECLARATION OF ACADEMIC ACHIEVEMENT

I, Andrew Yang, declare this thesis to be solely the work of mine. None of this work has been utilized elsewhere, whether that be for publication or for a degree at another institution.

Andrew Yang

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Introduction

1.1 The Problem of Mental Health

The term "mental health" is everywhere, from government agendas, to educational reforms, to daily discourse. This is for good reason—a recent study demonstrated that in 2017, 792 million people lived with a mental disorder such as anxiety disorders (284 million), major depression (264 million), bipolar disorder (46 million), and schizophrenia (20 million)—that is over 1 in 10 people globally. (Ritchie and Roser, 2018) Furthermore, in the landmark article "The Lancet Commission on Global Mental Health and Sustainable Development" (2018), the researchers reported that the global burden of disease attributable to mental disorders across all levels of society has been increasing significantly since it was first measured in the early 1990s. (p. 1556) However, we can struggle with our mental health without having a mental disorder—indeed, improving our mental health is an essentially universal goal that we all strive towards.

The importance of mental health is uncontroversial, but the same cannot be said about what mental health *is*. Marie Jahoda, in one of the most significant works on mental health, wrote the following in *Current Concepts of Positive Mental Health* (1958):

> There is hardly a term in current psychological thought as vague, elusive, and ambiguous as the term "mental health." That it means many things to many people is bad enough. That many people use it without even attempting to specify the idiosyncratic meaning the term has for them makes the situation worse, both for those who wish to promote mental health and for those who wish to introduce concern with mental health into systematic psychological theory and research. (p. 3)

Though she wrote this in 1958, over 60 years ago, her words still ring true today. However, we might object that the World Health Organization (WHO) provided a consensus definition of mental health. In 2001, they put forth the most commonly

known definition: "mental health is more than the absence of mental illness" and that mental health is defined as "a state of well-being in which every individual realizes his or her potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community". (WHO, 2001a, p. 1) These statements can be reduced to two key claims: 1) the negative content—mental health is the absence of mental disorder and 2) the positive content—mental health involves a jumble of positive aspects: a kind of well-being, actualizing potential, being resilient, having the capacity to work, and being a contributing member of their community. Without a doubt this definition has been highly influential as the theoretical foundation that has guided WHO's global mental health actions from research, interventions, to policies. However, it is by no means satisfactory.

In 2015, a survey by Manwell et al. asked mental health clinicians and researchers across eight different countries about their preferred choice of definition for mental health. Only 20% of respondents preferred the WHO definition, 30% did not like any of them, and the rest were assorted. There are several concerns with this definition which raises the doubt that perhaps we really do not have a clear conceptualization of mental health after all. A first concern is the fact that the WHO does not make it clear whether mental health is binary or continuous. If it is binary, it appears that WHO sets the bar quite high and thus many people would not be considered mentally healthy. Some of the comments from the survey include: the WHO definition is "...excessively demanding realization of potential... There's a difference between perfect mental health, and just simply mental health, and too many definitions conflate the two...the offered definition is too much and too contested qua definition (as opposed to theory)" and "Most of these [definitions] have too much stuff, creating unattainable goals and sounding like they were crafted by a committee wanting to cover all the bases and to be politically correct". (p. 5) The next criticism is that if mental health is defined in relation to a term that itself needs to be defined such as mental disorder, then a clear notion of mental disorder should be established—otherwise, unfamiliar terms are being explicated in terms of unfamiliar terms. The third concern is that the positive content of the definition appears arbitrary. Why include these aspects such as "working productively and fruitfully" in the definition? Why should these aspects and not others constitute mental health? When we examine all the documents that were put forth by WHO on mental health, we find that

they provide no substantiation for their definition. All that is provided are brief, elusive paragraphs. At best WHO's definition is intuitive, yet vague—thus, at the very least, there is an opportunity for further justification for why this should be the correct way of conceptualizing mental health.

It seems that what is clear is that we are not clear. Given the importance of mental health, this is a problem. Though there has been some literature putting forth alternative conceptualizations of mental health, discussion is largely quiet and so there remains a gap in the literature. This contrasts with the literature on the concept of mental disorder, where countless articles and books have been written spanning decades. Therefore, there is an opportunity to fill in this gap by providing a more precise, justified conceptualization of mental health, which is the purpose of this present work. It is imperative to answer the question of what mental health *is* because every practice related to mental health is committed to a conceptualization of mental health regardless of whether they are cognizant of this fact. And if these practices—whether that be medical intervention, health promotion, politics, and research—are dealing with some of the most vulnerable people in the world (i.e., the hundreds of million with severe mental health concerns with a diagnosable mental disorder, let alone almost all of us that have struggled with our mental health), then we must have a more refined understanding of what mental health *is*. For the answer to that question, whether we are conscious of it or not, systematically guides policy, research, intervention, and even how we live our lives.

1.2 Outline of Argument and Thesis

Chapter 2 is the core of my thesis, which begins with examining two aspects of mental health: (i) mental health is more than the absence of mental disorder and (ii) that there are salient positive aspects of mental health. Though these points are uncontroversial, the content of (ii) is not, which is the *Problem of Positive Mental Health Mental Health*, namely, what exactly are those positive aspects of mental health? I focus on aspect (ii) by going through various conceptualizations of the positive content of mental health, where I demonstrate the lack of consensus. After being acquainted with

the literature of concepts of mental health and the positive content problem has been established, I begin to articulate my conceptualization of mental health. My central argument can be depicted by the following figure:

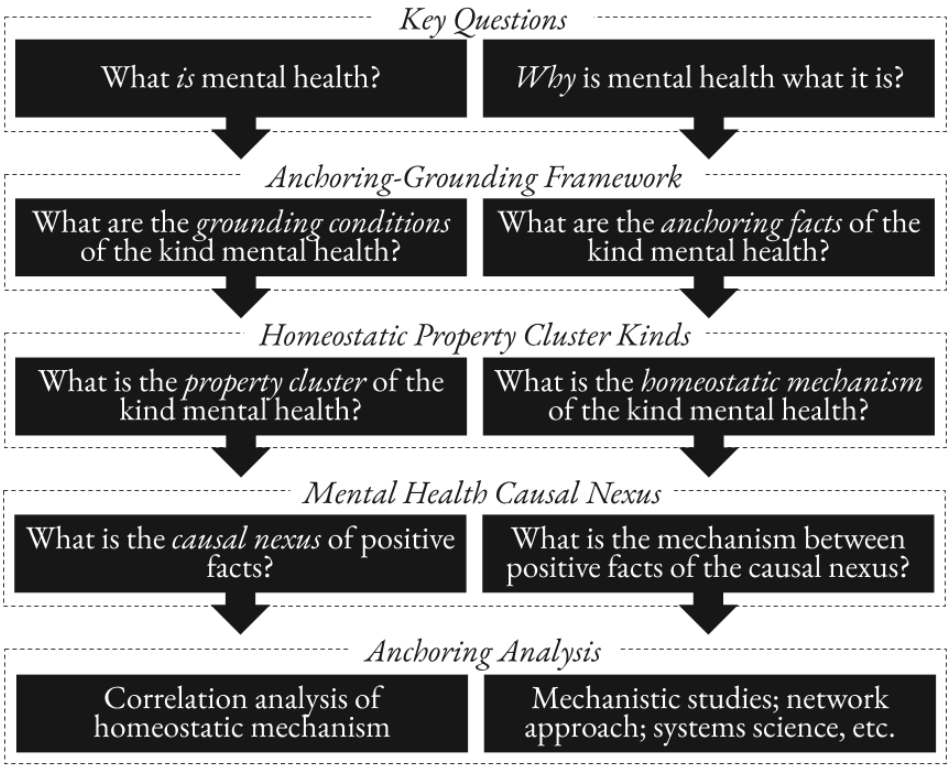

Figure 1: Overview of central argument

The figure starts with two key questions: (i) "what *is* mental health?" and (ii) "*why* is mental health what it is?" To answer each of these questions, a new idea is introduced, which takes us some distance in partially answering the key questions, but itself raises questions that requires another idea to be introduced. For instance, to understand what we mean in asking these key questions, we can reframe them in terms of the anchoring-grounding framework: (i) "what are the *grounding conditions* of the kind mental health?" and (ii) "what are the *anchoring facts* of the kind mental health?" However, to answer these questions, I argue that the ontological structure of the kind mental health is to be understood as a *homeostatic property cluster kind,* which leads us to two additional questions: (i) "what is the *property cluster* of the kind mental health?" and "what is the *homeostatic mechanism* of the kind mental health?" Furthermore, to answer

these questions, I introduce the *mental health causal nexus*: (i) *causal nexus* of positive facts and (ii) causal relations between positive facts of the causal nexus. Therefore, I argue that the answer to the question of "what *is* mental health?" is that mental health *is* a causal nexus of positive facts. That is, mental health is to be identified with a cluster of positive facts that regularly co-occur such as resilience, hedonistic mental states like joy, high cognitive functioning like concentration, and productivity. The answer to the question "*why* is mental health what it is?" is that the positive facts regularly co-occur due to the causal relations between them, rather than arbitrarily. For instance, resilience causes high cognitive functioning, which in turn causes resilience, which causes productivity, which causes high cognitive functioning and joy, and so forth. This explains why mental health is what it is because the causal relations between positive facts "glue" them together, causing them to regularly co-occur, thereby making them a stable category of existence that factors into epistemic practices such as induction and prediction. What those positive facts are, however, is a question that requires further empirical evidence that is not available given our epistemic state. In lieu of this, I develop a method of ascertaining what these positive facts are, namely, the *anchoring analysis* that involves elucidating *why* mental health is what it is. This involves scientific research into the homeostatic mechanism, i.e., the causal relations that is responsible for the clustering of properties that constitute mental health, via mechanistic studies, network approach, systems science, and correlation analyses. The anchoring analysis is an alternative to conceptual analysis, the dominant tool in philosophy for answering questions of what something is, which is problematic because it does not go beyond justification by appeal to intuitions.

Chapter 3 involves turning toward an alternative conceptualization of mental health that is similar to the one I propose in this thesis. Namely, the symptom network approach to mental health by the psychometrician Denny Borsboom. Borsboom argues that mental disorders should be considered as vulnerable causal network of symptoms, that is, symptoms of mental disorder that are causally connected, where the more connected they are, the more likely it leads to other symptoms being activated. Particularly strong causally connected symptom networks are considered vulnerable and is to be identified with particular mental disorders. From this conceptualization of mental disorder, Borsboom derives his conceptualization of mental health: a weakly

connected or resilient symptom network where symptoms of mental disorders are unlikely to arise. The problem with this conceptualization is that it is too fixated on symptoms at the level of explanation and ontology, while providing essentially no positive account of what mental health *is* other than the absence of strong mental disorder symptom networks, thereby failing to solve the positive content problem of mental health. These critiques will be explained in further detail, which demonstrates the superiority of my account of mental health as a causal nexus of positive facts.

1.3 What Does it Mean to Ask What is Mental Health?

When we ask the question what *is* mental health, what do we mean? To make clear the purpose of my work and what it means to ask what mental health *is* and *why*, it is worth introducing the anchoring-grounding framework (AGF) by Brian Epstein (2015) to set the framework for this project. Briefly, the AGF breaks down into: 1) the *grounding conditions*, which refers to the metaphysical reason why a fact[1] obtains; and 2) the *anchoring facts*, which refers to the metaphysical reason why the grounding conditions for facts are what they are. We can better grasp what it means to ask the questions of what mental health *is* and *why* by reframing them in terms of the AGF. When we ask, "what *is* mental health", we are asking "what are the *grounding conditions* for mental health?" And when we ask, "*why* is mental health what it is", we are asking "what are the *anchoring facts* for mental health?" Let us look at the AGF in more detail.

Epstein distinguishes the following types of inquiry: 1) causal inquiry; 2) grounding inquiry; 3) actual fact inquiry; and 4) anchoring inquiry. The sciences,

[1] Though I will eventually focus on and further explain "kinds" in this essay, to better show the scope of the anchoring-grounding framework, and to remain faithful to Epstein, I will follow his decision in choosing facts as the category for inquiry because it is both precise enough to make the distinctions we want, but broad enough to accommodate other categories (objects, properties, events, kinds, etc.) as well. (Epstein, 2016, p. 150)

including psychiatry [2], are mostly preoccupied with the causal inquiry. That is, identifying the causal relations in the world—what causes lead to what effects? In non-psychiatric medicine, an instance of this inquiry is the domain of etiology, which is interested in ascertaining the underlying common cause(s) of illnesses, diseases, and disorders. This would involve asking questions like, "what is the common underlying condition that causes scurvy?" where the answer is a deficiency of vitamin C. In psychiatric medicine, the causal inquiry might take the form of understanding the social determinants of mental health, such as "higher socioeconomic status causes an increase in mental health". Or what are the causes that lead to a manic episode, such as a stressful life event. It is important to distinguish this type of inquiry into *causes* from inquiry into *grounds*. Causes are the *causal reason* why facts obtain, whereas grounds are the *metaphysical reason* why facts obtain.

To better explain this distinction, take the example of a barn on fire. Suppose a cow knocked over a lamp, thereby lighting the barn on fire. The fact that "a cow knocked over the lamp" is the *causal reason* why the fact "the whole barn is on fire" obtains. In other words, these two facts are *causally related* to each other. This contrasts with the fact that "the barn doors, walls, and roof are on fire", which is *metaphysically related* to the fact that "the whole barn is on fire". The former fact does not *cause* the latter fact; rather, the former fact *grounds* the latter fact. Or the former fact is the *metaphysical reason* for the latter fact, arising from the fact that the barn is constituted by such parts as walls, doors, and a roof. Or in other words, the latter fact obtains *in virtue* of the former fact. The grounding inquiry is interested in the grounds for a fact—it is interested in what are the *grounding conditions* for a fact to obtain or be the case. In psychiatry, an instance of this inquiry is nosology, which is interested in classifying mental disorders and describing what conditions need to be met for someone to have a particular mental disorder. In the terminology of metaphysics, nosology ascertains what the *grounding conditions* are for an individual to have a particular mental disorder. The American Psychiatric Association oversees the Diagnostic and Statistical Manual of Mental

[2] In the following discussion I focus on psychiatry as the discipline that deals with mental health and mental disorder, but I realize that this is only one of many disciplines that grapple with these.

Disorders (DSM), which is the most recognized classification of mental disorders that articulates the conditions that need to be met for someone to be diagnosed with various mental disorders. For instance, the conditions for an individual to be considered to have major depressive disorder include depressed mood, fatigue, suicidal ideation, loss of interest, and insomnia for over two weeks.[3] (APA, 2013, pp. 160–161) Issues in nosology or classification of mental disorders is where most philosophical activity is found in psychiatry.[4]

Nosology, though an important concern, is not the most common inquiry in psychiatry. Aside from treatment, most psychiatrists are concerned with diagnosis, which involves determining whether their patients satisfy various diagnostic criteria for a mental disorder. In the terminology of metaphysics, they are interested in whether an individual fulfills the grounding conditions for a particular mental disorder. The mental health clinician will utilize their best judgment to determine the symptoms of an individual and to what degree they fulfill their best interpretation of various grounding conditions of a mental disorder. Or in terms of mental health, psychological questionnaires might be given to individuals to determine whether they fulfill the criteria of mental health implicit in their measurement scale—i.e., gauge how mentally healthy they are. This is the actual fact inquiry, which is the inquiry into the determination of facts and whether grounding conditions are instantiated.

Ontology is often interested in the *grounding* relation between sets of facts. However, according to Epstein, ontology should also be interested in a different type of metaphysical relation: the *anchoring relation*. (Epstein, 2015, 2016) To better explain this distinction, take Epstein's example of a war criminal. Suppose one of the reasons why someone is considered a war criminal is that they have tortured and executed many innocent civilians. From this we can get the following formula: for all x, the fact that x is a war criminal is grounded by the fact that x tortured and executed many innocent

[3] Here I am being casual about the distinction between having genuine depressive disorder and being diagnosed as having major depressive disorder. The difference between the two is an important one but I set this problem aside.

[4] For instance, see the 445-page book *Philosophical Issues in Psychiatry IV: Psychiatric Nosology* (2017).

civilians. Epstein calls these formulas that articulate the grounding conditions for facts *frame principles*. The following is a figure that depicts this example:

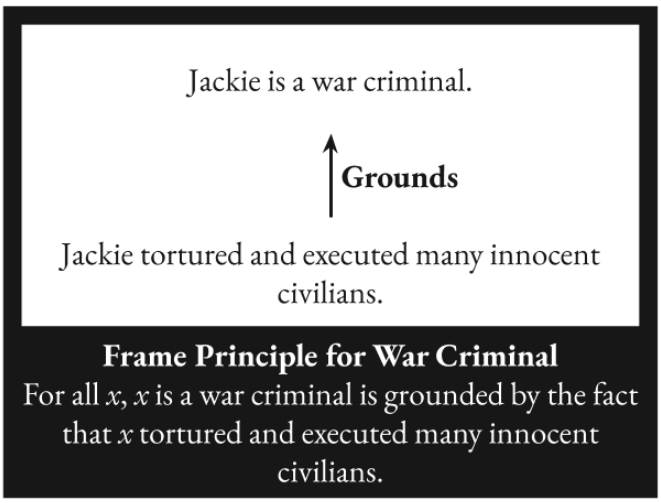

Figure 2: Frame principle for war criminal

Here we see a frame principle for war criminal in the grey box that articulates the grounding conditions for being a war criminal. The white box represents a *frame*, which represents the actual world. It is within frames that grounding occurs. (Epstein, 2015, p. 78) In this example, the fact "Jackie tortured and executed many innocent civilians" grounds the fact that "Jackie is a war criminal". Frame principles and frames can be depicted in general by the following figure:

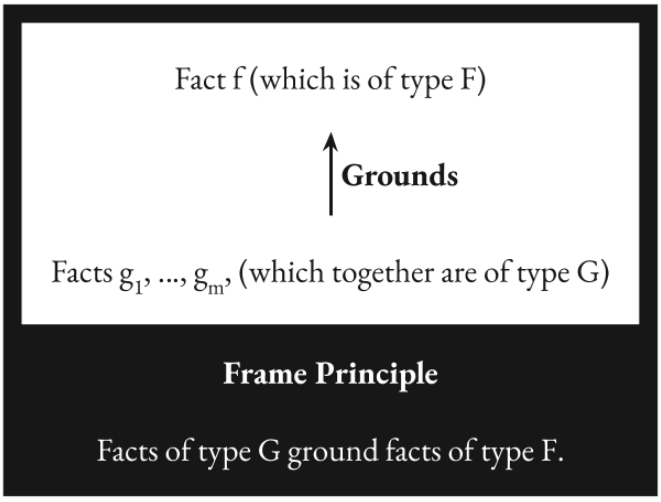

Figure 3: Frame principle in general

Firstly, let us clarify the relationship between lower-case g or f facts and upper-case G or F facts: g or f facts are *particular* instances of *general* G or F facts. For instance, the g fact that "Jackie tortured and executed many innocent civilians" is a particular instance of the general G fact "*x* executed many innocent civilians". Furthermore, the f fact that "Jackie is a war criminal" is a particular instance of the general F fact "*x* is a war criminal". The Frame Principle articulates the grounding conditions for facts of type F, which in this case is Facts of type G; therefore, "Facts of type G ground facts of type F". If facts g_1, ..., g_m (which are particular instances of facts of type G) are the case in the world, i.e., in the frame, then that grounds the fact f, which is a particular instance of the fact of type F.

Why, though, are these the grounding conditions for being a war criminal? What fact *sets up* or *puts into place* or *anchors* these grounding conditions? "What have we done—or what facts are there in the world—that put a given property or kind, having these instantiation and identity conditions, in place? As I will term it, what facts *anchor* the property or kind". (Epstein, 2014, p. 43) A simplistic answer for the example of the war criminal is that these grounding conditions are put into place by our collective acceptance or by convention.[5] We collectively accept, explicitly and implicitly, that the conditions of being a war criminal are what they are. Epstein calls these types of facts *anchors* or *anchoring facts* and calls the relation between these anchoring facts and grounding conditions the *anchoring relation*. Anchors are the metaphysical reason why the grounding conditions for a fact are the case. Identifying the anchoring facts that anchor grounding conditions is the anchoring inquiry. The example of the anchoring facts for war criminal can be visually depicted by the following figure:

[5] A more nuanced answer is the following: "Among the factors that 'carve out,' 'socially construct,' or 'anchor' the boundaries of war criminal are the following: customary practices, historical case law, the enactment of statutes, the physical recordings of statutes in codes of law, jury decisions, administrative practices and rules, the enactment of treaties, principles and rules of international law, national laws of systems around the world, and internationally recognized human rights". (Epstein, 2019, p. 770)

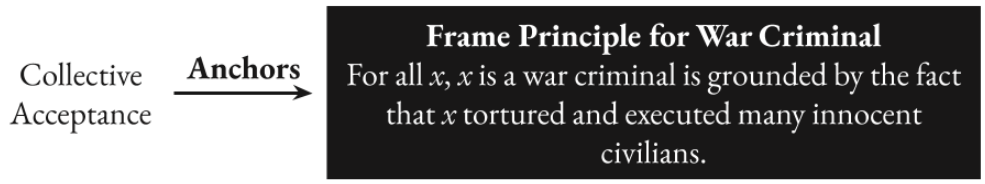

Figure 4: Anchoring relation for war criminal

The fact of "collective acceptance" is the metaphysical reason why the grounding conditions for being war criminal are what they are—in other words, collective acceptance puts into place the frame principle for war criminal. The anchoring relation can be depicted in general by the following figure:

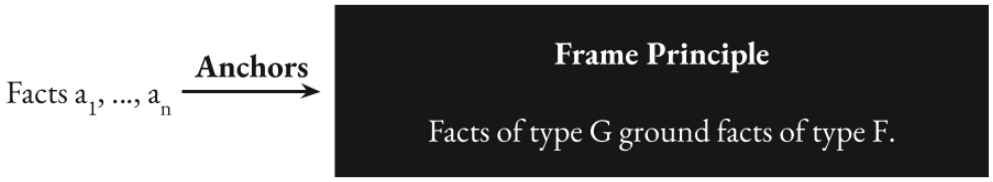

Figure 5: Anchoring relation in general

Facts a_1, ..., a_n are the metaphysical reason why Facts of type G grounds facts of type F. In other words, facts a_1, ..., a_n put into place or anchor the grounding conditions for facts of type F. In simpler terms, the reason why conditions for why something is what it is, is because of its anchors.

In summary, Epstein argues that there are two types of ontological questions: what are the grounding conditions and what anchors those grounding conditions? The grounding and anchoring inquiries comprise what Epstein calls the anchoring-grounding framework. This framework can be depicted visually in the following figure:[6]

[6] For Epstein, the anchors are not a part of the grounds. In this essay, I assume that this is correct; however, conjunctivists argue otherwise. I defer this debate to Epstein (2015) Chapter 9: "Against Conjuctivism".

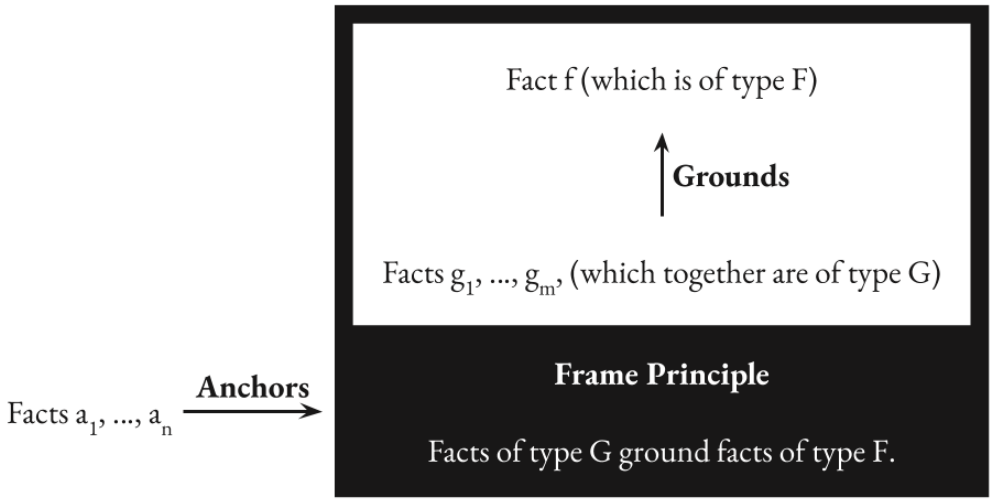

Figure 6: Anchoring-grounding framework in general

This figure integrates the ideas of anchoring facts, the anchoring relation, frame principles that articulate grounding conditions for facts, and the grounding relation between facts.

I will be utilizing the anchoring-grounding framework as the organizing principle of this work to elucidate what mental health *is*, which is purportedly a *kind*. A question that has fueled decades of debates in psychiatry is whether mental disorder is a social or natural kind. This was the key question that was supposed to determine whether psychiatry was a legitimate scientific discipline. Today, the legitimacy of mental disorders is mostly uncontested[7]—how could we deny the reality of the suffering of, for instance, an individual afflicted with constant delusions? Instead, the focus on the natural kindness of mental disorders involves developing a more refined classification system that better captures the nuances of particular mental disorders to guide research and treatment. [8] Mental disorder's twin concept, mental health, has received no philosophical investigation of kindhood. Of central importance for my work in elucidating what *is* mental health involves taking mental health to be a real kind that plays a central role in our epistemic practices. But before answering the question of what

[7] Aside from some minor anti-psychiatry movements such as the Psychiatric Survivor movement.

[8] *In Search of Psychiatric Kinds* (2019) by Slothouber is a good foray into these concerns.

type of kind mental health is, what exactly is a kind? Though a decisive answer is difficult to provide because it is a question that is still debated (Mason, 2016), we can gesture to an answer by first exploring paradigmatic examples of kinds, such as the natural kinds gold and water. A simplistic depiction of natural kinds explains them as categories where the members are grouped naturally, independent of human decisions or interests. For instance, a gold ring, a gold toilet, and a gold coin group together into a category because of their chemical composition Au, which depends not on us, but on laws of nature. There are also social kinds such as "public good", "marriage", and "money". The simplistic idea of these kinds is that their existence depends on human agreement in some way.

Yet what is the difference between social kinds and natural kinds? Asking this question presupposes that these two types of kinds are mutually exclusive and that there is a clear distinction; however, some argue that social kinds can be natural kinds and that it is difficult to draw a precise line between the two. Mason (2016) notices that there has not been much discussion about what exactly makes a kind social. It cannot just be that social kinds are not found "in nature", because there are many supposed natural kinds that are not found "in nature", such as synthetically produced polyethylene and PTFE (Teflon). We do not find these compounds "in nature", rather we are the cause for their existence. But nevertheless, these chemical compounds are similar to water, in that they are microstructurally individuated, which allows for the explanation and reliable prediction of properties and behaviors. And so, we should consider them natural kinds. Perhaps we can categorize kinds based on the types of facts that constitute them: if natural facts constitute a kind, it is a natural kind and if social facts constitute a kind, it is a social kind. However, such a distinction between natural and social facts may be, with respect to kinds, futile because kinds are thought to track the causal structure of the world where both "natural" and "social" facts are a part of this structure:

> Human cognitive and social structures, processes and practices count as much as natural phenomena as do atoms, trees, or biological populations. A metaphysical conception does not lose its metaphysical, ontological or naturalistic credentials if it involves references to such phenomena so long as they're portrayed as ordinary causal phenomena. (Boyd, 2019, p. 6)

Ultimately, we can question the distinction between natural and social kinds because social kinds also factor in inductions, predictions, and explanations. Therefore, natural and social kinds seem to only vary in the degree to which they fulfill these epistemic roles, where natural kinds usually do so more reliably.

Let us return to the question whether mental disorder is a social or natural kind. In the history of this debate, many thinkers have argued that mental disorder is a social kind because it is grounded by the fact of being an undesirable condition in the eyes of society. (Ausubel, 1961; Strokker, 1973; Engelhardt, 1974; King, 1981; Sedgwick, 1982) On the other hand, many thinkers have argued that mental disorders are natural kinds because they are grounded by scientific facts such as statistical deviation or biological dysfunction. (Boorse, 1975; Kendell, 1975; Freedman, 1986; Scadding, 1990) Some thinkers, such as Wakefield (1992) insist that mental disorder involves both natural and social facts and so can be regarded as both a natural and social kind. As for the kind mental health, there has not been any serious discussion about its kindhood, but if there were, it would likely follow the trajectory of the debate of the kindhood of mental disorder. However, it does not seem to matter much which way we decide this issue, because the distinction between social and natural kinds is vague and not necessarily mutually exclusive. What is important is that the kind be legitimate, that is, useful for induction, prediction, and explanation. Eventually I will argue that mental health is a *homeostatic property cluster kind*, and it is worth noting that this way of conceptualizing kinds is applicable to both natural and social kinds. So even if I turn out to be wrong that mental health is a type of hybrid natural-social kind, this is not detrimental to my answer to the question of the grounds and anchors of the kind mental health. For the answer will be provided through the idea of homeostatic property cluster kinds regardless of what position one takes with respect to what type of kind mental health is.

Going back to the anchoring-grounding framework, when referring to the natural world, especially natural kinds[9], Epstein uses the metaphor of "glue", meaning that kinds need something to "glue" them together: "It is a general feature of kinds—not just social kinds like dollars and play tea parties—that something needs to *glue* them

[9] I will discuss natural kinds in more detail below.

together. Even a natural kind like gold may need a bit of 'glue,' to set it up as a natural kind". (Epstein, 2015, p. 81) Natural kinds are not anchored by our collective acceptance or conventions, but by something in nature that is independent of us. So, the grounding conditions for the natural kind gold, or what conditions an object needs to fulfill to be a member of this kind, is that it is composed of atoms with the atomic number 79. But what unifies, "glues", or anchors gold into a natural kind are laws of nature that make the gold behave in certain ways and express certain properties in a regular, patterned way. Therefore, Epstein (2015) argues "Without laws gluing the chemical kind together, it would not be a natural kind at all." (p. 81) We can modify the anchoring-grounding framework to be specific for kinds:

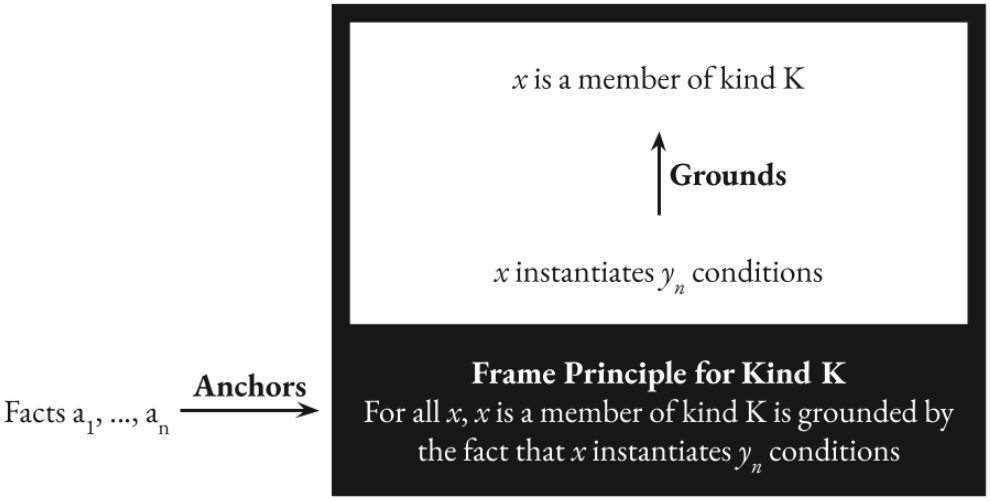

Figure 7: Anchoring-grounding framework for kinds

Starting with the frame principle that articulates the grounding conditions for a kind, we find that x is a member of the kind K if x instantiates y_n conditions. For instance, a substance is a member of the kind gold if the substance instantiates the condition of having the atomic number 79. Having the atomic number 79 grounds the substance's membership of the kind gold. Furthermore, the reason why to be a member of kind gold is to have the atomic number 79, or why gold has the grounding conditions that it does, is because of various anchoring facts of the physical and chemical nature of gold.

With the anchoring-grounding framework established, we are now in the position to understand the purpose and value of this work. The present project is not predominantly concerned with what causes mental health, which is by far the greatest

preoccupation of the literature. Rather, we are interested in what *constitutes* mental health, or in more archaic terminology, what is the *nature* of mental health. By constitutes, we mean what are the grounding conditions that need to be met for an individual to be considered mentally healthy: to say we are mentally healthy, do we need to be resilient? Clear minded? Happy? Simply free from mental disorders? But further, we want to know *why* these conditions are constitutive of mental health and not other conditions. In other words, we want to justify why mental health has the grounding conditions they do. That is, we want to elucidate the grounding conditions for the kind mental health and the anchoring facts that put into place those grounding conditions—this is tantamount to asking: what *is* mental health and *why*? Therefore, my project involves undertaking the grounding and anchoring inquiry with respect to the kind mental health. Ascertaining what conditions an individual needs to meet to be considered mentally healthy, or what the *grounding conditions* for mental health are, or what *is* mental health, is an underexplored part of the literature. Furthermore, in psychiatry there is no systematic or recognized anchoring inquiry as in the case for other types of inquiry, such as etiology, nosology, and diagnosis. Through investigating the anchoring facts that put into place the grounding conditions for mental health, we provide justification for why mental health is what it is. This is a novel type of justification, not just in philosophy of psychiatry, but generally as well.

The following figure depicts where we are in this thesis thus far, namely, we have discussed the idea of the anchoring-grounding framework:

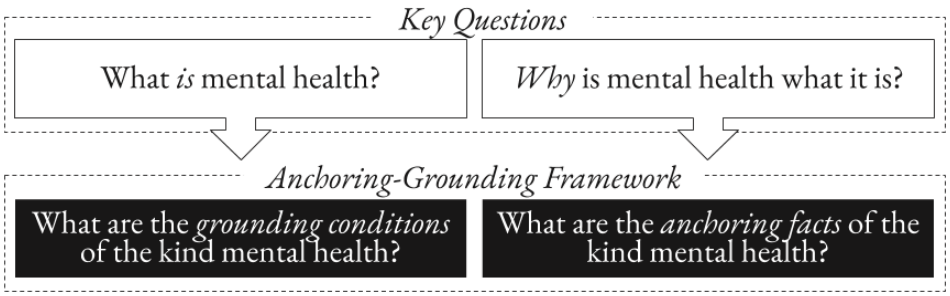

Figure 8: Overview: anchoring-grounding framework

The anchoring-grounding framework provides some distance in answering the key questions of (i) what *is* mental health and (ii) *why* is mental health what it is? Namely, it

reframes these questions as the corresponding questions of (i) what are the *grounding conditions* of the kind mental health and (ii) what are the *anchoring facts* of the kind mental health? The next section works toward answering these questions.

CHAPTER 2
Causal Nexus Account of Mental Health

2.1 Problem of Positive Mental Health

In this section we will work towards elucidating the grounding conditions of the kind mental health which is to answer the question of what mental health *is*. There have been an overwhelming number of answers to this question since the term first circulated in medical discourse roughly 150 years ago. In what follows, I will not provide a rigorous genealogical analysis of mental health, which would be superfluous to the main points I will draw our attention to; however, I do promise to touch on the major conceptualizations. Furthermore, I do not present a chronological history of the concepts, but instead arrange the conceptualizations in a way to best serve the points I want to make. That is, to get us acquainted with conceptualizations of mental health and demonstrate the lack of consensus.

Let us begin in 1958, when Marie Jahoda published *Current Concepts of Positive Mental Health*, which is a landmark moment in the history of mental health that has had widespread ramifications on understanding, research, and intervention. What makes this work significant is that it was a paradigm shift in understanding mental health as 1) more than just the absence of mental disorder and 2) that there is a positive component to mental health. Jahoda's work perpetuated the definition of health put forth by the World Health Organization in their 1948 Charter that defined general health as more than just the absence of disease: "health is not merely the absence of illness but a complete state of physical, psychological and social well-being". (p. 2) She drew on this definition and applied it to the concept of mental health while also providing, for the first time, a serious attempt at justification.

Firstly, Jahoda (1958) gave two reasons why mental health is more than the absence of mental disorder. The prevailing understanding of mental disorder is too

limited to define a concept in relation to it, thereby one would be conceptualizing mental health in terms of something that itself needs conceptualization: “To regard the absence of mental disease as a criterion has proved to be an insufficient indication in view of the difficulty of defining disease” (p. 22) and “no satisfactory concept of mental disease exists as yet and that little would be gained by defining one vague concept in terms of the absence of another which is much more precise”. (p. 73) Furthermore, Jahoda argues that mental health as more than just the absence of mental disorder appeals to professional expertise that is rooted in clinical experience: “the idea that mental health and mental disease are qualitatively different seems to gain currency with many professional persons” (p. 74) She mentions the point made by Dutch psychiatrist Rümke (1955) who disagrees with the notion that "there exists between health and sickness an almost imperceptible progressive transition". (p. 74) Rümke is against the idea that mental health and mental disorder are same in quality but differ in degree; instead, they are qualitatively different. Jahoda goes on to list several mental health professionals that support the positive conception of mental health, such as the psychoanalyst, the biological psychiatrist convinced about the reduction of mental disorders to biology, to the expert who is confused by the fact that similar pathogenic conditions can lead to mental disorder in some cases, but not in others. In other words, Jahoda paints the picture of expert consensus that mental health is more than the absence of mental disorder.

Today, the position that mental health is more than the absence of mental disorder is a criterion that enjoys consensus: “It is, however, generally agreed that mental health is broader than a lack of mental disorders”. (WHO, 2001, p. 5) The sheer agreement of this point provides good reason to insist that a correct account of mental health should fulfill this criterion. However, should we consider this criterion a grounding condition of mental health? No, because if we allow the absence of one condition to be the grounding condition of a kind, what will stop us from making every absent condition a grounding condition? More importantly, kinds track the true causal structure of existence and the absence of a condition does not factor into that causal structure. Instead, we should just consider the absence of mental disorder a criterion—and not a grounding condition—that a correct conceptualization of mental health should fulfill.

Mental health is more than the absence of mental disorder, but what is that more? The second major idea of Jahoda's (1958) work is putting the spotlight on the positive content of mental health. Her proposal contains an extensive analysis of six aspects of mental health with sub-criteria: (p. 96)

Attitudes toward the self	Growth, development, self-actualization	Integration	Autonomy	Perception of Reality	Environmental Mastery
•Accessibility of the self •Correctness •Feelings about the self •Sense of identity	•Motivational processes •Investment in living	•Balance of psychic forces •Unifying outlook on life •Resistance to stress	•Inner regulation •Independent behaviour	•Perception free from need-distortion •Empathy	•Ability to love •Adequacy in love, work, play •Adequacy in interpersonal relationships •Meeting situation requirements •Adaptation and adjustment •Problem solving

Table 1: Jahoda's conceptualization of mental health

It is not clear whether Jahoda required that an individual must instantiate all these conditions to be considered mentally healthy. However, from what she writes, it seems like that is what she has in mind: "At the present state of our knowledge it may well be best to combine the idea of various types of health with the use of a multiple criterion for each. The former will prevent overgeneralizations; the latter will permit us to do justice to the complexity of human functioning". (p. 73) Furthermore, it is unclear whether she considers mental health to be a matter of degree, but she does mention that an individual can be mentally healthy in some aspects but not others, leaving the question of their overall mental health to be an open question. Nevertheless, all things

considered, we can formalize Jahoda's conceptualization as the following. In the terminology of the anchoring-grounding framework, an individual is mentally healthy to the degree that they instantiate the six grounding conditions of: attitudes toward the self; growth, development, and self-actualization; integration; autonomy; perception of reality; and environmental mastery.

Though Jahoda's move to put the spotlight on the positive aspects of mental health garnered widespread support, her account of the positive content of mental health did not. The flaw with Jahoda's (1958) account lies in her methodology. Jahoda conducted "survey of the relevant literature... the search was extensive. It is hoped that no major idea in the area has escaped our attention" and that from "an inspection of the diverse approaches uncovered, six major categories of concepts emerge". (pp. 22–23) In other words, she surveyed the existing mental health literature and searched for major common themes. The first problem with this methodology is that it assumes the literature in question are referring to the same concept of mental health, which is problematic since all these instances of literature are putting forth their own conceptualization. In her selection of the research, she must judge the literature is talking about mental health, thereby presupposing a conceptualization of mental health, which is problematic because she is attempting to ascertain what mental health is. On a similar note, drawing conclusions about common themes requires judgment that these instances of literature are sharing the same content of the themes. Finally, this methodology goes only so far as the quality of literature at the time, which is doubtful given this was in the 1950s when mental health was still a relatively new concept and dominated by Western thinkers. For instance, a surface analysis of the criteria shows strong influence of humanistic psychology, which was flourishing at the time. Others, such as Murphy (1978) correctly insisted that these ideas were laden with cultural values and that mental health has a different meaning depending on the cultural context.

Overall, the legacy of Jahoda's work is that she firmly establishes two key criteria of mental health conceptualizations: 1) mental health is more than the absence of mental disorder and 2) there are positive aspects that constitute mental health. As we will see, whereas it is uncontroversial that mental health is constituted by positive aspects, it is highly controversial what that positive content is. I will refer to this as the *Problem of*

Positive Mental Health. In what follows, we will explore various conceptualizations of mental health that will serve to illuminate this problem.[10]

In 2001, the WHO published *Mental Health: New Understanding, New Hope*, which was a landmark moment in the history of mental health because WHO dedicated its annual "The World Health Report" to the topic, thereby putting it as a high priority on the global agenda. Early in the report WHO (2001) brings our awareness to the lack of consensus of what mental health *is*, with a wide gamut of conceptualizations:

> Mental health has been defined variously by scholars from different cultures. Concepts of mental health include subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational dependence, and self-actualization of one's intellectual and emotional potential, among others. From a cross-cultural perspective, it is nearly impossible to define mental health comprehensively. (p. 5)

Despite WHO's (2001a) skepticism about whether a cross-cultural consensus is possible, they put forth their influential definition that mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community". (p. 2) For WHO, what constitutes mental health or what the grounding conditions for mental health are, is actualization of potential, resilience towards normal stress, productivity, and contribution to community. But why these specific conditions? WHO provides no justification. At most, in WHO's follow up report *Promoting Mental Health* (2004), there is a gesture towards some kind of basis for their conceptualization:

> Over the last 30 years research has contributed to an understanding of what is meant by the term 'mental health'... Mental health has been variously conceptualized as a positive emotion (affect) such as feelings of happiness, a personality trait inclusive of psychological resources of self-esteem and mastery, and as resilience, which is the capacity to cope with adversity. (p. 19)

Furthermore, WHO provides a table titled "Some views around the concept of positive mental health", that summarizes several conceptualizations:

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[10] I note that I will not engage in the superfluous task of critiquing each conceptualization for it is not necessary for the eventual conceptualization of mental health I will put forth.

Personality Types	Individuals have varying personality types and thus coping strategies, according to Leighton and Murphy (1987). These strategies can be useful, or on the opposite end of the spectrum, can cause mental illness. These coping strategies are related to positive mental health.
Affective Dimension	Positive mental health can be understood as subjective well-being. Bradburn devised a psychological well-being scale in 1965 and later work demonstrated that subjective well-being exerts more affect on the environment than vice versa.
Salutogenic Approach	The emphasis is on "salutary" factors rather than risk factors and coping instead of breakdown. Antonovsky (1987) regarded a sense of coherence to be crucial for positive mental health, which involves the ability to respond flexibly to stressors. It appears that the optimism is shared amongst those who are mentally healthy as they have better coping mechanisms such as acceptance of reality and resilience. (Scheier and Craver, 1992)
Resilience	The ability to cope with adversity appears incredibly important for mental health and has been suggested that that is its positive content. Rutter (1985) conceptualized mental health as an interactive process between environment and an individual's constitution.
Psychoanalytic Approach	Positive mental health is the ability to use their internal energy to realize their potential in emotional, intellectual, and sexual areas of their life.
Quality of Life Approach	Positive mental health is having quality of life. Quality of life is defined by WHO as "an individual's perception of his/her position in life in the context of the culture and value systems in which he/she lives, and in relation to his/her goals, expectations, standards and concerns". Quality of life is a broad perspective of well-being that contains the individual's satisfaction with their society, environment, psychology, spirituality, and health status.

Table 2: WHO's conceptualizations of positive mental health

The multiplicity of conceptualizations captured in this table illustrates the *Problem of Positive Mental Health* quite well. Despite the broadness of this table, there are more accounts to be considered. Vaillant's article "Mental Health" (2003) provides several additional conceptualizations: positive psychology, development psychology, emotional intelligence, and subjective well-being.

Mental health as positive psychology: This dimension of mental health starts with Maslow's (1971) concept of self-actualization and his emphasis on humanistic psychology. Positive psychology was formally introduced in the January 2000 issue of *American Psychologists*, which can be understood as taking humanistic psychology and subjecting it to stricter measures of the scientific method:

> At the individual level, it is about positive individual traits; the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom.... And in this quest for what is best, positive psychology does not rely on wishful thinking, faith, self-deception, fads, or hand waving; it tries to adapt what is best in the scientific method to the unique problems that human behavior presents to those who wish to understand it in all its complexity. (Seligman and Csikszentmihalyi, p. 5)

Seligman (2006) was responsible for turning the field of positive psychology into a burgeoning field that truly followed Adolf Meyer's 1917 plea that studying mental health should avoid "moralizing" and instead proceed by "conscientious and impartial study" and "constructive experimentation". Oftentimes positive psychology discusses virtues or strengths of mental health, such as wisdom, compassion, and the ability to love are uncontentious. The idea is to examine recurrent positive strengths and values across cultures, which are thought to constitute the positive aspects of mental health.

Mental health as mature development: Brain development takes a lifetime. (Benes et al., 1994) For instance, research shows that those at the age of 70 demonstrate greater emotional modulation than at age 30. (Jones, 2000) There have been several important models of development. For instance, Erikson (1950) wrote that his eight development stages as a "criterion of mental health." Others include Jane Loevinger's (1976) model of adult ego development, Lawrence Kohlberg's (1984) model of adult moral development, and Menniger's (1967) model of adult development. The implicit assumption within all of these theories is that greater maturity means greater mental health, where several longitudinal studies demonstrate an association of mental health with maturity. (Jones and Meredith, 2000) Vaillant (2003) suggests that the correlation between mental health and maturity is due to brain myelinization and the development of emotional and social intelligence. Research has also shown that developmental models apply across different levels of education, gender, social class, and even cultures (Vaillant,

1995) such as the Eriksonian development model, where an individual masters four tasks: identity over identity diffusion, intimacy over isolation, generativity over stagnation, and integrity over despair as well. (Vaillant, 1976) Thus, on this dimension, mental health is developmental and biological maturity.

Mental health as social or emotional intelligence: Social-emotional intelligence has been recognized as important for millenia: in the *Nicomachean Ethics*, Aristotle writes, "Anyone can become angry—that is easy. But to be angry with the right person, to the right degree, at the right time, for the right purpose, and in the right way—that is not easy". Social-emotional intelligence was defined by Daniel Goleman (2006) as the following: a) accurate perception and monitoring of one's emotions; b) modulating emotions for appropriate expression, such as dealing with rumination and anxiety; c) accurate perception of and response to other's emotions; d) skilled in creating close relationships with others; e) ability to control emotions to achieve desired goal, such as delaying gratification and channeling impulses. Vaillant (2003) emphasizes the importance of socio-emotional intelligence for mental health: "Once we have a firmer grasp of its measurement, the relative importance of emotional intelligence to other components of mental health can be assessed. I wager that it will emerge as the most important single dimension of mental health". (p. 1379)

Mental health as subjective well-being: Marcus Aurelius once wrote, *"No man is happy who does not think himself so".* We can adjust this as: no one is mentally healthy who does not think themselves so. To be subjectively fulfilled and experience positive affect is a key component of mental health. Researchers such as Edward Diener has made significant progress in understanding the nature and causes of subjective well-being. (Diener, 2000)

As we can see, conceptualizations of mental health are scattered. The central points of this section were to become acquainted with various conceptualizations of mental health but more importantly to illustrate the *Problem of Positive Mental Health*, where there have been a wide variety of accounts of the positive aspects of mental health without any consensus yet significant relation. All these conceptualizations can be thought to be proposing potential grounding conditions for the kind mental health. Out of all these dimensions, however, what are the correct grounding conditions?

2.2 Boyd's Homeostatic Property Cluster Kinds

Recall that our two key questions are what *is* mental health and *why*. I have explained that the answer to the *what* question are the grounding conditions for the kind mental health and the *why* question are the anchoring facts that put into place the grounding conditions. Therefore, to find the grounding conditions for the kind mental health, we need determine the anchoring facts that put into place the grounding conditions. But how can we determine those anchoring facts? To answer this question, we need to bring in the idea of the homeostatic property cluster (HPC) account of kinds.

Boyd writes the following about what HPC kinds are: "The natural explanatory definition of one of these homeostatic property cluster kinds is provided by the members of a cluster of often co-occurring properties and by the ('homeostatic') mechanisms that bring about their co-occurrence". (Boyd, 2000, p. 67) The ontology of HPC kinds can be broken down into two components: 1) the property cluster, which roughly corresponds to the grounding conditions of a kind, and 2) the homeostatic mechanism, which roughly corresponds to the anchoring facts of a kind.

The first component is a set of properties that cluster together. A set of properties are clustered when the properties in a set tend to co-occur across an important number of cases. Or more simply, properties are clustered if there appears to be an observable regular pattern of co-occurrence. Moreover, to be a member of an HPC kind, the member does not need to instantiate all the properties—there does not have to be a common underlying property or properties that are individually necessary and jointly sufficient (i.e., "essence") of all members.[11] Instead, a member is considered a part of a kind if they instantiate an adequate number of properties. This conceptualization allows for kinds that have notoriously resisted being reduced to necessary and sufficient conditions yet are invaluable for our epistemic practices.

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[11] However, HPC kinds can also apply to kinds that have necessary and sufficient properties, so long as those properties are clustered.

The second component is the homeostatic mechanism, which is a causal mechanism responsible for the co-occurrence of the properties of a cluster. It is "homeostatic" in the sense that it ensures that properties of a cluster occur together. If one of the properties is present, the mechanism ensures that the other properties of the cluster occur too. Further, the mechanism is homeostatic in that it prevents properties in the cluster from disappearing.[12] The central point is that a homeostatic mechanism is responsible for the sustained co-occurrence and presence of properties in a cluster. Craver (2009) writes that "A consensus view among mechanists holds that mechanisms are entities and activities organized together such that they do something". From this, we learn that a mechanism has four parts: the phenomenon, entities, causal activities, and organization.

The phenomenon is the behaviour of a mechanism, where all mechanisms are mechanisms of some phenomenon. For instance, the mechanism of the action potential of neurons is responsible for the phenomenon of an action potential. In our case, the phenomenon we are interested in is the kind mental health. Mechanisms can be broken down into components or entities. Mechanists struggle to provide a concise expression of this idea (Craver and Tabery, 2015), so gesturing towards paradigmatic entities is the best we can do: cells, organisms, regions of the brain, neurotransmitters, desks, institutions, and so forth. (Craver, 2009, p. 582)

The entities of a mechanism engage in causal activity with each other. Instead of attempting to unravel the Gordian knot of theories of causation, I will touch on mechanistic accounts of causation. Glennan (1996) argues that mechanisms connect cause and effect. When we talk about X causing Y, there is a mechanism M that is between X and Y. For instance, when we say cigarettes cause cancer, there is a mechanism

[12] Over how many important cases do we have to see co-occurrence to conclude clustering? What is the threshold for co-occurrence that needs to occur for a family of properties to be considered clustered? What is the threshold of co-occurrence for a particular property to be included in the cluster? How much of the property cluster needs to be instantiated to be a member of the HPC kind? When does a potential member instantiate a particular property in the cluster? These questions about vagueness are beyond the scope of this essay, but I acknowledge they are concerns.

between these two phenomena that involve a complex causal process of biological entities causing each other. However, since mechanisms themselves involves causation, to explain the mechanism M that explains the causation between X and Y, we need to break M down into more lower level mechanisms, which in turn needs to be explained by further mechanisms. This occurs all the way down presumably to the fundamental level where properties are clustered together due to brute fact rather than causation. For instance, it is thought that the properties of electrons, leptons, and quarks cluster together due to brute fact. (Khalidi, 2016) However, we need not go all the way down to utilize mechanisms in science—we can leave black boxes where it would not be useful to venture.

Mechanisms are more than just the simple sum of their parts. They are organized spatially, temporally, and causally in a way that gives rise to mechanistic emergence, that is, that together they do something that they would not be able to do alone—the sum does more than the parts. (Craver and Tabery, 2015) In this case, the phenomenon in question is the kind mental health. Moreover, let us focus on the *causal* organization of mechanisms, that is, the structure of the causal relations between entities, in this case properties, of the cluster. There are at least three types of causal organization that are specified according to the mechanism in relation to the properties of the cluster:

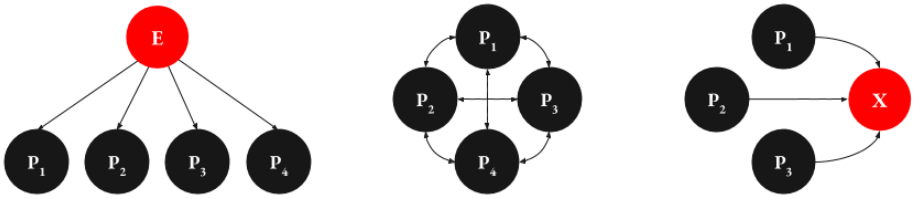

Figure 9: Types of causal organizations of mechanisms

1) underlies the properties, which can be considered traditional essences;
2) causal relations between properties of the cluster; and
3) antecedent/etiological causes of property cluster. (Craver, 2009, p. 578)

Mechanistic levels are not to be understood as monolithic levels (for instance, atoms, molecules, cells, organs, organisms, societies) as conceived by Oppenheim and Putnam (1958). Instead, "levels of mechanisms are defined locally within a multilevel mechanism: one item is at a lower level of mechanisms than another when the first item is a part of

the second when the first item is organized (spatially, temporally, and actively) with the other components such that together they realize the second item". (Craver and Tabery, 2015) In other words, two things are at the same mechanistic level because they factor into the same mechanism. Thus, it does not make sense to ask whether basketballs are on a higher or lower mechanistic level as the prefrontal lobe because they are not components of the same mechanism. (Povich and Craver, 2018, p. 188) The following figure by Stinson and Sullivan (2018) provides a schematic to grasp levels in mechanisms:

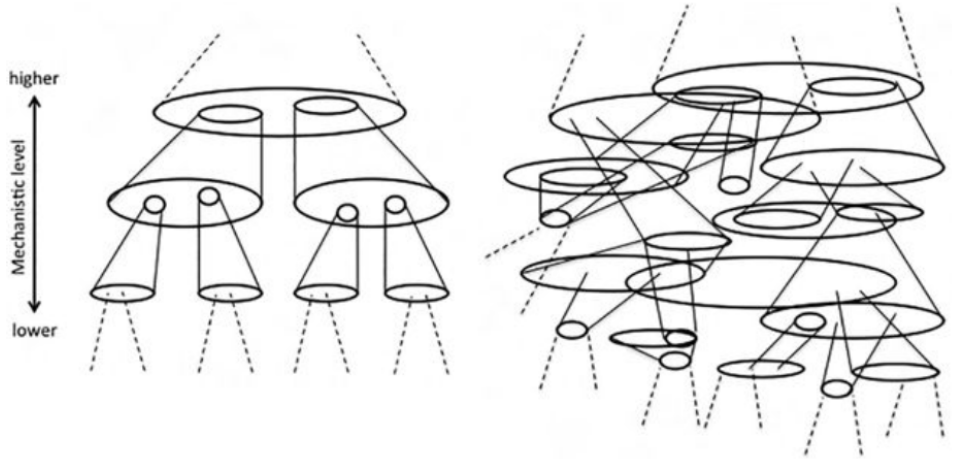

Figure 10: Mechanistic levels

The schematic on the left depicts mechanistic levels without interlevel causation, while the schematic on the right depicts mechanistic levels with interlevel causation.

Boyd (1991) establishes his view of homeostatic property cluster kinds in ten points, where we have just examined the most important two. (pp. 140–143) However, there are two other points of HPC kinds worth elaborating. The first is *causal import*; namely, the property cluster in question figures into our epistemic practices. This thesis works to exclude property clusters with homeostatic mechanisms that have no epistemic value. Storms, falling barometers, and joint pain form a property cluster that all share the underlying homeostatic mechanism that revolves around the weather, yet this would not be considered a homeostatic property cluster for it does not factor valuably into our epistemic enterprises. (Craver, 2009, p. 578) The other important feature is the *accommodation thesis*, which is where epistemology and metaphysics intersect:

> ... we are able to identify true generalizations in science and in everyday life because we are able to accommodate our inductive practices to the causal factors that sustain them. In order to do this—to frame such projectible generalizations at all—we require a vocabulary... which is itself accommodated to relevant causal structures. (1999, p. 148)
> The key idea is that successful reference to natural kinds is a special case of epistemically fruitful alignment or accommodation between perceptual, instrumental, cognitive, and representational practices, on the one hand, and inductively, practically or explanatorily relevant causal features of the world." (2019, p. 13)

Boyd argues that our kinds come from the causal structure of existence. Moreover, it is because this fact that they are useful for our epistemic enterprises of prediction, explanation, and control. In other words, "Kind concepts cut nature at its joints". (2009, Craver, p. 575)

In the philosophy of natural kinds, the homeostatic property cluster conception of kinds is as close as we can get to a consensus view. (Bird, 2018) And though the notion homeostatic property cluster kinds was developed to conceptualize natural kinds, the idea of HPC kinds apply to social kinds as well—thus we can utilize HPC kinds regardless if mental health is a natural or social kind in the traditional sense. In passing, Boyd mentions that "capitalism" and the car "1969 Plymouth Valiant" may possibly be considered HPC kinds. (Boyd, 1999, p. 68) Furthermore, in Mason's discussion of social kinds, she writes: "kinds can be individuated by clusters of properties that are contingently but reliably co-instantiated or co-occurring because they are held in homeostasis by one or more causal mechanisms". (Mason, 2016, p. 844) Referring to kinds, Guala (2016) writes that social kinds like money are anchored by homeostatic mechanisms. (p. 146) Epstein (2018) himself confirms that social kinds can be thought of as homeostatic property clusters in his entry "Social Ontology" for the *Stanford Encyclopedia of Philosophy* :

> According to Boyd, kinds are clusters of entities that stably have similar properties, with these similarities sustained by a causal homeostatic mechanism. Marriage, for instance, is a kind because there are many particular entities with similar properties (such as being formed by ceremonies, involving couples paired up, and so on), and because there are mechanisms causing entities to have and keep these properties.

Therefore, the HPC account of kinds applies to kinds in general and thus the kind mental health too.

Thus far we have established that in answering what is mental health, we are answering what are the grounding conditions of mental health. To answer the question of the grounding conditions of mental health, we can look toward the anchoring facts that put into place the grounding conditions of mental health. In this section we saw that homeostatic property cluster kinds allow us to take the next step towards answering these questions. The property cluster corresponds to the grounding conditions of mental health whereas the anchoring facts correspond to the homeostatic mechanism. The following figure depicts where we are in this thesis thus far, namely, we have discussed the idea of the homeostatic property cluster kinds:

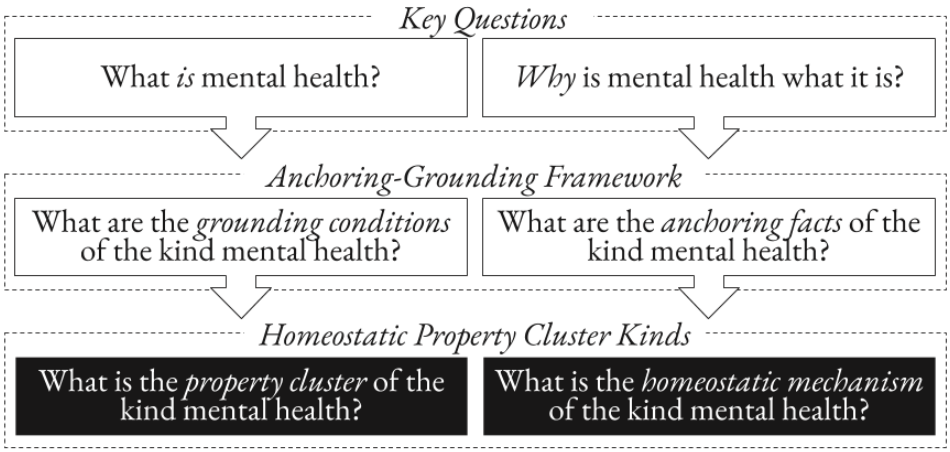

Figure 11: Overview: homeostatic property cluster kinds

We are now in the position to make the next move, namely, answer the question of what that homeostatic mechanism is.

2.3 Mental Health as a Causal Nexus

What are the anchoring facts that put into place the grounding conditions of the kind mental health? In other words, what is its homeostatic mechanism that is responsible for the clustering of properties of mental health? Let us begin by going back to our common-sense intuitions. How would we describe a hypothetical person with a high level of mental health? We might consider someone like Joyce. Joyce regularly

experiences hedonistically-tinged states like joy, clear-mindedness, tranquility, equanimity, concentration, and energy. Moreover, Joyce rarely experiences negatively-valenced states like excessive sadness, anxiety, rumination, hallucinations, compulsion, or psychosis. Joyce has productive personality traits like resilience, diligence, and optimism. Moreover, Joyce is not someone who is overly critical, impulsive, and immoral. Joyce has great physical health, has normal vitals such as blood pressure, and only periodically gets sick. Moreover, Joyce is free from a family history of mental disorder, cognitive impairments, and anatomical abnormalities. Joyce had a decent upbringing with supportive parents, trustworthy friends, but faced enough adversity to develop the ability to cope with stress. Moreover, Joyce's upbringing was relatively free from abuse, neglect, and negative influences. Joyce was also situated in an environment that was filled with effective mental health promotion, she lives in an inclusive country that promotes diversity, and there is an abundance of accessible wellness activities like going to the gym. Moreover, Joyce's environment was free from the turbulence of war, privatized healthcare, or heavy pollution. Joyce's days are filled with activities like a meaningful job, spending ample time with loved ones, and finds time to meditate here and there. Moreover, she avoids behaviours like abusing harmful substances, engaging with toxic people, or binging on junk food. Everyone would agree that Joyce has a high degree of mental health. There is an overwhelming number of positive facts[13] here, from many levels of explanation, that impact mental health:

1. Positive feelings, moods, and emotions (e.g. joy)
2. Positive attitudes (e.g., optimism)
3. Positive traits (e.g. resilient)
4. Biology (e.g. physical health)
5. Upbringing (e.g. supportive parents)
6. Societal factors (e.g. inclusivity)
7. Environmental factors (e.g. food security)
8. Healthy behaviors (e.g. meditating)

[13] Answering the normative question of why positive facts is positive must be deferred to another work. For now, I take positive facts to be something like what is valued, is a positive state, or leads to further positive states.

What Jahoda writes in 1958 rings true here: "A virtually unending number of conditions may affect the degree to which an individual possesses or displays any of the attributes constituting mental health." (p. 104) How can we make sense of all these facts?

To make distance with answering these questions, let us begin with a different line of inquiry. If we look across intuitively uncontroversial cases[14] of those with high degrees of mental health, we more or less see the same regular clustering of facts. What explains this regularity of facts and what unifies these facts together? Or in the terminology of homeostatic property cluster kinds, what is the homeostatic mechanism that is responsible for the clustering of properties of the kind mental health? The facts are unified in the world by a great chain, or rather network, of cause and effect. The reason why we see these facts regularly clustering together is because they cause each other. The positive facts of Joyce's life cause and are caused by each other, perpetuating and engendering further positive facts in a synergistic feedback cycle that creates an aggregation of positive facts. This aggregate has inertia, that is, it maintains and promotes further positive facts while preventing negative facts from arising. For instance, Joyce's joy leads to her optimism which leads to her resilience in the face of stressors which leads to more optimism when life works in her favor because she persisted through obstacles, thereby leading to further joy which allows her to have the personality to be hired for a job that gives her meaning, but also great relationships, that in turn give her more joy, satisfaction, and so forth.

Do these positive facts, however, cause Joyce's mental health? Are they caused by her mental health? Or are they constitutive of her mental health? To answer these questions, we need to make a distinction between *etiological* facts, which cause and are caused by mental health, and *constitutive* facts, which are to be considered grounding conditions of mental health. An example of an etiological fact would be warm weather, which can lead to a minor increase in mental health. When examining paradigmatic cases

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[14] It may be argued that to start off with paradigmatic cases of mental health is to presuppose what mental health is. However, we cannot start anywhere other than our intuitions for our intuitions are responsible for providing us an indication that there might be a kind out there to be discovered. See Section 2.4 for further discussion.

of mental health, the fact that these individuals live in a location with warm weather does not regularly occur. However, when examining paradigmatic cases of mental health, certain facts are regularly present like experiencing hedonistic mental states, having high cognitive functioning, and being resilient in the sense of being able to cope with difficulty. What is important about these facts is that they cluster regularly—that is, the co-occur. The reason why this regular clustering occurs is not because of chance or arbitrariness, but because of the strong causal connections between these facts that make it so that if some of these facts are present, it is strongly likely that other facts will be present as well. According to homeostatic property cluster account of kinds, the regularly clustering positive facts constitute the property cluster and thus the grounding conditions of the kind mental health. The following figure makes the distinction between etiological and constitutive facts clear:

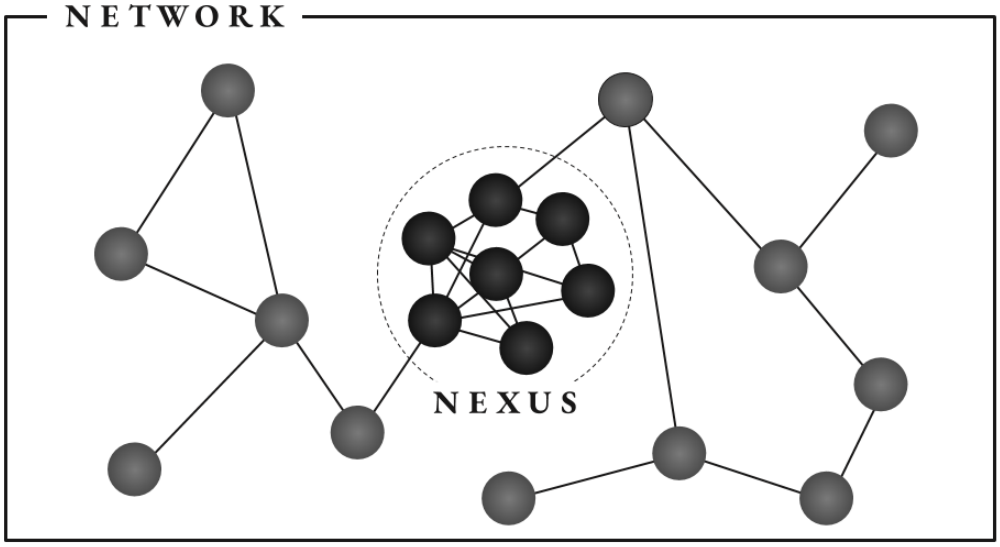

Figure 12: Causal nexus versus causal network

In this figure, the nodes represent facts and the lines between the nodes represents causal relations. The myriad causal facts that are related to mental health can be considered a causal *network*, where it is the facts that cluster that constitute a mental health causal *nexus* (MHCN). The facts outside this causal nexus are etiological and ensuing facts that cause and are caused by mental health, whereas the facts of the causal nexus are constitutive facts that should be identified with mental health. The

constitutive facts that cluster, i.e., the mental health causal nexus, can be considered as the property cluster of the HPC kind mental health. Furthermore, the grounding conditions of the HPC kind mental health is to instantiate this property cluster. When it is stated that "*x* causes mental health", it can be understood in terms of *x* causes an increase of the constitutive facts of mental health through some kind of mechanism. It is important to be clear about the relationship between the homeostatic property cluster kind mental health and a mental health causal nexus. The HPC kind mental health is a *general* category of existence whereas the MHCN pertains to *particular* individuals. An individual instantiates the HPC kind mental health by *actually* having a MHCN, that is, the positive facts that are constitutive of the MHCN are true for that individual. The MHCN is an *actual* instantiation of the HPC kind mental health.

How can we distinguish between necessary facts of mental health from constitutive facts? For instance, it is likely necessary for an individual to have healthy sleep behaviours to be highly mentally healthy so that highly mentally healthy individuals share the common fact of being well-slept. Is this, therefore, a constitutive fact of mental health? To answer this question, we need to determine whether it is the case that if an individual sleeps well, it strongly increases the likelihood that other facts of the causal nexus are present. Though a thorough answer requires further investigation, it would intuitively not be the case. Just because someone regularly sleeps well, it does not highly increase the likelihood of constitutive facts of mental health to be present, such as resilience, hedonistically-tinged mental states, or high cognitive functioning.[15] Thus, sleep may be a necessary etiological (and ensuing fact) of high degrees of mental health, but it is not a constitutive fact.

The HPC kind mental health is not a binary kind as if individuals either instantiate the kind or they do not, i.e., they are mentally healthy, or they are not. Rather, this is a kind that can be instantiated in varying degrees: individuals can have high degrees of mental health or low degrees of mental health depending to the extent they instantiate the kind. The extent that they instantiate this kind is not simply the extent that they instantiate a number of properties of the kind. Rather, they instantiate the kind to the

[15] Given my intuitions of what mental health is are correct

degree of the *robustness* of their mental health causal nexus (MHCN), which describes how likely a MHCN will maintain and engender positive facts while reducing and resisting negative facts. Robustness is a function of at least:

(i) how many positive facts constitute the causal nexus[16]

(ii) the intensity of positive facts that constitute the causal nexus (e.g. small pleasure versus rapture[17])

(iii) how easily the positive facts in the causal nexus come about (e.g., how easily does an individual experience hedonistically-tinged mental states)

The greater the robustness of a MHCN, the higher the degree of mental health of an individual. This makes sense intuitively: Joyce is more mentally healthy if her life is filled with many positive facts, like having resilience, enjoying hedonistic states, being productive, and having high cognitive functioning. A way to picture robustness of MHCH is the metaphor of a snowball's inertia rolling down a hill. Imagine a small snowball at the top of a hill—this represents a fragile MHCN. For the small snowball, it is difficult to collect additional snow (i.e., positive facts) because of the small surface area of the snowball and it is also susceptible to being easily damaged because of its small size (i.e., positive facts susceptible to disappear). However, the small snowball is still a snowball (i.e., cluster of positive facts) so it does have momentum and slowly collects additional snow (i.e., positive facts). In contrast, imagine a large snowball at the top of a hill—this represents a robust MHCN. For the large snowball, it is easy to collect additional snow because of the large surface area of the snowball and it is robust against being destroyed because of its mass and momentum.

This idea of momentum is a critical aspect of mental health It was stated earlier that mechanisms give rise to emergence, that is, a phenomenon that is distinct from the parts of the mechanism, where the parts in this case are the constitutive facts. But what is distinct about the phenomena of mental health from its constitutive facts? Those who

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[16] There are probably many positive facts that are constitutive of the HPC kind mental health. Boyd (1991) writes "a natural kind is associated causally with a large family of methodologically important properties". (p. 141) However, we can make a distinction between core properties and cursory properties depending on the importance of their causal effect in the property cluster.

[17] Assuming that hedonistically-tinged mental states is a grounding condition of mental health.

have high degrees of mental health experience momentum or inertia, which is the phenomena of mental health above and beyond its constitutive facts. The subjective feeling of mental health is perhaps to be ostensibly understood as something like "being in the groove". The highly mentally healthy individual is enmeshed in a virtuous (instead of vicious) cycle, where it is easy to slip into experiencing the constitutive facts of mental health and difficult to stop experiencing them. There are practical insights to be cultivated here. An example would be the idea that the path to recovery of mental health often starts with a spark that spurs momentum, like beginning to exercise which leads to several downstream effects throughout the person's life, such as increased physical health, self-esteem, meeting gym friends that are positive influences, and so forth. Furthermore, the path of declining mental health often starts with an obstacle that robs momentum, such as being hit by a worldwide pandemic that disrupts positive routines like going to the gym or spending time with loved ones.

We have explored the positive content of mental health, but what about the claim that mental health is more than the absence of mental disorder? The MHCN account also explains this. The most important justification that mental health is more than the absence of mental disorder comes from the actual causal structure of the world. That is, when an individual instantiates the grounding conditions of mental health, it is highly unlikely that they will also instantiate the grounding conditions for a particular mental disorder because of the inverse causal relations between their grounding. For instance, if an individual instantiates the hypothetical mental health grounding conditions of having resilience, being joyful, and having a physiologically normal brain and body, then it is highly unlikely that they also instantiate the hypothetical mental disorder grounding conditions of being depressed, excessive rumination, and insomnia.

The grounding conditions of the HPC kind mental health are not in terms of necessary and sufficient conditions, which means that mental health is not *epistemically* reducible. Furthermore, the positive facts that comprise the properties of the HPC kind are multiply realizable and in this case therefore neither *ontologically* reducible, that is, individuals can instantiate properties in different ways (e.g. subjective feeling of pleasure can come about by a variety of causes). This multiple realizability allows for an inclusive conceptualization of mental health that encompasses cultures and individual differences. The questions of multiple realizability and reducibility are worthwhile topics to explore

for further research, which is already ostensibly done by examining the mental health of diverse individuals and cultures.

The following figure integrates the concepts discussed thus far:

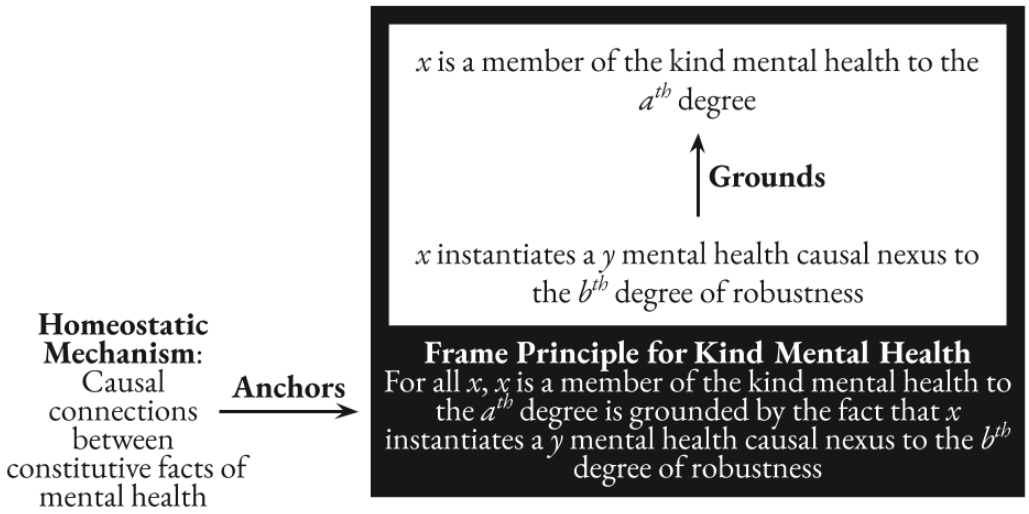

Figure 13: Anchoring-grounding framework for mental health

The frame principle that articulates the grounding condition for the kind mental health is: For all x, x is a member of the kind mental health to the a^{th} degree is grounded by the fact that x instantiates a y mental health causal nexus to the b^{th} degree of robustness. The reason why this is the grounding condition for the kind mental health is because of a homeostatic mechanism—the anchoring fact—that is responsible for the clustering of the property cluster, i.e., the causal connections between constitutive facts of mental health.

Finally, the following figure depicts where we are in this thesis thus far, namely, we have discussed the idea of mental health as a causal nexus:

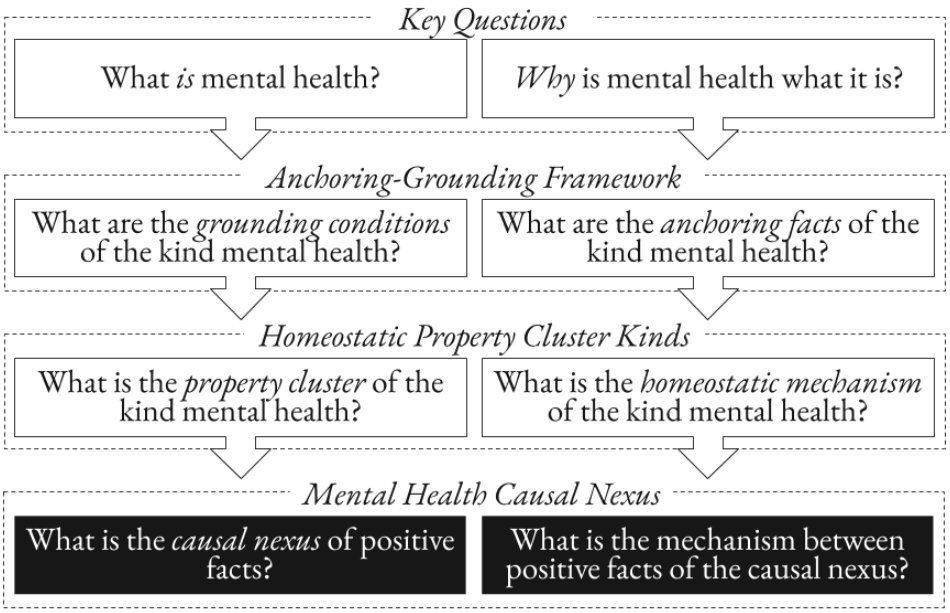

Figure 14: Overview: mental health causal nexus

When we ask, "what *is* mental health?", the answer is "a *causal nexus* of positive facts". When we ask, "why is mental health what it is?", the answer is "the homeostatic mechanism between constitutive facts of the causal nexus". For instance, the homeostatic mechanism between positive facts, such as resilience, hedonistic states, and high cognitive functioning, "glues" them together, so that they form a stable category of existence that can be referred to in our epistemic practices and factor into induction, prediction, and control. This cluster of facts, due to the causal structure of existence, factor into patterns of causality that we can access through our cognition and science, which is why it is a kind.

2.4 The Anchoring Analysis of Kinds

There is a gnawing problem at hand: but what exactly are the grounding conditions of the kind mental health? We have seen that mental health is to be understood as a causal nexus of facts, but which facts? Unfortunately, given our current

epistemic state, we are not yet in the position to answer that question. Instead, I provide a new methodology to ascertain what those grounding conditions are—the *anchoring analysis*—which will involve ascertaining the anchoring facts of the kind. But to understand this new methodology, let us contrast it with *conceptual analysis*, which I take to be the winner in a one-person race, that is, it is essentially the only method philosophers utilize to ascertain the grounding conditions of a kind, concept, or term. However, as we will see, this methodology is deeply problematic and cannot reliably elucidate the correct grounding conditions of the kind mental health. I would go so far as to assert that *all* conceptualizations of mental health thus far rely on various iterations of conceptual analysis—therefore, by demonstrating how this methodology falls short, it can be demonstrated that all proposed conceptualizations fall short. It may be that a conceptualization has correctly answered what mental health is, however, I argue their justification for why their conceptualization is correct will always be impoverished if it relies on conceptual analysis.

Conceptual analysis to discover the grounding conditions for kinds begins with examining (ideally expert) judgment and linguistic usage of a purported kind such as mental health. Examining linguistic usage usually involves armchair theorizing of picking out common conditions across important cases where the concept of mental health is utilized. Or, more rarely, common conditions can be elucidated through empirical research that rigorously examines linguistic usage. Note that this involves presupposing that the usage of the concept in these is correct—namely, it problematically assumes that the selected cases are genuine instantiations of the kind in question. The goal of conceptual analysis is usually to articulate a crisp, classical concept of a kind that can be reduced to individually-necessary and jointly-sufficient conditions. For instance, mental disorder is a (i) harmful (ii) mental dysfunction. (Wakefield, 1992) However, conceptual analysis can also yield a cluster concept (not to be confused with homeostatic property clusters), where to instantiate the kind, a member need not instantiate all conditions, so the grounding conditions are not in terms of necessary and sufficient conditions. For instance, for an individual to instantiate the kind major depression, they only need to satisfy four out of seven symptoms. The method to justify the resulting conceptualization from conceptual analysis usually involves examining whether it aligns with the intuitions of the armchair theorizer(s), captures the linguistic

usage across various important cases, and can withstand counterexamples. If counterexamples are raised, there are several strategies: (i) demonstrate that it is a pseudo counterexample; (ii) make ad hoc amends to the conceptualization such as qualifications to defuse the counterexample; (iii) allow for the counterexamples and insist that it is not problematic because the kind is inherently vague so borderline cases are inevitable.

It may be the case that conceptual analysis properly characterizes the kind in question. This is explained by Boyd's accommodation thesis, where our concepts, intuitions, and linguistic usage are the result of and accommodate the causal structure of the world.[18] In successful instances of conceptual analysis, it may be the case that our concept, intuitions, and linguistic usage correspond well to the kind in the world. However, the fatal flaw of conceptual analysis is that it is limited by the quality of our intuitions. It is likely that our intuitions come from a flawed understanding of the relevant causal structure, hence why we do not merely rely on our intuitions and instead conduct empirical research. I would also suggest that this is the reason why conceptual analysis, as far as I know, is scarcely successful. Furthermore, even if we have the best possible conceptual analysis that perfectly captures linguistic usage in important cases and expert judgments, there is still the charge that everyone's usage and judgments are flawed—the case of Copernicus illustrates this possibility. Therefore, the main problem with conceptual analysis is that it is stuck at the level of intuitions, linguistic usage, and a weak concept of the purported kind. In other words, it never goes beyond the arm-chair theorizer's intuition to investigate the causal structure of existence. As a result, there is no possibility for the kind to be falsified, or discover that it is two kinds in one, or that we have another concept of the same kind.

The following figure depicts conceptual analysis:

[18] See Section 2.3 for further details.

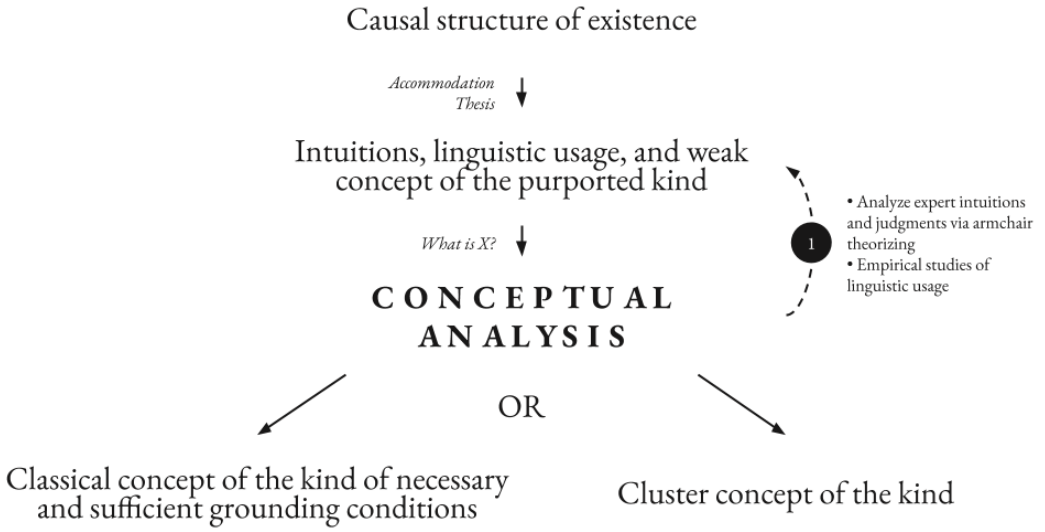

Figure 15: Conceptual analysis

To reiterate, according to Boyd's accommodation thesis, our intuitions, linguistic usage, and weak concept of the purported kind comes from the causal structure of existence. We desire a better understanding of the kind X, so we ask, "what *is* X?" We attempt to answer that question by using conceptual analysis which examines intuitions, linguistic usage, and the weak concept of the purported kind via armchair theorizing and empirical studies of linguistic usage. The result is either a classical concept of the kind in necessary and sufficient grounding conditions or a cluster concept of the kind, which is then tested by appealing to expert intuitions and counterexamples. The limitation of conceptual analysis is that it is stuck at the level of intuitions, linguistic usage, and our weak concept of the purported kind and does not analyze the causal structure of existence directly, such as through scientific research. Conceptual analysis, in other words, comes down to the "dull thud of conflicting intuitions". (Schwartz, 2014, p. 576)

As an alternative to conceptual analysis, I suggest the anchoring analysis. As we have discussed, anchoring facts put into place the grounding conditions of the kind mental health. The anchoring facts are to be understood as the homeostatic mechanism that is responsible for the clustering of properties that are constitutive of mental health. However, out of the large number of causal interactions that are relevant to mental health, what are the *constitutive* causes that comprise the properties (i.e., grounding

conditions) versus mere *etiological* causes of mental health (e.g., warm weather can cause an increase in mental health)? We can distinguish the constitutive causes from mere etiological or ensuing causes by using the anchoring analysis.

As we begin to require a clearer conceptualization of a purported kind, whether that be for the purposes of scientific experiments, to create policy, or to administer interventions, we realize that our concept of the kind falls short. Thus, we begin to ask "what *is* X", or in terms of the anchoring-grounding framework, "what are the grounding conditions for the kind X?", and we are faced with the task of selecting the appropriate methodology. This is where I suggest the use of the *anchoring analysis*. The anchoring analysis, like conceptual analysis, begins with intuitions, linguistic usage, and a weak concept of the purported kind. To start with intuition is partially justified because, according to the accommodation thesis[19], intuitions track and are the result of the causal structure of existence to some degree. We can bolster our starting point by relying on the intuitions of mental health experts—such as the Buddhist Master, the eminent psychiatrist, or the superlative athlete—as their intuition has been sharpened on the rock of causality by constantly confronting the causal structure of existence. Through their extensive years of experience striving for and attaining high levels of mental health, they come to learn, through trial-and-error and learning from other experts then trying their advice themselves, what allows them to achieve good mental health and what does not. Moreover, we have no choice but to start with intuition because it is all we have—it is because of intuition we begin to suspect the existence of a kind and without this intuition there would be no inquiry. After all, we cannot know what we do not know we do not know. Therefore, we undergo conceptual analysis as the first step of the anchoring analysis, where we examine the linguistic usage of experts to identify common conditions that have been proposed for mental health. For instance, it has been suggested that the conditions that are constitutive of mental health are resilience, hedonistically-tinged mental states like joy, or the presence of healthy mental functioning.[20]Intuitions are the starting point to begin our inquiry, but we must go

[19] See Section 2.3 for further details.

[20] See Section 2.2 for further details.

beyond them and towards analyzing the causal structure itself through the tools of science.

The second step involves consulting empirical evidence. Recall that the metaphysical reason why the grounding conditions of a kind are what they are is because of anchoring facts, where for the case of mental health I argued that there is a homeostatic mechanism that is responsible for the clustering of properties of the kind mental health. Recall that it is only properties that cluster together that form a kind, not simply properties that have causal interactions with others. From expert intuition, we have seen that properties that cluster include aspects such as being resilient, having positive affect, and being productive and the reason why these properties cluster is because of the homeostatic mechanism of their causal interactions between each other. We start with these properties and analyze whether they do indeed cluster together by conducting experimental investigations of their correlations. This is something that the Harvard psychiatrist George Vaillant does for the dimensions of mental health he intuitively picks out from his years of clinical expertise. In his article, "Positive mental health: is there a cross-cultural definition?" (2012), he provides the following table from the Study of Adult Development at Harvard that spanned several decades, which demonstrate significant correlations between five purported aspects of mental health: Global Assessment of Functioning (a measurement tool to determine the level of functional capacity of an individual), maturity, social intelligence, subjective well-being, and resilience: (p. 98)

	A	B	C	D	E
Model A: GAF at age 50	-				
Model B: Maturity	.59	-			
Model C: Social intelligence	.38	.44	-		
Model D: Subjective well-being	.40	.30	.40	-	
Model E: Resilience	.76	.52	.39	.31	-
Objective global mental health at 65	.45	.33	.30	.56	.45
Parental social class	.06	.40	.18	.13	.07
Warm childhood environment	.05	.04	.07	.07	.03

GAF – Global Assessment of Functioning
All correlations > .25 are significant at $p < 0.001$

Table 3: Correlations of proposed grounding conditions of mental health

This table shows, for instance, that resilience is highly correlated with functioning (0.76), maturity (0.52), social intelligence (0.39), and subjective well-being (0.31), where any correlation higher than 0.25 is statistically significant ($p<0.001$). Therefore, there is empirical reason to believe that these properties form a cluster and thus can be considered grounding conditions of mental health. However, when examining parental social class or warm childhood environment, there were only minimal correlations with the rest of the properties (<0.25), thus they would not be considered as part of the property cluster. This makes sense intuitively. For instance, many individuals, despite their parent's socioeconomic status, have poor mental health but many also have great mental health. For instance, a person who grew up with wealth can have many mental health issues such as drug abuse. On the other hand, a person who grew up destitute can have great mental health because they developed resilience through dealing with difficulty. Moreover, many monks and yogis are far below the poverty line, yet we would consider them as having paradigmatic mental health. Therefore, we do not intuitively identify socioeconomic status with mental health and the empirical research supports why. Yet we cannot deny that socioeconomic status causes improvements of mental health because, for instance, it allows individuals access to mental health care. Therefore, socioeconomic status can be considered an *etiological* cause of mental health, but not a *constitutive* cause like resilience.

With correlation analyses of properties we go a step further than conceptual analysis to empirically determine correlations to ascertain whether clustering occurs; however, we are still stuck at the level of intuitions as we are analyzing the correlations of properties picked out by intuition. The problem with this, as we have seen with conceptual analysis, is that it is contingent on the quality of our intuitions. For instance, Vaillant and Jahoda both predominantly rely on their intuitions to pick out relevant potential grounding conditions of mental health, but they have nearly different answers other than resilience. Thus, we can run statistical models all day to determine the correlations between these proposed grounding conditions, but we could be missing crucial grounding conditions if they have not been caught by intuition.

A case from medicine makes this point clear. When a purported disease arises, it begins with observing a regularity of properties across several cases. For instance, we may observe certain symptoms such as lesions of the skin, fever, cough, and so forth. Moreover, since we have never seen such a clustering of symptoms, intuition tells us that this is a new kind of disease. During the beginning of our inquiry into this disease, we do not understand the etiology—hence, we consider it a syndrome: a cluster of symptoms that are only unified by our regular observance of them. We refer to this cluster as syndrome X and despite our incomplete understanding, we have a degree of success in prediction, generalization, and explanation (i.e., the accommodation thesis). Through empirical research, we elucidate the causal mechanisms that give rise to these symptoms and also explain their clustering. For instance, it may be that virus interacts causally with the body in a variety of mechanisms to give rise the cluster of symptoms that we observe. With this discovery of the causal mechanism, our conceptualization of this kind of disease is revised to take the core property of this disease to be that virus for it is responsible for the symptom cluster. Hence, we come to understand the grounding conditions of this kind in terms of that virus, rather than, say, properties like the fever. However, if we stopped at the level of symptoms, (e.g., skin, fever, cough) and ran statistical models to understand the correlations between symptoms to ascertain whether or not true clustering occurs as well as the most important properties in that cluster, then we would miss out the reason why clustering occurs and the virus which is the key property in question.

The aforementioned example is not perfect because it deals with a homeostatic property cluster with a causal organization of an essence that underlies the property, whereas the causal organization of mental health is that the properties cause each other without any essence. Yet the point remains in that we run the same risk if we stop at the level of analyzing correlations between the purported grounding conditions of mental health. It is probably the case that we are missing core properties as research into mental health is heavily biased towards Western epistemologies. Mental health is a universal human phenomenon and there are probably core properties of mental health that have

been uncovered by non-Western thinkers.[21] For instance, in Theravada Buddhism, they discuss the 7 factors of enlightenment: effort, mindfulness, investigation, concentration, joy, tranquility, and equanimity.[22] These factors are described to form a synergistic feedback loop where, as the practitioner progresses, the causal relations between the factors become stronger, the meditator generates momentum, and the intensity of the states become greater until the meditation practitioner attains Enlightenment. These factors are what the dedicated practitioners strives for and these are conditions they seek to satisfy. It would be interesting to explore whether these are constitutive of mental health, i.e., they form a cluster or are etiological/ensuing causes. The point is, however, that examining non-Western epistemologies demonstrates that we likely do not have all the relevant grounding conditions of mental health which is why we should elucidate its homeostatic mechanism.

To elucidate the correct grounding conditions of mental health and to also justify why these are the grounding conditions, we need to take an additional step to elucidate further properties that are relevant for the cluster that we might be overlooking. This would involve the endeavour of elucidating the homeostatic mechanism of the kind mental health and then running a correlation analysis to determine which properties comprise the core of the cluster, that is, has the most important causal effects that stabilize the cluster. The process of identifying the homeostatic mechanism is not linear—namely, we do not start with elucidating the homeostatic mechanism and then run a correlation analysis to determine the most important properties of the cluster that are to be considered grounding conditions. Rather, it will first involve starting with our intuitions of what the properties are in the cluster, determining what the core properties are of the cluster through correlation

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[21] Though these individuals do not usually use the term "mental health", which is a Western term, I am assuming they have different terms that refer to the same kind.

[22] The spark that gave me the idea that the properties that are constitutive of mental health are what they are because they cluster together due to their causal relations came from a discussion with a Theravada Buddhist Nun Ma Vajira in Myanmar who explained that the 7-factors of Enlightenment form a "synergistic" feedback loop that mutually reinforce each other because they cause each other.

analysis, then using those core properties in mechanistic studies as the starting point in determining previously unknown core properties, then studying correlations between clusters once again, then using those core properties to elucidate more about the homeostatic mechanism, and so forth until the core properties are identified. The core properties are correctly identified to the degree that they are reliable and thus useful for our epistemic enterprises.[23]

On the anchoring analysis, therefore, it may turn out that we discover previously unknown facts that are especially important in the mechanism of the kind, leading us to revise our concepts of the kind. It may turn out in our investigation into the homeostatic mechanism of the kind mental health that there are important facts responsible for clustering that we could not have conceived by mere intuition. Maybe that is a particular gene, an ideal balance of biochemicals, neurological composition, a psychological trait/state, or a combination of various conditions. This would lead us to revise what we conceive the grounding conditions of the kind mental health to be. Other conceptual revisions could involve discovering that what we thought of the kind mental health is a different conceptualization of the same kind. In the next section I take this idea seriously, namely, that our concepts of mental health and well-being refer to the same kind. Furthermore, we may find that what we thought of as the kind mental health is several kinds in one. For instance, it has been suggested in the literature of mental disorder that our concept of schizophrenia does not refer to the kind schizophrenia, but is a single concept capturing several kinds, namely, different types of "schizophrenia". Furthermore, the anchoring analysis may lead us to realize that there is no kind that our concept mental health refers to at all—namely, that mental health is a folk concept that we should abandon.

The conditions that are constitutive of mental health is an empirical question that has yet to be explored but should be if we are interested in what mental health *is*

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[23] In a way, all research into the causes and effects of mental health are ostensibly uncovering different aspects of the mechanisms of mental health, where the mechanism responsible for clustering of properties is the homeostatic mechanism. Thus, there is a wealth of already established data that is ready to be analyzed that will allow us to make a start.

and *why*. This is an agenda for future scientific research. So what mental health *is* is the causal aggregate of conditions that are found by starting with our intuitions of mental health. And why it is so is because these conditions aggregate together, that is, they are highly correlated with each other so that if one of these conditions are present, it is highly likely the others will be as well. Though I suggest elucidating the homeostatic mechanism of mental health to ascertain the grounding conditions of mental health to answer what mental health *is*, understanding the homeostatic mechanism has additional value. Namely, it will provide a greater understanding of mental health that will guide research, intervention, and policy. This is similar to understanding a cellular mechanism, which allows researchers to target various areas of that mechanism to achieve certain ends, whether that be blocking a cellular receptor to prevent a biochemical cascade that is implicated in a disease process. Analogously, there are mechanisms that pertain to mental health that can be exploited to bring about greater mental health in individuals.

Elucidating the homeostatic mechanism via the anchoring analysis shares the striking similarity to Marie Jahoda's prescient suggestion from her *Current Conceptualizations of Positive Mental Health* (1958):

> In the interest of economy of effort in research and practical application, perhaps *the most urgently needed* study is one of the interrelationship of the criteria. Consider, for example, the possibility that autonomy exists only when an individual has a well-developed sense of identity or self-acceptance, or that adaptation follows from a balance of psychic forces... If a cluster analysis of the criteria would demonstrate such relations, the list of mental health concepts might be consolidated. A cluster analysis would have another advantage, too, that of permitting the establishment of a multiple criterion based on knowledge, rather than guesswork, about the relation of the components. (p. 100 [emphasis added])

Jahoda suggested that the most important research endeavor for mental health is to analyze the "interrelationship" of the criteria she intuitively picks out, such as "self-acceptance" being the necessary pre-cursor to "autonomy". I take her to be exhibiting mechanistic thinking and gesturing toward the need to understand the causal mechanisms that connect the various aspects of mental health.

Though we should understand mental health as a causal nexus of positive facts, we should not abandon the classical concept or definitions in terms of necessary and sufficient conditions, for they are valuable conceptual tools that trades in precision for

more pragmatic discourse. Which policymaker, mental health practitioner, or individual would be willing to say mental health is a causal nexus? Though classical concepts and definitions are not true in the sense of capturing the true grounding conditions of mental health, they approximate them enough so that it is reliable. To determine a workable definition of mental health, the properties that are most causally important in the homeostatic mechanism of mental health should be cut from the tangle of causation to form a definition of mental health. Again, this is an empirical question that will require further scientific research, but my intuitions suggest that a strong candidate for a causally important condition is resilience, which is condition that I have noticed that has continuously appeared in my research. For instance, the Stoics exalt "imperturbability", the Buddhists exalt "equanimity", and positive psychology exalts "grit" as researched by Angela Duckworth.

The following figure provides an overview of the anchoring analysis methodology:

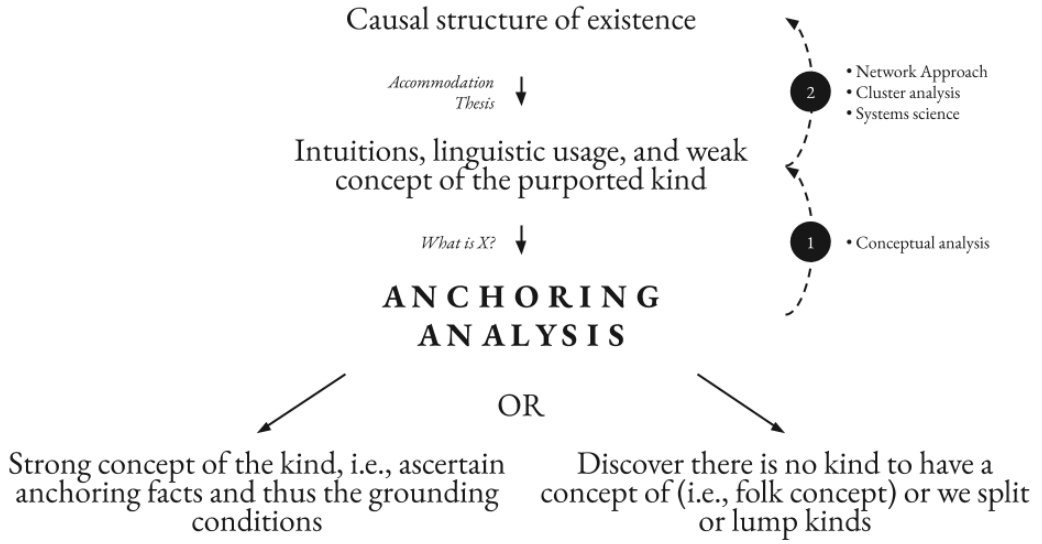

Figure 16: Anchoring Analysis

In sum, the anchoring analysis is a novel methodology to answer, "what *is* mental health?", which is usually answered by conceptual analysis of expert usage and judgement that is stuck at the level of intuition. The anchoring analysis involves conceptual analysis as a starting point but goes further to ascertain the homeostatic

mechanism of the kind in question to elucidate the key facts of that mechanism that are the grounding conditions that constitute mental health.[24] The most causally important facts in the mental health causal nexus can be thought of as the core properties of the property cluster kind of mental health and can be excised to provide a functional definition of mental health.

The following figure depicts where we are in this thesis thus far, namely, we have discussed the idea of the anchoring analysis:

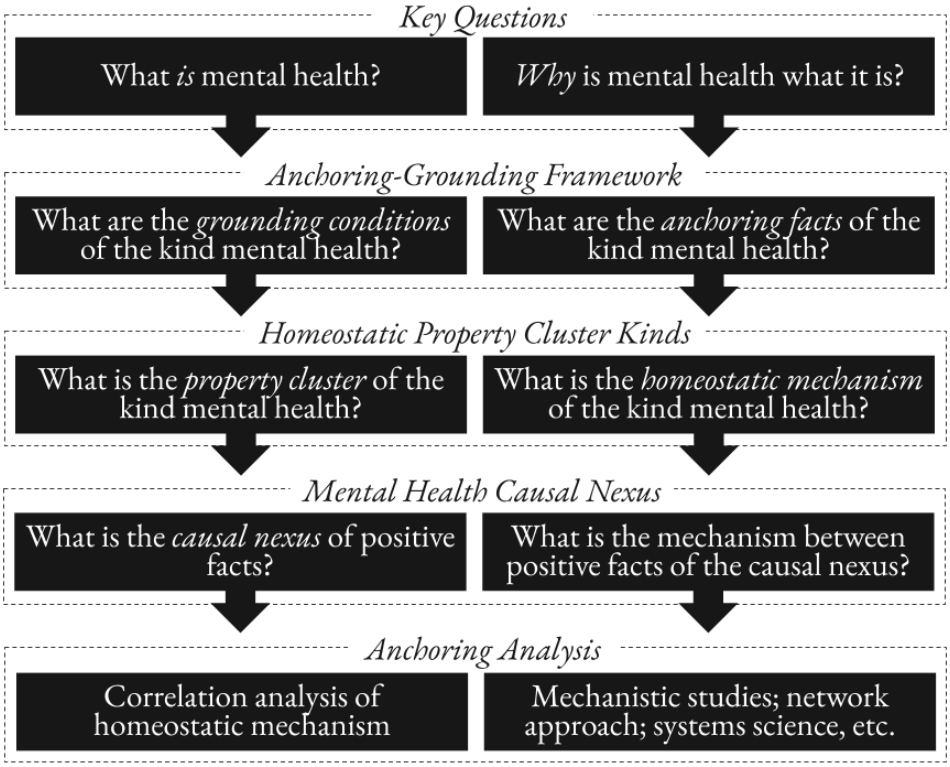

Figure 17: Overview: anchoring analysis

To answer the question of "What is the *causal nexus* of positive facts?" we need to undergo a correlation analysis of the homeostatic mechanism. And to determine the homeostatic mechanism, that is, answer the question of "What is the mechanism

[24] It would be worthwhile to determine whether the anchoring analysis applies to the question "what *is* X?" in general.

between positive facts of the causal nexus?" we need to undergo mechanistic studies, utilize the network approach which is found in psychopathology research, and leverage systems science that has studied causal networks of other phenomena, like economies.

2.5 Does Mental Health = Well-Being?

It is striking that conceptualizations of mental health and well-being are so similar. This is problematic because theories of well-being are contentious, where the question of "The Good Life" is one of the oldest questions in philosophy, spanning both Eastern and Western thought, and despite millennia of rigorous debate, no resolution has been found. Though there has never been a consensus on the theory of well-being, there has been three main theories, known in the literature as the "Big Three", that have been constantly discussed with seemingly endless minor variations, qualifications, and wrinkles. (Alexandrova, 2017, pp. 157–161) Hedonistic theories argue that well-being revolves around pleasure, satisfaction, or enjoyment. The informed-desire fulfillment theory argues that well-being is achieving one's desires that are rational. Finally, the eudaimonia theories argue that well-being is a state of virtuous flourishing of possessing qualities such as justice, friendship, and contemplation and overall is mostly considered in terms of successful engagement with the world. All three theories suffer from counterexamples, such as Noziak's experience machine where pleasure is faked, harmful desires such as the compulsive mathematician wanting to count every blade of grass, and the thriving wicked who appear to have well-being despite their malice. Each theory seemingly addresses the counterexamples that the others fail to account for, while also suffering from counterexamples that other theories address, amounting to a three-way standoff.

It seems that not only do we need to overcome the problems with conceptualizations of mental health, but also well-being for it has been lurking all along within conceptualizations of mental health. In their article, "Mental Health without Well-Being" (2020), Sam Wren-Lewis and Anna Alexandrova write that "On the philosophical side, it is critical to start a conversation that while implicit throughout the

history of philosophy, has yet to happen explicitly: is mental health identical to wellbeing, is it one of its constituents, or a precondition for it?" (p. 3) In this section, I grapple with the question of whether mental health is identical with well-being. In the end, I will argue that it is likely that they are not identical, but instead refer to a similar causal structure but from a different perspective that emphasize different aspects.

Let us examine some reasons why we should consider mental health and well-being as having the same referent. Firstly, the separation of mental health and well-being is counterintuitive. When mental health and well-being are taken as separate, it is usually well-being that encompasses mental health and mental health is necessary but insufficient for well-being: "mental health is a *necessary but not sufficient* precondition for wellbeing". (Wren-Lewis and Alexandrova, 2020, p. 28) Implicit in this conceptualization is that if an individual has well-being, one has mental health. But also implicit is that an individual can have mental health, but no well-being. It is clear an individual can have good physical health but not well-being: an Olympic athlete in a trauma-inducing warzone. But how can an individual have mental health without well-being? It is difficult to think of an example, perhaps because of the implausibility.

Moreover, examining the recent literature on mental health, there is an interesting linguistic phenomenon that has emerged where the term mental health is entangled with the term well-being, where the term mental health is being conflated with, and in a way, being replaced by the notion of well-being. The following table provides some examples:

• In WHO's 2004 report *Promoting Mental Health*, in the section titled "Shifting to positive mental health", they write: "Mental health promotion reconceptualizes mental health in positive rather than in negative terms. This shift in focus to positive indicators of well-being calls for methodological refinement in establishing positive indicators of mental health outcomes". (p. 28) They take the terms positive mental health and well-being as interchangeable. • Consider the title of the book by an important researcher in the field of mental health: "Mental Well-Being: International Contributions to the Study of Positive Mental Health". (Keyes, 2012) • Leschied et al. (2018) write "personal wellness and mental health well-being". (p. 4)

Table 4: Conflation of "mental health" and "well-being"

Nowadays we often see the terms mental and well-being coupled together, or the term mental well-being, or even mental health well-being. I suspect that this linguistic phenomenon is a manifestation of the fact that mental health and well-being refer to the same phenomenon.

Furthermore, in the article, "The Roots of the Concept of Mental Health" (2008) by Bertolote from the Department of Mental Health, World Health Organization, he writes that WHO's (1948) highly influential definition that "health is a *state* of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (p. 1), has been incorrectly construed as health and should have instead been understood as well-being:

> It should be noted that mental, in WHO's definition of health (as well as physical and social) refers to dimensions of a state and not to a specific domain or discipline. Therefore, according to this concept, it is incongruous to refer to physical health, mental health or social health. Should one wish to specify a particular dimension, the most appropriate noun to designate it should be wellbeing and not health (e.g., mental wellbeing or social wellbeing). (p. 114)

Bertolote makes the point that WHO's definition of health should have been construed as a definition of well-being, where we should understand mental health as mental well-being. Bertolote continues with another interesting point; that is, the term "mental health" is not static and evolved from the term "mental hygiene":

> This negligent use of the word health seems to have been also in operation when mental hygiene (a social movement, or a domain of activity) was replaced by mental health (originally intended to designate a state and later transformed in a particular domain or field of activity). (p. 114)

In tracing the roots of mental health, Bertolote writes the concept of mental health begins in the 1800s under the term "mental hygiene" in the discipline of public health. This term was first used by William Sweetzer in 1843 and was carried on by Dr. J. B. Gray, an eminent psychiatrist, who developed a bold plan to achieve national mental hygiene through community-based programs that ran through education, social culture, religion, and involvement in national life. (Mandell, 1995) In 1893, Isaac Ray, a founder of the American Psychiatric Association, defined "mental hygiene" as:

> the art of preserving the mind against all incidents and influences calculated to deteriorate its qualities, impair its energies, or derange its movements. The management of the bodily powers in regard to exercise,

> rest, food, clothing and climate, the laws of breeding, the government of the passions, the sympathy with current emotions and opinions, the discipline of the intellect— all these come within the province of mental hygiene. (Rossi, 1962)

The term mental hygiene stuck well into the 1940s. The First International Congress of Mental Health was organized by the British National Association and ran for 5-days in 1948, where the terms "hygiene" and "health" were used interchangeably throughout the conference and lacked any clear conceptual distinction. By the final day of the congress, the International Committee on Mental *Hygiene* was replaced by the World Federation for Mental *Health*. During this congress, J.C. Flugel, the Chairman of the Conference's Programme Committee provided one of the first conceptualizations of mental health: "Mental health is regarded as a condition which permits the optimal development, physical, intellectual and emotional, of the individual, so far as this is compatible with that of other individuals." (Bertolote, 2008, p. 115) WHO played a large role in the transmission of the concept of mental health as well. The first mention of mental health by the WHO is found in the first report of the WHO's Director General published in 1951, which contains a section titled "Mental Health." During this time, the terms "mental hygiene" were often used interchangeably with "mental health." By the time Jahoda's landmark report *Current Conceptualizations of Positive Mental Health* was published in 1958, the transition to the term mental health was nearly complete with only sparse mentions of "mental hygiene" in the 168 pages of her book.

In sum, there are at least four reasons to consider that mental health and well-being have the same referent: (i) the content of mental health is highly similar to well-being; (ii) it is counterintuitive to think of an individual with mental health but no well-being; (iii) the linguistic phenomenon of the conflation of the terms "mental health" and "well-being"; and (iv) because the term "mental health" has evolved from the term "mental hygiene", setting a precedent for further evolutions. However, I suspect that the most important reason for why mental health and well-being refer to the same phenomenon is because these concepts both track the same causal structure of the world. It is only due to perspectival elements that they "cut" that causal structure of the world in different ways, where I take that causal structure to be something like the facts that comprise the "Good Life", an idea that spans cultures and time. For instance, mental health is often taken in conjunction with the concept of mental disorder, so there is an

emphasis on not just looking at the positive aspects of mental health, but also examining whether the negative aspects, i.e., determining whether mental disorder is absent as well. However, the relationship between mental health and well-being is an open question that would be interesting to explore through further research. This would necessitate solving the problem of what well-being *is*, which is a daunting task. However, I mention in passing that my mental health causal nexus approach could also apply to well-being. It appears that Bishop (2015) has suggested that well-being is a homeostatic property cluster kind but falls short of providing a detailed account of what are the core properties of that cluster and, more crucially, *why*. The anchoring analysis would be an appropriate methodology for the task of ascertaining what well-being *is* and *why* as well as its relationship to mental health.

CHAPTER 3
Borsboom's Symptom Network Account of Mental Health

3.1 The Failure of Biological Psychiatry

In this chapter I will explore Borsboom's network approach to mental health, which is worth exploring because of its similarity to the mental health causal nexus account I have introduced. Namely, Borsboom derives his conceptualization of mental health from his understanding of mental disorder as a causal network where symptoms cluster together because of the causal interactions between them. We will first examine his conceptualization of mental disorder which will be the foundation to understand how he conceptualizes mental health. Then, I will provide criticisms to both his account of mental disorder and mental health that will demonstrate the superiority of my account of mental health as a causal nexus.

The network perspective is a radical departure from the prevailing way of understanding mental disorders, which is the common cause approach. To explain the common cause approach, take measles as an example. The symptoms of measles are dry cough, Koplik's Spots, fever, inflamed eyes, to name a few. These symptoms arise because of the measles virus, the common cause:

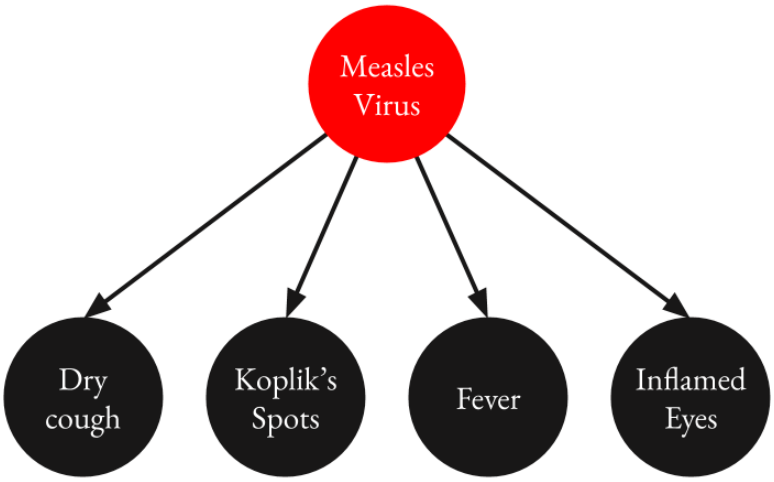

Figure 18: Common cause approach of measles

This is precisely why treatment is focused on eliminating the virus and not merely just addressing symptoms. The common cause approach has been arguably one of the most important insights in modern medicine over the past century. (Hyland, 2011) It's because of this approach that medicine has been able to understand and treat a wide range of physical ailments, from infectious to genetic diseases. Therefore, it is no wonder that researchers of mental disorders have adopted this approach. For instance, this is the common cause approach that has been applied to major depression:

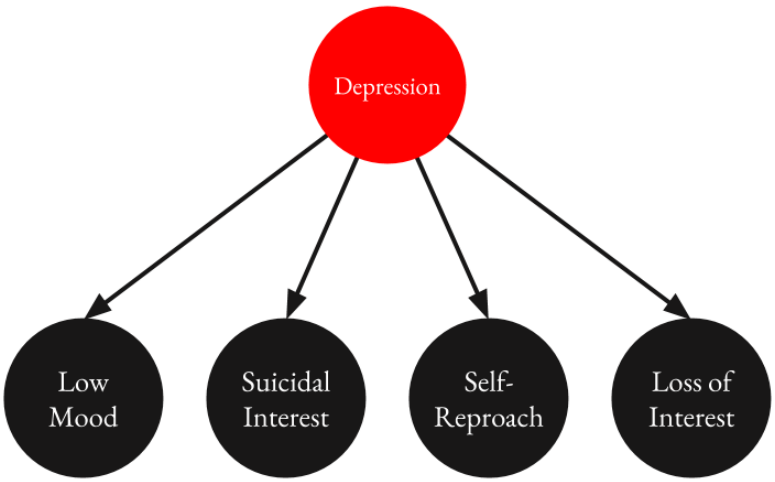

Figure 19: Common cause approach of depression

This figure depicts that underlying the symptoms of depression, such as self-reproach or self-blame, and suicidal ideation is a common cause. There have been many hypotheses about what the common cause is for mental disorders: repressed desires, conditioned behaviors, turbulent family upbringings, to name a few. Usually, the search for a common cause has usually been one that is biological, such as chemical imbalances, neural abnormalities, and genetic defects. This search for a common biological cause started over 100 years ago and accelerated in the 1980s. This was largely in response to the antipsychiatry movement that criticized psychiatry as masquerading as a scientific discipline whose real, hidden purpose was social control. To legitimize itself as a properly scientific discipline, psychiatry furiously set out to elucidate the biology of mental disorders. That furious search continues today, but with more precise technologies and better research methods. How has that turned out?

Two psychiatrists, who completed their medical degrees at Stanford and Johns Hopkins, wrote the following in *The New England Journal of Medicine*, the top medical journal in the world:

> Psychiatric diagnoses and medications proliferate under the banner of scientific medicine, though there is no comprehensive biologic

> understanding of either the causes or the treatments of psychiatric disorders. (Gardner and Kleinman, 2019, p. 1697)
>
> Biologic psychiatry has thus far failed to produce a comprehensive theoretical model of any major psychiatric disorder, any tests that can be used in a clinic to diagnose clearly defined major psychiatric disorders, or any guiding principle for somatic treatments to replace the empirical use of medications. (Gardner and Kleinman, 2019, p. 1698)

It seems as if this was written years ago, when psychiatry was still in its infancy and research into the brain was just beginning; however, this was published on October 31, 2019. The failure to find an underlying biological cause for depression provides a good example. The search for the common cause of depression as a chemical imbalance started in the 1950s, where it was suggested that depression was due to an imbalance of dopamine, then epinephrine, and most recently, serotonin. Yet despite 70 years of hunting for this chemical imbalance, there has been no supporting evidence. (Harrington, 2019) The search for a biological common cause of schizophrenia, another paradigmatic mental disorder, has fared no better. (Tandon et al., 2008) The biological approach to treating mental disorders, namely pharmaceuticals, also provides evidence that mental disorders cannot be reduced to a common biological cause. The largest meta-analyses have shown that for most mental disorders, drug treatment results in modest average treatment effects at best, with incremental benefits over placebo. (Huhn et al., 2014; Leucht et al. 2017; Cipriani et al., 2018) These effects may be even smaller if biases are considered, where in head-to-head antidepressant trials, newly marketed drugs appear to work better in the beginning but get worse as they get older. (Ioannidis, 2008) The lack of evidence behind psychiatric pharmaceuticals after billions of dollars in research over several decades has compelled them to abandon the field, even though the global burden of disease for mental disorder—and thus the market—is staggering. (Chandler, 2013) As such, it is not surprising that no biomarkers (reliable biological aberrations that occur in mental disorder patients, but not in the healthy population) have been elucidated for any mental disorders. (Ioannidis, 2019)

Decades of sophisticated research, yet the quest for common biological causes of mental disorders has come up empty. One way to interpret this shortfall is to argue that given more time and better technology, they will be found. This optimistic reasoning has been recycled repeatedly in response to failure after failure. Other researchers,

however, are skeptical of this hope. Denny Borsboom (2017a), the psychometrician behind the network approach, wrote the following:

> Our current lack of understanding of mental disorders may not have resulted from limited observational capacities, noisy measurement instruments, or inadequate data, as it is typically supposed. Instead, we may have simply lacked a theoretical framework to organize the available empirical facts. (p. 11)

Perhaps the prevailing paradigm is wrong. Perhaps the standard common cause approach that works so well for physical disorders does not apply to mental disorders. Perhaps research has not found an underlying biological common cause because they do not exist.

3.2 Symptom Interactions Explain Clustering

How, then, can we explain mental disorders without reference to a common cause? It is clear that when people suffer from symptoms, such as depressed mood, self-reproach, loss of interest, suicidal ideation and so forth, the symptoms cluster in non-arbitrary ways. It is not just a coincidence that these symptoms often appear together in patients, time and time again. For instance, the symptoms of depression have been noted since the ancient Greeks, lending support that there is a consistent pattern of the occurrence of symptoms. (Thumiger, 2018) How can we explain this clustering if it is not through pointing to a common biological cause?

A hint comes from the fact that symptoms of mental disorder causally interact with each other. For instance, depressed mood causes self-reproach, loss of interest and suicidal ideation. Self-reproach causes depressed mood and suicidal ideation. And loss of interest causes depressed mood. Symptoms of mental disorders and their interactions form what Borsboom calls a "symptom network". He argues that the reason why symptoms appear together is because they cause each other. For instance, when one symptom is activated, suppose self-reproach because of an embarrassing event at work, it goes on to activate other symptoms:

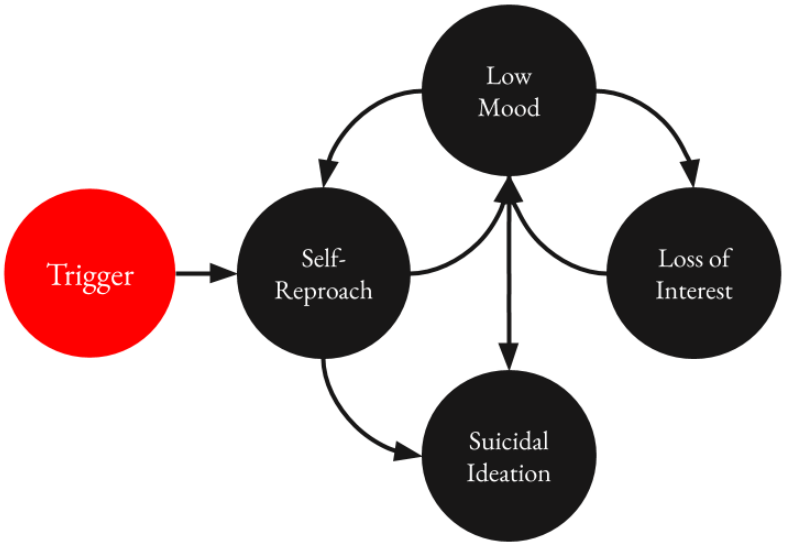

Figure 20: Depression symptom network 1

Therefore, when we ask the question, why do symptoms of major depression appear together, instead of saying a common cause like a chemical imbalance, the network approach answers, because the symptoms cause each other. There might be the objection: the external triggering event is the common cause. No, because there are many ways the depression network can be activated—there is not a single "common" cause. For instance, depressed mood could be caused due to getting fired at work, and through symptom interactions, the entire network becomes activated:

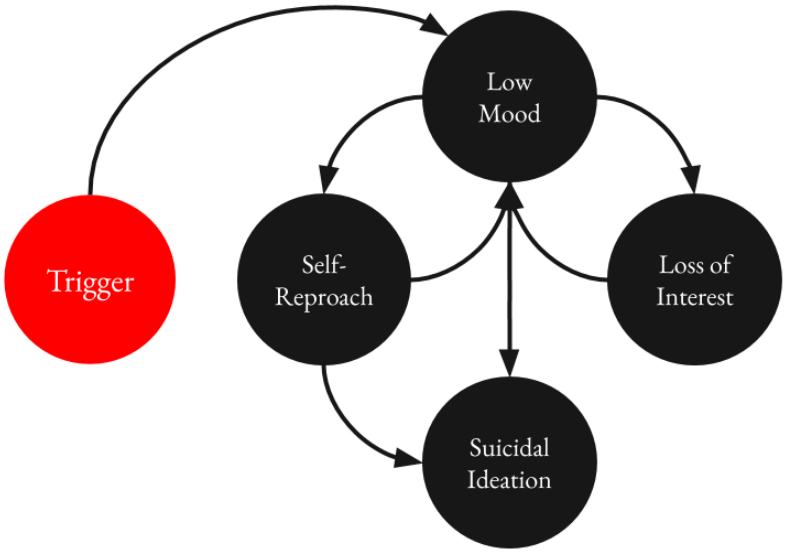

Figure 21: Depression symptom network 2

This is different from measles, where every time those symptoms appear together, it is always the same measles virus. Secondly, the trigger does not explain why the symptoms appear together because it does not directly cause all the symptoms. An additional aspect, namely the causal interactions between symptoms, are required to explain the clustering. This contrasts with the common cause approach where the symptoms are all caused by the same underlying common cause, which explains why the symptoms appear together:

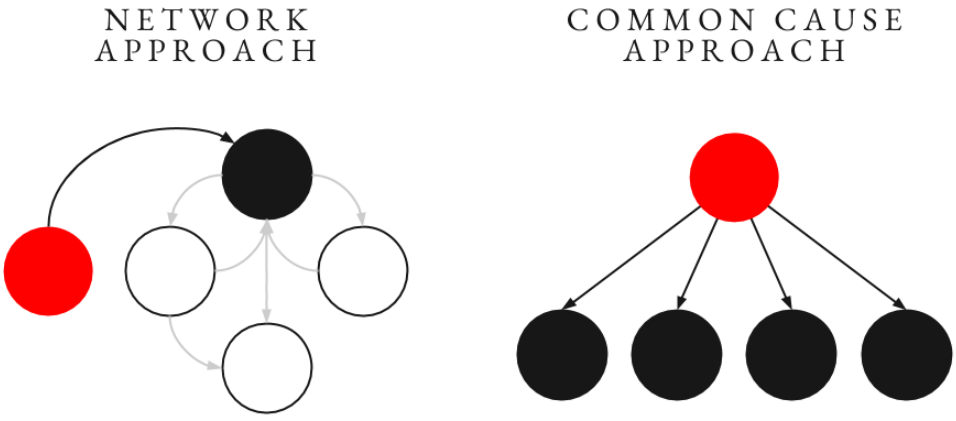

Figure 22: Network approach vs. common cause approach

Borsboom and Cramer (2013) are psychometricians who have developed symptom network models that are substantiated by empirical data. The following is an example of a depression symptom network of a group of individuals: (Borsboom and Cramer, 2013, p. 103)

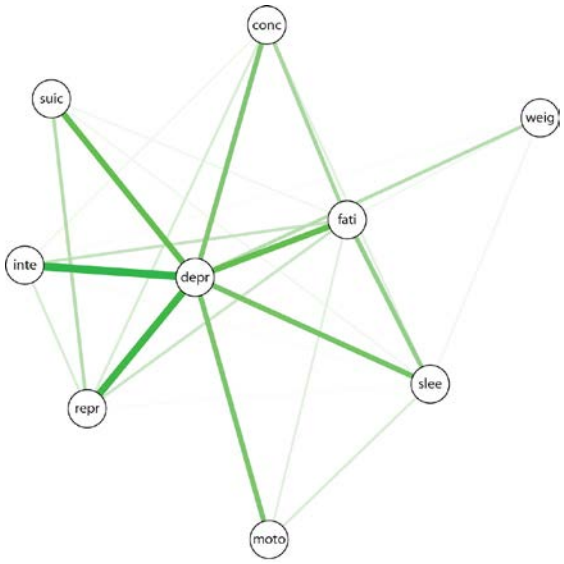

Figure 23: Empirically substantiated depression symptom network for a group

The nodes in the figure include: "depr" for depressed mood; "fati" for fatigue; "slee" for sleep changes; "conc" for lack of concentration; "weig" for weight changes; "moto" for motor retardation; "repr" for self-reproach; "inte" for loss of interest, and "suic" for suicidal thoughts. The thickness between symptom nodes indicates the strength of connection between the symptoms. For instance, there is a strong relationship between loss of interest and depressed mood, which means that they cause each other strongly (e.g., depressed mood causes loss of interest and vice versa). But for the symptom of suicidal ideation and fatigue, one does not strongly cause the other, which is indicated by the faint and thin line that connects them. It should be noted that this model is unidirectional, that is, it does not indicate the direction of causation.

It is clear that some individuals are more likely to experience symptoms of mental disorder than others. To distinguish between symptom networks, we need the notion

of symptom network sensitivity.[25] Formally, network sensitivity is the degree to which a network tends to be in an active or symptomatic state. Informally, it indicates how easily someone experiences symptoms of mental disorder. For an individual with a highly sensitive symptom network, they tend to experience symptoms of mental disorder. Whereas another individual may face a similar stressful event, yet they experience no symptoms of mental disorder at all. Network sensitivity is a continuum that can be depicted in the following way:

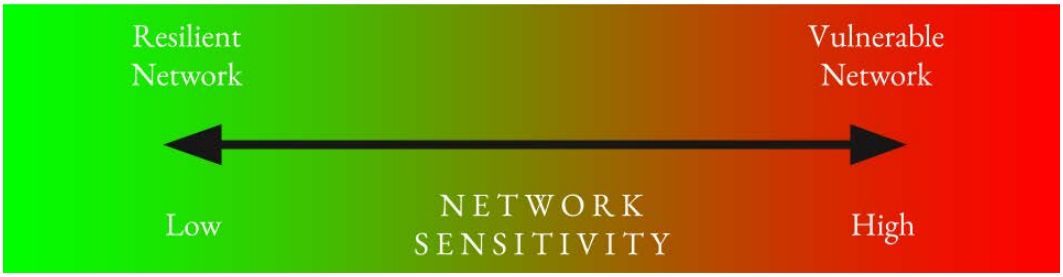

Figure 24: Network sensitivity

To indicate the differences between the two ends of the continuum, the term vulnerable network is used to denote the high end, whereas the term resilient network is used to denote the low end. Network sensitivity is a function of activation threshold of individual symptoms and the connection strength between symptoms. The first is the ease at which a given symptom is activated. So, for instance, two individuals could be exposed to the same trigger, but in one that could trigger a symptom of depressed mood yet in another that same symptom would not be triggered, or to a lesser degree. The second is the connectivity or the strength of connection of symptoms. For instance, in one individual, self-reproach very likely activates depressed mood, yet in another this may not occur.

3.3 Borsboom's Account of Mental Disorder

[25] I introduce this concept into the network approach literature for mental disorder.

Thus far two key principles of the network approach have been established: 1) the clustering of mental disorder symptoms is explained by the causal interactions between symptoms as well as a potential external factor and 2) each individual's symptom networks have varying degrees of sensitivity. We now have the resources to answer the question: what is mental disorder? From the network approach, mental disorders are to be identified with vulnerable or highly sensitive symptom networks. For instance, an individual might experience a minor stressful event, but that easily activates depressed mood, which rapidly activates other symptoms of major depression such as suicidal ideation, and then this network experiences widespread and sustained activation for a clinically significant period of time. On the other hand, for an individual with a resilient symptom network, they tend to experience no symptoms of mental disorder despite experiencing stressors. And for these individuals, if they do have symptoms, it is only under very turbulent circumstances and their symptoms are not sustained as connections between their symptom networks are weak. Mental disorder can be illustrated in the following figure:

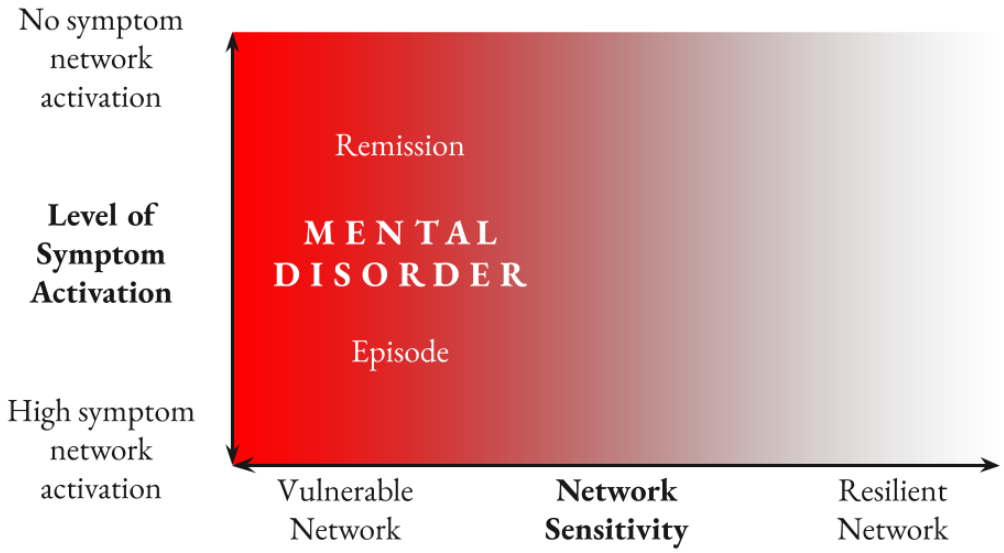

Figure 25: Graph of the network approach to mental disorder

The bottom axis of the graph denotes network sensitivity and spans from highly sensitive (i.e., vulnerable network) to insensitive (i.e., resilient network). The left axis of the graph denotes symptom activation, where high activation means there is a high presence of symptoms and low activation means there is a low presence of symptoms.

Mental disorder is to be identified with a vulnerable network and is represented by the red gradient on the graph. Notice that the gradient indicates that the severity of mental disorder admits of degrees: an individual is mentally disordered to the extent that they have a vulnerable symptom network. This is in line with observations and discourse that indicates two individuals can have the same mental disorder, but one might have more intense symptoms and experience symptoms more frequently.

This graph also shows indicates something important about mental disorder, namely, that it is not merely the presence of symptoms. An individual could have all the symptoms of mental disorder present for only a few moments, but that is not enough to consider that individual to have a real mental disorder. Instead, it is important to clarify that an individual tends to be in a symptomatic state, that is they experience symptoms frequently, which is of course because they have a vulnerable symptom network. The vulnerability of a symptom network is ostensibly captured by the DSM which requires that an individual has to be symptomatic over a period of time to fulfill the criteria for diagnosis. Moreover, just because an individual with a vulnerable symptom network (i.e., mental disorder) is asymptomatic at a particular time, that does not mean that they no longer have a mental disorder. On the other hand, for most of those with mental disorders, they do not experience symptoms at all times, rather their symptomatic state fluctuates. This is captured by the network approach which shows that an individual with a vulnerable symptom network that is currently experiencing clinically significant levels of symptoms is considered to be undergoing an *episode* of mental disorder, while an individual with a vulnerable symptom network that is not experiencing clinically significant levels of symptoms is considered to be in *remission*.

The network approach to mental disorder has powerful explanatory value. One of the most distinctive features about mental disorders is that they are often found together, where an individual might have multiple diagnoses. In other words, mental disorders have a high degree of *comorbidity* and there is significant overlap between symptoms of mental disorders. Some critics argue that the presence of comorbidity shows that the DSM has not properly "cut the world at its joints", that the nosology is wrong because of the lack of clear lines: "In the meantime, psychiatry finds itself plagued by ... an increasingly unwieldy diagnostic system of overlapping symptom checklists". (Gardner and Kleinman, 2019, p. 1698) But on the network approach, comorbidity and

overlapping symptoms is a real feature of mental disorders, not a by-product of invalid nosology or poor clinical judgement. The network approach can explain this phenomenon, namely, via *bridge symptoms*. These are symptoms that are shared between mental disorder symptom networks. As symptoms cause each other, the presence of a bridging symptom goes on to cause other symptoms, thereby connecting symptom networks of major depression (MD) and general anxiety disorder (GAD): (Borsboom and Cramer, 2013, p. 109)

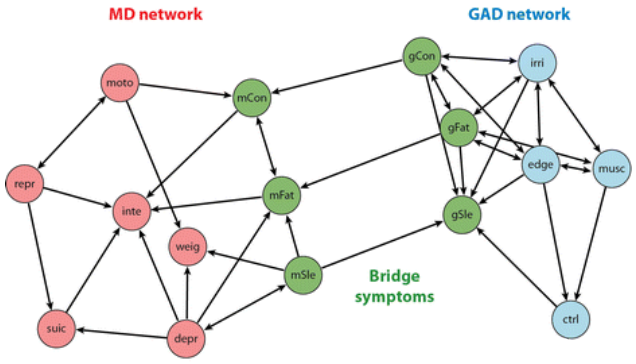

Figure 26: Bridge symptoms explain comorbidity of mental disorders

In this figure, the bridge symptoms are depicted in green. The symptoms of poor concentration ("Con"), fatigue ("Fat"), and sleep disturbances ("Sle") are shared symptoms between major depression and general anxiety disorder symptom networks which connects them together. Thus, the network approach is able to explain comorbidity and justify the intuition of psychiatrists, namely, that patients can often have multiple mental disorders.

The network approach also accommodates the intuitions of physicians, namely, that symptoms of mental disorders cause each other. (Kim and Woo-Kyoung, 2002) When physicians are asked about mental disorder, they spontaneously talk about it along the lines of reciprocal causal relationships. These reciprocal causal relationships that are the core of the network approach also explain the *hysteresis* of mental disorders, that is, that symptoms of mental disorders continue even when the initial triggering cause is removed. (Cramer et al., 2016) Hysteresis is a property of phase transitions, describing the asymmetry between the path to and from a given phase state. An instance taken from chemistry is the phase transition of water between liquid and solid: although

water freezes at 0 degrees Celsius, it melts at 4 degrees Celsius. Thus, the point at which water enters an alternative state is not the same point at which is returns to the original state. With respect of vulnerable symptom networks of mental disorders, although the symptomatic state might have been entered into because of an external trigger, simply moving that external trigger is not sufficient to end symptom network activation. This is due to the strong causal connections between symptoms, which propagate symptom network activation over a period of time. The hysteresis of symptom networks also explains the inertia of mental disorders, that for the most serious cases of mental disorder, where symptom network connections are very strong, the path to recovery is incredibly difficult and multifaceted. The vicious cycles of symptom-symptom causation resist efforts of treatment and recovery as symptoms are continually reinforced through causal interactions between each other.

Though we have looked at a particular mental disorder major depression, Borsboom thinks that his symptom network approach generalizes to many other mental disorders as well, where he provides the following figure to illustrate his point: (Borsboom and Cramer, 2013, p. 100)

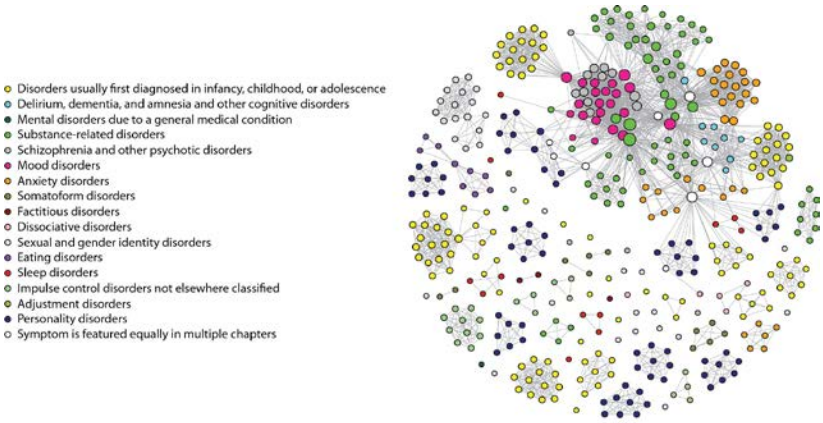

Figure 27: Global symptom networks of major mental disorders

It is likely that within this figure there are extraneous symptom-nodes, symptom-nodes that have not been considered, as well as kinds of mental disorders that have been overlooked or incorrectly included. However, the figure depicts a conceptual understanding of mental disorder symptom networks and their relationships.

With the main claims of the network approach of mental disorder laid out, it is worth examining an obvious objection: the use of the diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders to construct symptom networks. This is undoubtedly a surprising move considering the intense criticism the DSM has faced for decades. For instance, Thomas Insel, the former director the National Institute of Mental Health (NIMH) in the USA, the largest mental health research organization in the world, writes of DSM: "100 percent reliability and 0 percent validity" (Greenberg, 2010, p. 316) and that DSM-5 is a book that "biology had never read". (Belluck and Carey, 2013) As a result, NIMH elected to abandon the DSM and only support research for its new nosological system, the Research Domain Criteria (RDoC), that is thoroughly rooted in biology. Meanwhile, the network approach goes against the grain and argues that the DSM does have significant validity and uses the symptoms identified as the bedrock for constructing symptom networks of mental disorders.

It is entertaining to think that psychiatrists are in backrooms, colluding together, concocting the next diagnostic category, or making others broader to loop in more socially deviant people to prescribe more medications to make their wallets fatter. It is easy to scapegoat psychiatrists when you look at the violent and absurd history of psychiatric treatment, from deliberately inducing malaria to putting icepicks up people's noses to swirl around their brain matter. It is obvious that the prevailing image of the psychiatrist to the common eye is one that is sinister, evil, and sadistic. Just look at the regularity of discourse that portrays psychiatrists as adopting the anti-Hippocratic oath, to do much harm. This perception was the case in the early 20th century and is the case now—our fascination with the malevolent psychiatrist-villain has not yet been exhausted in popular media. (Hopson, 2014)

A common criticism of the DSM is that it just looks at symptoms and not etiology, unlike other fields of medicine. And as such, the DSM is methodologically dishonest because it does not have any biomarkers, unlike somatic medicine where diabetes, for example, can be ascertained by blood glucose level. But the DSM has tried to include biomarkers and etiology not just in the recent DSM-5 manual, but also the DSM-IV, which was published nearly 30 years ago. (Harrington, 2019) Perhaps the reason why the DSM has not included etiology is not because of some malicious reason, but because despite their best efforts, there have not been any found. According to the

network approach, maybe this is the case because there are no common biological causes—it is more realistic to think that the DSM is the best effort, not just of psychiatrists, but of many mental health experts with many different interests over decades of clinical observation. Thus, the network approach claims that the DSM has captured, via thousands of mental healthcare experts, the regular clustering of symptoms and has codified the real patterns of mental disorder in diagnostic checklists.

3.4 Borsboom's Account of Mental Health

From the symptom network approach of mental disorders, Borsboom (2017b) derives a new way of conceptualizing mental health:

> Mental health is the stable state of a weakly connected symptom network. Mental health is characterized by a resilient symptom network which, if perturbed, quickly returns to its stable state, which is a state in which symptoms are naturally inactive. Note that this definition does not equate mental health to the absence of symptoms. Rather it equates mental health to the attractor state of a complex network, which implies absence of symptoms (apart from random variation) but is not identical to it. (p. 85)

Borsboom identifies mental health with the stable state of a weakly connected or resilient symptom network. Notice that he does not identify mental health with a resilient symptom network, but the *stable state* of a resilient symptom network. He provides a diagram that helps clarify what he means by this stable state (Borsboom, 2017b, p. 86):

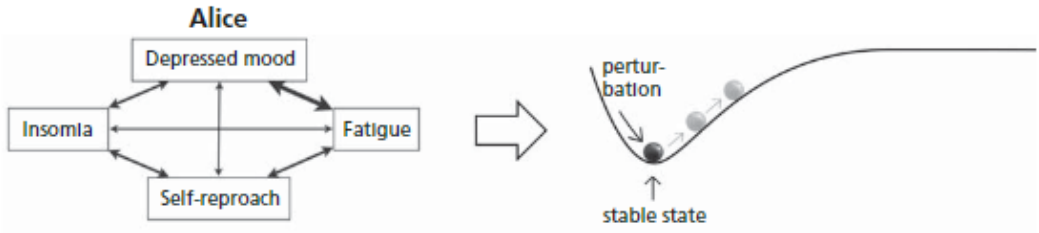

Figure 28: Mental health as a stable state

The left side of the figure represents Alice's depression symptom network, which is to be understood as weakly connected or is characterized as resilient. The right side of the

figure is an alternative way to depict Alice's symptom network that illustrates what Borsboom means by stable state. The curve represents the level of Alice's symptom network activation where the lowest point of the curve represents no symptom network activation whatsoever and as you depart from this lowest point up the curve, there is increased symptom activation. Further, as the lowest point of the curve, this is the most likely state that the symptom network will be in—i.e., being symptom free. Borsboom identifies the stable state with this lowest point. The ball in the figure represents the current activation state of Alice's symptom network. At the lowest point of the curve, the stable state, there is no symptom activation. However, with perturbations, such as excessive stress at work, Alice will have elevated symptomatology, but the activation state of the network will quickly fall back down to the stable state of being inactive. The further the ball from the lowest point, the more symptom network activation occurs. Thus, the stable state or mental health is not to be understood as solely *being* symptom-free, but also the *tendency* to be symptom-free. Said differently, mental health is not to be identified with the absence of symptoms nor is it to be identified with a resilient symptom network. Rather, mental health is to be identified with both a resilient symptom network *and* the absence of symptoms. Or more accurately, an individual is mentally healthy to the degree they have a resilient symptom network and have the absence of symptoms. This can be depicted in the following figure:

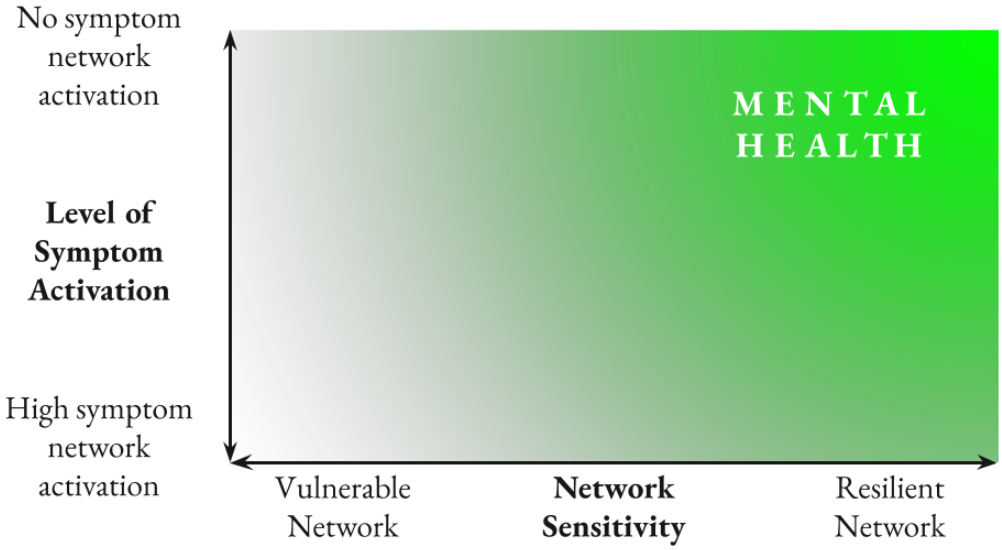

Figure 29: Graph of the network approach to mental health

To reiterate, Borsboom essentially identifies mental health as 1) a weakly connected symptom network and 2) with low degree of stressors, that is, factors external to the symptom network that are likely to activate symptoms. Again, notice that mental health is not to be identified simply with a weakly connected symptom network. Instead, mental health is both a weakly connected symptom network that is not activated, namely, there are no symptoms present. In the presence of external stressors for a mentally healthy individual, such as stress at work, there may be some symptoms present, but the network activation will go back to its inactive state: "A weakly connected network will, under low external stress levels, occupy a stable state of mental health ... The network is resilient because—even if it may feature symptomatology if put under stress from the external field—it will return to its stable state when that stress level diminishes." (Borsboom, 2017a, p. 10) The insensitive mental disorder networks of the individual make it so that they are resilient towards stressors to prevent symptoms from arising.

3.5 Criticisms of Borsboom's Account

Borsboom's network approach to mental disorder and mental health suffer from several criticisms. As his conceptualization of mental health is contingent on his conceptualization of mental disorder, it is worth raising some initial concerns with the latter. The first concern is the reliance on DSM symptoms as the central properties of mental disorders. We should be highly skeptical of this given the amount of controversy surrounding the DSM.[26] Indeed, network approach research has demonstrated that the DSM symptoms play no privileged role in network analysis of psychopathology compared to non-DSM symptoms. (Fried et al., 2016; Kendler et al., 2018) Moreover, the most recent version of the DSM, the DSM-5, has ballooned to 947 pages, and includes a total of 541 diagnostic categories. (APA, 2013) Concerns have been raised about the

[26] See Section 3.4 for further details.

legitimacy of several diagnostic categories such as "hoarding disorder", which is the label for those who tend to excessively accrue belongings. Moreover, it is doubtful whether all mental disorders have symptoms that cause each other, which is a central tenant of the network approach to mental disorder. At most, it would seem that not all mental disorders should be understood as causal networks of symptoms, but rather particular mental disorders where anxiety and depression are the best candidates. Some researchers insist that only particular mental disorders should be understood as symptom networks and that mental disorder in general should be understood along different lines, such as through Wakefield's harmful dysfunction approach. (Winzeler, 2015)

In addition, the ontological principles underpinning Borsboom's symptom network approach are naïve. Network approach researchers are motivated to go beyond biology in the explanation for mental disorder, so they argue that symptoms cause each other, such as rumination causes insomnia, thereby explaining the regular clustering of these symptoms. This myopic fixation on simply finding correlations between symptoms is at the expense of examining the causal mechanisms between them.[27] Indeed, there have been several concerns in the literature that have called to expand symptom causal networks beyond (usually psychological) symptoms and to incorporate other dimensions as well, such as the biological and sociological levels. (Fried and Cramer, 2017) I take this literature-wide move to be ostensibly moving toward elucidating the causal networks of mental disorders, that is, the causal mechanisms between symptoms. I insist that there must be some detailed mechanism from, say, rumination to insomnia that heavily involves biology. This does not necessarily mean that mental disorders can be reducible (both ontologically or epistemically) to a common biological cause or biology as a whole, but it does mean that there needs to be further emphasis on incorporating biological explanations in explaining how symptoms cause each other if the network approach to mental disorder is to mature. I suggest this because I suspect that biological interventions are critical for widespread increases in mental health. Being equipped with this knowledge provides insight into how causal connections between symptoms can be dampened. Overall, Borsboom's symptom

[27] See Section 2.3 for further details on mechanisms.

network approach, though an important step towards elucidating mental disorder, rests on an impoverished ontology. This warrants skepticism about his conceptualization of mental health that he derives from his account of mental disorder.

There are also several criticisms with Borsboom's account of mental health itself. When examining Borsboom's (2017b) methodology of justification for conceptualization of mental health, he relies on insisting that his account aligns with the definition put forth by WHO:

> Also note that the definition of mental health given here does not exclude the relevance of positive factors in one's life, or the presence of well-being (the "positive" definition of health; WHO 1948). It is entirely conceivable, and in fact quite likely, that well-being in several domains is a necessary condition for keeping the connectivity of a symptoms network low. If people, for whatever reason, cannot profitably and productively engage in daily life, or cannot maintain rewarding social relations, naturally occurring fluctuations in symptomatology may have much more room to propagate through a problem network. (p. 86)

On Borsboom's conceptualization, factors in an individual's life such as social relations or being productive, modulates an individual's symptom network so that the causal connections between are weak, decreasing network sensitivity and preventing network activation. Borsboom's methodology of justification is concerning because it relies on the assumption that WHO's definition is justified. We showed at the outset that WHO's definition of mental health is far from census and could even be thought as problematic because of the dissent amongst mental healthcare experts. The more important concern with this assumption is that WHO's definition lacks justification beyond just the fact that it coheres with common-sense intuition. Is the common-sense intuition the result of historical reasons and the fact that WHO has authority for what is considered mental health? Or is it indeed the reality of mental health that it is more than just the absence of mental disorder and involves the positive components that WHO suggests? As we have discussed, relying on common-sense intuition to justify accounts of mental health is not reliable.[28] Therefore, Borsboom's reliance on justifying his conceptualization of mental

[28] See Section 2.5 about how relying on commonsense intuition as justification falls short of providing a correct account of a kind.

health by relying on an account that requires further justification itself amounts to no substantial justification at all.

The most pressing concern is exactly what that positive content of mental health could be. We have seen that the true point of contention for mental healthcare experts is what the positive conception of mental health is and so addressing this concern is imperative for a successful conceptualization of mental health.[29] Though Borsboom insists otherwise, it appears that Borsboom's conceptualization amounts to the absence of symptoms and the absence of strongly connected symptom networks. In this sense, the concept of mental health to the concept of mental disorder is like shadows as the absence of light or cold as the absence of heat. In metaphysics, this type of kind is called a paranatural kind, which is parasitic on some sort of natural kind and enjoys no real ontological status—in this case the concept of mental health is parasitic on the concept of mental disorder. To be fair, Borsboom does put forth hints of a positive conceptualization of mental health. In the quotation just examined, he suggests some positive aspects such as "productively engage in daily life" or "rewarding social relations". But this is just a gesture to what the positive content could be and not what it actually is. Furthermore, Borsboom suggests a component of mental health along with being symptom-free is a weakly connected symptom network that he describes as "resilient" networks. This is intuitive because mental health is commonly thought of as being resilient. (Galderisi et al., 2015) However, this is a superficial analysis that conflates two different notions of resilience. Resilience, in the common-sense of the term, is something like the ability to withstand hardships and bounce back from difficulty. Whereas for Borsboom, resilience is construed as a weakly connected symptom network where symptoms do not go on to cause other symptoms within that network. In other words, resilience is resisting the presence of symptoms of mental disorder, which is quite different from our common-sense notions like the student who bounces back from a failed essay or the imperturbable Stoic who can endure great obstacles. There is a clear distinction between resilience as commonsensically construed compared to Borsboom's version and so his conceptualization of mental health does not truly align with common-

[29] See Section 2.1 for further details on the Positive Mental Health Problem

sense notions. Of course, this is not enough to rule out why Borsboom's notion is incorrect—it may be that the common-sense notion has been wrong all along and needs correcting. However, he does not argue why we should adopt this notion of resilience compared to the common-sense notion and I think he would agree that he does not have a good case to be made here.

Though there are issues with this conceptualization as outlined above, I do think Borsboom is onto something. Namely, he is correct to consider mental health as a stable attractor state that difficult to depart from, which is an implication of conceptualization of mental health that I provided. I argued that mental health should be identified with a robust causal nexus of positive facts, where the more robust the causal nexus, the higher the mental health, and the more difficult it is for positive facts to subside and negative facts to arise. Though Borsboom clarifies the content of mental disorder, namely the stable state of a strongly connected symptom network where the nodes are the symptoms, he fails to do so for mental health. What is this mental health stable state beyond just the absence of symptoms and a weakly connected symptom network? He gestures toward various protective factors from the WHO as being responsible for weakly connected symptom networks, but other than that, his positive account of mental health is impoverished. Whereas on my account, I suggest that those protective factors he gestures towards constitute their own causal nexus, which I call the mental health causal nexus. When we look towards paradigmatic cases of mentally healthy people, we notice that there is a pattern: for instance, they regularly experience hedonistic mental states, are resilient, and are productive. Let us ask the same question that Borsboom asked about symptoms of mental disorder: why do these facts regularly appear together? And more than that, why do these facts seem to make sure the other facts are present and stay present? The answer is, just like for mental disorder symptoms, these positive facts cause each other to form a causal nexus—which is the account that I put forth in this work.

CHAPTER 4
Conclusion

4.1 Overview of the Argument

This work began with the question of "what *is* mental health?" Through analyzing conceptualizations of mental health, we found two points of consensus, that is: (i) mental health is more than the absence of mental disorder and (ii) mental health is certain positive aspects. The second point is the main point of contention in the literature, the *Problem of Positive Mental Health*, which was the central focus on my thesis. To resolve this problem, I first introduced the anchoring-grounding framework (AGF) and the idea of homeostatic property cluster (HPC) kinds. These ideas started in different academic disciplines, yet seamlessly integrate as they each raise questions that the other answers. The anchoring-grounding framework (AGF) breaks down into: 1) the grounds, which refers to the metaphysical reason why a fact obtains; and 2) the anchors, which are the metaphysical reason why the grounding conditions for facts are what they are. On the other hand, the homeostatic property cluster (HPC) account of kinds has two components: 1) a cluster of consistently co-occurring properties; and 2) a homeostatic mechanism that is responsible for the co-occurrence of these properties. I argued that the HPC account can be situated within the AGF: to ascertain the grounding conditions of an HPC kind we examine its property cluster and to ascertain its anchors we examine its homeostatic mechanism. AGF asks the question of "what anchors the grounding conditions for mental health?" In other words, "why is mental health what it is?" HPC kinds answer that question. First, the theory of these kinds reframes the question as one about why positive facts of mental health cluster regularly. In other words, "what is responsible for the regular pattern of positive facts that is seen with mental health?" The answer is because of a homeostatic mechanism that causally maintains not just the presence, but the co-occurrence of properties in the cluster.

We saw that the answer to the question of "what exactly is the homeostatic mechanism?" is that the causal interactions of a mental health causal nexus is responsible for the clustering or regular appearance of symptoms together. In the end, we found that the grounding condition of the HPC kind mental health is the degree of instantiation of a robust mental health causal nexus that is made up of a cluster of positive properties or constitutive facts. The more robust their mental health causal nexus, the more they instantiate the kind mental health and the more mentally healthy they are.

The final chapter involved looking at a similar account of mental health that comes from Borsboom's network approach to mental disorder, where it was shown that his account had a myopic fixation of explanation and ontology at the level of symptoms as well as an impoverished conceptualization of the positive content of mental health, which amounted to an absence (of vulnerable symptom networks or mental disorders). Borsboom's approach is in the right direction, but the approach I articulated in my thesis goes much further.

4.2 Final Remarks

In the end, I wave the white flag of epistemic humility for I do not fully answer the central question of this work— "what *is* mental health?" Given our epistemic state, I refrain from providing any final conceptualization of mental health in terms of the exact property clusters or homeostatic mechanism. To do so, we would need to couple philosophical study with scientific research to uncover empirical evidence. Instead, I resort to providing something like a scaffolding conceptualization of mental health as a robust mental health causal nexus of positive facts that cause each other. Despite not going all the way, I make great distance in identifying the right questions to ask and provide the beginnings of a new methodology to determine what mental health *is*, that is, the anchoring analysis that looks toward elucidating the homeostatic mechanism of the kind mental health in general as well as the causal structure of particular mental health causal nexuses of individuals. Researchers have been doing this unreflectively already—that is, when they undergo research of what causes mental health and what

mental health causes, what they are in effect doing is studying fragments of the causal structure of the mental health network. However, far more work needs to be done to provide integrated models of mental health that brings all these fragments together. This endeavour will rely on significant philosophical work, such as from the mechanistic philosophers, as well as empirical research into the mechanisms that are responsible for the kind mental health. We already see the naïve beginnings of this methodology in network approaches to psychopathology from Borsboom. Moving beyond this methodology would look towards disciplines like systems science with more sophisticated computation and statistical models. In the end, I suggest a new research agenda leveraging similar approaches to understanding mental health. Elucidating the homeostatic mechanism of the kind mental health is an daunting task; however, we only complicate matters for ourselves if we simplify the complexity of mental health.

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"Quod optimus medicus sit quoque philosophus"
"The best physician is also a philosopher."

– Galen