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Eronen, Markus I.

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# Psychopathology and Truth: A Defense of Realism

MARKUS I. ERONEN\*

*Katholieke Universiteit Leuven, Leuven, Belgium*

\*Address correspondence to: Markus I. Eronen, PhD, Department of Theory and History of Psychology, Faculty of Behavioural and Social Sciences, University of Groningen, Grote Kruisstraat 2/1, 9712 TS, Groningen, The Netherlands. E-mail: m.i.eronen@rug.nl

*Recently Kenneth Kendler and Peter Zachar have raised doubts about the correspondence theory of truth and scientific realism in psychopathology. They argue that coherentist or pragmatist approaches to truth are better suited for understanding the reality of psychiatric disorders. In this article, I show that rejecting realism based on the correspondence theory is deeply problematic: It makes psychopathology categorically different from other sciences, and results in an implausible view of scientific discovery and progress. As an alternative, I suggest a robustness-based approach that can accommodate the significance of coherence and pragmatic factors without rejecting scientific realism and the correspondence theory of truth.*

**Keywords:** coherence, psychiatric disorder, robustness, scientific realism, truth

## I. INTRODUCTION

Perhaps the most important philosophical issue in psychiatry is the reality of psychiatric disorders. Are they real or just theoretical or diagnostic constructs? If they are real, are they real in the same sense as things in the natural sciences, such as electrons, DNA molecules, or biological organisms? The classic positions are *instrumentalism*, according to which the concepts of psychiatric disorders are just constructs that are useful for prediction and practical purposes but do not correspond to anything real in the world, and *scientific realism*, according to which psychiatric disorders are real and exist in the world independently of our theories and models. Both positions have important shortcomings. Most importantly, instrumentalism is problematic

because statements or models can be useful while also being radically false, and realism has problems accommodating the fact that psychiatric classifications have constantly changed throughout the history of science.

In a series of writings, Kenneth Kendler and Peter Zachar have recently argued for a middle position that incorporates elements of both instrumentalism and realism and thus potentially gets the best of both worlds (Kendler, 2015, 2016a, 2016b; Zachar, 2014, 2015). Kendler proposes to replace standard scientific realism and the correspondence theory of truth with softer realism that is based on the coherence theory of truth (Kendler, 2015, 2016a, 2016b). According to the correspondence theory, which is the traditional and commonsense view, truth is a matter of correspondence with objective reality, whereas according to the coherence theory, truth is a matter of cohering with other beliefs or findings. Kendler argues that in psychopathology diagnostic categories are determined by various social and historical factors, and not just by the way the world is, and, therefore, the coherence theory is more suitable in this context.

Zachar (2014) is also very clear in his skepticism concerning the correspondence theory in psychopathology, but his own view on truth is rather elusive. It seems to involve aspects of both coherence and pragmatist theories of truth. Zachar (2014) is sympathetic to William James' idea that truth is somehow related to our ability to act successfully, and to what our beliefs will converge in the long run. What makes this problematic is that there are well-established and persuasive counterarguments to such pragmatist theories of truth (see, e.g., Dowden and Swartz, 2016). For example, believing that God exists may allow individuals to act more successfully and may even be beneficial for the society as a whole, but this does not make it true. It is also conceivable that individuals and scientific communities could converge to false statements in the long run, so it would be strange to use this kind of convergence to define truth. Zachar does not clearly spell out how we could avoid these problems, or how exactly the pragmatist theory of truth is supposed to function in psychopathology. For this reason, in this article I will mainly focus on the coherence theory of truth and Kendler's account.

The idea to replace the correspondence theory of truth with the coherence theory is innovative and initially promising, but as I will argue in this article, in its present form it is problematic. Instead, I will propose an alternative solution: We can hold on to scientific realism and the correspondence theory and include pragmatic and coherentist considerations only at the level of evidence and justification. In this way, we can incorporate the important insights of Kendler and Zachar without revising our views about the nature of truth and realism.

However, I should point out that the aim here is not to give an unqualified defense of the correspondence theory of truth.<sup>1</sup> There is still much debate in contemporary philosophy concerning the nature of truth, and deflationary accounts, according to which we do not need any substantial theory of the

nature of truth (e.g., stating that “‘it is raining outside’ is true” is equivalent to just stating that it is raining outside), are popular among philosophers (David, 2015). The position that I defend in this article does not depend on the correspondence theory (as opposed to deflationary theories) being the correct account of truth. The main point here is, rather, that Kendler and Zachar have not provided compelling reasons to reject the correspondence theory or scientific realism in psychopathology, and that adopting the coherence theory of truth is a precarious and unnecessary route to take.

The structure of this article is as follows. First, I briefly go through the arguments that Kendler and Zachar have raised against the correspondence theory of truth and scientific realism and present Kendler’s alternative approach to truth (Section II). Second, I point out some problematic consequences of this move, arguing that it leads to a fundamental disconnect between psychopathology and the rest of science, and an implausible view of scientific progress (Section III). In Section IV, I show that the considerations raised by Kendler and Zachar do not give sufficient grounds to reject the correspondence theory or scientific realism. Finally, I argue that pragmatist and coherentist considerations belong to the level of evidence and justification, and that appreciating their importance does not require adopting a pragmatist or coherence theory of truth (Sections IV and V).

## II. THE CASE AGAINST SCIENTIFIC REALISM AND THE CORRESPONDENCE THEORY IN PSYCHOPATHOLOGY

Both Kendler and Zachar are sympathetic to the basic idea of realism: They accept the commonsense view that the world exists in some sense independently of our knowledge of it, and that there are things that are objectively true or false independently of what we believe of them (Kendler, 2016b; Zachar, 2014, 237). However, both are skeptical regarding full-blown scientific realism of the kind that asserts that there is a straightforward correspondence between categories of psychiatric disorders and the objective reality, meaning that psychiatric categories accurately represent real phenomena that exist independently of diagnostic models and practices (Zachar, 2014, 2015; Kendler, 2015, 2016a, 2016b).

Kendler’s main arguments for rejecting the correspondence theory are (1) the historical and social contingency of psychiatric categories and (2) the pessimistic induction argument. The first argument is based on the observation that psychiatric categories seem to be partly determined by various social, practical, or ethical factors. Consequently, if those social, practical, or ethical factors had been different, we would have ended up with different categories. Kendler and Zachar have presented various detailed case studies that support this. For example, the decision to exclude homosexuality from the list of mental disorders in the third edition of the *Diagnostic*

and *Statistical Manual of Mental Disorders (DSM-III)* was in large part due to protests at the annual conventions of the American Psychiatric Association (Zachar and Kendler, 2012). These protests made many psychiatrists realize that the fact that homosexuality was classified as a mental disorder was being used to justify discrimination. Moreover, many psychiatrists had personal encounters and discussions with homosexual colleagues, which reduced negative attitudes toward homosexuality. Thus, scientific discoveries played only a side role in the decision to reclassify homosexuality.

Another example discussed by Kendler and Zachar is narcissistic personality disorder, which was retained in *DSM-5* in spite of conflicting evidence, partly due to resistance from clinical experts who questioned the clinical utility of the alternative proposal (Zachar, 2014, 195–97). Zachar summarizes the situation as follows: “The clinical goals of practitioners and patients, the various scientific goals of researchers, philosophical theories about the nature of disorders, the priorities of health service administrators and social policy analysts, and commercial interests, for better or worse, have all played a role in how constructs for psychiatric disorders are developed” (Zachar, 2015, 289).

On the basis of these kinds of considerations, Kendler (2016b) argues that if we could turn back the clock 10,000 years and start all over again, we would get diagnostic categories very different from what we have now. The development of psychiatric categories is influenced by various historical contingencies and social and practical factors and is not just a story of an increasingly better match with features of the objective reality.

This is closely related to the pessimistic induction argument against realism that has been much discussed in general philosophy of science. It is based on the observation that the best scientific theories of the past, such as the caloric theory of heat, have repeatedly turned out to be false.<sup>2</sup> Thus, we can reason as follows: Because most of the successful and widely accepted theories of the past have turned out to be false, it is likely that also our currently successful and widely accepted theories will be replaced in the future. Therefore, we are not warranted in believing that they are true, or that they refer to things that actually exist. Kendler (2016b) argues that this is very relevant for the science of psychopathology, because it is easy to find in the history of psychiatry numerous theories and disorders that have since been replaced. Examples that he mentions include demonomania, anxiety psychosis, hysteria, and the subtypes of schizophrenia. As so many theories and categories of the past have been abandoned and replaced, there seems to be no reason to believe that the current categories will fare any better.

According to Kendler (2015, 2016b), these problems for realism are to a large part due to the correspondence theory of truth, which purportedly does not fit with the science of psychopathology. The correspondence theory is the view that truth consists in correspondence with reality; in other words, a statement or proposition X is true exactly when the world is like X says it

is. For example, the statement “it is raining outside” is true if and only if it is in fact raining outside. When applied to the reality of psychiatric disorders, the correspondence theory can be taken to imply that in order for a psychiatric category to be real, it should correspond to something in the objective reality.<sup>3</sup> Owing to the reasons paraphrased earlier, that is, the historical and social contingency of psychiatric categories and the pessimistic induction, Kendler (and Zachar) consider this to be too much to ask for psychiatric disorders.

Kendler (2016b) proposes that instead of the correspondence theory of truth, we should adopt the coherence theory, according to which something is true exactly when it fits well (coheres) with other things accepted in science. When applied to psychopathology, the implication is that what we mean when we say that one diagnostic concept is real is that it is well integrated to our scientific knowledge base: “a diagnosis is real to the degree that it ‘coheres’ well with what we already know empirically and feel confident about” (Kendler, 2016b, 9). Kendler also connects this to the idea of validators that goes back to Robins and Guze (1970), pointing out that diagnostic concepts that are strongly connected with other empirical findings (validators) can be seen as “well-validated.” He argues that with each iteration of a diagnostic manual, the diagnostic categories should become more interwoven into the fabric of scientific findings, and thus more true or real. This leads to a graduated realism, where the reality of psychiatric disorders is not a yes-or-no matter of correspondence with reality, but a gradual matter of coherence with other scientific findings, and constructs of disorders can exhibit varying degrees of truth or reality (Kendler, 2015, 2016b).

Importantly, Kendler does not defend a full-blown coherence theory of truth for all domains of science (Kendler, 2016a, 2016b). He argues that although coherence is a criterion for the truth of psychiatric classifications, this coherence should be understood in terms of connections to other things we know from the relevant sciences, and the correspondence theory of truth applies to these other things. For example, psychiatric classifications are connected to findings from neuroscience and biology, and the truth of statements in those fields, for example, “the mesocortical pathway transmits dopamine from the midbrain to the prefrontal cortex,” is determined by correspondence with reality—the statement is true if and only if the world is the way it says it is. In this way, Kendler’s version of the coherence theory still remains grounded in the objective reality and is not a form of antirealism or relativism.

### III. PROBLEMS WITH THE COHERENCE SOLUTION

The coherence theory as proposed by Kendler is a carefully conceived balancing act between standard scientific realism and instrumentalism.

However, it leads to a range of problems. First of all, as we saw at the end of the last section, Kendler argues that the standards for truth and reality are different in psychopathology than in the rest of science: in psychopathology, the criterion is coherence, while in the rest of science it is correspondence. However, the idea that we can just relax the conditions for what counts as true in a certain field of science is highly questionable. Although it is plausible that criteria for what is good evidence, methods, arguments, and so on, vary from one field to another, it is a far stronger claim that also the nature of truth is different.

If we assume that the coherence theory of truth applies in psychopathology and the correspondence theory in the rest of science, then the statement “magpies are able to fly” in biology is true if and only if it is a fact that magpies can fly, while it is not the case that the statement “John has anorexia nervosa” is true if and only if John actually has anorexia nervosa. Instead, “John has anorexia nervosa” is true to the degree that it coheres with what we already know, and there is no further fact of the matter. This is not only intuitively strange, but more importantly, it implies a fundamental and categorical difference between psychopathology and the rest of science, because they deal with different notions of truth. In other words, the nature of truth itself is different in these different fields. If coherence is seen as a source of evidence and justification instead, and not as definitive of truth, this undesirable outcome can be avoided: in this picture, the evidence that we appeal to justify statements like “John has anorexia nervosa” is very different (and weaker) than the evidence that we use to justify statements like “magpies are able to fly”; but *if* the statements are true, they are true in the same sense.

There are also several other problems with the coherence theory approach. First of all, recall that the point of the pessimistic induction argument was that many scientific theories that were widely accepted at their time have since been replaced and turned out to be false, so we should not expect that the currently widely accepted theories are true. This problem was one of the motivations for Kendler's account, but it is far from clear how the coherence theory of truth would help here. In the history of psychopathology, we find disorders that cohered to at least some degree with the scientific findings of their day, but that have since been replaced, for example, female hysteria, monomania, or multiple personality disorder. Thus, the fact that current classifications cohere with scientific findings does not as such seem to provide any reason to think that they are true.

However, Kendler's view is probably rather that these past disorders were also real to the degree that they corresponded with the scientific findings of their day, and that current classifications are real to a much higher degree. This is an interesting proposal, and it is consistent with Kendler's idea of “graduated realism,” where disorders that cohere more with empirical findings and other validators are “more real” than those that cohere less (Kendler,

2016a, 2016b). However, this kind of graduated realism is in general metaphysically problematic, and when applied to the context of scientific change, it leads to a strange picture of science. Consider the fact that 100 years ago there was much less coherence between anorexia nervosa and empirical findings than there is nowadays. Does this mean that anorexia nervosa was much less real 100 years ago? Similarly, after 30 years we may have more coherent evidence for anorexia nervosa than we have now. Does this mean that it has become more real? If yes, the implication seems to be that scientists in psychopathology are not discovering disorders, but creating them or making them (more) real. In other words, it is not the case that human subjects have various mental ailments whose nature scientists try to discover and understand, but rather that scientists are bringing disorders into existence and making them more real as they gather more evidence. This is a very unnatural view of the scientific enterprise and takes Kendler's position rather far from scientific realism.<sup>4</sup>

In a recent helpful reply to a letter where similar concerns were raised (Eronen, 2016), Kendler (2016a) has briefly addressed these points and slightly adjusted his position. He now argues that the coherence theory of truth should not apply to the whole of psychopathology, but just to nosology and diagnostic criteria (Kendler, 2016a). The idea is that what makes a certain set of diagnostic criteria real or true is that it coheres to a high degree with empirical findings and other validators, but in other contexts in psychopathology and in the rest of science, the correspondence theory applies. Kendler (2016a) also argues that the idea that the theory of truth is different in nosology than in the rest of science is not as strange as it may seem, because nosology is not a "science" in a narrow sense, but rather a combination of science, policy, and values. However, this revised approach is also problematic.

If the coherence solution only applies to diagnostic criteria, it becomes too restricted and uninformative. It is plausible to think that at least some psychiatric disorders exist independently of diagnostic criteria—for example, anorexia nervosa is out there even if there is no one to diagnose it. If this is the case, we also need some account of the nature of the psychiatric disorders as such, and not just the criteria to diagnose them. If psychiatric disorders, such as anorexia nervosa, are real, how should we understand this? Is it a question of correspondence with objective reality, or something else? If the coherence theory only applies to diagnostic criteria, it presents no solution to these key questions. Furthermore, even if it is the case that psychiatric nosology is not just a science, but a mix of science, policy, and values, this does not make the idea that nosology deals with a different notion of truth any less strange. To see this, consider the fact that politics is also not a science, but nevertheless we would not want to have a different, less demanding notion of truth adopted in politics than in science.



It seems that the root of these problems is an important distinction that has been overlooked, namely, the distinction between coherence as a source of evidence or justification on the one hand, and coherence as the nature of truth on the other. Accepting the former is rather plausible and unproblematic, because coherence is often one reason why we are justified in thinking that something is real or true, or one type of evidence that we can appeal to when arguing that something is real. For example, because there are more and more coherent findings supporting anorexia nervosa, the *evidence* for it gets better, and we can be more confident and justified in *believing* that it is a real phenomenon. However, accepting coherence as a source of evidence and justification does not require accepting a coherence theory of *truth*, and it is only the latter that leads to the kinds of problems discussed in this section.

#### IV. DEFENDING REALISM AND THE CORRESPONDENCE THEORY

Earlier we have seen that the coherence theory as proposed by Kendler leads to various problems: it makes psychopathology categorically different from other sciences, it does not help in responding to the pessimistic induction argument, and it results in a strange picture of scientific discovery. As I will now argue, the best way to avoid these problems is to hold on to realism and to understand the role of coherence at the level of evidence and justification instead of adopting the coherence theory of truth. However, taking this route calls for a response to the arguments against correspondence realism raised by Kendler and Zachar. Let us thus reconsider those arguments and see if there are ways to defuse them.

The first argument was the social and historical contingency of psychiatric classifications: the concepts of psychiatric disorders are influenced by various social, practical, and ethical factors, and not just based on a match or correspondence with reality. This is an undeniable fact. However, it is important to understand that there are several different issues entangled here, and that the points raised by Kendler and Zachar have implications for only some of these issues. On the one hand, there are questions such as: How did we actually end up with the diagnostic categories and classifications that we have? When and based on what do scientists believe that a disorder is real? When is it acceptable to call something (e.g., depression) a disorder? On the other hand, there are more metaphysical or philosophical questions such as: When is a disorder real? When are scientists *right* in thinking that a disorder is real?

The view that I want to defend is that theories of truth are only relevant for questions of the latter kind, and that the points raised by Kendler and Zachar are only relevant for questions of the first kind. For example, social, practical, and ethical factors undoubtedly played a fundamental role

in the processes that led some psychiatrists to *believe* that monomania or the multiple personality disorder is real. However, it is a different question whether they were *right* in accepting those disorders to be real. From the point of view of correspondence realism, they were not right, because the concepts of those disorders did not correspond to features of the objective reality. Similarly, social, practical, and ethical factors influenced the decision to retain the narcissistic personality disorder in *DSM-5* in spite of conflicting evidence, but a correspondence realist could argue that (assuming that the critics are right) the concept of a narcissistic personality disorder does not correspond to any phenomenon or feature of the objective reality.

Thus, the evidence from the historical and social contingency of psychiatric classifications only shows that social, practical, and ethical factors influence what disorders are believed to be real by the scientific community at a given time. However, the question that is relevant for realism and the correspondence theory is: When are scientists *right* in accepting a disorder as real? Correspondence realism is one answer to this question: They are right when the concept of a disorder corresponds to something in reality. The evidence that social, practical, and ethical factors influence the beliefs of psychiatrists and scientists does not in any way undermine this.

Let us then move on to the second argument, the pessimistic induction. According to this argument, many apparently successful scientific theories of the past have turned out to be false, so we are not warranted in believing that current apparently successful scientific theories will turn out to be true. In the context of psychopathology, the idea is that most past classifications have been replaced, so arguably there is no reason to expect that the current or future ones will correspond to real features of the objective reality.

Fortunately for the realist, there are many ways to respond to pessimistic induction. In contemporary philosophy of science, it is a matter of debate whether the pessimistic induction argument in fact is a valid argument against scientific realism, and whether it is actually supported by historical evidence (Psillos, 1999; Lewis, 2001; Thagard, 2007; Mizrahi, 2013). Here I will focus on just one way of circumventing the problem, one that is particularly well suited for the context of psychopathology. This is based on the idea of *robustness* (also called mutual grounding, overdetermination, triangulation, or diverse testing; Wimsatt, 1981, 2007; Trout, 1998; Chang, 2004; Eronen, 2015, 2019; Kuorikoski and Marchionni, 2016; Schupbach, 2018). The idea is that if there are several independent ways of measuring, detecting, producing, or deriving something, we have robust evidence for it. Importantly, if we have such robust evidence for an entity or a phenomenon, it is very unlikely that all those independent ways will turn out to be wrong, and thus it is very likely that that entity or phenomenon is real. For example, electrons can be measured, detected, and produced with many different techniques and setups relying on different theoretical assumptions, and they can be derived from various models and theories. Consequently, they are robust and extremely likely to be real.

Although it is an undeniable fact that many entities, properties, and categories have been eliminated in the history of science, it is far from clear that entities, properties, or categories for which there was *highly robust evidence* have been eliminated. The evidence for entities such as the phlogiston or the caloric was certainly not as robust as the evidence that we currently have for entities such as neurons, bacteria, pollen, or DNA molecules.

In psychopathology, many disorders of the past arguably had a very low degree of robustness. As an extreme example, consider drapetomania, a mental disorder introduced by the American physician Samuel Cartwright in the 1850s, which afflicted black slaves, making them want to flee from captivity (Zachar, 2014, 116). The case for drapetomania was based on some idiosyncratic assumptions about the “natural” behavior of black Africans, assumptions for which there was no independent evidence (Zachar, 2014, 120). In contrast, anorexia nervosa does not seem to depend on any particular conceptual framework; there are various psychological and neuroscientific theories and models about it, and specific physiological changes can be observed in patients with anorexia (Klump et al., 2001; Katzman, 2005). Consequently, there is robust evidence for anorexia nervosa. Of course, the evidence for some other current psychiatric disorders may be robust to a very low degree only. Consider, for example, disruptive mood dysregulation disorder, which is defined by “severe temper tantrums that are disproportionate to the situation, inconsistent with developmental level, and occur at least three times per week” (Dougherty et al., 2014, 2339). This disorder was added to *DSM-5* even though there are very few studies or theories addressing it, and the heritability, course, prevalence, and even the exact characteristics of the disorder remain unclear (Dougherty et al., 2014). However, cases like this merely show that we cannot be confident that all current psychiatric classifications correspond to real disorders. We have varying degrees of robust evidence for them, and thus varying degrees of justification for believing that they are real.<sup>5</sup>

Note also that a strong case can be made for scientific realism regarding the *symptoms* of psychiatric disorders, and that such realism is even implicit in Kendler’s and Zachar’s accounts. Both Kendler (2016b) and Zachar (2014) are sympathetic to the network approach developed by Denny Borsboom and colleagues (Borsboom, 2008; Cramer et al., 2010), and the related homeostatic property cluster view of psychiatric disorders (Kendler, Zachar, and Craver, 2011). The idea of this approach is that disorders are conceptualized as mutually interacting networks of symptoms and other factors. However, if symptoms are said to causally interact with each other, as in the network approach, then it is hard to deny that they are real. It is widely accepted in philosophy of science that if something is a cause, it must also be real. Thus, taking the network approach to psychiatric disorders seems to commit one to realism regarding symptoms.

The account defended here leads to a nuanced picture of realism in psychopathology. In this picture, commitment to scientific realism involves believing that a central aim for science is to find classifications that (approximately) correspond to features of objective reality, and that as science progresses, classifications should become better at capturing such features of reality.<sup>6</sup> It is not necessary for the realist to claim that the current constructs correspond to reality, because such correspondence can be seen as a regulative ideal and an overarching goal that we have not reached and may not reach in the near future. We can have varying degrees of confidence in the reality of psychiatric disorders and symptoms, corresponding to the degree that we have robust evidence for them. Neither the social and historical contingency of classifications nor the pessimistic induction argument forces us to reject realism or the correspondence theory in psychopathology. If there is highly robust evidence, we can be highly justified in believing that psychiatric disorders are real.

## V. CONCLUDING REMARKS

Kendler and Zachar are right in emphasizing the importance of coherence and pragmatic factors for psychopathological classifications. What I have called robustness in the previous section is close to what Kendler and Zachar mean when they talk about coherence. However, they are taking a step too far when they are arguing for coherence or pragmatist theories of *truth*. Coherence plays a natural and important role at the level of evidence and justification—it is often one way in which we can justify believing something to be real or true—but as we have seen, it is deeply problematic as a definition or account of truth (see also [Thagard, 2007](#); [Chang, 2009](#); [Olsson, 2014](#)).<sup>7</sup> In Section IV, I spelled out the role of coherence in terms of robustness: to the degree that there are several independent strands of evidence for a psychiatric disorder, it is robust and we can be confident in its reality. However, the same point could also be made in terms of validity, which is perhaps a more familiar term to clinical researchers. The idea would then be that the better validity evidence we have for a disorder, the more justified we are in believing that it is in fact real. Robustness and validity are closely connected: robustness appears in discussions of validity in the form of convergent validity and in general should be seen as a crucial factor when evaluating the overall validity of a construct (for more on this, see [Bringmann and Eronen, 2016](#)).

Even though I have mainly focused on Kendler's coherence solution here, similar considerations apply to the role of pragmatic factors in psychiatric classification that [Zachar \(2014\)](#) emphasizes. Pragmatic theories of truth are ridden with problems, but the usefulness of a diagnostic category, and the extent that it works in clinical practice, can be taken as a contribution to the

body of *evidence* for the reality of a disorder. In other words, instead of arguing that such positive practical considerations make disorders more real or more true, it is plausible to think of them as making the evidence for the disorder more robust, or making the diagnostic category more valid.

In conclusion, Kendler and Zachar are right when they claim that pragmatism and coherence are important considerations for psychopathology and the reality of mental disorders. However, both pragmatism and coherence are important at the level of justification and evidence only and do not belong at the level of truth.

## NOTES

1. See, however, Haig and Borsboom (2012), who discuss theories of truth in psychology and extensively argue that the correspondence theory of truth (as opposed to coherentist and pragmatist theories) is essential for making sense of psychological research.

2. In the caloric theory of heat, phenomena of heat and cold were explained based on a self-repellent fluid, the caloric, that constitutes heat. The caloric theory was widely used in the late eighteenth and early nineteenth century and led to several accurate predictions.

3. It is a matter of debate in philosophy to what extent theories of truth are relevant for the issue of scientific realism (see, e.g., Devitt, 1991). However, as this issue goes beyond the scope of this article, I follow Kendler and Zachar here in discussing truth and reality together.

4. As an anonymous reviewer pointed out, an alternative and more charitable interpretation of Kendler's position could be made in terms of verisimilitude (i.e., truth-likeness; Popper, 1963). The idea would then be that disorders or diagnostic categories that cohere more with empirical findings are more truth-like, or closer approximations to reality, than those that cohere less. However, as I will argue later, this idea does not challenge scientific realism and can also be captured without replacing the correspondence theory of truth.

5. Note that this also does not imply essentialism regarding psychiatric disorders: A scientific realist of this kind can subscribe to, for example, a homeostatic property cluster view of disorders (see, e.g., Bird, 2018).

6. This also nicely captures Kendler's (2009, 2015, 2016b) idea that diagnostic manuals are (or should be) getting better or more realistic with each iteration.

7. An anonymous reviewer suggested that it is possible that Kendler and Zachar are in fact not defending any particular account of the nature or definition of truth, but rather denying the need for any universal theory of truth, and emphasizing the importance of pragmatism and coherentism for understanding the reality of psychiatric disorders. This interpretation would make their position quite similar to mine, but it does not follow very naturally from the views that Kendler and Zachar have expressed in print.

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