IS OCD EPISTEMICALLY IRRATIONAL?

PABLO HUBACHER HAERLE*

Abstract: It's a common assumption in psychiatry and psychotherapy that mental health conditions are marked out by some form of epistemic irrationality. With respect to obsessive-compulsive disorder (OCD), the mainstream view is that OCD causes its sufferers to form irrational beliefs. Recently, however, this 'doxastic view' has been criticized from a theoretical and empirical perspective. Instead a more promising 'zetetic view' has been proposed which locates the epistemic irrationality of OCD not in irrational beliefs, but in the senseless inquiries it prompts. Yet, in this paper I present a special class of cases—sufferers of sexual obsessive-compulsive disorder (S-OCD)—which cannot be explained by existing doxastic and zetetic accounts of the epistemic irrationality of OCD. In addition, some sufferers of S-OCD appear to be adhering too well to a plausible set of norms for inquiry. Their suffering seems to be partially caused by an excess of rationality, and not a lack thereof. They seem, if anything, *too* rational. This shows firstly that it's unlikely that there is one form of epistemic irrationality common to all sufferers of OCD. Secondly, it should lead us to rethink the epistemic categories we use in classifying mental health conditions such as OCD.

Keywords: Obsessive-Compulsive Disorder, Rationality, Zetetic Epistemology, Philosophy of Psychiatry, Self-Knowledge.

> Must my thoughts dwell night and day on my personal sins and blemishes, because I truly have them?—or may I sink and ignore them in order to be a decent social unit, and not a mass of morbid melancholy and apology?
>
> — William James, *Pragmatism,* Lecture Six.

It's a common assumption in psychiatry and psychotherapy that mental health conditions are marked out by some form of epistemic irrationality (Bortolotti 2013). For instance, the fifth

* I want to thank Richard Holton, Anne Meylan, Jessie Munton, Sahanika Ratnayake and Sebastian Schmidt for encouragement and incredibly valuable feedback. I'm deeply thankful to Glenn Anderau, Rhea Blem, Demetra Brady, Ethan Clack, Katie Coyne, George Grün, Mark Isler, Lukas Kunz and Michael Müller for many important conversations. Neil Levy helped me to access some material which was crucial for this paper. I'm also hugely indebted to the helpful comments of three anonymous referees of a different journal and two anonymous referees of this JOURNAL.

and most recent edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) includes failures of epistemic rationality in the criteria for schizophrenia, delusions, depression and many more (APA 2013; cf. Craigie and Bortolotti 2015, p. 4). Also the most widely used psychotherapy—cognitive behavioral therapy—assumes that mental health issues result from 'thinking errors', *i.e.*, violations of epistemic rationality (Beck 1976; cf. Ratnayake 2021).

It is largely uncontroversial that mental illness can involve *pragmatic* irrationality, *i.e.,* failures to adhere to the rules of what we ought to do given our aims (e.g. flawed means-end-reasoning, weakness of the will, etc.). However, recent philosophical and empirical work has questioned the link between mental illness and *epistemic* irrationality, *i.e.,* failing to adhere to the rules of how we ought to form believe and inquire (e.g. errors of logical reasoning, disregard of relevant evidence, etc., cf. Bortolotti 2013; Friedman 2020). It has been denied that epistemic irrationality serves to characterize mental illness at large (Craigie and Bortolotti 2015) and specific conditions such as schizophrenia (Bortolotti 2020, ch. 4), delusions (Bortolotti 2009, 2020, chs. 3 and 5) and depression (Ratnayake and Poppe 2020; Ratnayake 2021) in particular. For instance, Lisa Bortolotti draws on psychological research to argue that delusional beliefs are not qualitatively different from ordinary irrational beliefs such as positive illusions or everyday confabulations. Further, using the observation that often our everyday beliefs are underdetermined by available evidence, Sahanika Ratnayake defends the idea that often depressed individuals are merely pragmatically instead of epistemically irrational.

So far, that line of research hasn't been extended to obsessive-compulsive disorder (OCD). In this paper I show that the existing accounts of the epistemic irrationality of OCD fail to apply to all its instances. I present a special class of cases—sexual obsessive-compulsive disorder (S-OCD)—which cannot be explained by existing accounts of the epistemic irrationality of OCD. Instead of violating norms of epistemic rationality, some sufferers of S-OCD appear to be adhering *too well* to a plausible set of norms for inquiry. Their suffering seems to be partially caused by an *excess* of rationality; they seem, if anything, *too* rational. Therefore, my argument suggests that there is not one form of epistemic irrationality common to all sufferers of OCD.

To show this, I will proceed as follows. I will first discuss OCD (§1) and the ways in which it is ordinarily thought to be epistemically irrational (§2). Traditionally, OCD has been seen as mainly inducing irrational *belief* (§2.1.). Following recent advances in the literature, however, I also consider the ways in which OCD may lead to irrational *inquiry* (§2.2.). I then introduce the subclass of *sexual* obsessive-compulsive disorder (S-OCD) (§3). I show that belief-centered accounts of the irrationality of OCD do *not* apply to paradigmatic cases of S-OCD. Next, I argue that the alleged irrationality of such sufferers is also not captured by existing inquiry-based accounts (§4). This is due to the taboo nature of their inquiries (§4.1., §4.2.) and the motivational effects following from it (§4.3.). The last section (§5) concludes that this should lead us to rethink the epistemic categories we use in classifying mental health conditions such as OCD.

1. SOME BACKGROUND ON OCD

With a life-time prevalence of 1%-3% OCD is a relatively common condition. Its main characteristics are unwanted and recurrent obsessive thoughts causing anxiety and distress (APA 2013, p. 237). The topics of such obsessions cluster around worries of harming other people, violating social taboos, getting infected or failing to prevent horrible threats (Cochran and Heaton 2017, p. 186). In response to these obsessions, either overt or covert compulsive behavior is enacted. Importantly, the compulsions can be as varied as the obsessions; they range from excessive hand washing, to incessant checking, to odd rituals, to mental repetitions, etc. (Haase 2002; Williams and Wetterneck 2019).

Fitting its multi-faced nature, OCD often occurs in combination with other psychiatric conditions such as depression or various anxiety disorders (Pallanti *et al.* 2011; Gillett *et al.* 2018). Nonetheless, a large experimental study (Taylor *et al.* 2010) found three common factors among people diagnosed with OCD: an inflated sense of responsibility, the need to control one's thoughts and intolerance of uncertainty.

On the theoretical side, there are two major accounts of OCD: The 'dysfunctional belief model' (cf. Salkovskis and Wahl 2004; Abramovitz *et al.* 2009) proposes that sufferers from OCD *appraise* unwanted thoughts in a special way, either by

exaggerating their importance or their causal potential. Instead of such appraisals, the 'flawed inferences model' (O'Connor and Robillard 1995) focusses directly on the formation of first-order beliefs. According to this theory, what drives OCD are not appraisals of intrusive thoughts, but rather irrational beliefs about the world directly.

Irrespective of the model, the most widely used psychotherapy used for treatment of OCD,—cognitive-behavioral therapy—focusses in its treatment on resisting 'bad' inferences and challenging appraisals by rational argument. Through 'Socratic dialogue' and exposure the subject is brought to see that their beliefs are unfounded, with the aim of reducing the obsession and thereby the compulsion (Wilhelm 2002; Salkovskis and Wahl 2004, p. 153; Kampa 2020, p. 480f.).

Hence, we see that psychiatric theories and therapeutical treatments of OCD appeal heavily to epistemic irrationality. But in what ways exactly is OCD taken to be epistemically transgressive?[1]

2. THE IRRATIONALITY OF OCD

2.1. DOXASTIC APPROACHES

A common idea is that people diagnosed with OCD jump to conclusions and engage in "catastrophizing". To give a much used example (O'Connor and Robillard 1995, p. 894; Haase 2002, p. 72; Kampa 2020, p. 479):

> Amelia is driving in her car. All of a sudden, she hears a weird noise which she cannot identify. She forms the belief that she's run someone over and spends hours looking for the supposed victim.

Clearly, Amelia's behavior seems irrational. Yet, what makes it so?

One way of understanding Amelia's irrationality is to think of it as involving a "distinctive kind of epistemic mistake [of taking] 'possibly P' as grounds for 'P'" (O'Brien 2013, p. 97). On that analysis, Amelia's behavior is explained by a supposed *belief* of hers, namely that she ran over someone. This belief is

[1] It deserves mention, that there is a lively philosophical debate about the nature of obsessive thoughts (e.g. Noggle 2016; Taylor 2020), the voluntariness of compulsions (e.g. O'Brien 2013) and the various causal theories of OCD (e.g. Cochran and Heaton 2017).

epistemically irrational, since you can't start out from the true statement "It's possible that I've run over someone" and then form the belief "I *did* run someone over".

An alternative explanation of Amelia's irrationality is that she "overestimate[s] the likelihood and severity of danger" (Wilhelm 2001, p. 122). When OCD patients are instructed to calculate the actual probabilities of a feared event, such as contracting HIV from shaking someone's hand, they realize that those probabilities are much lower than previously assumed.

On these accounts, the epistemically irrational inference induced by OCD lies in either a) going from mere possibility directly to belief, or b) going from a very low probability to belief.

Alternatively, a belief can be irrationally held, not just because it's unlikely to be true, but also because another belief would be much better supported. Think of this in a broadly Bayesian framework: how much does the available evidence support a hypothesis *relative* to an alternative? If Amelia, after repeated checking, didn't find any signs of an accident, the hypothesis that she just hit a pothole instead of a human is much more likely. In the therapeutic context this is sometimes framed as a distinction between 'theory A' and 'theory B' (Salkovskis and Wahl 2004, p. 149). Theory A explains the obsessive thoughts about, say, being a child molester, through the hypothesis that the patient *is* actually a child molester. Theory B, instead, explains the obsessive thoughts with the hypothesis that the subject is simply *afraid* of being a child molester (ibid., p. 153). Since the patient only credits the first hypothesis, while in fact there is a better confirmed alternative, they are epistemically irrational.

Locus of Irrationality	Reason for Irrationality
Belief	a) Belief is formed based on mere possibility.
	b) Belief is formed based on low probability.
	c) Belief is formed and/or maintained despite a better supported alternative.

Table 1: Doxastic Accounts of the Epistemic Irrationality of OCD.

I summarize the different doxastic—*i.e.,* belief-centered—approaches to the epistemic irrationality of OCD in *Table 1*. I take this to represent the mainstream understanding of the

epistemic irrationality of OCD informing diagnostic and therapeutical manuals. Yet, this understanding has been criticized from numerous angles.

First of all, it's not clear whether the obsessive thoughts people with OCD experience are correctly classified as 'beliefs'. For, many—if not most (Abramovitz *et al.* 2009, p. 293)—sufferers of OCD have 'insight', *i.e.*, they realize that their obsessive thoughts are irrational. But, it is a widely accepted feature of beliefs that they involve a commitment to the truth of what is believed. Sufferers of OCD thus pose a puzzle. They seem to have irrational beliefs, but at the same time concede that their beliefs are false, putting it in question whether their attitudes are correctly described as beliefs in the first place (Noggle 2016; Taylor 2020).

Second, even if this concern about the nature of obsessive thoughts was put aside, new empirical results question whether OCD is marked out by beliefs based on insufficient evidence. Recent randomized control trials find no evidence that people with OCD jump to conclusions more than 'the non-pathological' population (Jacobsen *et al.* 2012; Morein *et al.* 2019). This means that even if sufferers of OCD sometimes engage in catastrophizing, such faulty inferences are by no means specific to them. Some issues non-diagnosed individuals *don't* worry about are often more probable than they assume. Consider the possibility of getting cancer. Even though this is fairly common, many of us have the belief "Surely, *I* won't get cancer" (Bortolotti 2020, p. 119). Logically, however, the inference from "I might contract HIV" to "I will definitely contract HIV" is equally faulty as an inference from "I might not get cancer" to "I will definitely not get cancer". Of course, it may be that due to a difference in objective probabilities, the non-pathological underestimation of the risk of cancer is less transgressive than the inflated fear of HIV. But without specifying such matters (e.g. in terms of credences, see §2.2.), epistemic mistakes such as a), b) and c) also apply to the healthy underestimation of risks (cf. Bortolotti 2009; Ratnayake 2021).

These considerations don't directly attack the idea that people with OCD entertain epistemically irrational beliefs, but they question whether such beliefs would provide a distinguishing criterion between sufferers of OCD and the non-pathological population. Since it does seem that sufferers of OCD are epistemically irrational *in a special way*, it has been concluded

that doxastic accounts fail to identify what makes them so. As a result, some philosophical approaches have moved away from locating the epistemic irrationality of OCD in *beliefs*. Instead they propose a 'zetetic approach', *i.e.,* an account which places the epistemic irrationality of OCD in the senseless *inquiries* it prompts (Kampa 2020; Taylor 2020).

2.2. ZETETIC APPROACHES

While a belief expresses a view about the world, inquiries are actions aimed at answering questions (Friedman 2019a, 2019b). In this subsection, I present the idea that the epistemic irrationality induced by OCD may (also) lie in prompting senseless *inquiries*.

There is substantial evidence suggesting that OCD affects people's inquiries. Compared with subjects showing fewer OCD-related traits, sufferers of OCD inquire longer in ambiguous situations (Harkin and Mayes 2008; Toffolo *et al.* 2014). Further, a new research paradigm (Hoven *et al.* 2019) suggests that sufferers of OCD are 'underconfident' in their judgements, *i.e.,* don't attach *sufficient* confidence to their verdicts. Accordingly, what marks out OCD is the inability to stop an inquiry and to *settle* on a belief, even when it would be rationally mandated to do so.

Even though doxastic and zetetic problems are clearly interdependent, I join Samuel Kampa (2020) and Evan Taylor (2020, p. 17) in understanding at least part of the epistemic behavior and attitudes induced by OCD as specifically question-directed, *i.e.*, as inquiries.

An important corollary of understanding OCD as, among other things, a disorder of inquiry is that the doxastic criticisms need to be modified. To recall, it is said that people diagnosed with OCD a) take mere possibility as a ground for belief b) overestimate small probabilities, and c) adopt beliefs despite better-confirmed alternatives. However, it's not clear that these criticisms carry over to inquiries. For it isn't an epistemic mistake to go from 'possibly *p*' to 'what if *p*?'—especially not in high-stakes cases. Further, there is definitely no epistemic rule that dictates inquiring only into the better confirmed hypothesis. In many situations—for instance in scientific contexts—doing so would be epistemically irresponsible. Taylor also concludes that "a full theory of *why* 'what-if' obsessive thoughts are often

irrational is needed" (2020, p. 19, emphasis in the original). I discuss two such attempts now, even though I will later (§4) argue that they fail to apply to all cases of OCD.

In a series of recent papers, Jane Friedman (2019a; 2019b; 2020) argued that the norms of inquiry—the 'zetetic' norms as she calls them—are not identical to the norms governing belief. First, Friedman (2019a) proposes an account of why incessant checking, such as whether the stove is *really* off, is epistemically transgressive. Incessant checking is not restricted to, but prevalent in people diagnosed with OCD. Friedman's argument goes as follows: checking is a form of inquiry. Inquiry presupposes the suspension of judgement; it doesn't make sense to say, "I know that *p* but I wonder whether *p*". According to her, there are certain levels of evidence after which the suspension of judgement is no longer permissible. Since incessant checking is an iterative process increasing the checker's epistemic standing, at some point this critical level of evidence will be reached. Afterwards, inquiring and suspending judgement again is a violation of the norm that one has to *end* an inquiry when there is evidence beyond reasonable doubt. This is what makes incessant checking epistemically transgressive.[2]

Second, Samuel Kampa (2020, p. 487ff.)—building on Friedman—argues that sufferers of OCD are epistemically irrational when they inquire into possibilities which are simply too unlikely. He thinks that in order to legitimately conduct an inquiry one needs to attach a certain credence to the hypothesis one is considering. If the evidence doesn't license such a credence, the inquiry is epistemically transgressive. Since sufferers of OCD worry about very improbable events, *i.e.,* propositions which have extremely low objective credences, they violate this zetetic norm. Similar reasoning applies to the other end of the spectrum; after a certain threshold, the evidence suggests such a high credence that further inquiry would be transgressive.

The intuition underlying these two norms of inquiry can be summarized as follows:

[2] To avoid confusion, I join Friedman (2020, p. 532) in thinking that we should make room for the zetetic *within* the epistemic. So for me zetetic norms *are* epistemic norms.

> Zetetic Requirement (ZR): You ought not to inquire into p if the available evidence is such that you ought to have reached a firm conclusion about p.

If by inquiring you breach ZR, you are in one of the shaded areas of *Figure 1* and thereby become epistemically transgressive.[3]

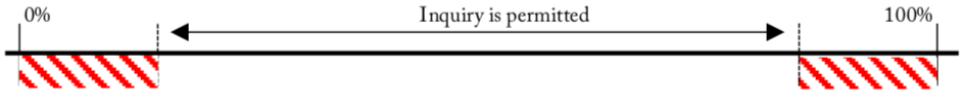

Figure 1: Scale of Evidence/Credence and Permissibility of Inquiry.

In *Table 2* I summarize the existing accounts of the epistemic irrationality of OCD.

Locus of Irrationality	Reason for Irrationality	Problems
Belief	a) Belief is formed based on mere possibility.	Potentially empirically and theoretically inadequate. Doesn't apply to inquiries.
	b) Belief is formed based on low probability.	
	c) Belief is formed and/or maintained despite a better supported alternative.	
Inquiry	d) Inquiry is continued even though a firm conclusion should have been reached (ZR).	

Table 2: Doxastic and Zetetic Accounts of the Epistemic Irrationality of OCD, including their problems.

[3] Note that for Friedman *any* level of credence is compatible with further inquiry (2019b). In order to settle an inquiry, according to her, we need to reach a level of evidence where we ought to form an 'all-out belief' in the truth or falsity of our hypothesis. For Kampa, on the other hand, there are levels of credence which by themselves render further inquiry impermissible. This distinction doesn't matter for my purposes.

Failing to stop an inquiry when you should nicely captures the idea that sufferers of OCD are underconfident in their judgments (Hoven *et al.* 2019). Thus, a violation of ZR seems like a promising and empirically adequate candidate for locating the epistemic irrationality of OCD.

For my purposes here, it's irrelevant whether the zetetic accounts of the irrationality of OCD are a *substitute* or an *extension* of the doxastic accounts discussed in §2.1. Contrary to the strong criticisms of doxastic accounts, to my mind it remains possible that *some* sufferers of OCD violate doxastic norms, while others violate zetetic norms (cf. §5). However, in the next section I present a specific class of cases who violate neither doxastic norms nor ZR. Accordingly, what makes these people irrational, if anything, is not accounted for by the existing approaches.

3. SEXUAL OBSESSIONS

Sufferers of *sexual obsessive-compulsive disorder* ('S-OCD' for short) are characterized by obsessive inquiries into their own sexual desires (Williams and Wetterneck 2019). One class of sufferers of S-OCD worries about having sexual desires for family members. For instance, Sabine Wilhelm (2001, p. 120, my emphasis; cf. Kampa 2020, p. 480) gives the example of a man called Gary:

> Gary, a 29-year-old carpenter, sought treatment because he had "terrible thoughts" that he "could not shake off". […] During the first session he was too embarrassed to discuss his symptoms in detail but he explained that frequently "perverse" sexual images came to his mind. He had thoughts and images about incest with family members, in particular his mother. […] His worst fear was that he *might* get aroused by the sexual thoughts about his mother or sister, and he therefore developed extensive avoidance behaviors.

If Gary infers from "It's possible that I am attracted to my mother" to "I am attracted to my mother" he is committing the epistemic mistakes outlined in §2.1.. However, Gary's obsessive thoughts are not exhausted by doxastic attitudes. In addition, he's obsessively asking himself a *question*, namely "Am I sexually attracted to my mother?". To some extent Gary's OCD seems to manifest in his worry that he *might* have a desire for a family member. His worry is thus comparatively better characterized as (part of) an inquiry than a belief.

Another class within sufferers of S-OCD are people obsessing about the possibility of being gay. Here's Monnica Williams (2008, p. 198f., my emphasis; cf. Bhatia and Kaur 2015) with an unnamed real-life case:

> This all started about two years ago, with obsessions about being gay. […] I am in the medical profession. If I have to do a belly exam, and a girl is skinny (and of course I'm jealous), I get visuals that I don't want. If a couple comes in and the husband is ugly, but the wife is pretty and thin, I think, "Oh my God, I would rather be with the wife than the husband." Then I try to picture myself years down the road, and I can't see who I am with – a man or a woman. I feel like I have become obsessed with the female body, *which could either be due to my horrendous self-esteem or that I'm really gay.*

Let's call this woman 'Rahel'. As Williams highlights, Rahel "*hypothesizes* that her obsessions are due to her 'horrendous self-esteem' or that she is 'really gay'" (ibid., my emphasis). Hence, part of Rahel's OCD consists in her trying to assess a hypothesis, *i.e.,* in conducting an inquiry.

I think there are parallels between Rahel and Gary, as they both experience unwanted fantasies and thoughts. Also, the possibilities they're afraid of are a taboo in many societies.[4] Most importantly, however, both try to answer a question about their own desires: "Am I sexually attracted to my mother?" and "Am I gay?" respectively. They are both *inquiring*.

As the growing literature on sexual obsessions shows (see the entries in Williams and Wetterneck 2019), there are countless cases like this. Do sufferers of S-OCD show epistemic irrationality as a result of their condition? Of course, it seems plausible that some sufferers of S-OCD simply are convinced that they have a certain desire without showing any tendencies to inquire. Regarding those cases, it may well be that the doxastic approaches characterized in §2.1. successfully locate their epistemic irrationality. Yet, inquirers such as Rahel and Gary seem to fail to settle on a belief at all, and instead engage in endless inquiries. Thus, the doxastic criticisms discussed so far don't apply to them. Do the zetetic approaches discussed in §2.2 fare any better at identifying what makes people like Gary or

[4] Of course, there are important differences too. While incest is perhaps morally transgressive, homosexuality is obviously not. Also, for simplicity, I treat the question "Am I homosexual?" roughly similar to the question "Do I have homosexual desires?". I am aware that knowing one's sexual orientation is more complex than knowing one's desires (Wilkerson 2009; Dembroff 2016, p. 20f.). I will return to this in Note 6.

Rahel epistemically irrational? In the next section, I suggest that they don't.

4. THE RATIONAL SEXUAL

ZR governs inquiries relative to the subject's available evidence. Do Rahel and Gary violate ZR? In order to answer this question, we need to take a closer look at their evidential situation. In the next subsections, I will argue that such sufferers of S-OCD are unlike Friedman's incessant checkers in that their internal evidence—*i.e.,* thoughts, fantasies and desires—and their external evidence—*i.e.,* actions and behavioral patterns—leave them in a state of uncertainty about the question they're inquiring into (§4.1.). I deny that their inquiries are irrational independent of ZR (§4.2.) and argue that their attempts at collecting conclusive evidence are systematically undermined (§4.3.). As a result, Gary and Rahel *never* arrive in one of the shaded areas of *Figure 1*. They do not violate ZR.

4.1. REPRESSED DESIRE

Which external evidence does Gary possess? Let's assume that Gary never acted in any way which could be taken to express a desire for his mother. This speaks against the hypothesis that he is attracted to her. Yet, this line of argument is not automatically conclusive for him.

To begin with, Gary's past behavior is not necessarily indicative of the desires he entertains now. Clearly, we can desire something we never desired before. Also, a desire can be *had* without being put to action. In addition, incest is such a taboo and potentially harmful to his loved ones, that even if Gary had an according desire strong enough to act on, he would take care not to do so. Hence, his inquiry into the question of whether or not he is sexually attracted to his mother seems to be compatible with many different types of outward behavior, even behavior that does not straight-forwardly express a desire. A similar argument applies to Rahel's situation.

As a result, Gary may turn to internal evidence—like many sufferers of OCD in fact do (Salkovskis and Wahl 2004, p. 159). What is his situation there? First of all, he has intrusive sexual fantasies about his mother. Taken by itself, this speaks for the hypothesis that he is attracted to her. True enough, he doesn't enjoy these fantasies. However, it could be that because incest is

such a taboo, he doesn't even allow himself to recognize his enjoyment and suppresses it successfully. It's possible that Gary has *repressed* desires such that even repeated introspection is unable to recover them.

This is not some *ad hoc* theory. Feminist scholarship has highlighted how social norms influence and potentially hide our sexual desires from ourselves (e.g. Srinivasan 2021). For example, it's well known that many people who came out as gay later in their life, report an inability to feel their desires beforehand (Jensen 1999). For someone like Rahel, this makes it worse since she can't trust her conscious feelings to be genuine expressions of her 'true' desires; societal pressure might keep her from realizing her homosexual desires. It seems plausible, then, to assume that sufferers of OCD like Gary and Rahel can't trust their internal evidence to reliably signal their desires.

For these reasons Gary's and Rahel's evidence leaves them in a state of *uncertainty*. Their internal and external evidence neither overwhelmingly supports nor rejects the hypotheses they're interested in. Different from Friedman's incessant checkers, it's not the case that their evidence makes it clear which conclusions they ought to draw. As a result, the reasons why incessant checking is epistemically transgressive don't apply to those inquiries into one's own desires. And with respect to Kampa's formulation, it seems safe to say that an uncertain situation licenses credence levels which permit further inquiry. Thus, the credences Gary and Rahel should attribute to their respective hypotheses lie in the 'middle zone' of *Figure 1*.

So far, this shows that the evidence people like Gary and Rahel possess doesn't make their inquiries irrational *at a specific point in time*. However, this neglects the fact that Gary and Rahel are inquiring. After all, they are trying to gather *new* evidence. Why can't this new evidence provide them with a conclusive reason to end the inquiry?

4.2. TRANSPARENCY AND EXPERIENCE

For starters, it could be that Gary and Rahel's inquiry is such that they don't actually acquire new evidence. In that case, their evidential uncertainty would be a necessary implication of a failure to increase their epistemic standing. Clearly, if you just repeat the same thoughts over and over again, this will not provide you with any new data. However, as discussed in §3, I

take people like Gary to genuinely engage in inquiries which are not just an endless repetition of the same thought. For instance, if Gary spends hours pondering a certain interaction he had with his mother, he most likely will discover more evidence than if he didn't. He may register details and nuances of his own behavior and inner life which he wouldn't have otherwise. We can think of Gary as possessing a detailed registry of his sensations in the presence of his mother. Such a sufferer of S-OCD is in the paradoxical situation that, in gathering new evidence, they are not getting closer to settling the question. Why is this so?

One idea is that they are simply using the wrong method. First, you could think that Gary and Rahel are looking for evidence where there isn't any to be had. According to one picture of introspection, questions about our desires are not answered as a result of an inference from evidence about ourselves but instead by making up our mind about what we *ought* to desire (e.g. Moran 2001). Clearly, doing so may involve inferences from evidence about the *object* of our desire. But it will not, typically, involve evidence about *ourselves*. If I want to know what I desire, I need to—according to this 'transparency' view—consider evidence about what actually *is* desirable and not about my own behavior or phenomenal experiences. Accordingly, Gary and Rahel wouldn't be settling on a belief because they'd apply a method (looking for evidence about themselves) which will not get them what they want (self-knowledge). Their inquiries are irrational, not in virtue of violating ZR, but instead of using the wrong method of inquiry to begin with.

Even though attractive, there are numerous reasons to doubt whether this picture really applies to the cases at hand. For Rahel and Gary already know what they want, they have made up their mind. Gary doesn't want to make a pass on his mother and Rahel doesn't want to be gay.[5] They don't need to make up their mind as to what they rationally ought to desire. Instead, they want to know which desires they already have. Additionally, the desires in question are not under their rational control. It is not true that Rahel can consider the reasons for and against being gay and then decide what she wants to be. She wants to know, in some

[5] By no means do I want to imply that being homosexual is not worth wanting. It seems to me that developing Rahel's sexual obsession presupposes an internalized negative evaluation of homosexuality—which, of course, is completely compatible with being homosexual (Williams and Wetterneck 2019, p. 25).

sense, what she already is.[6] Hence, a transparency picture of introspection is not well suited to account for the situation these sufferers of S-OCD find themselves in.

Second, you might think that Gary and Rahel use the wrong method, not because they fail to make up their mind, but because they are mistaken about the very nature of desire. It could be that desires aren't atomistic objects waiting for introspection, but instead have a 'reactive' dimension, *i.e.,* only develop fully in response to arousing situations (Angel 2021, p. 56ff.). Accordingly, if Gary and Rahel want to know their respective desires, they ought not to introspect in isolation, but instead engage in potentially arousing encounters and see what they *experience*.

With respect to Gary, this proposal is clearly absurd. But with respect to Rahel, you could plausibly think that to achieve a conclusive piece of evidence, she simply ought to try out how engaging in intimate same-sex activity feels. However, I think even in that case, it's not guaranteed that she will discover what her desires are. For in order to understand whether you enjoyed a particular experience, you need to abstain from immediately scrutinizing your reaction (cf. Holton 2016). But, if Rahel engages in intimate same-sex activity with the purpose of learning about her own desires, it's unlikely that she'd have such genuine, non-controlled expressions. For, given her OCD, it's probable that she'll be constantly interpreting and controlling her thoughts. Therefore, I don't think it's obvious that engaging in same-sex activity would reveal to her what her true desires are. Thus, she's not *irrational* if she doesn't.

These considerations show that the Gary's and Rahel's inquiries are not inconclusive because they fail to gather new evidence or use the wrong method to begin with. To the contrary, Gary and Rahel *do* gather new evidence and use a *permissible* method given the question they're interested in. Accordingly, you'd think they should at some point violate ZR, *i.e.,* arrive in one of the shaded areas of *Figure 1* where any

[6] It is a subject of ongoing debate to what extent, if at all, one's sexual orientation involves 'choice' (e.g. Wilkerson 2009). If it did, this would undermine looking for evidence as an appropriate method to realize one's sexual orientation. However, this is controversial. For instance, Robin Dembroff (2016) argues that sexual orientation depends on a *disposition* to feel arousal and engage in sexual relationships in ordinary circumstances. The type of inquiry Rahel engages in can be understood as an attempt to gain such modal self-knowledge, *i.e.,* knowledge of what she *would* feel and do if put into the right circumstances. Therefore, it can't be *presupposed* that looking for evidence is an irrational method of inquiring into one's sexual orientation.

further inquiry is transgressive. However, in the next subsection, I will present some reasons to believe that people like Gary and Rahel *never* arrive in the shaded areas of *Figure 1*. As result, they don't violate ZR.

4.3. RATIONAL SELF-MISTRUST

Gary and Rahel are strongly motivated not to be gay or incestuous, respectively. If Gary came to the firm conclusion that he is not attracted to his mother, and if Rahel realized that she was in fact not gay, they would avoid the stress of having to cope with numerous societal sanctions. Such societal stigma has a clear affective dimension. Gary knows that he would feel immense relief if he reached the conclusion that he has no incestuous desires. A desire to feel this relief might draw him to that conclusion. Thus, not only do these motivations raise the possibility of repressed desires as discussed in a previous subsection (§4.1.), it also makes it very plausible that Gary and Rahel are engaged in *motivated reasoning* (Kunda 1990). Their societal and emotional motivation may skew their inquiries into one direction and lead to a biased assessment of the evidence. For instance, Rahel may selectively search her past for instances where she clearly experienced *hetero*sexual desires.

Now if sufferers of S-OCD are *aware* of the possibility of motivated reasoning, this awareness might corrupt their inquiries. If I know I'm highly motivated to reach a specific conclusion, a natural response to this knowledge is to lower confidence into the results of my inquiry. If my attitude towards my own inquiry is such mistrust, however, I don't really gather evidence in the full sense of the word; whatever I gather, I shouldn't trust. Therefore, I won't be able reach a conclusion. This is, I suggest, what's happening with Gary's and Rahel's inquiries. They understand that they're heavily biased towards one conclusion. In response they mistrust their abilities at gathering and assessing evidence. As a result, they do gather new evidence which they don't trust. Hence, they won't settle on a belief.[7]

Importantly, this all seems entirely rational. Knowing your own biases might make it *rational* to mistrust the evidence you

[7] This presupposes that Rahel and Gary *are* aware of their motivational biases. I think that, given the prevalence of 'insight' in OCD, there is good reason to grant this assumption.

gather. In such cases, I might be rationally justified in *mistrusting* myself. Put differently, if you have good reason to believe that you're biased, underconfidence in your judgement may be rationally permissible, perhaps even mandated.

Hence, I propose that it is *rationally justified self-mistrust* which keeps Gary and Rahel from settling on a belief. Even though they do gather new evidence, they don't trust themselves to acquire and assess their evidence correctly. As a result, they keep on inquiring. Importantly, though, they do not violate ZR. For, given their own unreliability, it is not the case that after a certain level of evidence thought should have reached a firm conclusion and settled on a belief. The evidential situation of a sufferer of S-OCD like Gary or Rahel will be no less uncertain even after repeated investigation; they won't trust the evidence they're gathering. This answers why also *after* inquiring Gary and Rahel won't have arrived in one of the shaded areas of *Figure 1*. They never violate ZR. Hence, insofar as their OCD leads them to become epistemically irrational, all the discussed approaches (see *Table 3*) fail to capture what makes it so. Some sufferers of S-OCD don't violate any of the discussed doxastic requirements—because they fail to settle on a belief in the first place—nor do they transgress against the zetetic norm ZR.

Locus of Irrationality	Reason for Irrationality	Problems
Belief	a) Belief is formed based on mere possibility.	Potentially empirically and theoretically inadequate. Doesn't apply to inquiries.
	b) Belief is formed based on low probability.	
	c) Belief is formed and/or maintained despite a better supported alternative.	
Inquiry	d) Inquiry is continued even though a firm conclusion should have been reached (ZR).	Doesn't apply to some sufferers of S-OCD

Table 3: Updated Doxastic and Zetetic Accounts of the Epistemic Irrationality of OCD, including their problems.

But also people without OCD are affected by societal motivational biases. Hence, if the societal stigma was the only reason for why Gary's and Rahel's inquiries fail to get them out of their uncertainty, then it would be mysterious how *anyone* could ever reach a conclusion about their taboo sexual desires. While, I do think that the mechanism described here does illuminate why inquiries into sexual and otherwise taboo beliefs, desires or emotions become more *difficult*, I do take it that *some* inquiries about that work. Sometimes we can inquire into our sexual desires and other taboo mental states and realize what they are. So, motivational bias rooted in societal sanctioning can't be the only reason why sufferers of S-OCD don't arrive at a conclusive evidential situation. In order to argue that the inquiries of sufferers of S-OCD are especially unlikely to produce conclusive evidence, we would need to posit a characteristic *specific* to people with OCD.

The most promising strategy is, I think, to point to the unusually high epistemic standards applied by people with OCD. Sufferers of OCD are reported to have "elevated evidential requirements" (Salkovskis and Wahl 2004, p. 158) and say things like "I must continue to worry until I have covered all the possible problems that this worry raises" (Davey and Meeten 2016, p. 241). This suggests that sufferers of OCD have low tolerance for factors which might skew their inquiries such as the possibility of motivated reasoning. They are drawn to rigorous inquiries and long for certainty. Again, this is consistent with the idea of OCD leading to underconfidence (Hoven *et al.* 2019) and intolerance of uncertainty (Wilhelm 2001, p. 123; Taylor et al. 2010; Cochrane and Heaton 2017). Their intolerance of uncertainty makes it hard for people like Gary and Rahel to settle on a belief in spite of knowing that there is some chance their judgement might be biased. Unlike inquirers who are not affected by OCD, Gary and Rahel may want their inquiries to be *completely free* of any motivational biases. Members of the 'non-pathological' population would be ready to trust themselves despite minor motivational biases—if they are aware of them at all. Sufferers of OCD, on the other hand, are vigilant about their own biases and lose self-trust at awareness of *any* potential for motivated reasoning. Thus, I suggest that the reason why Gary's and Rahel's inquires don't become irrational are their high epistemic standards. They want their inquiries to be free of motivated reasoning and any biases. This is what keeps them

from settling on a belief. As a result they continue with their harmful and senseless inquiries. Therefore, it seems that part of their suffering is caused by an *excess* of epistemic rationality and not a lack thereof.[8]

The impression that people like Gary and Rahel are epistemically rational in many respects can be solidified. Consider the following epistemic duty proposed by Richard Hall and Charles Johnson (1998, p. 133, my emphasis):

> Duty (D): For every proposition that is less than certain on one's present evidence, one has an *epistemic duty* to seek more evidence about that proposition.

In an attempt to prevent D norm from obvious overreach, Neil Levy proposed that D only applies to important and controversial propositions (2006, p. 65).

Evidently, Gary and Rahel adhere to D perfectly, in fact, too perfectly. The questions Gary and Rahel inquire into *are* important high-stakes questions. If Gary concludes "Yes, I am sexually attracted to my mother" many incentives for action follow. Perhaps, he should avoid any contact with his mother and isolate himself. If, on the other hand, Rahel would conclude "Yes, I am a lesbian" she would need to adapt her self-image and maybe her lifestyle. Accordingly, Gary's and Rahel's continued inquiry excel in following the zetetic norm D.

Therefore some sufferers of S-OCD adhere to many epistemic norms. They gather new evidence in an uncertain situation, react appropriately to the stakes connected with their inquiries and are aware of their own motivational biases. They don't violate ZR, since the objective credences of the hypothesis they're interested in doesn't change through the course of the inquiry, but instead remains in the 'middle zone' of *Figure 1*. Instead of transgressing against epistemic rationality, thus, people like Gary and Rahel engage in epistemic activities many epistemologists would applaud for their rationality. If anything, these sufferers of OCD seem to be *too* rational.

---

[8] One could also see having a tendency to doubt as the basic phenomenon, explaining why people like Gary and Rahel have such high epistemic standards. However, having high epistemic standards explains why one has the tendency to doubt *in a better way* than the other way around. For, having high epistemic standards can be cited as a *rationally justifying reason* for why one has the tendency to doubt. Whereas having the tendency to doubt cannot be cited as a *justifying reason* for why one has higher epistemic standards, even if it may be a *causal explanatory reason.* Thanks to an anonymous reviewer for pressing me on this point.

Now, of course, my argument doesn't show that sufferers of OCD aren't epistemically irrational *all things considered*. After all, they may violate other doxastic or zetetic norms so far neglected by the literature. For instance, it could be that setting such excessively high standards of belief is simply epistemically irrational. Alternatively, it may be that people like Gary and Rahel violate a distinctively epistemic norm by inquiring into questions they have reason to think that they cannot answer. In addition, it might well be that they become epistemically irrational *in virtue* of their OCD inducing pragmatic irrationality (cf. the idea of "pragmatic encroachment", *i.e.*, pragmatic concerns 'bleeding into' epistemic matters).

While exploring these possibilities is an important task for future work, the existing approaches fail to establish a criterion of epistemic irrationality that applies to all sufferers of OCD. Doxastic accounts don't manage to capture cases where OCD seems to primarily manifest in inquiries. The proposed violation of the zetetic norm ZR doesn't apply to certain sufferers of S-OCD like Gary and Rahel. Obsessions about your sexual desires call for a more nuanced and detailed view of epistemic irrationality than assumed in the philosophical literature and the diagnostic/therapeutic manuals mentioned at the beginning. This indicates the potential for further fruitful work at the intersection of the philosophy of psychiatry and epistemology.

5. CONCLUDING REMARKS

Recent philosophical work (e.g. Bortolotti 2009; 2020; Ratnayake 2021) challenged the idea that mental health conditions can be characterized with reference to epistemic irrationality. If sufferers of mental health conditions are irrational, then so are many non-pathological individuals. Such arguments are often inspired by a political motive of destigmatizing mental health conditions by rendering them on a spectrum with non-pathological phenomena. I consider this convincing and important. Given my arguments in this paper, how does it apply to sufferers of OCD?

As shown in §2.1. if the epistemic irrationality of OCD is located in doxastic attitudes, the argument applies neatly. There's a plethora of evidence that also non-pathological people engage in jumping to conclusions and adopt beliefs despite better confirmed alternatives.

What about the zetetic approaches discussed in §2.2.? The empirical findings cited throughout suggest that *there is* a difference in inquiry-behavior between sufferers of OCD and non-pathological subjects. Sufferers of OCD are said to inquire longer into uncertain propositions (Harkin and Mayes 2008; Toffolo *et al.* 2014), trust their judgements less (Hoven *et al.* 2019) and learn less well about failures of inquiries (Najmi *et al.* 2010). Violations of zetetic norms like ZR, then, seem like a promising candidate of locating an irrationality *specific* to OCD.

In §4, however, I've argued that ZR isn't able to capture the irrationality of a specific class of sufferers of S-OCD. People like Gary and Rahel who worry about their own sexual desires and are affected by rational self-mistrust don't transgress against ZR. So, even though many suffers of OCD may violate ZR and become epistemically irrational thereby, this doesn't apply to all cases of OCD.

You may take this to mean that people with OCD are not epistemically irrational at all as none of the discussed accounts are able to capture all cases. Personally, I favor a more pluralistic conclusion. OCD is long known to be a very heterogenous condition (Abramovitz *et al.* 2009). This poses problems for biological and cognitive models as most characteristics only fit a restricted subset of sufferers. In this paper, I have suggested that OCD is also heterogenous with respect to its *epistemic* features. Some sufferers will be epistemically irrational in virtue of their OCD-induced beliefs. Others will be epistemically irrational because they violate ZR due to their underconfident inquiries. And some might be epistemically irrational in virtue of a violation of other zetetic norms or pragmatic irrationality. Perhaps there are even sufferers of OCD which are not epistemically irrational at all. I don't see any *a priori* problems in accepting such a pluralistic picture.

(7'452 words)

REFERENCES

Abramowitz J.S., Taylor S., McKay D., (2009), "Obsessive-compulsive disorder", *Lancet*, 374 (9688): pp. 491-9.

American Psychiatric Association (2013), *Diagnostic and statistical manual of mental disorders* (5th ed.), Arlington, VA: American Psychiatric Association.

Angel, K. (2021), *Tomorrow Sex Will Be Good Again: Women and Desire in the Age of Consent*, London: Verso.

Beck, Aaron (1976), *Cognitive Therapy and the Emotional Disorders*, New York: International Universities Press.

Bhatia, M. S., & Kaur, J. (2015), "Homosexual obsessive compulsive disorder (HOCD): A rare case report", *Journal of clinical and diagnostic research*, 9(1): pp. 1-3.

Bortolotti, L. (2009), *Delusions and Other Irrational Beliefs*, Oxford: Oxford University Press.

—(2013), "Rationality and Sanity: The Role of Rationality Judgments in Understanding Psychiatric Disorders" in K. Fulford, M. Davies, R. Gipps, G. Graham, J. Sadler, G. Stanghellini, and T. Thornton (eds.), *The Oxford Handbook of Philosophy and Psychiatry*, Oxford: Oxford University Press.

— (2020), *The Epistemic Innocence of Irrational Beliefs*, Oxford: Oxford University Press.

Cochrane, T., & Heaton, K. (2017), "Intrusive uncertainty in obsessive compulsive disorder", *Mind & Language*, 32 (2): pp. 182–208.

Craigie, J., & Bortolotti, L. (2015), "Rationality, Diagnosis, and Patient Autonomy in Psychiatry", in Sadler, J., Fulford, K. W. M., & van Staden, W (eds.), *The Oxford Handbook of Psychiatric Ethics. International Perspectives in Philosophy and Psychiatry,* Oxford: University Press.

Davey, G., & Meeten, F. (2016), "The perseverative worry bout: A review of cognitive, affective and motivational factors that contribute to worry perseveration", *Biological Psychology* 121: pp. 233–243.

Dembroff, R. (2016), "What is Sexual Orientation?", Philosophers' Imprint, 16(3): pp. 1–27.

Friedman, J. (2019a), "Checking again", *Philosophical Issues,* 29(1): pp. 84–96.

— (2019b), "Inquiry and Belief", *Noûs*, 53: pp. 296–315.

— (2020), "The Epistemic and the Zetetic", *The Philosophical Review* , 129 (4): pp. 501–536.

Gillett, C. B., Bilek, E. L., Hanna, G. L., & Fitzgerald, K. D (2018), "Intolerance of uncertainty in youth with obsessive–compulsive disorder and generalized anxiety disorder", *Clinical Psychology Review*, 60: pp. 100–108.

Haase, M. (2002). "Living with 'obsessive compulsive disorder.'", in Max van Manen (ed.), *Writing in the Dark: Phenomenological Studies in Interpretive Inquiry*, Althouse Press: pp. 61–83.

Hall, R.J., & Johnson, C.R. (1998), "The epistemic duty to seek more evidence", *American Philosophical Quarterly* 35: pp. 129–40.

Harkin, B. L., & Mayes, G. M. (2008), "Implicit awareness of ambiguity: A role in the development of obsessive–compulsive disorder", *Behaviour research and therapy*, 46(7): pp. 861–869.

Holton, R. (2016), "Addiction, Self-signalling, and the Deep Self", *Mind & Language,* 31: pp. 300–313.

Hoven, M., Lebreton, M., Engelmann, J.B. et al. (2019), "Abnormalities of confidence in psychiatry: an overview and future perspectives", *Translational Psychiatry* 9, 268.

Jensen, K. L. (1999), "Lesbian epiphanies: Coming out later in life", New York: Binghamton.

Kampa, S. (2020), "Obsessive–compulsive akrasia", *Mind & Language*, 35: pp. 475–492.

Kunda, Z. (1990), "The case for motivated reasoning", *Psychological Bulletin, 108*(3), 480–493.

Levy, N. (2006), "Open-Mindedness and the Duty to Gather Evidence", *Public Affairs Quarterly,* 20(1): pp. 55–66.

Moran, R. (2001), *Authority and Estrangement. An Essay of Self-Knowledge,* New Jersey: Princeton University Press.

Morein-Zamir S., Shapher S., Gasull- Camos J., Fineberg N.A., Robbins T.W. (2020), "Avoid jumping to conclusions under

uncertainty in Obsessive Compulsive Disorder", *PLoS ONE* 15(1).

Najmi, S., Reese, H., Wilhelm, S., Fama, J., Beck, C., & Wegner, D. M. (2010), "Learning the Futility of the Thought Suppression Enterprise in Normal Experience and in Obsessive Compulsive Disorder", *Behavioural and Cognitive Psychotherapy*, 38: pp. 1-14.

Noggle, R. (2016), "Belief, quasi-belief, and obsessive–compulsive disorder", *Philosophical Psychology*, 29(5): pp. 654–668.

O'Brien, L. (2013), "Obsessive thoughts and inner voices", *Philosophical Issues*, 23(1): pp. 93–108.

O'Connor, K., & Robillard, S. (1995), "Inference processes in obsessive-compulsive disorder: some clinical observations", *Behaviour Research and Therapy* 33(8): pp. 887–896.

Pallanti, S., Grassi, G., Cantisani, A., Sarrecchia, E., & Pellegrini, M. (2011), "Obsessive–compulsive disorder comorbidity: clinical assessment and therapeutic implications", *Frontiers in psychiatry*, 2, 70: pp. 1–11.

Ratnayake, S. (2021), "It's Been Utility All Along: An Alternate Understanding of Cognitive Behavioural Therapy and The Depressive Realism Hypothesis", *Philosophy, Psychiatry, Psychology*.

Ratnayake, S. and Poppe, C. (2020), "Ethical Issues in Cognitive Behavioral Therapy", in M. Trachsel, J. Gaab, N. Biller-Andorno, Ş. Tekin, & J. Z. Sadler (eds.), *The Oxford Handbook of Psychotherapy Ethics*, Oxford: Oxford University Press.

Salkovskis, P. M., & Wahl, K. (2004), "Treating obsessional problems using cognitive-Behavioral therapy", in M. A. Reinecke & D. A. Clarks (Eds.), *Cognitive therapy across the lifespan*, Cambridge: Cambridge University Press: pp. 138–171.

Srinivasan, A. (2021), *The Right to Sex*, London: Bloomsbury.

Taylor, E. (2020), "Discordant knowing: A puzzle about insight in obsessive–compulsive disorder", *Mind & Language*, online first: pp. 1–21.

Taylor, S., Coles, M. E., Abramowitz, J. S., Wu, K. D., Olatunji, B. O., Timpano, K. R., McKay, D. Kim, S., Carmin, C., & Tolin, D. (2010), "How Are Dysfunctional Beliefs Related to Obsessive-Compulsive Symptoms?", *Journal of Cognitive Psychotherapy*, 24(3): pp. 165–176.

Toffolo, M., van den Hout, M., Engelhard, I., Hooge, I., & Cath, D. (2014), "Uncertainty, checking, and intolerance of uncertainty in subclinical obsessive compulsive disorder: An extended replication", *Journal of Obsessive-Compulsive and Related Disorders*, 3(4): pp. 338–344.

Wilhelm, S. (2001), "Obsessive compulsive disorder", in W. J. Lyddon & J. Jones (eds.), *Empirically supported cognitive therapies: Current and future applications*, New York: Springer Publishing Company: pp. 118–133.

Williams, M. (2008), "Homosexuality Anxiety: A Misunderstood Form of OCD", in E. Sebeki (ed.), *Leading-Edge Health Education Issues*, Hauppauge NY: Nova Science Publishers: pp. 195–205.

Williams, M., & Wetterneck, C. (2019), "Understanding Sexual Obsessions", in, Williams, M., & Wetterneck, C. (eds.), *Sexual Obsessions in Obsessive-Compulsive Disorder: A Step-by-Step, Definitive Guide to Understanding, Diagnosis, and Treatment,* New York, NY: Oxford University Press.

Wilkerson, W. (2009); "Is It a Choice? Sexual Orientation as Interpretation", *Journal of Social Philosophy*, 40(1): pp. 97–116.