

## SUBMITTED ARTICLE

# The rationality of eating disorders

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Sufferers of eating disorders often hold false beliefs about their own body size. Such beliefs appear to violate norms of rationality, being neither grounded by nor responsive to appropriate forms of evidence. I defend the rationality of these beliefs. I argue that they are in fact supported by appropriate evidence, emanating from proprioceptive misperception of bodily boundaries. This argument has far-reaching implications for the explanation and treatment of eating disorders, as well as debates over the relationship between rationality and human psychology.

**KEYWORDS**

anorexia nervosa, bulimia nervosa, eating disorders, epistemic akrasia, rationality, treatment

## 1 | INTRODUCTION

Eating disorders are classically associated with false beliefs about body size (Bruch, 1962). Despite considerable evidence to the contrary, sufferers insist that they are overweight and must lose weight to obtain an acceptable body. This article explores the rationality of holding such beliefs. Specifically, I focus on norms of epistemic rationality, which specify that our beliefs must be grounded in and responsive to appropriate forms of evidence (Bortolotti, 2014). While sufferers of eating disorders appear to violate these norms, I will argue that such appearances are misleading.

I begin by introducing the false beliefs about body size associated with eating disorders and the norms of rationality that these beliefs appear to violate (Section 2). I outline the implications of this irrationality. These include philosophical implications regarding the relationship between rationality and human psychology and practical implications related to explaining and

treating eating disorders and empathising with those who suffer from them (Section 3). I defend the epistemic rationality of these beliefs by illustrating how they are, in many cases, supported by appropriate forms of evidence, emanating from proprioception (Sections 4 and 5). I finish by addressing how this account bears relevance to the outlined implications (Section 6).

## 2 | EATING DISORDERS AND EPISTEMIC RATIONALITY

To be epistemically rational is to proportion one's beliefs to the available evidence (Hume, 2000). Contemporary philosophical accounts distinguish two norms of epistemic rationality, related to belief formation and maintenance, respectively (Bortolotti, 2010). The first norm is to “form new beliefs that are firmly grounded on the available evidence” (p. 17). If one sees that there is a carton of milk in the fridge then it is rational to form the belief that there is a carton of milk in the fridge; it is irrational to form the belief that there is no milk in the fridge, 10 cartons of milk in the fridge, or a pair of shoes in the fridge. I will refer to this as the norm of *grounding*.

The second norm, which I will refer to as the norm of *responsivity*, is to “update existing beliefs when relevant evidence becomes available” (Ibid.). If I return to the fridge and see that the carton is gone, the norm of responsivity demands that I update my belief about the presence of milk in the fridge. To continue believing that there is milk in the fridge is to violate this norm.

Many who suffer from eating disorders (anorexia nervosa and bulimia nervosa) appear to violate both norms, in virtue of the beliefs that they hold about their own bodies. These disorders are classically associated with certain evaluative beliefs, for example, “I am too fat”, “I am not thin enough.”<sup>1</sup> However, evidence suggests that such beliefs themselves stem from false beliefs about bodily dimensions.

Decades of research suggests that people who suffer from eating disorders hold false beliefs about the size of their own bodies. The clearest evidence comes from experiments that present participants with line-ups of different sized bodies, asking them to identify the image that best represents their current body size (for a recent review, see, Mölbert et al., 2017). When faced with this task, participants with eating disorders consistently indicate body sizes much larger than their own. If they are willing to make such assertions (“that silhouette matches my body size”), this suggests that they believe that their bodies are larger; in other words, they hold false beliefs about their own bodily dimensions.<sup>2</sup>

At first glance, these beliefs appear to violate both the aforementioned norms of rationality. First, they appear *ill-grounded*: Given that people with eating disorders' bodies are not as large as they believe them to be, there seems to be no evidence that could ground their false beliefs. Accordingly, those who hold such beliefs violate the norm of grounding. Second, these beliefs appear *incorrigible*: resistant to counter evidence. A well-known and well-discussed feature of

<sup>1</sup>While not all those diagnosed with anorexia nervosa or bulimia nervosa hold such beliefs, my focus here is on those that do.

<sup>2</sup>While assertion is generally taken to be strong evidence of belief, an anonymous referee pointed out that assertion in these studies need not necessarily be interpreted as such. Participants may indicate larger bodies for various reasons. For example, responding to the demand characteristics of the experiment, or as a way in which to express emotional attitudes (for discussion of these issues, see Gadsby, 2021). For now, I assume that such assertions are indicative of belief. Later, I illustrate how those who suffer from eating disorders have sufficient reason to hold such beliefs. In doing so, I support the doxastic interpretation of these assertions.

eating disorders is that those who suffer from them are “extraordinarily resistant to efforts to persuade them to think anything else” (Vitousek, 1996, p. 388) and “strongly resistant to social feedback about their physical appearance” (Vandereycken & Van Humbeeck, 2008, p. 113). Despite the attempts of family, friends and clinicians to convince them of their true body size, people with eating disorders maintain their false beliefs. Accordingly, they violate the norm of responsiveness.

I will not defend the claim that holding these beliefs is *ideally* rational. Psychologists have persuasively demonstrated that human beings, by and large, do not live up to ideal norms of rationality (Kahneman, 2011). As Bayne and Pacherie (2005, p. 180) put it, “Given our finitary predicament—the computational, memory and time limitations we are subject to—it is actually irrational for us to aspire to ideal rationality.” What stands out about sufferers of eating disorders is not that they violate norms of rationality, but that they do so severely. They appear to have no evidence whatsoever in favour of their beliefs about body size but considerable evidence to the contrary, thus their beliefs appear entirely ungrounded by and irresponsive to evidence. What is interesting and important about eating disorders, then, is how severely sufferers appear to violate norms of rationality. In virtue of this severity, several implications follow, which I address next.

### 3 | THE IMPLICATIONS OF EPISTEMIC IRRATIONALITY

#### 3.1 | The functional characteristics of belief

One reason that philosophers take interest in examples of irrationality is for their promise in illuminating the functional characteristics of belief. Beliefs are standardly characterised as exhibiting four functional properties. First, they are appropriately sensitive to evidence—in other words, they are epistemically rational (Funkhouser, 2019, p. 37). Second, they produce appropriate behaviour. Believing that there is a carton of milk in the fridge causes behaviour such as asserting that there is a carton of milk in the fridge and walking to the fridge when it is time to prepare cereal. Third, beliefs are—as Stich (1978) phrased it—inferentially promiscuous, serving as premises to further inferences. Believing that there is no milk in the fridge leads one to infer that it is time to buy more. Finally, beliefs are practical-setting independent, producing the relevant inferential and behavioural effects regardless of context (Van Leeuwen, 2014).

Much philosophical debate surrounds the possibility that beliefs, or belief-like states, exhibit some of these characteristics but not others. For example, Levy (2020) argues that some beliefs are not setting independent, while Frankish (2009) argues that some beliefs do not produce appropriate behaviour. What stands out as philosophically important, then, about the body size beliefs associated with eating disorders, is that they exhibit a highly unconventional functional profile. These beliefs generate the appropriate behavioural and inferential consequences—weight loss behaviour and inferences such as “those clothes will not fit” (Casper et al., 1979, p. 60)—and do so regardless of context. However, they lack beliefs’ (arguably) most important feature, namely, being appropriately guided and constrained by evidence (Shah, 2003). If such beliefs are as epistemically irrational as they appear, then this demands a radical reshuffling of current mental-state taxonomies, along with an explanation for what kinds of beliefs (or belief-like states) they comprise.

This possibility is crucially relevant to understanding eating disorders. A straightforward explanation for the weight loss behaviour associated with these disorders is that it is caused by

a belief-desire combination: sufferers' desire to attain an ideal body size and belief that they have not yet done so (Gadsby, 2020).<sup>3</sup> However, the apparent lack of epistemic rationality invites the claim that sufferers of eating disorders do not, in fact, believe the relevant propositions ("my body is *this* size").<sup>4</sup> This would emphasise the importance of non-doxastic accounts of weight loss behaviour in eating disorders.<sup>5</sup>

In fact, some philosophers already assume that eating disorders involve philosophically relevant violations of the usual functional characteristics of belief. This is seen in debates over epistemic akrasia. In epistemic akrasia an agent holds a belief while simultaneously believing that the available evidence does not support that belief (Owens, 2002). In these debates, eating disorders are taken as a potential example of epistemic akrasia, wherein sufferers believe that they need to lose weight but also that the available evidence does not support that belief (Adler, 2006; Chislenko, 2016). Such debates assume that eating disorders involve severe violations of epistemic rationality, wherein sufferers possess evidence against their belief, recognise the significance of this evidence, but nevertheless fail to update their belief—violating the norm of responsiveness.

### 3.2 | Empathy

Beyond the foregoing theoretical implications, the epistemic rationality of eating disorders bears many practical implications, one of which relates to empathy for those who suffer from them. Family, friends and clinicians often find themselves unable to empathise with sufferers: "[F]ew outsiders can empathize with the plight of an emaciated adolescent distraught over the prospect of eating ice cream or stepping on a scale" (Vitousek et al., 1998, p. 398). As one former neuropsychologist notes, in recalling their first encounter with patients with eating disorders:

I am now sorry to say, I found them tiresome: I'd just finished a placement at a neurorehab centre working with people who were struggling to adjust to the cruel effects of stroke, traumatic brain injury or some other neurological catastrophe. They had what I considered to be "real" problems. Now here were these (I thought) precious young women just refusing to eat. (Broks, 2020).

One barrier to empathy for those with irrational beliefs is that we cannot imagine ourselves believing such things (Currie & Jureidini, 2001).<sup>6</sup> By dismissing people as irrational, we disengage from imagining ourselves in their situation and empathising with them. In this way,

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<sup>3</sup>This assumption is common among clinicians, as is evident in the following excerpt from a clinical handbook: "Controversies about details notwithstanding, both [anorexia nervosa] and [bulimia nervosa] include among their necessary criteria the issue of what, for the sake of brevity, might be called 'weight concern' ... [it is] deemed to be of the essence and to provide the motivation for the eating restraint which seems to be a key to the pathogenesis of [anorexia nervosa] and probably of [bulimia nervosa] too" (Palmer, 2005, p. 4).

<sup>4</sup>For a discussion of this line of argument in relation to delusions, see Bortolotti (2010, Chapter 3).

<sup>5</sup>To list some examples: the cognitive-interpersonal maintenance model claims that weight loss behaviour is a form of emotion regulation (Schmidt & Treasure, 2006); the habit model claims that, while initially driven by a belief-desire combination, weight loss behaviour becomes habitual and no longer under control (Walsh, 2013); finally, many claim that weight loss behaviour constitutes an attempt to establish a sense of control, which might occur in the absence of false beliefs about body size (Fairburn et al., 1999).

<sup>6</sup>While this claim is mostly found in theoretical discussions of irrational belief, it is consistent with recent empirical evidence outlining the importance of imagination to empathy (Vollberg et al., 2021).

judgements of irrationality undermine the possibility of empathy. This may lead to further problems, as some clinicians insist that empathy is necessary for successful treatment (Vitousek et al., 1998).

Judgements of irrationality may also reduce empathy towards people with eating disorders by inducing epistemic blame. As several philosophers have noted, when people violate norms of epistemic rationality—for example, “dogmatically continuing to believe a claim even after receiving evidence which undermines it” (Brown, 2020, p. 3596)—we often blame them for doing so (Rettler, 2018).<sup>7</sup> Perhaps, then, some find it difficult to empathise with sufferers of eating disorders because they consider them epistemically blameworthy, given the way in which they appear to flout norms of rationality. Given these considerations, the assumption that sufferers of eating disorders are irrational may be the key to understanding why many find it difficult to empathise with them.

### 3.3 | Treatment

A final issue relates to how we attempt to treat eating disorders and whether some forms of treatment are justified. Many treatment methods are premised on beliefs about body size being amenable to change. For example, some methods expose clients with eating disorders to perceptual evidence regarding their body size, in an attempt to dislodge their false beliefs (Delinsky & Wilson, 2006). However, if these beliefs are, as they appear, entirely unresponsive to counter-evidence, then such techniques will not succeed.<sup>8</sup>

Another issue related to treatment—directly tied to the question of epistemic rationality—pertains to the ethics of coercive treatment. Coercive treatment for eating disorders involves either confining someone to an inpatient facility or, in extreme cases, force feeding them (i.e., through nasogastric tube). While clinicians often resort to coercive treatment, its legal and ethical justification is contentious (Draper, 2000; Tan et al., 2006).

There is one scenario in which, most agree, coercive treatment is justified. This is in cases where individuals are incompetent to make decisions regarding their own treatment. One necessary condition for decisional competence (in most European and North American legal contexts) is the ability to reason (Grisso & Appelbaum, 1998). While there is some ambiguity over what forms of basic reasoning abilities are required (Hawkins & Charland, 2020), they are often specified as those that facilitate understanding and appreciation of the relevant medical facts (Matthews, 2000, p. 63). Being unable to appropriately respond to evidence regarding one's own physical condition (body size), and thus form accurate beliefs about this domain, is undoubtedly crucial to understanding and evaluating what is at stake.<sup>9</sup> In this way, the question of epistemic rationality is directly relevant to that of decisional competence.

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<sup>7</sup>While there is considerable debate over whether we should blame people for holding certain beliefs, philosophers generally accept that we do.

<sup>8</sup>One could argue that it is an empirical question whether such treatment methods work. If they do, then this validates the rationality of eating disorders. However, assessing whether these techniques work in virtue of changing the relevant beliefs is practically difficult. Eating disorder treatment generally combines techniques, so when success does occur it is difficult to assess the comparative contribution of each technique (Shafran et al., 2009). Additionally, many studies show little to no difference between eating disorder treatments, even when compared with non-eating disorder specific methods (Murray et al., 2019).

<sup>9</sup>Indeed, sufferers of eating disorders sometimes reject medical advice because it only applies to those who are “thin” (Tan et al., 2006, p. 7).

If people with eating disorders are entirely unresponsive to evidence regarding their body size, then they cannot reason appropriately about advice related to their physical health. Consequently, they qualify as decisionally incompetent and coercive treatment is justified (at least according to highly influential views). This issue holds deep practical importance. Not only do eating disorders, most notably anorexia nervosa, exhibit a high mortality rate (Arcelus et al., 2011), they are strongly associated with treatment refusal (Goldner, 1989). Furthermore, the irrationality of beliefs about own-body size is often cited by clinicians in justifying coercive treatment (Draper, 2000, p. 129).

## 4 | FALSE BELIEF AND PROPRIOCEPTIVE MISPERCEPTION

### 4.1 | Feeling fat: The misdescription view

A common complaint from people with eating disorders is that they “feel fat” (Linardon et al., 2018; Mehak & Racine, 2020). This is a well-recognised aspect of these disorders: It features in many theoretical models (of both anorexia nervosa and bulimia nervosa) (Fairburn, 2008) and is measured in the Eating Disorder Examination Questionnaire, one of the most common measures for assessing eating disorder symptomatology (Fairburn & Beglin, 1994).<sup>10</sup>

Feeling fat occurs with striking regularity. For example, Linardon et al. (2018) studied the prevalence of the phenomenon in a sample of 123 participants with anorexia nervosa and 51 participants with bulimia nervosa. Fifty-four percent of participants reported that they felt fat every day of the last 28 days (Linardon, personal communication). Indeed, many with eating disorders describe feeling fat as occurring at multiple times throughout the day. Some describe feeling this way “whenever they eat food, or meet friends” (Espeset et al., 2012, pp. 526–527), others, “all day long” (Keizer, 2014, p. 10).

Feeling fat is considered clinically important, as it drives the relevant bodily attitudes. As one clinical handbook notes “[f]eeling fat is a target for treatment because it tends to be equated with being fat (irrespective of the patient’s actual shape and weight) and hence maintains body dissatisfaction” (Murphy et al., 2010, p. 622). Simply put, people with eating disorders believe that they are fat because they feel that way.

Despite this feeling’s noted role in driving attitudes towards body size, there has been surprisingly little research into it. One likely reason is the clinical consensus that reports of feeling fat are misdescriptions: “[F]eeling fat is a result of mislabeling certain emotions and bodily experiences ... These typically are negative mood states (e.g., feeling bored or depressed) or physical sensations that heighten body awareness (e.g., feeling full, bloated or sweaty)” (Ibid.). According to clinicians, when their clients report feeling fat, they are misdescribing entirely distinct bodily experiences or emotions (McFarlane et al., 2011; Mehak & Racine, 2020; Zhang et al., 2014).

Note that, on this misdescription account, the body size beliefs associated with eating disorders would clearly violate norms of rationality, as feeling bored, depressed or sweaty is simply the wrong kind of experience to justify beliefs about bodily dimensions. Just as seeing milk and forming the belief that there is a pair of shoes in the fridge is irrational, so too is feeling sweaty and forming the belief that one is fat.

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<sup>10</sup>The questionnaire asks: “On how many of the past 28 days have you felt fat?”

Contrary to the misdescription account, I will argue that the evidence referred to in reports of feeling fat are not always distinct and irrelevant emotional or bodily experiences. Rather, these reports often refer to a form of proprioceptive misperception of bodily boundaries. In other words, when people with eating disorders report feeling fat, they are describing their experience accurately.

## 4.2 | Feeling fat: The misperception view

My argument that feeling fat involves misperception draws on three pieces of evidence. First, when people with eating disorders describe feeling fat, they often provide concrete, physical descriptions, of a form that seem unlikely to refer to unrelated emotional or bodily experiences. Second, the literature on illusions and mental disorders suggests that illusory experiences of body size are not only possible, but remarkably common, lending plausibility to the claim that such experiences could be implicated in the case of eating disorders. Third, empirical evidence suggests that eating disorders involve aberrant proprioceptive processing, of a form that would give rise to misperception of body size.

In discussion with someone with a prior diagnosis of anorexia nervosa, I asked her to describe her experience of feeling fat. She replied: “I feel as if my stomach extends to *this* point”, indicating, with her hands, a point five centimetres beyond the boundary of her abdomen.<sup>11</sup> What stands out about this description is its concrete nature: She could indicate, quite precisely, a difference in the felt dimensions of her body. In fact, concrete, physical descriptions of this kind are a common feature of first-person reports:

I feel fat all day long. I feel fat and fat rolls all over my body, and especially after I eat something *it feels as if my face, stomach and legs are blown up* ... When I'm around others, for example when we are sitting on a couch, or when we are eating, *it feels as if I take up too much space*. In these situations *I feel big and plump* ... (Keizer, 2014, p. 10; my emphasis).

I feel huge. I feel so goddamn fat ... I feel like a big blob ... It feels like I'm overflowing. (Wooldridge, 2018, pp. 196–197).

Heidi: I do not want to live like this for the rest of my life. But something happens when I eat. *It feels as my thighs immediately expand*. I know it is not possible but ...

Interviewer: But that is how you feel.

Heidi: Yeah, *physically* ... (Nordbø et al., 2012, p. 64; my emphasis).

According to the misdescription account, these reports refer to emotional or bodily experiences that do not involve differences in body size. In contrast, I will argue that we should take these reports at face value and accept that they refer to matching perceptual experiences.

### 4.2.1 | Body size misperception is common

Proprioception provides us with an awareness of our own bodily boundaries—where our bodies end and the world begins. This informs us about our body's location (my boundaries are located

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<sup>11</sup>Thanks to Manja Engel for discussing this experience with me and allowing me to relay her description.



at this point) and size (my body takes up this much space). While proprioception is, in typical cases, a reliable source of information about body size, there are a remarkable variety of ways in which it malfunctions, misleading us about our bodies.

Consider a few examples. If you have ever hit your thumb with a hammer—or caused yourself immediate pain in some other way—you might have felt it increase in size, despite looking the same (Valenzuela-Moguillansky, 2013). Similarly, if you have undergone local anaesthesia, you might have experienced a change in the size of the anaesthetised body part (Gandevia & Phegan, 1999).

Indeed, proprioceptive illusions of body size are remarkably simple to induce. For example, consider the phantom nose illusion (Ramachandran & Hirstein, 1998). In this illusion, one participant sits, blindfolded, behind another. An experimenter takes the blindfolded participant's finger and taps it on the nose of the participant in front, while at the same time tapping the blindfolded participant's nose. If the illusion is successful, the blindfolded participant reports feeling that their nose extends to where their finger is tapping.

Misperception of body size is also a feature of numerous syndromes. For example, those who suffer from Alice in Wonderland syndrome—a condition which is commonly associated with migraines—experience their bodies as growing larger or smaller:

I have a very peculiar feeling of being very close to the ground as I walk along. It is as though I were short and wide, as the reflection in one of those broadening mirrors one sees in carnivals, etc. Of course I know it isn't true. (Lippman, 1952, p. 349; cited in Pitron & de Vignemont, 2017, p. 118).

A feeling that I was very tall. When walking down the street I would think I would be able to look down on the tops of others' heads, and it was very frightening and annoying not to see as I was feeling. The sensation was so real that when I would see myself in a window or full-length mirror, it was quite a shock to realise that I was still my normal height of under five feet. (Ibid.)

These reports refer to proprioception misperception of body size, inconsistent with these individuals' beliefs or visual experience.

The phantom limb phenomenon also involves proprioceptive misperception of body size. Here, amputees describe feeling the spatial presence of their former limb (Ramachandran & Hirstein, 1998). As in the case of eating disorders, many can describe this feeling in “fairly precise spatial terms” (Ratcliffe, 2019, p. 82).

Researchers take the foregoing reports at face value, accepting that they refer to genuine (albeit illusory) experiences of body size. I suggest that we adopt the same attitude towards the reports of feeling fat associated with eating disorders. Doing so leads to the hypothesis that these disorders involve proprioceptive misperception of body size. As I will illustrate, this hypothesis is eminently plausible in light of the available evidence.

#### 4.2.2 | Eating disorders and distorted body models

Proprioception is underpinned by afferent signals emanating from a wide variety of receptors tracking the properties of our skin, tendons, muscles and joints. To compute our bodily boundaries, these signals must be combined with information regarding the spatial properties of the



body itself (Proske & Gandevia, 2012). This information is stored in a neural representation, often referred to as the *body model* (Longo & Haggard, 2010). Because perception of bodily boundaries is determined by the content of the body model, if this model misrepresents our body size, then we misperceive these boundaries.

There is strong evidence to suggest that, in eating disorders, the body model misrepresents body size. First, note that this model not only underpins perception of our bodily boundaries, but also our ability to control our bodies and assess potential actions (Peviani & Bottini, 2018). This is because in order to process body size appropriate motor commands, information about the size and shape of the body (derived from the body model) is required.<sup>12</sup>

Evidence suggests that those who suffer from eating disorders both act and assess their ability to act as if they had larger bodies. For example, when passing through doorways, they turn their shoulders as if their bodies were wider than reality (Beckmann et al., 2020; Keizer et al., 2013; Metral et al., 2014). They also judge their ability to pass through doorways, and other apertures, as if their bodies were wider (Engel & Keizer, 2017; Guardia et al., 2010; Guardia et al., 2012; Metral et al., 2014). In the psychological literature, this is taken as strong evidence for the claim that the body models of people with eating disorders represent them as larger (Gadsby, 2017a).<sup>13</sup>

If, as researchers assume, the body model underpins perception of bodily boundaries, then sufferers of eating disorders would misperceive these boundaries—consistent with the concrete, physical descriptions of feeling fat that many provide.

## 5 | RETURNING TO RATIONALITY

### 5.1 | Grounding

The norm of grounding states that our beliefs must be formed in response to appropriate evidence. At first glance, the body size beliefs associated with eating disorders appear to violate this norm; because sufferers are much thinner than they believe themselves to be, it seems as if there is no evidence to ground their beliefs. Contrarily, I argued that sufferers do possess appropriate evidence, provided by proprioception. The issue at hand, however, is normative rather than descriptive. While people with eating disorders may possess evidence suggesting that their bodies are larger, the important question is whether they should (rationally) form beliefs based off such evidence. As I will show, there are several reasons why it is rational to do so.

First, note that proprioception is a consistently reliable source of information about our bodies. For most of us, being severely misled about the boundaries of our bodies is rare. Because proprioception is reliable, there is good reason to trust what we feel, endorsing evidence provided by this sense.

Of course, proprioception should not always be trusted. Consider the aforementioned examples of misperception. Those who suffer from Alice in Wonderland syndrome do not believe

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<sup>12</sup>In the literature on motor control, this representation is more commonly referred to as the body schema. Nevertheless, there is good reason to assume that the labels “body model” and “body schema” refer to the same representation (Gadsby, 2019, p. 7).

<sup>13</sup>It is worth noting that, thus far, these experiments have only been conducted on participants diagnosed with anorexia nervosa or “eating disorder not otherwise specified.” Nevertheless, given the close relationship between the categories of eating disorders (Fairburn, 2008, p. 17), it seems likely that, if tested, participants with bulimia nervosa would exhibit similar behaviour.

that they are suddenly 8 ft tall and people experiencing the phantom nose illusion do not believe that their nose is suddenly 3 ft long. Nor should they. It would be irrational to endorse these illusory experiences, or any experience where the likelihood of the relevant state of affairs is particularly low. The events represented by such experiences are implausible: people do not suddenly grow 3 ft, nor do their noses. Given this implausibility, the more rational response is to believe that such experiences are illusory, which is precisely what those who experience these illusions do.

There is, however, an important difference between the aforementioned illusions and the kinds of proprioceptive misperception associated with eating disorders: In many cases, the experience of feeling fat is plausible. Unlike with phantom noses, phantom limbs and Alice in Wonderland syndrome, many of these experiences simply convey the content that particular body parts are larger than reality (though still within a reasonable range for humans).<sup>14</sup> In cases where proprioception provides us with plausible evidence regarding body size, it is epistemically rational—or at least not severely epistemically irrational—to form beliefs based on that evidence.

## 5.2 | Revisability

Contrary to appearances, the body size beliefs associated with eating disorders are grounded in appropriate forms of evidence and therefore, in holding them, sufferers do not violate the norm of grounding. This leaves the norm of revisability. The issue here is that although these beliefs may be formed in response to appropriate evidence, they nevertheless appear inappropriately resistant to counter evidence. To assess whether this feature violates the norm of revisability, we must separately consider two forms of counter evidence—emanating from testimony and perception, respectively—and assess the effect they ought to have, given their co-occurrence with proprioceptive misperception.

### 5.2.1 | Testimonial counter evidence

The incorrigibility of false body size beliefs in eating disorders is a well-known source of frustration for clinicians—despite their attempts to provide clients with accurate information regarding body size, those clients persist with their false beliefs. For our purposes, the important question is whether, given the proprioceptive evidence that they possess, this lack of response to testimony constitutes a (severe) violation of the norm of revisability. As I will show, certain features of the relevant context explain why testimony fails to produce the expected effect.

The first thing to note is that proprioception provides a form of *first-person* evidence, which cannot be made available to others (Bayne & Pacherie, 2005, p. 183). One can only proprioceptively experience the size of their own body, and this experience cannot be shared. This does not entail that it is epistemically inferior—many of our beliefs are based on first-person evidence, for example, memories of past events—but it does entail that the evidence

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<sup>14</sup>This is not to say that all instances of feeling fat are plausible, for example, experiencing one's body suddenly expanding after eating is not (Nordbø et al., 2012, p. 64). Rather, instances of misperception would fall on different ends of a spectrum of plausibility, with some (one's thighs suddenly expanded) falling closer to the implausible end and others (one's abdomen extending to a proximate point in space) falling closer to the plausible end.

cannot be shared with others. Consequently, it cannot be held up for scrutiny and dispute and therefore cannot be easily contradicted by third parties (Hohwy & Rosenberg, 2005, p. 146). Beliefs grounded by proprioceptive evidence are thus difficult to change via testimony.

While such evidence cannot be shared, it can be referred to. And, on inspection of first-person reports, many sufferers do refer to this evidence when called on to justify their beliefs, for example, responding “I can feel my body ... it just feels big” (O’Connell et al., 2018, p. 5). While such individuals may appear to be simply dismissing testimonial evidence, my account suggests a different story: they are responding to challenges with reference to evidence of their own. The issue is simply that this form of evidence cannot be shared and appropriately scrutinised.

What appears like an outright dismissal of testimonial evidence may instead be an instance of a much more common phenomenon, namely, trusting first-person evidence over the testimony of others. Indeed, this interpretation is consistent with observations from those who have interviewed people with eating disorders. As O’Connell and colleagues note, “As experts of their own bodies, they did not trust input from others that suggested their perceptual experience may be incorrect” (Ibid.).

## 5.2.2 | Perceptual counter evidence

A more significant challenge to the epistemic rationality of body size beliefs in eating disorders refers to perceptual counter evidence. The most appropriate form of this evidence stems from vision, for example, during mirror exposure.<sup>15</sup> There is some uncertainty regarding what people with eating disorders see when they look in the mirror. Some insist that they visually perceive themselves as larger than reality, though behavioural evidence in support of this has not yet emerged (Gadsby, 2021). Others claim that they see themselves as thin, despite this contradicting how they feel (Espeset et al., 2012). As one clinician describes, “although usually they may perceive their wasted body visually, they do not ‘feel’ the emaciation” (Vandereycken, 2006, p. 344). For present purposes, I will assume that some sufferers accurately visually perceive their body size, and I will discuss what is expected of such individuals according to the norm of revisability.

First, note that, in many cases, visual perception of body size is much less regular than proprioceptive misperception. Apart from the fact that mirror viewing does not, generally, take place multiple times a day, many people with eating disorders avoid viewing themselves in the mirror altogether (Fairburn et al., 1999), or if they do, focus on “trouble areas” rather than the body as a whole, in order to assess body size in a limited way (Tuschen-Caffier et al., 2015). So if accurate visual perception does occur, it does so less commonly than the proprioceptive misperception described—consequently, it is less influential. When considered in terms of the amount of evidence, this suggests that people with eating disorders may not dismiss visual evidence but rather that such evidence is unable to outweigh proprioception.

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<sup>15</sup>There is some debate over whether, and in which ways, people with eating disorders accurately perceive their own body size. For example, evidence suggests that eating disorders may involve sensory disturbance in several modalities, which may further impede sufferer’s ability to accurately judge their body size (Gadsby, 2017b). These other forms of sensory disturbance may also reinforce false beliefs about bodily dimensions, in combination with proprioceptive misperception. To address that possibility is beyond the scope of this paper, so I have narrowed my focus here to proprioception alone.

More importantly, it is difficult to specify the rationally mandated response when someone with an eating disorder experiences a single event involving sensory evidence (visual or otherwise) conveying their true body size. Psychologists often approach the question of whether mental disorders involve irrationality by proposing rationally expected responses to an instance of new evidence and assessing whether groups respond in this way (Coltheart et al., 2010; McKay, 2012). However, while there is a way to answer the theoretical question of expected rational response, it is difficult to apply this to real world cases. This is because we do not possess all the relevant psychological facts, such as the individuals' background beliefs, the kinds of hypotheses that they are likely to generate in the face of the evidence, how trustworthy they rate different sensory modalities and so on. In real-world cases we do not possess this information, and it is practically difficult to obtain. Thus we cannot make appropriately informed predictions about how individuals should react to single exposures to unusual evidence.

In assessing the rationality of beliefs, a better relationship to consider is between a belief and one's total body of evidence, gathered over time (Worsnip, 2018). In the context of eating disorders, we must consider how body size beliefs shift once a substantial body of contradictory evidence has been gathered.

Consider someone who is far along the course of their eating disorder. They have suffered from reoccurring proprioceptive misperception, providing evidence that their bodies are large. At the same time, they have been exposed to considerable evidence to the contrary: testimony from family, friends and clinicians, as well as accurate visual perception of their body. What do the norms of epistemic rationality demand when someone is faced with significant, contradictory evidence of this kind?

One rational response, highlighted by philosophers, is to suspend one's judgement (Friedman, 2013; Raleigh, 2021; Worsnip, 2018). This should not be conflated with believing nothing. Rather, suspended judgement is a unique doxastic attitude, one that is rational in the face of equivocal evidence. Suspended judgement is precisely what we see in many cases of eating disorders. Those who are further along the course of their disorders—having amassed significant contradictory bodies of evidence—often suspend their judgement, claiming “I don't know how I really look” or “I've lost my sense of reality” (Espeset et al., 2012, p. 522).

While eating disorders are well known for the strength with which body size beliefs are initially held (at the point of diagnosis and early treatment) (Vitousek et al., 1998), research conducted on those in the later stages of their disorders suggests that a significant number exhibit low confidence regarding the true size of their own bodies (for a recent review, see Phillipou et al., 2017). This suggests that, contrary to appearances, many who suffer from eating disorders respond rationally to the evidential circumstances that they find themselves in: At first, trusting their proprioceptive evidence and, after time, suspending judgement about their body size.

## 6 | IMPLICATIONS

According to the proposed account, the false body size beliefs associated with eating disorders are not ill-grounded. Rather, they are grounded by re-occurring proprioceptive misperception. Further, these beliefs are not incorrigible. Counter evidence is, at first, simply outweighed by proprioceptive evidence. After time (once sufficient contradictory evidence has been gathered) many who suffer from eating disorders suspend judgement about their body size, as norms of rationality dictate.

This account suggests that eating disorders may not represent the case study in irrationality that many philosophers have assumed. Consider debates over the possibility of epistemic akrasia. In those debates, eating disorders are taken as a potential example of epistemic akrasia, wherein sufferers believe both that they need to lose weight and that the available evidence contradicts that belief. Philosophers in these debates propose different explanations for this apparent akrasia, in terms of how sufferers attend to the relevant thoughts (Adler, 2006) or attribute their own beliefs (Chislenko, 2016). In both cases, philosophers take their ability to explain eating disorders as an explanatory benefit of their accounts.

My argument suggests a different position, namely, that assuming that eating disorders involve epistemic irrationality (and consequently epistemic akrasia) is unwarranted. According to my account, people with eating disorders possess sufficient evidence in favour of their “I need to lose weight” beliefs and do not consider their evidence as favouring the opposite. Consequently, they do not qualify as epistemically akratic.

That sufferers of eating disorders possess evidence in favour of having larger bodies also supports the claim that they do indeed believe themselves to be larger. As noted (fn. 2), some suggest that when participants with eating disorders claim to have larger bodies, this may be due to demand characteristics or emotional influences. The proposed account suggests that we should take such assertions at face value, accepting that these participants do believe themselves to be the body size that they claim. In turn, this supports the assumption that such beliefs causally contribute to the relevant weight loss behaviour.<sup>16</sup>

The position I have argued for also bears practical implications. First, in terms of the ethics and legality of coercive treatment, it suggests that (contrary to the assumptions of many clinicians) the false body size beliefs held by people with eating disorders do not render them decisionally incompetent. My account suggests that the problem lies not in these individuals' ability to respond to evidence but in the unfortunate evidential circumstances that they find themselves in.

This is not to say that people with eating disorders are ideally rational. The important question for the issue of decisional competence, however, is whether they suffer from severe breakdowns in their rational capacity (Grisso & Appelbaum, 1998). My account suggests that they do not. Consequently, the assumption that these individuals are decisionally incompetent, in virtue of being irrational, is unwarranted, and coercive treatment cannot be justified in this way.

This does not entail that people with eating disorders can never qualify as decisionally incompetent, there are many avenues through which they might (Tan et al., 2006).<sup>17</sup> However, my account suggests that clinicians and judges must justify their claims of decisional incompetence with reference to these alternative reasons. They cannot assume that holding false beliefs about one's body size is sufficient evidence of irrationality.

My account also vindicates treatment methods aimed at changing body size beliefs, including those that focus on exposing people with eating disorders to accurate information regarding their body size. My account suggests that these beliefs can be changed, though doing so may be difficult, so long as the relevant body model distortion (and the false proprioceptive evidence it creates) remains. To make progress on treatment, researchers might then focus on how to

<sup>16</sup>Of course, it is highly likely that other factors (including those discussed in fn. 5) also contribute to weight loss behaviour.

<sup>17</sup>For example, severe starvation reduces cognitive capacity, such that concentrating becomes difficult. In such cases, clinicians often consider coercive treatment warranted (Draper, 2000). This is partly justified in terms of saving the patient's life, but also for restoring their mental capacity so that they can reason appropriately about their own treatment.

address body model distortion, as some are already doing (Keizer et al., 2016). By adjusting the body models of people with eating disorders, there is hope in correcting their bodily misperception.<sup>18</sup>

Another promising way forward involves training people with eating disorders to understand, interpret and reject their illusory experiences. A first step in doing so would be to not dismiss references to them as misdescriptions but to provide patients with comprehensible causal explanations of their misleading experiences. This would involve describing the phenomenon of body model distortion and its perceptual consequences and teaching these individuals to be wary of their proprioceptive awareness.

Finally, my account characterises those who suffer from eating disorders not as precious, unreasonable or irrational, but as victims of epistemically unfortunate circumstances, outside of their will or control. Consequently, they are neither blameworthy for their beliefs nor unsuitable recipients of our empathy. By educating not just eating disorder sufferers but clinicians and the public about body model distortion and its perceptual consequences, we might hopefully engender some much-needed compassion for those who suffer from these debilitating conditions.

## 7 | CONCLUSION

In this article, I outlined a novel argument regarding the rationality of eating disorders. Specifically, I defended the view that people with eating disorders are not (severely) irrational in the way they form and maintain beliefs about their bodies. According to this account, the body size beliefs associated with eating disorders are grounded and reinforced by proprioceptive evidence. The nature of this evidence helps explain why these beliefs are resistant to change.

This position bears several ramifications. First, the beliefs that people with eating disorders hold regarding their body size are not different in kind from typical beliefs. Thus, contrary to the assumptions of some philosophers, they cannot be used to support arguments regarding epistemic akrasia. Second, sufferers of eating disorders have ample reason to hold false beliefs about their own body size, so we should assume that they do in fact hold such beliefs (consistent with their assertions) and, in turn, that such beliefs play a role in driving the relevant weight loss behaviour. Third, treatment methods premised on these beliefs being responsive to evidence are not misguided, so long as these techniques take into account the relevant forms of proprioceptive evidence. Finally, while people with eating disorders may be decisionally incompetent, they are not so in virtue of irrationally forming and maintaining beliefs about their body size.

There are several caveats to the proposed argument. First, I have not argued that people with eating disorders are ideally rational. They likely exhibit various forms of sub-optimal reasoning about body size (Gadsby, 2020). I have, however, shown that eating disorders do not involve severe violations of the norms of epistemic rationality, as those who suffer from them do not hold entirely ill-grounded and incorrigible beliefs. For the implications outlined, this is the key point.

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<sup>18</sup>Researchers can draw from the literature on proprioception to find clues as to why this phenomenon affects sufferers of eating disorders. Potential avenues for exploration include the relationship between gender and movement kinematics (Young, 1980), as well as associations between somatic illusions and eating disorder related traits like anxiety (Somerville et al., 2007) and past trauma (Ataria, 2016).



Second, I have only focused on one feature of eating disorders (false body size beliefs) and one form of rationality (epistemic). However, eating disorders are associated with numerous attitudes and behaviours whose rationality might be questioned. For example, many who suffer from eating disorders hold extreme beliefs regarding the paramount importance of thinness (Tan et al., 2006). As several researchers have highlighted, however, such values may be rational responses to the kinds of cultural messaging that young people (in particular, women) are exposed to (Bordo, 2004; Wolf, 1991). Many of the outlined implications regarding the epistemic rationality of body size beliefs may also hold for other features of eating disorders and other forms of rationality. This article thus highlights the need for further research into the various ways in which features of eating disorders conform to, or deviate from, norms of rationality.

There is still much work to do in verifying, developing and extending the proposed account. It may turn out that this account only vindicates the rationality of some of those who hold these beliefs, or for some periods of illness. This is ultimately an empirical issue, more information about the beliefs and the experiences that ground them is required. Nevertheless, I am optimistic that this account will help to vindicate the rationality of eating disorder sufferers and usher in a new way of understanding them—not as epistemically irrational but as epistemically unfortunate.

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