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Body Checking in Anorexia Nervosa: from Inquiry to Habit

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Abstract
Body checking, characterized by the repeated visual or physical inspection of particular parts of one's own body (e.g. thighs, waist, or upper arms) is one of the most prominent behaviors associated with eating disorders, particularly Anorexia Nervosa (AN). In this paper, we explore the explanatory potential of the Recalcitrant Fear Model of AN (RFM) in relation to body checking. We argue that RFM, when combined with certain plausible auxiliary hypotheses about the cognitive and epistemic roles of emotions, is able to explain key characteristics of body checking, including how body checking behavior becomes habitual and compulsive.

Keywords Body checking · Anorexia Nervosa · Inquiry · Pragmatic encroachment · Recalcitrant emotion · Suspension of judgment · Attention bias

1 Introduction

Anorexia nervosa (AN) is an eating disorder with a poor treatment outcome characterized by restricted calorie intake resulting in a failure to meet appropriate needs and a significantly low body weight (APA 2013, 339–341).[1] The DSM-5 underlines two fundamental psychological aspects that are important factors in the development and maintenance of AN. First, individuals with AN typically exhibit a strong, *recalcitrant fear* or "dread" (WHO 1992, F50.0) of becoming fat or gaining weight, which does not recede when individuals with AN are confronted with evidence that they are far from a body weight that would warrant it (APA 2013, 340).[2] Second, the DSM-5 emphasizes a "body image disturbance," which pertains to the distorted manner in which the weight

[1] Atypical cases in Anorexia Nervosa meet all the criteria for AN except that the individual's weight is within or above the normal range despite weight loss.

[2] As the DSM-5 explains, "this intense fear of becoming fat is usually not alleviated by weight loss. In fact, concern about weight gain may increase even as weight falls" (APA 2013, 340).

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or shape of one's body is seen.[3] This distortion is generally understood to encompass both perceptual and doxastic elements, with a special focus on false beliefs about body weight and shape (e.g., "I am fat"; "I am overweight"). These false beliefs are notably resistant to contrary evidence and generally continue to persist, even after weight loss.

These two psychological aspects reinforce a strong preoccupation with and overvaluation of body shape and size, which are often manifested in compulsive and habitual behaviors like repetitive body checking and body avoidance (e.g., Lavender et al. 2013; Steinglass et al. 2011; Nikodijevic et al. 2018). *Body checking*, characterized by the repeated visual or physical inspection of particular parts of one's own body (e.g., thighs, waist, or upper arms), can involve pinching body parts to test for fat, monitoring the movement of thighs when sitting down, examining whether thighs touch each other when walking, etc. (Engel et al. 2005; Lavender et al. 2013; for a controlled study, see Calugi et al. 2006; 2017; The Body Checking Questionnaire, Reas et al. 2002), whereas *body avoidance*, characterized by trying to avoid seeing one's body, can include wearing loose-fitting clothes to disguise one's body, hiding or covering mirrors, declining to be weighed, and redirecting gaze when walking past reflective surfaces (Shafran et al. 2004). While some have suggested that over time body checking becomes aversive and is eventually avoided (Fairburn et al. 1999), other studies found that body checking and body avoidance are not mutually exclusive and may alternate (Shafran et al. 2004). The association between the severity of the eating disorder and the frequency of body checking/avoidance in part stimulated the view that body checking in AN is closely related to OCD behaviors (e.g., Breithaupt et al. 2014).

In this paper, we focus on body checking, in part because it is often taken to involve aspects that violate epistemic norms. We offer an account of how body checking is related to fundamental psychological aspects in AN and how checking behavior becomes habitual and compulsive. Our account will be developed in a critical dialogue with an influential view that we call the "False Belief Model" (FBM), according to which AN should be explained essentially as resulting from a desire to attain an ideal body weight and a false and irrational belief that one exceeds that weight. In agreement with the FBM, much of the literature treats checking as a biased inquiry and evidence gathering that helps *maintain false beliefs* about both shape and weight in order to preserve the concerns that motivate dietary restraint (Fairburn 2008). Roughly put, body checking selectively directs attention to and magnifies perceived bodily imperfections, while continuous body avoidance can prevent receiving evidence that could disconfirm the false beliefs (e.g., Williamson et al. 1999). We argue that this interpretation suffers from at least four interconnected weaknesses: first, it has difficulties accounting for how individuals with AN can harbor the interrogative attitudes that are necessary for inquiring into their weight; second, it exaggerates the powers of biased inquiry and evidence

[3] Body image usually refers to a conscious perception and beliefs about one's own body (including its appearance, size, and shape), while the body schema is based on proprioceptive data (e.g., from muscles, joints, and skin) and primarily guides sensory-motor processes like posture and movement (Gallagher 1986; de Vignemont et al. 2021).

gathering in maintaining false beliefs about weight; third, it fails to locate a plausible reward to motivate repeated checking behavior; and fourth, because of this, it cannot explain how checking behavior is repeated frequently enough to become habitual.

Instead, we offer an alternative account of body checking, based on an understanding of AN that, instead of emphasizing false belief, emphasizes the first of the abovementioned fundamental psychological characteristics of AN: recalcitrant fear. We argue that recalcitrant fear, combined with certain reasonable auxiliary hypotheses about the cognitive and epistemic roles of emotions, can explain how AN patients can be held in a state of suspended judgment, and thus in a state of inquiry about their weight, despite their relatively strong evidence that they are *not* overweight. We argue further that the experience of this evidence provides a temporary reward strong enough for reinforcing repeated checking, and that this explains how checking behavior often becomes habitual and compulsive.

In the rest of the paper, we proceed as follows. In § 2, we outline the Recalcitrant Fear Model (RFM) of AN, and contrast it with the FBM. In § 3, we turn to the explanation of the information-seeking aspect of body checking and argue that RFM provides a more convincing explanation than FBM. In § 4, we show how RFM is also better placed to explain how body checking can become habitual and compulsive. Finally, in § 5, we tentatively suggest a generalization of our account to similar checking behavior in OCD, before concluding in § 6.

2 The Recalcitrant Fear Model of AN

In their recent work, Varga and Steglich-Petersen (2023) argue that due to the key explanatory role that the FBM attributes to false beliefs, it faces several serious difficulties. First, the FBM cannot explain AN behavior in individuals who do not harbor false beliefs about their body size. Some of these individuals stress that they *know* that they cannot be fat, which can be taken to exclude that they hold the belief that they are fat. This, in turn, means that such a belief cannot be attributed to explain their behavior. Second, the model renders it enigmatic how individuals with AN can have genuine insight into their own condition. Often, individuals with AN are aware that their thoughts about their body size are false and perhaps also irrational (i.e., adopted without appropriate evidence), and the literature differentiates between AN "with good insight", "with poor insight" and "with psychotic features" (Phillips et al. 1995). The problem is that while the FBM maintains that the insight targets a belief, such beliefs could *not* be the object of insight in the sense of knowing that the content of the target belief is false. Possessing the belief that some content p is true would make it impossible to know that p is false, because one cannot know a content to be false that one *believes* to be true.[4] The reason that such knowledge excludes the belief in question is that it is not possible to *know* a proposition one believes to

[4] See e.g., Kaizer (2014) and Espeset et al. (2011) for examples of individuals with AN reporting *knowing* that they could not be fat.

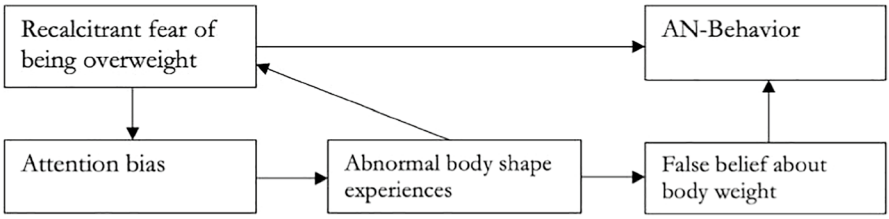
be false, as holding such a belief would *defeat* the knowledge. This form of defeat is referred to as "doxastic defeat" (Lackey 1999; see also Taylor 2022). This means that if one wants to maintain that insight is possible, then the objects of insight cannot be false beliefs.

Due to difficulties with the FBM, Varga and Steglich-Petersen (2023) propose the "Recalcitrant Fear Model" (RFM) as an alternative to explain AN behavior without relying on false beliefs. A key impetus comes from the work of Michael Strober (2004), who proposes the idea that weight aversion and compulsive dieting in AN express a heritable tendency for fear-based learning and phobic avoidance. This view opens the way toward comprehending AN behavior as a direct expression of the recalcitrant fear, without the intermediary of false belief. To develop this basic idea, the RFM draws on the philosophical literature on recalcitrant emotions (D'Arms and Jacobson 2003; Döring 2015), particularly on Michael Brady's (2009, 2013) account.

Brady's account accepts the general view in which emotions keep our attention focused on the relevant emotionally valenced stimuli and enhance their detection and processing. This is particularly clear in the case of fear, which not only noticeably narrows our focus to threatening features, but also prioritizes their processing compared to non-threatening features (Najmi et al. 2012). Moreover, Brady (2009) sees emotions as involving inclinations to assent to and act on evaluative construals. To take the example of fear, the narrowed attention to signs of danger inclines subjects to assent to the evaluative construal of the situation as dangerous and to act accordingly. Of course, it is possible to resist assenting to the particular construal, and this is exactly what characterizes a recalcitrant emotional experience: while subjects are inclined to act on and assent to an evaluative construal of the situation, they actually assent to an opposing construal. Brady's account thus explains the irrationality of recalcitrant emotions without ascribing inconsistent beliefs or judgments. First, recalcitrant emotions are irrational because they activate motivational resources to prepare for action that the subject does not believe the situation demands. Second, the inclination to assent to a construal in light of a conflicting evaluative belief violates epistemic norms (Brady 2009, 426–429). For example, they incline subjects to assent to a construal that they regard as false and without being based on what they regard as good reasons.

The RFM maintains that recalcitrant fear can explain AN behavior along two pathways. First, along a *primary* and *direct* pathway, recalcitrant fear involving strong inclinations can overwhelm the subject's cognitive control and thus cause AN behavior without the intermediary of a false belief.[5] Second, along a *secondary* and *indirect* pathway, the RFM allows false beliefs to figure in the explanation of AN behavior, but also contributes to the explanation of these beliefs: recalcitrant fear can lead to attentional biases and more abnormal bodily experiences, which, in turn, can cause false beliefs.

[5] Additional support for the direct pathway comes from philosophical accounts arguing that emotions have independent motivational force and can thus replace or supplement belief-desire pairs in explaining behavior (see e.g., Döring 2003; Scarantino 2017; Yip 2022).



A summarizing diagram of the Recalcitrant Fear Model (Varga and Steglich-Petersen 2023., 22)

Due to its structure, the RFM is able to avoid the two difficulties that we highlighted with respect to the FBM. First, as the indirect pathway is not the only path to AN behavior, RFM acknowledges that some individuals with AN do harbor such false beliefs, but stresses that the ascription of false beliefs may be reserved to the comparatively rare cases of AN without insight. Second, by positing that the object of insight is the state of recalcitrant fear, the RFM avoids having to deny that insight is possible. Insight into the "falsity" of the fear amounts to knowing that the evaluative construal associated with the fear is false. Psychologically, this seems unproblematic, as insight into one's fear of *x* would merely add up to knowing that *x* is not in fact dangerous. Epistemically, this also seems relatively straightforward: the recalcitrant fear does not defeat the fact that one's belief that the situation is not dangerous constitutes knowledge.[6] Of course, this also means conceding that insight is not possible for individuals with AN who *do* hold the false belief, as it would make it impossible for them to know that they are not in fact overweight. However, the RFM can accept this result, especially because it holds that it is appropriate to ascribe false beliefs to many fewer individuals with AN than commonly supposed.

In addition to avoiding the outlined difficulties faced by the FBM, the RFM displays additional explanatory advantages.[7] For example, the RFM makes better sense of common ritualistic behavior in AN, including consuming food at a notably slow or fast pace; ensuring different food items remain separate and do not mix; selecting particular utensils or dishware for eating; and consuming foods in a specific sequence; and more (Glasofter et al. 2016, 226). Explaining such rituals by citing belief-desire pairs would require attributing not only false beliefs about body weight, but also false beliefs about the effectiveness of these ritualistic behaviors with respect to the desire to lose weight. However, the attribution of irrationality on such a scale is not a plausible upshot. Instead, on the RFM, individuals with AN understand that the ritualistic behaviors will not help them lose weight, but deploy them as (maladaptive) strategies to control fear and to regulate emotional distress.[8]

[6] For example, fear of flying does not defeat knowledge that flying is perfectly safe.

[7] Because false beliefs do not play a key explanatory role, it does not need to confront the daunting task, pursued by Gadsby (2017, 2020, 2022), of explaining how the relevant false beliefs are formed and maintained despite being exposed to robust counterevidence. By focusing on recalcitrant fear, the RFM can explain how AN behavior can persist in the absence of the false belief.

[8] We should add that some patient reports suggest that fears might both be linked to losing control and being in control (e.g., Skarderud 2007). For this reason, our focus is on control-related fears, regardless of whether they involve loss or gain of control.

3 Body Checking as Inquiry

This brings us to the explanation of body checking. We have already outlined the most important characteristics of this behavior in the introduction, but will make three further assumptions, all of which we regard as fairly minimal.

The first assumption that we will make is that body checking behavior typically evolves from being intentional and purposeful, to becoming habitual and compulsive. It is widely agreed that body checking is often habitual and compulsive (e.g., Breithaupt et al. 2014), so adding that it evolves to acquire these characteristics from an intentional and purposeful phase is really just to assume that it follows the most common pattern of how such behaviors are formed. Habitual behavior is usually understood as behavior that has shifted from requiring focus and energy to being automatic, and thus requiring little or no attention (Smith and Graybiel 2016). We assume that the same is the case for habitual body checking.

The second assumption that we will make is that body checking in the intentional and purposeful phase should be understood as a form of genuine inquiry, i.e., as an attempt to settle a factual question by gathering information or evidence. For individuals with AN, the burning question is whether or not they are overweight, so in this intentional phase, body checking should be understood as attempts to settle this question. Below, we discuss whether this claim might be rejected, but we assume it for now. This also means that an explanation of how body checking becomes habitual must account for how individuals with AN are motivated to engage in inquiry about their weight long enough and frequently enough to result in a habit. As we shall see, such an explanation can involve several elements, including the identification of a plausible reward to reinforce the behavior, and an explanation for why the inquiry never gets settled.

The third assumption that we will make is not specifically about body checking as inquiry, but about inquiry as such. We adopt Friedman's influential idea, that genuine inquiry into a question implies being in a state of suspended judgment with respect to its answer (Friedman 2017, 2019). This is because to be inquiring into whether p, one must hold a question-directed or interrogative attitude as to whether p, or, more generally, the question one wishes to settle. Interrogative attitudes include, e.g., *wondering* and being *curious*, so one cannot be said to be genuinely inquiring into whether p, unless one is, for example, wondering or curious as to whether p is true. And according to Friedman, holding an interrogative attitude with respect to a question implies suspending judgment on its answer. For example, one cannot wonder whether p, if one already believes that p is true. So, to be genuinely inquiring whether p is true, one must necessarily be suspending judgment as to whether p. Accordingly, an explanation of inquiring body checking must include an explanation of how subjects are kept in a state of suspended judgment, despite the repeated checking.[9]

[9] For a recent account of the reasons we have for engaging in inquiry, see Steglich-Petersen (2022a).

3.1 Body Checking and the False Belief Model

With these assumptions in place, we can turn to consider what explains inquiring body checking behavior in AN patients. Consider first how the FBM would explain it. An immediate stumbling block for this model is that, by virtue of ascribing a false belief in being overweight to AN patients, the model cannot at the same time comprehend AN patients as being in a state of suspended judgment as to whether they are overweight. Given the above assumption about suspension of judgment as a necessary condition for inquiry, the FBM is barred from understanding AN patients as genuinely inquiring into their weight.

Let us consider a couple of possible responses to this problem on behalf of the FBM. One response might be to claim that during the genuinely inquiring phase of the development of body checking behavior, AN patients do *not* yet believe that they are overweight, but rather suspend judgment about this. It is only through the biased and motivated process of inquiry that they acquire the false belief, at which point the body checking ceases to be genuine inquiry. Body checking plays a part in this process of biased inquiry, for example by focusing on certain body parts, looking at oneself from angles that make one appear overweight, and by comparing oneself to others with thinner bodies. This is in line with the suggestion mentioned in the introduction, that body checking aims at *promoting* or *maintaining* false beliefs about shape and weight. On this line of thought, the false belief, painful as it is, is deliberately pursued by AN patients as an instrument for motivating dietary restraint, and thus furthering the ultimate desire of being thin (Fairburn 2008).

This response, however, raises several questions. First, it inherits a general issue with the FBM, of accounting for how false beliefs about weight are formed and maintained despite the strong evidence of their falsity that AN patients are continually exposed to. Gadsby (2020) recognizes this difficulty and attempts to resolve it by appealing to two factors: abnormal body experiences and the abovementioned desire-driven bias. However, as argued by Varga and Steglich-Petersen (2023), it remains unclear how the instrumental interest in a false belief for motivating dietary restraint could outweigh the significant emotional distress that AN patients, given their fear of being fat, will associate with such a belief. It thus remains unclear why AN patients should be motivated to bias their inquiry in favor of believing that they are overweight, rather than in favor of disbelieving it. Second, and because of this, the response also fails to locate a plausible reward to reinforce the repeated checking behavior, which in turn would make it mysterious how the behavior can become habitual.

Another possible response on behalf of the FBM to the problem described above, would be to comprehend AN patients as *alternating* between suspended judgment and belief. On the face of it, this would make the FBM compatible with an interpretation of body checking as genuine inquiry. Incidentally, this is also how Friedman understands (non-pathological) repeated checking, namely, as a process of asking a question and settling on an answer by forming a belief, only to reopen the inquiry again soon after by once again suspending judgment on the relevant question,

inquiring again, and so on.[10] This, in turn, leads to her diagnosis of what is epistemically irrational about repeated checking. According to Friedman, repeated checking is epistemically irrational when and to the extent that it involves moving from belief to suspended judgment between the acts of checking, without this move being based on good epistemic reason.

Although we don't want to deny that repeated checking may sometimes be a matter of moving back and forth between belief and suspended judgment, as suggested by Friedman, we doubt that this could be the general picture. Belief is generally considered to require a degree of stability and resilience in the face of doubt, so it would require some special explanation to make sense of how the repeated cycles of belief and suspension described by Friedman are even possible (Leitgeb 2014; Steglich-Petersen 2019). It is also questionable that subjects would be able to maintain the ability to form beliefs in response to checking, if they have experienced repeatedly losing this belief soon after without reason. At the very least, we should expect that the subject's ability to conclude the inquiry by forming a belief degrades over time, eventually resulting in being unable to acquire the relevant belief. But in that case, it becomes hard to see how this process of alternating between suspension and belief could be part of the FBM, which, after all, depends on subjects *being* able to believe falsely that they are overweight. In summary, given the three initial assumptions, it seems fair to conclude that the FBM has severe difficulties accounting for key characteristics of body checking.

3.2 Body Checking and the Recalcitrant Fear Model

We now move on to consider the explanatory resources of the RFM in relation to the inquiry stage of body checking. Two immediate advantages of the RFM over the FBM are worth noting right away. First, since the RFM reserves ascription of false beliefs about weight to severe cases of AN without insight, it is not prevented from understanding the majority of AN patients, and certainly those at the inquiry stage of body checking, as suspending judgment and thus inquiring about their weight.

The second advantage is somewhat more subtle. A critical issue for the FBM was to account for how body checking could serve to promote a false belief that one is overweight. This proved challenging in part because AN patients typically have ample evidence from other sources that they are *not* overweight. But it is also challenging because the evidence obtained from the body checking itself can be assumed to objectively support the belief that they are not overweight—in fact, to outside observers, it is often enigmatic how AN patients can avoid concluding the obvious,

[10] Repeated checking has recently gained attention in the epistemological literature, which has focused mainly on accounting for what is wrong with repeated checking from an epistemic perspective—after all, if one is not absolutely certain that p is true, what is wrong with gathering more evidence as to whether p? For recent discussions of this question, see Whitcomb (2010), Friedman (2019), Taylor (2022), and Vazard (2021, 2022). Although we will return to the question of what is wrong with checking, our main concern is a different one, namely that of explaining how it is possible for AN patients to be locked in a state of inquiry about their own body weight and shape, despite the ample evidence gathered from the repeated checking that they are not in fact overweight.

namely that they are dangerously thin. The FBM therefore needs to ascribe a very considerable bias in the body checking to account for the false belief.

The RFM, on the other hand, does not need to explain how body checking could result in a false belief. Instead, the RFM faces only the considerably easier task of explaining why the repeated checker tends not to form the true belief that they are not overweight, but rather remains in a state of suspended judgment. To be sure, this is not without difficulty. In particular, since the checking can be assumed to often result in relatively strong evidence that the checker is not overweight, something must be said to account for how it is possible for checkers not to form this belief. However, as we will now explain, fear of *p* being true provides the perfect epistemic pretext for being held in a state of suspended judgment as to whether *p*, even when the evidence in fact supports that *p* is false. Accordingly, a fear of being overweight provides the perfect epistemic environment for being held in a state of suspended judgment as to whether one is in fact overweight, even when the evidence supports that one is *not* overweight. Taking Friedman's necessary condition for inquiry into account, fear of being overweight thus explains why AN patients can be kept in a state of inquiry into their weight.

Generally speaking, fear of *p* promotes suspended judgment as to whether *p* in at least two ways. First, it can cause subjects to selectively attend to evidence supporting *p*. As mentioned in the previous section, it is widely accepted that emotions encompass various perceptual and physiological changes, such as visceral and cardiovascular alterations, that aid in the activation of motivational and cognitive resources. This includes the fine-tuning of attentional mechanisms, which help filter information and tackle competing environmental stimuli (Oatley and Jenkins 1996). As such, emotions improve stimulus detection and processing and keep attention focused on emotionally valenced stimuli. For instance, fear narrows the scope of attention towards threatening stimuli, makes it challenging to shift focus away from such stimuli, and allocates a lesser priority to the processing of neutral information (Najmi et al. 2012). Applied to AN, when patients fear being overweight, they will attend selectively to evidence supporting that they are overweight, for example, by attending to body parts that appear to them most overweight, or by tending to look at themselves from angles or in positions that make them appear overweight. Even if the evidence does not support that one is overweight, individuals with AN may thus be held in a state of suspended judgment. Note again that even both the RFM and the FBM rely on bias in their respective explanations of body checking, the RFM places a significantly lighter explanatory burden on this bias than the FBM, since the RFM only relies on the bias to explain how subjects are hindered from believing that they aren't overweight, while the FBM relies on it to explain how subjects come to believe that they *are* overweight.

The second way in which fear of *p* can work to retain subjects in suspended judgment as to whether *p* is by causing subjects to raise the evidential threshold for believing that *p* is false. One way of motivating this claim is via the theory of "pragmatic encroachment" on rational belief. It is widely regarded as plausible that an individual's practical circumstances can influence whether someone is in a position to know or rationally believe a proposition. To motivate this idea, consider the following set of cases from Schroeder (2012, 266–267), adapted from Stanley (2005) and DeRose (1992):

Low Stakes: Hannah and her wife Sarah are driving home on a Friday afternoon. They plan to stop at the bank on the way home to deposit their paychecks. It is not important that they do so, as they have no impending bills. But as they drive past the bank, they notice that the lines inside are very long, as they often are on Friday afternoons. Hannah remembers the bank being open on Saturday morning a few weeks ago, so she says, 'Fortunately, it will be open tomorrow, so we can just come back.' In fact, Hannah is right—the bank will be open on Saturday.

A common intuition held by many is that Hannah's belief that the bank will be open could be considered epistemically rational. Her recollection of seeing the bank open a few weeks earlier, when combined with pertinent background knowledge, appears to provide adequate epistemic justification for her belief that the bank will be open. However, contrast this Low Stakes scenario with the following High Stakes situation:

High Stakes: Hannah and her wife Sarah are driving home on a Friday afternoon. They plan to stop at the bank on the way home to deposit their paychecks. Since their mortgage payment is due on Sunday, they have very little in their account, and they are on the brink of foreclosure, it is very important that they deposit their paychecks by Saturday. But as they drive past the bank, they notice that the lines inside are very long, as they often are on Friday afternoons. Hannah remembers the bank being open on Saturday morning a few weeks ago, so she says, 'Fortunately, it will be open tomorrow, so we can just come back.' In fact, Hannah is right—the bank will be open on Saturday.

Contrary to the Low Stakes scenario, it is a widely held intuition that Hannah's belief is not epistemically rational in the High Stakes situation. Since the two situations are identical in epistemic aspects—Hannah forms her belief in both scenarios based on her recollection of the bank being open—and only diverge in the practical matter of the urgency for the couple to deposit their paychecks by Saturday, it can be concluded that this practical element is the determining factor in whether Hannah's belief is epistemically rational..

On the standard understanding, the significance of depositing the checks in the two cases makes an epistemic difference, as it alters the potential severity of the consequences if Hannah incorrectly believes that the bank will be open. In the terminology favored within this debate, it impacts the 'stakes' associated with holding the belief that the bank will be open. In the Low Stakes scenario, if Hannah falsely believes the bank will be open and delays depositing her checks until Saturday based on this belief, the result is inconvenient but not catastrophic—she will simply have made an unsuccessful trip to the bank. In the High Stakes scenario, however, acting on such a false belief could lead to severe consequences. Thus, the ramifications of holding, and acting upon, a false belief that the bank will be open are markedly greater in High Stakes compared to Low Stakes.

Although these cases are standardly taken to illustrate a normative epistemic effect on rational belief, it is highly plausible that they also indicate a descriptive psychological effect, namely that we, as a matter of fact, tend to raise our evidential threshold for belief when we perceive the stakes to be high. This may simply consist in a judgment to the effect that acting on a particular false belief would carry

adverse consequences, but it seems that affective states, and in particular emotions, will often be what underlies such a perception of high stakes. For example, if I fear spiders, I will tend to regard it as much worse to believe falsely that there are no spiders in my bed, than if I don't have a fear of spiders. Consequently, we would expect someone who fears spiders to operate with a higher evidential threshold for believing that no spiders are present.[11]

It is worth mentioning that this conclusion about the psychological effect of fear-driven stake-perception on the evidential threshold that subjects require for belief may be reachable without relying on normative epistemic claims about pragmatic encroachment on epistemic rationality.[12] Nagel (2008, 2010) argues that we naturally expect different epistemic behavior from subjects who perceive stakes to be high, e.g., by collecting more evidence than low-stakes subjects before settling on a belief, but not because of any change in normative epistemic standards. Instead, subjects in the different conditions engage in adaptive thinking, weighing the anticipated costs of gathering more evidence against the prospective value of increased accuracy. This leads to the adjustment of cognitive effort in reaction to the perceived stakes or, as Nagel puts it, their level of "epistemic anxiety. And the subject's stake-perception is clearly influenced by fear in the way sketched above.

We can now apply these observations to understand body checking in AN. Just like fear of spiders will lead subjects to operate with a higher evidential threshold for believing that no spiders are present, so will fear of being overweight lead individuals with AN to operate with a higher evidential threshold for believing that they are *not* overweight. This will have the effect that individuals with AN will be disposed to remain in a state of suspended judgment in evidential circumstances that would normally lead non-patients to believe that they are not overweight. Because of this, individuals with AN will continue to inquire into their body weight and shape by engaging in repeated checking. Add to this the fear-driven bias, which leads AN patients to focus on evidence that indicates the feared possibility of being overweight. This, too, will lead AN patients to remain in a state of suspended judgment in circumstances that would normally lead others to reject that they are overweight.

Having described these two ways in which fear of being overweight can cause AN patients to be held in a state of suspended judgment and continued inquiry, we can return briefly to the question of irrationality, which was the main focus of the epistemological literature on repeated checking. In both cases, the culprit of the irrationality is the intense fear and preoccupation with being overweight. It is this state that drives the attention bias, causing patients to attend selectively to evidence supporting the feared scenario. And it is this fear that causes patients to attribute a high cost to believing falsely that one is not overweight, and thus raise the evidential threshold for belief. This is in line with the RFM, which locates the irrationality of AN in the emotions.

Even if the irrationality stems from the fear of being overweight, this does not imply that it is not irrational for AN patients to suspend judgment in response to the repeated body checking. But if it is irrational, it is certainly only irrational in a rather qualified

[11] For a recent detailed explanation of pragmatic encroachment that is compatible with this effect of fear on the epistemic rationality of belief, see Steglich-Petersen (2022b).

[12] Skeptics about pragmatic encroachment include Neta (2007), Brown (2008), Lackey (2010), and Gerken (2017).

sense. Consider the two effects of fear in turn. When fear biases our attention to focus on some stimuli over others, this can be understood in one of two ways. Either the biased attention results in the subject's evidence being restricted to that stemming from the stimuli focused on, or the biased attention does not affect the available evidence, but makes the subject give more weight to the evidence that she is biased towards. In the first case, although the bias itself can be considered in some sense irrational, the belief resulting from the bias would not necessarily conflict with the subject's evidence, and hence not be epistemically rational. In the second case, the belief resulting from the bias *would* conflict with the available evidence, and hence be straightforwardly irrational. Whether to understand attention bias in the first or the second sense is a question beyond the scope of this paper; perhaps, in most cases, the answer is somewhere in the middle, with the bias both restricting the pool of evidence and directing attention to a selected part of the evidence. But either way, the irrationality of suspending judgment that results from the attention bias is not entirely straightforward.

When fear makes subjects increase their evidential threshold for belief, it is even less clear in what sense this results in epistemic irrationality. At least, it is compatible with a very significant degree of epistemic rationality on behalf of the subjects. To see this, note that AN patients may well have a relatively realistic assessment of the degree to which the evidence raises the likelihood of them being overweight. In the paradigmatic cases considered above, pragmatic encroachment does not operate by affecting how likely subjects should deem the target proposition to be in light of the evidence, but rather by affecting the evidential threshold required for belief. This also opens up the possibility that AN patients have an appropriately high credence that they are not overweight, while failing to believe that they are not overweight, although this further possibility requires that credences and categorical beliefs are independent, such that an arbitrarily high credence in a proposition can coexist with the absence of a categorical belief in that same proposition.[13] Without pursuing these questions here, we think it is safe to conclude that the epistemic irrationality of suspending judgment is at best qualified.

There is a further sense in which it might be irrational for AN patients to continue their inquiry by repeated checking. As they experience over time that their repeated body checking does not result in them settling the question of their weight by forming a belief, they acquire higher-order evidence about their own epistemic dispositions, indicating that they will not be able to settle the inquiry. Such evidence, when strong enough, might in itself make it irrational to continue inquiry.[14] But again, the irrationality of continued inquiry is certainly not straightforward.

[13] For a recent defense of the independence of credences and categorical beliefs, see Jackson (forthc.). For a review of the debate, see Jackson (2020).

[14] For a similar claim regarding OCD, see Flores (forthc.). Flores draws on Woodard (2022), who argues that if one of the primary aims of forming beliefs is to settle inquiry, then there is something epistemically irrational about frequently changing one's mind. The problem is, roughly, that during their deliberations, these individuals gain evidence that they will not stably settle their belief. In OCD, Flores points out that during their fruitless inquiries, individuals with OCD acquire higher-order evidence that the inquiries are biased and will not be able to settle the question, which should constitute a reason for stopping the inquiry. We may accept that something similar is at stake here, but leave open for now whether this is best understood as epistemic irrationality. On an instrumentalist understanding of reasons for inquiry, such as that defended by Steglich-Petersen (2022a), the relevant kind of irrationality might be understood as instrumental rather than epistemic.

4 The Habituation of Body Checking

Even if fear of being overweight tends to retain AN patients in suspended judgment, and thus in a state of inquiry by repeated body checking, body checking typically changes character over the course of the disease, eventually taking on an increasingly habitual character, at which stage it becomes hard to interpret as genuine inquiry aimed at settling a question by gathering information. As noted above, it is an important desideratum for accounts of body checking, that it is able to explain how the habituation happens. As a minimum, this involves accounting for how AN patients are motivated to engage in inquiry about their weight long enough and frequently enough to result in a habit, which in turn can involve several elements, including the identification of a plausible reward to reinforce the behavior, and an explanation for why the inquiry never gets settled. Above, we have argued that the RFM, but not the FBM, can account for the latter, but that still leaves the identification of a reward.

What reward for checking can the RFM locate? The *prospect* of reward is clear enough. According to the RFM, AN patients engage in body checking in order to disconfirm a feared possibility, which is clearly a prospect of reward. To compare, a person who is afraid of spiders checks for spiders in order to achieve a sense of being safe. That being said, this reward never fully materializes: the repeated checking never results in the hoped-for outcome, namely, a clear sense of having disconfirmed that one is overweight. This is compatible, however, with some lower level reward being achieved through the checking. Recall that the checking may well result in the experience of perceptual evidence that supports that one is not overweight, and it may even result in a relatively realistic understanding of this evidence. Even if this experience fails to close the inquiry due the increased threshold for belief, it is plausible that the experience itself can give some temporary sense of not being overweight, and thus a temporary reward to reinforce the repeated checking.

On the other hand, as indicated above, the FBM has difficulties locating a plausible reward. According to this model, individuals with AN engage in body checking to confirm that they are overweight, with the ulterior motive of bolstering motivation for action against gaining weight. But given that individuals with AN fear being overweight, such confirmation is a painful prospect, and it is unclear that it can be counterbalanced by the ulterior motive to reinforce checking. The RFM thus has a clearer story to tell about motivating and reinforcing rewards for checking behavior than does the FBM.[15]

[15] Although this is not our focus in this paper, an anonymous reviewer rightly notes that the account offered here could be strengthened by drawing on the work of philosophers working in the phenomenological tradition. Apart from the distinction between body image and body schema introduced earlier and the work of Merleau-Ponty (1962) on body image, the Husserlian distinction between image object, image subject, and physical image might help illustrate at least some features leading to the habituation of body checking behavior. As the reviewer notes, one aspect might be described as involving a discrepancy between the image subject and the image object that inquiry is unlikely to be able to bridge. For a discussion of this Husserlian distinction with respect to illness, see Bizzarri (2020). In addition, the experiential difference between the intentional directness towards our body and the body being the implicit background of experience, as discussed by Drew Leder in his book *The Absent Body* (1990) can help shed light on experiential aspects of conditions that involve a distorted body image.

5 Generalizing to Checking Behavior in OCD

Researchers have long been aware of the many striking similarities between eating disorders and OCD (see e.g., Breithaupt et al. 2014), and Mandelli et al. (2020) estimates that 44% of AN patients have a lifetime-comorbidity with OCD.[16] Both conditions are characterized by anxiety and obsessive thinking. In the case of AN, the obsessive thinking tends to center around weight and eating, while in OCD, the obsessive thinking can concern a variety of matters, especially possible harms. And both conditions are characterized by compulsive and often ritualistic behaviors. Most strikingly for our purposes, repeated and compulsive checking is one of the most characteristic behaviors of both AN and OCD, with checking in AN being directed at the patient's weight and shape, while being directed at the possible harms in OCD. Furthermore, in both AN and OCD, checking behavior changes from being intentional and purposeful, to becoming habitual and compulsive. These similarities support that we should expect checking behavior to express similar underlying psychological mechanisms, and thus be explained in largely the same way in AN and OCD. In this brief final section, we tentatively suggest that the RFM is well placed to achieve this similarity of explanation, while the FBM struggles.

According to recent work arguing that explanations of OCD should place more emphasis on recalcitrant fear than on false belief (Steglich-Petersen and Varga 2022), obsessions about possible threats should in most cases not be interpreted as expressions of false beliefs about the reality or likelihood of those threats, but rather as expressions of an underlying and recalcitrant fear, which in many cases coexist with an understanding of the threats as very unlikely. If this is the case, then repeated checking in OCD can be explained in essentially the same way as we have proposed in this paper to explain it in AN. The objective becomes that of explaining why OCD patients can be held in a state of suspended judgment, and thus genuine inquiry, with respect to the threats they obsess about, for long enough that the checking behavior becomes habitual and compulsive, despite the evidence objectively speaking against the reality of the threat and despite the patient's understanding that the threats are unlikely. And here, the considerations from § 4 seem to reapply. In virtue of being in a state of recalcitrant fear with respect to the threats they obsess about, OCD patients are disposed to bias their attention towards stimuli that confirm rather than disconfirm the fear; and even if this bias does not result in the evidence appearing to confirm the threat, as it probably rarely does, it is sufficient to keep the patient in a state of suspended judgment when combined with the other factor: the fear-driven increase in the evidential threshold needed for believing that the threat is *not* real. So, on the face of things, the explanation of checking in AN seems to generalize to checking in OCD.

The FBM struggles to achieve the same similarity of explanation. This is particularly so for the version of the FBM that conceives of body checking as the deliberate attempt to promote or maintain false beliefs about shape and weight as an

[16] For contributions to this research, see e.g., Kaye et al. (2004); Yaryura-Tobias et al. (2001); and Murphy et al. (2004).

instrument for motivating dietary restraint (Fairburn 2008). It is simply not clear what the analogue of such belief-maintenance would be in the case of OCD, and OCD patients are not usually understood as valuing or promoting their obsessive and anxiety-inducing thoughts. Further exploration of these questions, however, will have to await another occasion.

6 Conclusion

The purpose of this paper was to improve our understanding of how body checking and avoidance express the fundamental psychological factors in AN, and how this behavior becomes habitual and compulsive. We argued that the prevalent model, which ascribes false beliefs about weight a fundamental explanatory role in AN, suffers from at least four related downsides: first, it has difficulties accounting for how AN patients can harbor the interrogative attitudes that are necessary for inquiring into their weight; second, it exaggerates the powers of biased inquiry and evidence gathering in maintaining false beliefs about weight; third, it fails to locate a plausible reward to motivate repeated checking behavior; and forth, because of this, it cannot explain how checking behavior is repeated frequently enough to become habitual. Instead, we offered an alternative account of body checking based on an understanding of AN that, instead of emphasizing false belief, emphasizes recalcitrant fear of being fat.

We argued that recalcitrant fear, combined with certain reasonable auxiliary hypotheses about the cognitive and epistemic roles of emotions, can explain how AN patients can be held in a state of suspended judgment, and thus in a state of inquiry, about their weight, despite their relatively strong evidence that they are *not* overweight. We argued further that the experience of this evidence provides a temporary reward strong enough for reinforcing repeated checking, and that this thus explains how checking behavior often becomes habitual and compulsive. Finally, we offered some tentative reasons for thinking that a similar explanation can account for checking behavior in OCD, thus promising a unified account of a behavior that is central to two disorders with high comorbidity.

While the RFM highlights that some behaviors like body checking can be explained by recalcitrant fear without false beliefs, the model also allows that in some cases, false beliefs may play an explanatory role. Still, we believe that given the complexity of AN, it is unlikely that a single psychological explanation can fully account for its development and maintenance.

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