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What's Low Mood All About? An Indicative-Imperative Account of Low Mood's Content

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Abstract:

Does low mood have intentional content? If so, what is it? Philosophers have tried to answer both questions by appealing to low mood's phenomenal character. However, appeals to phenomenology have not settled this debate. Thus, I take a different approach: I tackle both questions by examining low mood's complex functional role in cognition. I argue that if we take this role into account, we have excellent reason to believe that low mood a) *has* content, and b) has the following indicative-imperative content: *Good events are, on average, less likely to occur than bad events & Limit [the subject's] resource expenditure!*

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1. Introduction

Unless you are immensely lucky, I suppose that you know what low mood is. It's the mental state that makes you feel "down in the dumps", that saps enjoyment out of your everyday activities, and that can, at its worst, make things seem hopeless. It can last for hours, days, even weeks, and though its intensity can ebb and flow, it is almost always present during those times (DeLancey 2006). It is the antithesis of elation, and while it is often unpleasant, it can also sometimes make you feel neither pleasant nor unpleasant, simply numb (Cooper, Arulpragasam, and Treadway 2018; Ratcliffe 2015).[1]

Presumably, any philosopher would agree with the characterisation of low mood I have just given. The problem is that they appear to agree about nothing else. In particular, there is no consensus concerning the intentional content of low mood: some philosophers say that low mood lacks content (Deonna and Teroni 2012; Lormand 1985; Searle 1983), and those who say it has content disagree about what this content is (Crane 1998; Mendelovici 2013; Price 2006; Solomon 1976).[2] My aim in this article is to make progress on this key philosophical problem.

So far, philosophers have attempted to determine the content of low mood on the basis of low mood's phenomenal character (Crane 1998; Mendelovici 2013; Deonna and Teroni 2012). Since phenomenological considerations have failed to settle the debate, I propose to tackle the issue from a different perspective: I suggest using low mood's *functional role in cognition*—specifically its effects on judgement and action-selection—as a guide to its

[1] I use 'low mood' in a way that encompasses both mild low mood and depression, since it is now widely accepted that these are different forms of the *same mental state* (in particular, depression is more severe and long-lasting than mild low mood), rather than two separate kinds of mental state (Andrews and Thomson Jr. 2009; Nesse 2019; The British Psychological Society 2020; Turner 2024).

[2] The content of a mental state can be thought of as a personal-level phenomenon grounded in the state's phenomenal character (e.g., Mendelovici 2013; Searle 1983) or in informational-theoretic terms, according to which content does not depend upon phenomenal consciousness but rather on certain informational and/or functional properties (e.g., Dretske 1995; Fodor 1987; Shea 2018; Tye 1995). For more on this distinction in relation to moods, see Bradley (forthcoming). In this paper, I read 'content' in an informational-theoretic way. I focus on this approach because a) it is in line with mainstream cognitive science, and b) it implies that low mood's content is naturalizable, insofar as it could be (in principle) fixed by information, function, or some other suitably natural properties.

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content. I argue that low mood's functional role (which I outline in section 2) gives us excellent reason to think that low mood has *a* content (section 3), and that *the* content is the following: *Good events are, on average, less likely to occur than bad events & Limit [the subject's] resource expenditure!* (Section 4). Finally, in Section 5, I return briefly to the issue of phenomenology, and show that this content coheres with low mood's phenomenal character.

2. Low mood's functional role

I begin by outlining what low mood's functional role in cognition is. Specifically, I focus on low mood's effects on judgement and action-selection. Why this focus? Broadly speaking, low mood has two types of effects: *reflex-like* (e.g., making people cry) and *non-reflex-like* (e.g., affecting one's judgments). Following a well-established tradition in philosophy and cognitive science (Dretske 1988; Fodor 1990, 1994; Shea 2018), I propose that the appeal to content is needed only to explain the latter category of effects, since reflex-like responses can be explained in a purely non-semantical way. Given this, only data concerning the non-reflex-like effects of low mood can be used as a guide to discover its content.

One may still wonder why I do not discuss low mood's effects on memory and attention (e.g., Bower 1981; Matt, Vázquez, and Campbell 1992; Peckham, McHugh, and Otto 2010), both of which are non-reflex-like. I leave these effects aside because they do little to help us determine the *specific* content of a mental state. The reason why is simple. Memory and attention are merely *primed* by the content of mental states (Maxfield 1997; McNamara 2005). For example, thinking about a yellow car will prime me to remember things about/attend to yellow cars, and also other cars, other yellow things, and anything else that I associate with yellow cars. However, due to the rapidly expanding branches of association involved in memory and attention, it is very hard to infer what content caused those changes. For example, suppose that a certain mental state has led me to remember that my first car was yellow. This state might have had any of these myriad contents (the same can be said, *mutatis mutandis*, for attention). I could have had an experience that represented a yellow car, or many yellow cars, or perhaps instead a Toyota—my first car was, after all, a yellow Toyota—or even just the colour yellow. Perhaps it's none of these. Even if we focus on the mental state's *pattern of* effects on memory (and attention), things don't get any clearer. Suppose that the mental state causes me to remember that my first car was yellow, my second car red, and my third blue. What was the content of the state that caused these memories? Did it

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represent all three colours, or the cars themselves? Or did it just represent a Toyota (or anything related to a Toyota, for that matter), which led me to think about my first car (which was yellow), which in turn triggered other memories regarding my previous cars and their colours? We still cannot tell. Given this, considering low mood's effects on memory and attention is not epistemically useful for discovering low mood's content.

In contrast, focussing on judgement and action-selection *is* epistemically useful. Suppose that by looking outside the window, I form the judgement that there is a yellow car parked on my driveway. What visual experience might have led to such a judgement? It is highly likely to be a visual experience that represents that there is a yellow car on my driveway. Of course, considering this one judgement alone leaves open the possibility that the experience represented something else–it could have represented *a yellow Toyota* instead, for example. But, this time, looking at *the pattern of judgements* I formed by looking out of the window will solve this indeterminacy–e.g., do I judge that the car is both yellow and a Toyota, or just yellow and of an indistinguishable brand?

The same principle applies to action-selection. If I intentionally steer my car left around a corner at a particular angle, we have good reason to think that the representation that guided this action represented the road as turning to the left at that particular angle, as this neatly explains how and why I performed this action. Granted, I may have turned my car at a steeper angle than my experience represented the road as turning because I wanted to perform some kind of special manoeuvre. But again, we can determine whether this is the case by further looking into the general pattern of actions the mental state caused. E.g., did I say to my passenger "Look at this cool manoeuvre," before turning, or did I check my mirrors, turn gently, and keep an eye on the curb?

With all that in mind, I now examine data from numerous studies in order to present an overarching account of low mood's effects on both judgement and action-selection.

2.1. Low mood and judgement

Studies of how low mood affects judgment typically proceed as follows (Hepburn, Barnhofer, and Williams 2006; Schwarz and Clore 2003; Wright and Bower 1992): low mood is induced in a group of subjects by asking them to recount unpleasant memories, or by focussing their attention on negative events, or by presenting them with sad movies/music/stories; subjects' moods are then measured, either by having the subjects complete a questionnaire designed to

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measure low mood severity (e.g., the Beck Depression Inventory or the Hamilton Depression Scale) or by getting them to give verbal mood reports, to ensure that they are indeed in a low mood; subjects are then asked to make certain judgments, and these judgments are compared with the judgments made by people in a neutral or high mood, or with the judgements made by those same people at a later time once their mood has returned to normal. This procedure has generated some interesting results.

First, subjects in an induced low mood make different judgments than controls about *the likelihood of good and bad events occurring*: they typically rate the chances of good events occurring as lower, and the chances of bad events occurring as higher, compared to those in a neutral or high mood, across multiple domains (Wright and Bower 1992).[3] For example, they judge that they are less likely to meet new friends, go on holiday, or receive an honour, compared to controls. They also judge that they are more likely to get mugged, lose a close friend, or lose their money, compared to controls. This effect extends to their judgements of events that affect *others*. Those in a low mood judge that, on average, bad events that affect others (e.g., the president of the USA being assassinated) are more likely, compared to controls. They also judge that good events that affect others (e.g., a cure for cancer being discovered) are less likely, compared to controls. Furthermore, when a subject's reported probabilities of good/bad events occurring are aggregated, it turns out that those in a low mood judge that good events will be, *on average*, less likely to happen than bad events (*ibid*). For comparison, those in a neutral mood judge that, on average, good events are marginally more likely to occur than bad events, and those in a high mood judge that, on average, good events are significantly more likely to occur than bad events (*ibid*).

These data are supported by studies assessing the correlation between depression (severe, prolonged low mood) and people's predictions about future events. Multiple studies show that depressed individuals judge that bad events will be more likely to occur, and good events less likely to occur, compared to controls (Hobbs et al. 2022; Marroquín and Nolen-Hoeksema 2015; Thimm et al. 2013). It should be noted that not all of these studies show that when subject's reported probabilities of good/bad events occurring are aggregated, depressed

[3] Note: they are not asked about the probability of *mental* events occurring. E.g., they are not asked questions like, 'How likely do you think it is that you'll experience pain in the near future?', though they are asked how likely they think it is that they will be injured (Wright and Bower 1992).

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individuals think that good events will be, on average, less likely than bad events (e.g. Thimm et al. 2013), though several do (Hobbs et al. 2022; Marroquín and Nolen-Hoeksema 2015). This, however, is to be expected. Data do *not* show that low mood causes people to judge that *all* negative events are more likely to occur than *all* positive events. Thus, since studies can only ask a limited number of questions, it is not guaranteed that the aforementioned effect on people's judgments of the average probability of events occurring will be seen in all studies. Nevertheless, given that plenty of data indicate that low mood does cause people to judge that good events are, on average, less likely to occur than bad events, I contend that we have good reason to think that this is indeed one of low mood's effects on judgement.

Second, compared to those in a neutral mood, those in an induced low mood judge that even if a good event were to occur, it would be *worse than usual* (Hepburn, Barnhofer, and Williams 2006). This doesn't mean that low mood subjects rate good events as less worthwhile/important—they don't (Dickson, Moberly, and Kinderman 2011). Rather, evidence suggests that they expect to derive *less pleasure or enjoyment* from them (Hallford, Sharma, and Austin 2020). It should be noted that although low mood causes people to judge that they will get less pleasure from typically good events, low mood has *no effect* on how positively/negatively people judge bad events to be, should they occur (Hepburn, Barnhofer, and Williams 2006).

These data are supported by studies assessing the correlation between low mood and people's judgements of how positive/negative future events will be. Multiple studies have shown that that those in a low mood tend to judge that they will get less pleasure/enjoyment from typically good events (should they occur), compared to controls, but that they do not differ from controls in how good/bad they judge future negative events will be (should they occur) (Marroquín and Nolen-Hoeksema 2015; Yuan and Kring 2009). Thus, I conclude that we have good reason to think that low mood causes people to judge that they will get less pleasure/enjoyment from typically good events, while having *no effect* on their judgements of how positive/negative bad events will be, should they occur.

Finally, when asked to judge how *satisfied they are with their life as a whole*, those in a low mood report lower overall satisfaction than those in a neutral or high mood (Schwarz and Clore 1983).

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On the basis of these data, I propose that low mood brings about a *broad negativity bias on judgment*: as well as causing people to be generally less satisfied with their life as a whole, it results in people (a) judging that good events are less likely to occur, and bad events more likely to occur, than those in a neutral or high mood, (b) judging that good events are, on average, less likely to occur than bad events, and (c) judging that even if good events do occur, they won't be very pleasant/enjoyable anyway. Low mood doesn't, however, affect how positively/negatively people judge bad events will be, should they occur.

2.2. Low mood and action-selection

Low mood, I maintain, also has a *global demotivational effect on action*. To begin with, it affects *social* behaviour: people in a low mood are less skilled at social interactions (Gotlib 1992), and tend to socialise (*ibid*), work (Lerner and Henke 2008), and parent (Beck 1995) less than those in a neutral mood. Admittedly, these data are correlational, but since therapies and drugs that alleviate low mood symptoms also tend to increase socialisation, working, and parenting behaviours, we can safely conclude that low mood is the *cause* of these changes in social behaviour (Briley and Moret 2010; Gunlicks and Weissman 2008; Murray et al. 2003; Sledge and Lazar 2014).

Low mood also has a demotivational effect on *non-social* actions. Firstly, people in a low mood engage in fewer hygiene behaviours than those in a neutral mood (Slekiene and Mosler 2017). Secondly, individuals in a low mood report that they are less motivated to participate in personal leisure activities, such as going for a walk by oneself, than those in a neutral mood, and in many cases do in fact engage in fewer such activities than controls (Nimrod, Kleiber, and Berdychevsky 2012). They also tend to be far more sedentary than those in a neutral mood—spending more time doing things like lying in bed, watching TV, or scrolling through social media—and the more severe the low mood, the more sedentary people tend to be (Blanco and Barnett 2014; Nimrod, Kleiber, and Berdychevsky 2012). Yet again, these data are correlational, but animal studies suggest that low mood is the cause of this demotivation of non-social action: induced low mood has been shown to decrease non-social behaviours in mice (Yang et al. 2014), and treating mice with antidepressants tends to increase their hygiene behaviours (Piato et al. 2008).

One might respond to the claim that low mood has a *general* demotivational effect by pointing out that depressed individuals sometimes exercise *more* than non-depressed

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individuals (Blanco and Barnett 2014). It is, however, easy to explain away this datum. Even when depressed individuals exercise, they report that they are less motivated to do so (Blanco and Barnett 2014; Nimrod, Kleiber, and Berdychevsky 2012). Furthermore, exercise is often used as coping mechanisms, and is encouraged by psychiatrists in order to help alleviate the symptoms of low mood (Craft and Perna 2004). As such, it seems correct to say that those who engage in exercise do so *in spite of their low mood*, not because of it.

Finally, the demotivational effect of low mood is potentially even greater than indicated above: when low mood becomes severe and persistent, as in severe depression, it can demotivate the individual from acting in any way whatsoever. As is well-known, severely depressed individuals struggle to do even the smallest of tasks, such as getting out of bed (Kanter et al. 2008).

2.3. Wrap up

Low mood plays a large and complex functional role in cognition: it has important effects on judgment, giving rise to a broad negativity bias, as well as on action-selection, where it leads to demotivation across social and non-social domains. The question now is: how low mood can play this role? In the next section, I argue that it couldn't do so if it lacked content.

3. In-virtue-of-content explanations

A number of philosophers argue that low mood (as well as other moods) is content-less (Deonna and Teroni 2012; Lormand 1985; Searle 1983). Their argument for this claim is phenomenological. Consider a paradigmatic content-bearing state—e.g., the visual experience *of a cat*. This mental state wears, so to speak, its content on it phenomenological sleeve—one experiences it as *directed* at the cat. But low mood is different (*ibid*). Though something like my failure to finish my paper might *cause* my low mood, I don't experience my mood as *directed* at this failure. As such, the argument goes, one has good a reason to conclude that low mood lacks content.

In response to this argument, many philosophers have argued that it mischaracterises the phenomenology of (low) moods (Crane 1998; Mitchell 2019; Seager and Bourget 2017). While it is true that we don't experience low mood as directed at any *particular* object, like *that* cat or *this* paper, this doesn't mean that we experience low mood as directed at *nothing*. Rather, we experience low mood as directed at something general, such as the *whole world*,

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everything, or a set of *possible events*—it "casts a shadow" on the world, or makes one's future seem bleak (Ratcliffe 2015; Solomon 1976). Given this, the response continues, the right lesson to be drawn from the phenomenology of low mood is not that low mood lacks content, but rather than it has *general* rather than particularised content. For example, low mood might represent *the whole world* as being a certain way (Crane 1998; Goldie 2000; Mitchell 2019), or it might represent *whatever one turns one's attention to* as being certain way (Kenny 1963; Seager and Bourget 2017; Solomon 1976), or it may even represent certain kinds of *future events* as being *likely/unlikely* (Price 2006; Tappolet 2017) (I will come back to these "general" contents in Section 4).

The problem with this debate should be obvious enough. Even if one accepts that phenomenology is a good guide to low mood's content (and one might deny that anyway (Bordini 2017; Kind 2013)), it is very hard to establish who is getting the phenomenology right here. Is low mood experienced as directed at *nothing*, or as directed at some very *general* object? I confess that I find this hard to say. In light of this, in this section, I take a different approach to the issue of whether low mood has content: I propose that low mood has content because ascribing content to low mood is the best way to make sense of its functional role in cognition.

3.1. Explaining effects on judgement

As we have seen above, one of the effects that low mood has on judgment is that it alters our judgements about the *probability of events* occurring—people in a low mood judge that bad events are more likely to occur, and good events less likely to occur, compared to controls, and when subject's reported probabilities of good/bad events occurring are aggregated, those in a low mood judge that good events will be, *on average*, less likely to happen than bad events. Now, one might try to explain this at the *neural level* ("When one tokens a low mood, some neurons fire in this and that way, and this causes the neurons that encode probability to fire in that and this way"), but apart from the fact that we don't have any such explanation available (we are not even close) it seems that this explanation wouldn't be enough anyway—clearly, it must be supplemented with an *information-processing* one.

If low mood has content, this information-processing explanation is readily at hand. The explanation would go something like the following. Low mood represents the probability of (certain) events occurring (or some similar content). This information is processed, along

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with the information carried by one's beliefs and desires, in decision-making. As a result, one's judgements about the probability of events is different from what it would have been were one not in a low mood.

Would an information-processing explanation be available if low mood didn't have content? One could propose that low mood is typically accompanied by some belief (or beliefs) about the probability of certain events occurring—let's call this proposal 'the belief theory'—and that these beliefs are what alter people's judgements. For example, one might say that when one undergoes low mood, one also forms the belief, *Bad events are, in general, going to be more likely in the near future*. However, this proposal faces a serious problem, insofar as it is unclear how we could form such a belief, *unless low mood had content*. Recall that low mood can be reliably induced by getting people to watch sad movie clips (often works of *fiction*), or by getting them to listen to sad music. It seems highly implausible that one would form the belief, *Bad events are, in general, going to be more likely in the near future*, based only off of watching a sad movie or listening to a melancholy song. After all, being presented with these stimuli gives one *no evidence* at all about what kinds of events are likely to happen in the future. One could explain why we form such a belief if low mood had the content, *Bad events are, in general, going to be more likely in the near future* (or some similar content), but then, clearly, the belief theory would not stand in opposition to the theory that low mood has content.

In response to this, one might alter the belief theory along the following lines: one might argue that people have a belief with the content, *Typically, when I'm in a low mood, the probability of events (of a certain type) occurring has altered (in a certain way).* This version of the theory can explain why sad music alters people's judgements about the probability of certain events occurring: sad music causes one to be in a low mood, and if one believes that being in a low mood is typically associated with a certain probability change, then one has *a reason* to conclude that such a probability change has indeed occurred. But this version of the theory also faces a major problem. People can report many beliefs about low mood—e.g., the belief that low mood makes them feel like they don't want to do much, or the belief that low mood usually follows from sadness or disappointment. However, it doesn't seem that they can retrieve the belief, *Typically, when I'm in a low mood, the probability of events (of a certain type) occurring has altered (in a certain way).* Why so? The most plausible answer is: because people don't have such a belief.

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Yet another alternative to the hypothesis that low mood has content would be to argue that low mood biases other cognitive processes such as memory or attention (which it does, as discussed in section 2), and these changes bring about changes in one's beliefs or judgements—call this the 'cognitive bias theory' (see Sizer 2000 for a similar idea). There is, however, a core issue with this proposal. Namely, there is plenty of evidence indicating that changes to attention and memory are due to the *content* of one's mental states (Maxfield 1997; McNamara 2005). To use a previous example, if I think about yellow cars, I'll likely attend more to yellow cars, and I'll likely remember things about yellow cars, because my thoughts are *about yellow cars*. Accordingly, it is not clear that this 'cognitive bias theory' is a genuine alternative to the claim that low mood has content. Moreover, the very fact that low mood does bias attention and memory actually gives us reason to think that it *does* have content, as it is unclear how low mood *could* bias attention and memory if it lacked content.

Finally, one may try to explain low mood's effects on judgement by reference to anhedonia—the reduced ability (or in extreme cases, inability) to feel pleasure (Shankman et al. 2014).[4] The explanation would look something like this. Anhedonia is a common symptom of low mood, and over 70% of depressed individuals experience it (*ibid*). Furthermore, people's judgements regarding how they will feel about future events are shaped by their current feelings (Loewenstein, O'Donoghue, and Rabin 2003). Thus, we would expect that low mood would influence people's judgements of the pleasantness of future events.

I grant that appealing to anhedonia seems to be a likely explanation of why those in a low mood judge that they will get less pleasure from normally pleasant events, suggesting that even if low mood has content (and regardless of what this content is), at least this *one* effect need not be explained by reference to its content (I will return to this in section 4). However, anhedonia cannot explain the change in people's judgements of the probability of good/bad events occurring, as getting diminished pleasure from normally good events has no bearing on the judgement that normally good events are *less likely* to happen. Thus, this explanation alone will not suffice either.

Now, I am not saying that a contentless explanation of the above is impossible to give. My point is that we currently lack one, and we should therefore stick to the idea that the effects low mood has on our judgments of probability is due to low mood having content.

[4] I'd like to thank an anonymous reviewer for *Philosophy of Science* for raising this point.

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3.2. Explaining effects on action-selection

The second reason to think that low mood has content is that the relation between low mood and behaviour is not reflex-like. Suppose that I am *feeling down*, so I am not very *interested* in going to a party. However, I *believe* that I must go to the party because I made a promise to a friend. What I *decide* to do depends on the interaction of my low mood and my belief. In fact, it depends on the interaction of my low mood with a myriad of mental states. Suppose I don't actually *care* about that friend too much, but I am *hungry* and, given my low mood, I really don't *want* to cook. In that case, the interaction of my low mood with these other mental states is likely to result in the decision to go to the party for a little bit, get some food, and get back home.

The moral here is that low mood appears to demotivate action by entering decision-making, where it interacts with other mental states in a semantically coherent way—something that can be easily explained if we posit that low mood has content. In fact, explaining complex behaviour and action-selection, such as the kind outlined above, is typically thought to be the *primary explanatory role* of content in cognitive science (Shea 2018). Furthermore, this flexibility precludes the idea that we can tell a brute-causal, reflex-like story of how low mood affects action-selection.

One might advert to anhedonia again to try to explain this effect on action-selection. If one doesn't find anything pleasurable, then surely this would demotivate at least *some* actions. I agree, but anhedonia cannot explain low mood's *global* demotivational effect. Firstly, many of the actions that low mood demotivates are not driven by pleasure—e.g., going to work and parenting are driven largely by a sense of duty, and basic hygiene behaviours by a sense of self-preservation. Secondly, many suffering from anxiety disorders also experience anhedonia (Guineau et al. 2022), yet these disorders do *not* have a global, demotivational effect (Chand and Marwaha 2024; Munir and Takov 2024).

If anhedonia won't do the job, and we can't tell a brute-causal story of how low mood demotivates action-selection, are there other more complex but nonetheless contentless story of how low mood brings about these changes in behaviour? As of yet, we lack an account of how contentless low mood could interact, in a semantically coherent way, with contentful mental states (and the burden of proof is on my opponents to provide one). Lacking such an account, the hypothesis that low mood affects action-selection in virtue of it having content is

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literally the *only explanation we have*, giving us good reason to endorse it. Taking this into account, along with what I have said regarding explaining low mood's effects on judgements, I contend that we should conclude that low mood has content.[5] The question now is, 'What is this content?'.

4. The *indicative-imperative* theory of low mood's content

In the previous section, I argued that given its functional role, we have excellent reason to believe that low mood has *a* content. In this section, I put forward a novel theory of *the* content of low mood by considering what content ascription best explains this functional role. I start by examining the three major extant philosophical theories of (low) moods' content, i.e., the *objects of attention theory* (Kenny 1963; Seager and Bourget 2017; Solomon 1976), the *whole world theory* (Crane 1998; Goldie 2000; Mitchell 2019), and the *probability theory* (Price 2006; Tappolet 2017), and show that none of them can explain low mood's functional role.[6] I then develop my *indicative-imperative* account, according to which low mood's content is as follows: *Good events are, on average, less likely to occur than bad events & Limit [the subject's] resource expenditure!*

4.1. Three theories

According to the objects of attention theory, low mood represents *whatever one turns one's attention to* as being a certain way (Kenny 1963; Seager and Bourget 2017; Solomon 1976).[7] While proponents of the theory disagree on exactly how low mood represents the objects of

[5] A similar argument, made by Rossi (2021), for the claim that moods have content is that they *rationalise* behaviour, in the sense that they give the individual experiencing the mood *reason* to behave a certain way.

[6] Absent from my discussion is the *bare properties* theory, according to which moods, in general, represent *only* properties, not objects or events (Mendelovici 2013). Since low mood alters people's judgements of the probability of certain *events* occurring, it becomes immediately apparent that any theory that posits that moods *don't* represent events wouldn't be able to explain this effect, and thus should be rejected.

[7] It should be noted that the objects of attention theory applies to other moods as well. E.g., according to this theory, anxiousness and irritability also represent whatever one turns one's attention to as being a certain way (though, of course, anxiousness will represent everything as being one way, and irritability will represent everything as being a different way). My arguments here, however, only apply to low mood.

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one's attention, they generally think that low mood represents them as being *bad* in one way or another (*ibid*).[8] For example, low mood would represent one's food as being unpleasant or one's future as bleak, provided that one's food or one's future were the object of one's attention.

This theory can certainly make sense of why low mood lowers people's life satisfaction. One's overall life satisfaction is determined by many elements—e.g., physical health, social status, life history, present occupation, and, importantly, optimism and pessimism for the future (Piper 2022). In regard to the latter, it has been shown that things like negative expectations about future climate change (Osberghaus and Kühling 2016), or worry about future unemployment (Grözinger and Matiaske 2004), lower overall life satisfaction. If low mood represents everything one turns one's attention to as bad, then it should have a negative impact on one's overall life satisfaction. After all, if someone turns their attention to their health or their job prospects, low mood will represent those things as bad, and since all these things are determinants of life satisfaction, representing them as bad should naturally lower people's ratings of overall life satisfaction.

However, the objects of attention theory immediately runs into trouble when it tries to explain low mood's effects on judgement, since it predicts that someone in a low mood should think that *every* event that they turn their attention to is bad. However, this is not the case. Those in a low mood think that good events are less likely to occur than bad events, *but they nonetheless still think that some events are good, and some are bad*. A proponent of this theory might try to alter it so that low mood represents every object as being *worse than usual*, rather than outright bad. However, this still doesn't work. This theory would predict that low mood causes people to think that *every* event is worse than usual. However, as we have seen above, low mood has no effect on how bad people think bad events will be. Thus, neither version of the objects of attention theory can explain low mood's effects on judgements.

[8] Some describe low mood as "casting a shadow" over objects, others say that it represents things as *bleak* or *uninteresting*.

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What about the whole world theory? According to this theory, low mood represents *the whole world* as being a certain way (Crane 1998; Goldie 2000; Mitchell 2019).[9] As was the case with the objects of attention theory, proponents of the whole world theory disagree on exactly how low mood represents the world, but they generally think that low mood represents the world as being *bad* in one way or another.[10] Also like the objects of attention theory, the whole world theory does a good job of explaining why low mood lowers people's general life satisfaction. After all, who would be satisfied living in a world that they think is generally bad?

However, the whole world theory has the following problem: it is too unspecific, and therefore it fails to capture the specific effects of low mood on judgement. Let me explain. There are many ways in which the world can be represented as bad. For example, given the information that the world is bad, someone might think that bad events are *more likely* than good events; another person might think that bad events are going to be *worse* than usual; yet another might think that *every* event will be bad. The problem for the whole world theory is that low mood has a very specific effect: it *does* cause people to judge that good events will be less likely, and bad events more likely, compared to those in a neutral mood, but it *doesn't* cause people to judge that bad events will be any worse than usual, nor does it cause people to judge that every event will be bad.

Moreover, the whole world theory cannot explain low mood's global, demotivational effect on action-selection either. After all, on its own, representing the world being bad could motivate *resource expenditure* in order to change the state of the world for the better. And even if we add anhedonia to a general representation of badness, we could at best only explain why low mood demotivates *some* actions (as discussed in Section 3.2), but not why it has the *global* demotivational effect that it does. Since the whole world theory cannot explain low mood's effects on both judgement and action-selection, we have good reason to reject it.

[9] Like the objects of attention theory, the whole world theory also applies to other moods: all (or at least most) moods represent the whole world as being a certain way (though the ways in which each mood represents the world as being will differ), according to the whole world theory. Again, my arguments herein are only meant to apply to low mood.

[10] Again, this is often spelled out in terms of low mood "casting a shadow" over the whole world, or representing the whole world as being *bleak* or *uninteresting*.

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Finally, we turn to the probability theory (Price 2006; Tappolet 2017). My relationship with this theory is ambivalent. On the one hand, this couldn't even be considered a theory of low mood's content—proponents of the theory talk of the contents of moods *in general*, rather than of the content of low mood in particular. On the other, the key idea of the theory—namely, that moods represent the *probability* of certain kinds of events occurring (or not occurring)—appears to be on the right track, at least for the case of low mood. Since low mood alters people's judgements about the probability of good/bad events occurring, it seems plausible that its content involves a probability representation. But what representation exactly? The probability theory doesn't say. But I have a proposal. I am going to build it step-by-step.

4.2. Low mood's content: First hypothesis

Working from the idea that low mood is probabilistic representation, the following serves as a plausible first hypothesis:

> *LMC-1*: low mood represents that *good events are, on average, less likely to occur than bad events.*[11]

Let me explain what exactly the above means. First, let's begin by clarifying what it means to say that low mood represents *good/bad events*. In this context, 'good/bad events' should be interpreted as those events that *generally* increase/decrease wellbeing and flourishing. This does not imply that good events do not have any negative effects (and vice versa for bad events). For example, receiving a prestigious award is (*ceteris paribus*) a good thing overall, even if it is bad insofar as accepting the award takes some time out of one's day. Moreover, low mood doesn't merely represent events that are good/bad *for* the person experiencing the mood, but also events that generally increase/decrease wellbeing and flourishing for other people. For example, deadly natural disasters that occur in far off countries would be (*ceteris paribus*) represented as bad events, even if they don't affect the person experiencing the mood. I should also note that which specific events one's mood represents as good/bad will of course depend on one's (implicit or explicit) criteria for wellbeing and flourishing.

[11] I am using 'events' in a way that excludes mental events. E.g., getting injured would count as an event, but experiencing pain would not.

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Second, to say that low mood represents that good events are, *on average*, less likely to occur than bad events is to say that low mood represents that good events are *in general* less likely to occur than bad events, not that *every* good event is less likely than every bad event.

Why think that low mood has this content? Firstly, it can straightforwardly explain why when subject's report probabilities of good/bad events occurring are aggregated, those in a low mood judge that, on average, good events are less likely to occur than bad events—the content is literally, *Good events are, on average, less likely to occur than bad events*. Secondly, it can explain why those in a low mood typically rate good events as less likely to occur, and bad events as more likely to occur, than those in a neutral or high mood. Given the information that *good events are, on average, less likely to occur than bad events*, one should update one's judgments of the probabilities of specific good/bad events occurring to match this average. Since people in a neutral mood judge that good events are, on average, marginally *more* likely than bad events, and those in a high mood judge that good events are, on average, *significantly more* likely than bad events (Wright and Bower 1992), then it follows that, compared to those in a neutral or high mood, for any good/bad event, someone in a low mood will likely judge that event to be less/more likely than someone in a neutral or positive mood.

This content also explains why low mood lowers people's overall life satisfaction. As mentioned, many factors play into how satisfied people are with their life as a whole—e.g., how happy they are with what they have done in their past, their current relationships, the amount of money and other resources they have, and, importantly, their *optimism/pessimism for the future* (Piper 2022). Given, then, the information that good events are, on average, less likely to occur than bad events, I take it as extremely plausible that one's overall life satisfaction would be lower than if one was given the information that good events are more likely.

What about the fact that low mood causes people to judge that even if good events do occur, they will be less pleasant/enjoyable (while also having no effect on people's judgements of how positively/negatively future negative events will be)? On the face of it, this suggests that low mood might represent a change in at least the pleasantness/enjoyableness of good events, and that therefore we must modify LMC-1. However, as you will recall, this is exactly the effect on judgement that anhedonia can explain. I'll elucidate.

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As mentioned, anhedonia is a diminished ability to feel pleasure, and a common symptom of low mood. It does not, however, affect one's ability to feel displeasure (Shankman et al. 2014). Given this, and given that people's judgements regarding how they will feel about future events are shaped by their current feelings, we should therefore expect that those experiencing anhedonia will predict that normally pleasurable events will be less pleasant/enjoyable, should they occur (compared to controls), while not differing from controls in their judgements of the pleasantness/enjoyableness of future, normally unpleasant events.

This prediction is borne out in data, as low mood causes subjects to rate typically good events more negatively (in terms of how much pleasure they will get from them) but has no effect on how negatively they judge normally bad/unpleasant events will be. Since these data can be explained as being a result of anhedonia, and there is no need to account for these data in virtue or low mood's content.

However, a real difficulty stands in the way: LMC-1 runs into trouble as soon as we consider low mood's effect on action-selection. Recall that low mood has a *general demotivational* effect on action—it causes people to engage in fewer social and non-social activities. LMC-1 cannot explain this. According to LMC-1, low mood represents that good events are, on average, less likely to occur than bad events, but this alone does little to guide action, as both disengaging with activities and engaging with them more makes sense given this information alone. On the one hand, if bad things are likely to happen, why not just stay out of the way and lie in bed? On the other hand, it also makes sense to be motivated by the change in probabilities of good/bad events occurring—if I'm more likely to lose my job, I should put in more effort to ensure that doesn't happen. But we do not see this disparate effect in action-selection in low mood; low mood demotivates across the board, and positing that low mood has only the indicative content presented here cannot explain this.

4.3. Low mood's content: Second hypothesis

The most obvious solution to this problem is to amend LMC-1 as follows:

> *LMC-2*: low mood represents that *[the subject's] actions will cause good events to be, on average, less likely to occur than bad events*.

LMC-2 does a reasonable job of explaining low mood's demotivational effect on action. Given the information that *one's actions* are more likely to lead to more bad than good, then

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one should naturally limit one's actions. The problem is that LMC-2 fails to explain a key effect of low mood on judgment.

Recall that low mood also affects people's judgements of events that have nothing to do with them. For example, those in a low mood are more likely than controls to think that the president of the USA will be assassinated. LMC-2 lacks the resources to explain this. After all, how could receiving the information that *[the subject's] actions will cause good events to be, on average, less likely to occur than bad events* result in someone thinking that it is now more likely that US president will be killed? To go from one thought to the other, one would be delusional, thinking that practically everything is under one's control. But the vast majority of people in a low mood are not delusional (only a minority of even severely depressed people are delusional) (Gaudiano, Dalrymple, and Zimmerman 2009). They know full-well that their actions have no bearings on the life of the president.

We face a conundrum here. LMC-1 can account for low mood's effects on judgement, but not its effects on action-selection, while the opposite is true of LMC-2. In the next section, I attempt to solve this puzzle.

4.4 Low mood's content: Final hypothesis

So far, I proposed accounts of the content low mood that adverted only to *indicative content*, a type of content that *describes* the way things are and thus has truth conditions (it can be true or false) (Barlassina and Hayward 2019). *Good events are, on average, less likely to occur than bad events* is an example of such content. But this isn't the only type of content. Mental states can also have *imperative content*, a type of content that does not describe but instead *commands*, and it has *satisfaction conditions*, not truth conditions (Barlassina and Hayward 2019; Charlow 2014). I argue that low mood has both indicative and imperative content. More precisely, I claim that the indicative content is the same as the content proposed by LMC-1, and that the imperative content commands that the subject limits one's resource expenditure. Thus, what we get is the following *indicative-imperative* account of low mood's content:

> *LMC-3*: low mood's content is as follows: *Good events are, on average, less likely to occur than bad events & Limit [the subject's] resource expenditure!*

Since the indicative part is the same as the content outlined in LMC-1, we already know it can explain the effects of low mood on judgements. To reiterate, it explains why people in a

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low mood judge that, on average, good events are less likely to occur than bad events; why those in a low mood judge that bad events are more likely, and good events less likely, than those in a neutral or high mood; and why those in a low mood report lower life satisfaction than those in a neutral mood. What I need to show is that the proposed low mood's imperative content (in conjunction with this indicative content) explains low mood's global demotivational effect on action. Let me do just this.

By 'resource', I mean things like food, energy, and money. 'Resource expenditure' stands for the use/loss of resources. Accordingly, *Limit [the subject's] resource expenditure!* commands the subject to lessen the amount of resources (e.g., food, energy, money) they use/lose. Thus, LMC-3 explains why low mood has a general demotivational effect on action-selection in the following way. All actions require the use/loss of resources. Working and parenting use energy and require one to eat more food, as do personal activities like going for a walk. Many social activities, e.g., going to the pub with friends, not only require the use of energy, but also cost money. Even maintaining one's hygiene requires money and energy. On the other hand, while being sedentary—e.g., lying in bed or watching TV while lounging on the sofa—does use up *some* resources, such sedentary activities use the smallest amount of resources possible (it is, after all, impossible to use no resources whatsoever). Therefore, following a command to limit one's resource expenditure, one should *generally* limit the number of actions one performs and become more sedentary, as doing so satisfies the command.

Having said this, I should note that in order to provide a useful guide to behaviour, low mood couldn't just command the agent to limit resource expenditure; it also must inform about *what kinds of environments they must reduce their resource expenditure in*. Suppose you are given a command to limit resource expenditure, but you judge that you are in a relatively favourable environment. Given your judgement, you are unlikely to limit your resource expenditure by much. Why should you? After all, you believe you are in an environment where good events are more likely than bad ones, so even in expending resources you judge that you are more likely to encounter good events. But if you receive the information that bad events are more likely than good events (along with the command to limit resource expenditure), now you should limit your resource expenditure more, given that you judge that there is an increased likelihood of both expending resources and a bad event occurring, thus making your resource expenditure futile.

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As you will recall, this is exactly what we see when people are in a low mood. Those in a low mood *significantly* limit their resource expenditure across social and non-social domains, and those in a severe low mood even go as far as limiting resources as much as one possibly can by doing little more than staying in bed. This is predicted by my indicative-imperative account of low mood's content, but it cannot be explained if we posit that low mood has only indicative or imperative content.

One might think that this theory implies that low mood would cause people to be *completely* sedentary all the time, as doing so would limit resource expenditure more than anything. However, this is not the case. Low mood is not the only motivator of behaviour—other affective states, desires, intentions, and other such mental states will motivate people to use resources in the pursuit of certain gains. As a result, these competing motivations will often cause people to act in certain ways despite their low mood. For example, one who knows they *must* go to the shops to get food will likely do so, even if they have limited many of their other activities (e.g., even if they then won't go for a walk afterwards). Of course, we would expect *extreme* cases of low mood to cause people to become almost entirely sedentary, as the signal to *limit [the subject's] resource expenditure!* would take precedent over other motivational signals. But this is not a problem: as mentioned, this seems to be the case, as those in an extreme low mood often have trouble even getting out of bed.

In sum, then, positing that low mood has the content, *Good events are, on average, less likely to occur than bad events & Limit [the subject's] resource expenditure!* explains both low mood's effects on judgements and its effects on action-selection. As such, we have good reason to accept LMC-3.

5. Returning to low mood's phenomenal character

Much of the philosophical work on the content of moods has focussed on their phenomenology (Crane 1998; Mendelovici 2013; Deonna and Teroni 2012). In this article, I adopted a different strategy and tried to infer low mood's content from its functional role in cognition. Still, I am happy to concede that, at a minimum, the content of a mental state should be *in line with* the state's phenomenal character—for example, it would be very odd to say that the content of an experience as of a yellow lemon in fact represents a blue chair. Thus, I will briefly sketch why I believe that the content above coheres with low mood's phenomenology.

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Firstly, this content respects the fact that low mood (like all moods) seems to be about things *in general*, not about *particular* objects or events. The indicative part of the content concerns the probability of *generally* good or bad events occurring, not the probability of specific events occurring, and the imperative content commands that one limits one's resource expenditure *in general*, rather than limit the expenditure of a particular resource, or the expenditure of resources in the pursuit of any particular goal or outcome.

Secondly, the content posited has the capacity to account for low mood's *unpleasantness*. There is much debate in philosophy—at least amongst representationalists about phenomenal character—regarding whether unpleasantness is accounted for by evaluative indicative content or by imperative content that commands that the subject avoid or have less of a certain thing (Barlassina and Hayward 2019; Martínez and Barlassina forthcoming; Carruthers 2023). The beauty of the theory provided here is that it has the capacity to account for low mood's unpleasantness either way. After all, according to this theory, low mood represents both that *bad* events are more likely to occur than good events, and commands that the subject expend *fewer* resources. Thus, it is compatible with both an evaluative and imperative theory of unpleasantness.

Finally, the content posited here coheres with the fact that low mood is often described as both a feeling of hopelessness and listlessness (Ratcliffe 2015). If low mood represents that bad events are more likely than good events (on average), then it would make sense for the subject to feel somewhat hopeless—after all, one will likely encounter more good than bad in the future, if the content is veridical. And the command to *limit resource expenditure!* could plausibly account for feelings of general listlessness, as all actions involve some kind of resource expenditure, and thus listlessness and a general unwillingness to act would help satisfy this command.

Conclusion

Let's take stock one last time. There has been much debate in philosophy over whether low mood has content, and if it does, what this content is. In this article, I have argued that we can best explain low mood's functional role in cognition—specifically, its effects on judgements and action-selection—if we posit that it has the following content: *Good events are, on average, less likely to occur than bad events & Limit [the subject's] resource expenditure!* Thus, given the explanatory power of this content in explaining action-selection and judgement, and the fact that it can also plausibly still account for low mood's phenomenology, I contend we have excellent reason to accept the above indicate-imperative account of low mood's content.

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