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(At)tending to Your Needs: Proper Function and Attention

Abstract: This paper develops a 'Needs-Based Account' of the function of attention, according to which attention functions to channel cognitive resources in ways that fulfil individual needs. I compare the account to other prominent theories, including the Cognitive Unison Theory (Mole 2010), Selection-For-Action View (Wu 2014), and the Structuring Mind view (Watzl 2017). The main point of contrast between the Needs-Based Account and competing views is the focus on the role of *needs* as providing a teleological end for attention, where competing accounts focus on *tasks*. Needs are characterized as (i) substantial; (ii) subjective; (iii) irreducible to basic biological requirements; and (iv) 'external', in that needs to not necessarily provide agents with reasons or motives for acting. I argue that accounting for the function of attention in terms of needs rather than tasks is useful for understanding disorders of attention, and so holds promise for use in clinical settings.

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1. Introduction

Although attention has long been a major research area in psychology and cognitive science, it has until recently been relatively neglected as a topic in philosophy of mind. This paper contributes to the growing theoretical research on attention by proposing a novel account of attention's function. I label my approach the Needs-Based Account. According to this view, attention functions to channel the cognitive resources of individuals in ways that contribute to the fulfilment of their needs. While the Needs-Based Account captures a simple and plausible idea about attention, it differs in substantial respects from the predictions and explanations offered by competing accounts, which are often framed in terms of tasks.

In the next section, I introduce the Needs-Based Account of the function of attention. In section 3, I compare the account to other prominent theories, including the Cognitive Unison Theory (Mole 2010), Selection-For-Action View (Wu 2014), and the Structuring Mind view (Watzl 2017). I argue that the Needs-Based Account has an advantage over competing accounts that frame attention in terms of the individuals' tasks and goals, and that the account promises a more complete explanation of malfunctions in attention. Section 4 concludes.

2. The Needs-Based Account of Attention

This section begins by introducing a teleofunctional theoretical framework in which my account of attention is set. I then explicate the Needs-Based Account, with a particular emphasis on developing the notion of 'need'. The account is then applied to some of the various aspects of attention, including overt vs. covert, focused vs. distributed, and endogenous vs. exogenous attention. The section concludes by considering the objection that ultimately any cognitive capacity must somehow contribute to the fulfilment of needs, and so the Needs-Based Account fails to say anything substantive about attention. I argue that attention is distinctive in having the higher-order role of managing other cognitive capacities so that they effectively contribute to the fulfilment of needs.

2.1 Theoretical Framework

Research in cognitive science reveals a diversity in the forms that attention can take and the mechanisms that implement it (Petersen and Posner 2012)—consider, for example, attention's role in maintaining alertness (Oken, Salinsky, and Elsas 2006), in the selection of

information for processing (Desimone and Duncan 1995), in modulating how information is processed (Carrasco et al. 2004), and the distinction between exogenous and endogenous attention (see Chun, Golomb, and Turk-Browne 2011 for a review). It has been argued that the various manifestations of attention speak against attempts at a unified theory (Hommel et al. 2019; Anderson 2011). However, many philosophers and cognitive scientists have continued to search for a substantive general theory consistent with these empirical findings (e.g., Mole 2010, Wu 2014, and Watzl 2017). The Needs-Based Account provides a general explanation of attention that promises to capture a variety of attentional phenomena.

Another area of emerging research concerns normative questions about attention. We can distinguish two types of such normative question. One type focuses on the role of attention in normative domains, such as ethics, epistemology, or politics. Our ethical, epistemic, and political obligations can require us to attend (or not) in certain ways (see e.g. Panizza 2022; Smith and Archer 2020; Watzl 2022). I set questions of this type aside, as it seems in principle possible to address these questions without committing to any particular theory of attention.

Another set of questions concerns normative issues about attention as such. What is it for attention to function well or poorly (independently of ethical, epistemic, or political implications)? How do digital technologies affect our ability to pay attention (see Williams 2018)? In virtue of what (if anything) do conditions such as ADHD count as *disorders* of attention (Hawthorne 2010)? How does attention figure in other disorders such as addiction (Field and Cox 2008) and obsessive-compulsive disorder (Levy 2018)? One of my goals is to develop a theory of attention suited to addressing this second category of normative questions.

Given these goals, I find it useful to take a teleofunctional approach to attention (see e.g. Cummins 1975; Millikan 1984; Neander 1995; Shea 2013). A teleofunctional account of X aims to explain what role X plays in a system S, i.e. what effects X has in S, that accounts for X's continued proliferation. Teleofunctional theories are often developed on a biological or evolutionary analogy, where the function of a device is understood as the effects it has had which have or could be selected for. Teleofunctional theories thus do not just tell us what X statistically normally does in S, but what X is in a minimal sense *supposed to* do in S—X's *proper function* (Millikan 1984).

A teleofunctional account of attention is attractive for at least two reasons. First, a teleofunctional account allows us to explain what (if anything) functionally unifies attention, without presuming that attention's function is manifested in a unitary underlying metaphysical nature. Attention's overall proper function may have various cognitive implementations, consistent with psychological research showing a diversity of attentional mechanisms. Second, a teleofunctional account allows for explanations of *mal*functions in attention, making it suitable for identifying natural norms on attention. This framing thus allows the Needs-Based Account to address normative questions about attention as such.

2.2 Introducing the Needs-Based Account

The basic starting point for my account is the idea that attention functions well when it enables individuals capable of flexible action to act in ways that fulfil their needs. Here is the official statement of this guiding idea:

> *The Needs-Based Account*: The proper function of attention is to channel the cognitive resources of behaviorally flexible creatures in ways that serve their needs.

I loosely define ‘cognitive resource’ to include any ‘online’ cognitive processing tools, or cognitive capacities currently available for information processing. Such cognitive processing tools include perceptual, inferential, and conceptual capacities. ‘Channeling’ online cognitive processing tools involves directing the flow and application of these tools. For instance, attending to a basketball may involve activation and application of concepts such as <basketball>, <game>; implementing an intention to dribble; reasoning about the best position for blocking the opponent’s shot; tracking the ball as it passes from player to player; and so on. One’s attending to the basketball is a matter of managing these active cognitive processes.

Cognitive resources, as information-processing tools, play important epistemic functions for tracking features and objects, recognizing patterns, and filtering signals out from background noise. The Needs-Based Account is thus able to capture a guiding thought in cognitive science research on attention, that attention acts as an information filter—in my terms, information-filtering is channeling cognitive resources. These epistemic functions are not ends of attention themselves, however, but are rather the normal way that attention serves its proper function for fulfilling needs. The epistemic role of attention is subservient to its practical function.

In considering the function of attention, many have noted an important connection between attention and ‘behavioral decoupling’ (Allport 1987; Neumann 1987; Wu 2014; Watzl 2017), or the ability to choose one among several possibilities for action in light of a given stimulus situation. Prior to the evolution of behaviorally decoupled creatures, attentional capacities would neither be needed nor possible. For a behaviorally *coupled* creature, there is never a choice to be made in confrontation with the environment—the ‘choice’ of behavior is in principle determinable as a mathematical function of the stimulus situation and cognitive wirings of the creature. Hence, there is no need in such a creature for executive control over the deployment of cognitive resources. Once behavioral responses are decoupled from present stimuli, but not before, a creature needs some way of matching psychological inputs with behavioral outputs. Attention is what accomplishes this task, by prioritizing certain items over others to enable effective action.

The Needs-Based Account makes a claim about the proper function of attention. This is to make a claim about what attention’s *purpose* is, or what effects attention has for the creatures that use it, that explains why attention continues to be a main feature of those creatures’ cognitive systems. While it is important to consider the various mechanisms by which cognitive resources are allocated—I consider some applications below—the focus of the Needs-Based Account is on the use or purpose that such allocation serves for the attending individual. Accordingly, it is important to be clear about the proposed *telos* for attention. Thus, the Needs-Based Account of attention needs a theory of needs.

2.3 A Theory of Needs

The idea that attention is to serve the individual’s needs may initially seem a platitude that will be accepted by any account of attention. Attention is frequently thought to be guided by the goals, tasks, and intentions of the individual. In many contexts, “need” can be used interchangeably with these other notions. If anything, it may seem preferable to focus on *task* as an experimentally manipulatable operationalization of concepts like ‘goal’ or ‘need’. However, a brief foray into the philosophy of needs reveals that the concept is more complicated than this interchangeability would suggest. Coupling the Needs-Based Account with a robust theory of needs yields not a platitude, but a theory of attention that differs from alternatives in substantial respects.

The philosophical literature on needs is driven by their purported normative significance. Frankfurt notes, for instance, that the role of needs "in political and moral discourse is especially conspicuous and powerful" (1984, 1).[1] Intuitively, an individual's primary or basic needs (henceforth I prefer 'primary'), e.g., for food, shelter, and safety, are capable of grounding moral claims. At the same time, needs-talk often also ranges over comparatively trivial concerns. We can and do say things like the following:

"I need a better look to determine if that really is a weasel"

"Alice need leeks to make potato-leek soup"

"Micah needs your signature to join the basketball team"

Determining whether some animal is a weasel, making a potato-leek soup, and joining the basketball team are intuitively not nearly as normatively significant as needs for food, shelter, and safety. Accordingly, one of the major projects in the philosophy of needs is to develop an account that accommodates the flexibility of needs talk, compatibly with recognizing the special normative significance of certain needs (Fletcher 2018). The main strategy for realizing this project is to somehow distinguish between different kinds, concepts, or senses of needs: one primary sense of need that is especially normatively significant, vs. a thin, ends-derivative conception of needs that is not as normatively significant. Philosophers mark this distinction in different ways, but initially, we can suppose that primary needs are related in a fairly direct way to *survival* (Reader and Brock 2004) and *avoiding serious harm* (Thomson 2005), while 'thin' instrumental needs are generated by the agent's *voluntarily chosen ends* (e.g., of joining the basketball team, making potato-leek soup, etc.) or the agents *wants* and *desires* (as in: if Alice *wants/desires* to make potato-leek soup, then Alice *needs* to have leeks).

The Needs-Based Account of attention is most plausibly developed in terms of primary needs. Developing it in terms of an end-relative or wants-based theory would risk trivializing the account. (The thin sense may be operative in contexts where 'need' is treated as interchangeable with 'task' or 'goal' in describing the function of attention). The success of most if not all intentional actions arguably requires the attention of the agent; hence, in any given intentional action, we could say that the agent *needs* (in the thin sense of 'needs') to attend to such-and-such or in some particular manner. I need to attend to the basketball in order to successfully throw the ball into the hoop. Attending in the right way is part of carrying out the intended action (Wu 2014). Attention is thus trivially implicated in the (thin) needs generated by the ends of intentional action. The Needs-Based Account, if developed in terms of thin needs, would amount to no more than the claim that attention functions to channel cognitive resources in just that way those resources must be channeled for the agent to act in the way she intends. I intend the Needs-Based Account to have more substance, and this is what we get when it is framed in terms of primary needs.

Unfortunately, it is difficult to specify exactly what counts as a primary need. One approach would be to limit primary needs to just what is necessary for survival or the avoidance of serious harm, as suggested above. But this approach has counterintuitive results, by excluding intuitive instances of normatively significant needs. For instance, the need for effective

[1] See also Fletcher (2018), who notes that many philosophers also subscribe to the idea that there is a "privileged class of needs [that] is fundamental, irreducible and morally important, in a way that has an important upshot for moral philosophy and/or moral thought" (175).

political representation is arguably an important human need, yet political representation may not always be directly related to survival and avoidance of serious harm. It also seems that we have normatively significant needs for social fulfilment and creative self-expression, which are also not clearly related to survival and avoidance of serious harm (Maslow 1943). These considerations speak against a reductive biological approach to needs, that countenances only what is strictly necessary for the survival of an individual, group, or species.

Another approach is to identify primary needs with what is sufficient for an individual to flourish (Anscombe 1958; Stewart 1985). A worry for the flourishing conception of primary needs is that it risks overgenerating needs, by, e.g., entailing that individuals need whatever is sufficient for the development of moral virtue (assuming an Aristotelian approach to flourishing), a notoriously difficult task even in the best of circumstances. Possibly, the folk understanding of 'flourishing' differs significantly from philosophical understandings that draw from eudaimonistic accounts of well-being. At any rate, the notion of flourishing is a topic of sustained debate in normative philosophy, on which one can remain neutral while accepting a Needs-Based Account of attention. Accordingly, I characterize primary needs without relying on flourishing, though the flourishing conception of needs may end up being a contender for the best overall account.

What counts as a normatively significant need also seems to be determined in part by the self-conceptions and chosen projects of agents. As an aspiring philosopher in a publish-or-perish academic environment, *I* need time to craft compelling philosophical arguments. I am made worse off with respect to my academic career when life circumstances prevent me from doing so. But the need for substantial time for creative thought and philosophical discussion are not needs shared by those who have chosen different life paths, and accordingly who have different and at least equally normatively significant needs. The fact that the objects of normatively significant needs can vary greatly depending the personal and social identities of the individuals who have them speaks against an 'objective list' approach to primary needs (modeled on objective list theories of well-being).[2] We may be able to accommodate the variety in the objects of needs in general terms, e.g.: individuals have primary needs for the objects and activities required for realizing central aspects of their identities. Nevertheless, given that the objects and activities of the needs so specified are determined by the self-conceptions of individuals, the general characterization offered is no help for objective list theories, which maintain that what is good for an individual is independent of their attitudes (Fletcher 2015). Still, it seems reasonable to expect that, consistent with the diversity of identity-constituted needs, all humans will share some needs in virtue of our biological constitution. Food, sleep, shelter, safety seem to be needs that must generally (but not exceptionlessly)[3] be met if one is to accomplish any of one's other needs.

A further question concerns the relation of needs to the motivations and reasons for action of an agent. Needs, it might be thought, are the sorts of things capable of motivating action, or providing reason for action. They seem, for instance, to figure in explanations of action: asked why she is buying leeks, it is reasonable for Alice to tell us that she needs them for potato-leek soup. The ease with which needs enter these explanations may encourage us to be

[2] See Haybron 2006, and essays in Fletcher (ed.) 2015.

[3] On occasion one will need to temporarily or even permanently forgo satisfaction of these 'biological' needs in the pursuit of a higher purpose. One might reasonably neglect sleep in the interest of, say, completing a book. Some find it reasonable to refuse food for political purposes, as in hunger strikes. We also sometimes put ourselves in physical danger in order to save others. We have purposes that transcend our basic biological needs. Thus, I do not agree with the idea (popularized in Maslow's hierarchy of needs) that certain 'basic' needs must always be met before others can rationally be pursued.

'needs-internalists', that is, to hold that necessarily if A needs X, then A has reason to take actions that (she believes) lead to A acquiring X. However, against the needs-internalist, it also seems possible for an agent to acknowledge X as a genuine need, yet not to acknowledge any reason to act so as to fulfil X. Indeed, Williams acknowledges this possibility in "Internal and External Reasons" (1979, 81):

> If an agent really is uninterested in pursuing what he needs; and this is not the product of false belief; and he could not reach any such motive from motives he has . . . then I think we do have to say that in the internal sense he indeed has no reason to pursue these things.

For example, in instances of depression, an individual can acknowledge that they have genuine needs relating to self-care, and yet find no reason to act in the appropriate ways. An implication of the Needs-Based Account in this case is that the individual's patterns of attention are malfunctional, insofar as their cognitive resources are channeled in ways that run counter to their needs—for instance, by exhibiting patterns of rumination on negative experiences and self-image. Given needs-externalism, the malfunction in this case is a malfunction in attention that does not necessarily constitute irrationality in the agent's deliberations. I take this to be a welcome implication, as it allows us to effectively diagnose attentional aspects of mental disorders like depression, without adding the possibly stigmatizing conclusion that such disorders manifest irrationality.

In sum, the Needs-Based Account of attention is based in a notion of a primary need that is: (i) substantive (as opposed to thin/instrumental), (ii) subjective, (iii) irreducible to strict biological need, (iv) and externalist. Finally, though not a focus of the present paper, it is worth noting that intuitively, the needs of an individual can derive from multiple sources (e.g. biological, social, personal) and can conflict with each other. For instance, in the case of addiction, it can be the case that one has developed a physical dependence on a drug and so 'need' it at a physiological level even as one aspires to sobriety and hence also needs to avoid using. More mundanely, we humans have in one sense an evolved desire for sweet things, which would have been a good proxy for needed calorie-rich foods in our past environments, and yet we can also have a health-informed need to avoid sweets given their abundance in contemporary society. We can be and often are at cross-purposes with ourselves (Millikan 2004 Chapter 1), and this is reflected in patterns of attention. The potential for conflict in needs is due to the fact that primary needs can derive from different sources, some biological, some social, some personal. This is as we should expect given a non-reductive approach.

2.4 Applications

The broad understandings of 'cognitive resource' and of 'need' employed in the Needs-Based approach allows for it to account for a great variety of attentional processes. I will briefly consider some distinctions to illustrate how the function of attention can be implemented by different mechanisms. The distinctions are between: (i) overt and covert attention, (ii) focused and distributed attention, and (iii) endogenous and exogenous attention.

Overt and Covert Attention. Overt attention involves shifts in attentional focus accompanied by overt signs of such a switch, such as eye saccades (in the case of vision), or moving one's head or face to orient in the direction of a sound or smell, etc. Covert attention shifts attentional focus without an accompanying sign. What purpose of the individual might be served by being able to attend either overtly or covertly? One suggestion is that overt and covert attention have an important *social* function.

Both overt and covert attention involve channeling cognitive resources to a target. But arguably, in the case of *covert* attention, normally it serves a need of the individual to keep the object of focus concealed from observers, whereas in overt attention it normally serves the individual's needs to reveal the object of focus to others (Gobel et al. 2015). Kuhn, Tatler, and Cole (2009) experimentally manipulated the social dimension of attentional focus, using the misdirection tactics of magicians. They found that the direction of a magician's gaze played an important role in orienting people's attention, independently of low-level features of the scene. The magician's overt attentional behavior in this paradigm is thus misleading—the object of the magician's covert focus is, by design, different from the object suggested by overt gaze behavior. Gobel and Giesbrecht (2020) also find that social information about a partner prioritized overt but not covert attention in a joint cueing task, and that overt attention is penetrable for social information even at early stages of information processing. Arguably, then, overt vs. covert attention have important functions in the social dynamics of establishing and manipulating joint attention.

Focused and Distributed Attention. Focused attention is directed towards a specific item, whereas distributed attention is directed towards a scene as a whole. A simple hypothesis we can draw from the Needs-Based Account is that focused attention is appropriate when semantic scene information is relevant to needs, whereas distributed attention is appropriate where overall scene categorization is more relevant to needs. Focused attention best serves the individual when what they need information about *what* they are looking at and its *features* (is that a venomous copperhead, or a harmless garter snake?). Distributed attention is useful when what is important is quickly extracting statistical information for rapid decision-making (is there an animal present in this scene or not?) (see Treisman 2006; Brand and Johnson 2018).

Endogenous and Exogenous Attention. Endogenous (or 'top-down') attention is sustained and voluntarily controlled by the individual, whereas exogenous (or 'bottom-up') attention is an involuntary, automatic, stimulus-driven form of attention. Endogenous attention keeps cognitive resources applied to important tasks which require substantial or sustained processing, whereas exogenous attention attunes the individual to important happenings in their environments. A major question in the attentional control literature concerns whether attentional control (endogenous attention) is stimulus- or goal-driven. In recent progress on this debate (Vecera et al. 2014; Luck et al. 2020), models now predict that circumstance and experience influence when distracting stimuli will capture attention (exogenous attention capture) vs. when goal-directed attentional control (endogenous attention) will block such attention-capture. This finding is compatible with the Needs-Based Account; it would presumably serve the individual's needs to have a channel open to the detection of novel and potentially dangerous or rewarding stimuli. It would also serve needs to be able to filter out irrelevant stimuli when an important task requires significant or sustained cognitive processing. These needs would have to be balanced against each other, and they may sometimes conflict.

2.5 The Triviality Objection

Understanding 'cognitive resources' and 'needs' in the broad way discussed here has the advantage of making the Needs-Based Account quite flexible. This flexibility is to be expected from a general theory of attention, given the pervasiveness of attention in mentality and the diversity of attentional phenomena. However, one might worry that the Needs-Based Account is flexible to the point of triviality. It is easy to say that attention functions to serve the individual's needs; *any* evolved capacity must contribute to the fulfilment of the needs of

its possessor in some way, or it would not have been selected for. There is nothing distinctive about attention in this regard, so the Needs-Based Account fails to make a substantive claim, one might argue.

Although any evolved capacity must contribute to fulfilment of the needs of its possessor in some way or other, there is an especially direct relation between attentional capacities and needs. Attention has the function of regulating other cognitive capacities such that they do in fact contribute to the fulfilment of the individual's needs. To perform this function, attentional capacities must be attuned to the individual's needs. (Being 'attuned to' needs means tracking those needs with some reliability; it does not require *representing* those needs as such). Attention serves as the mediator that connects cognitive resources to needs, and so it takes an active role in ensuring that those needs are met. Other cognitive capacities must often enough contribute to fulfilling the individual's needs, but attention is the capacity responsible for making this happen. So understood, attention's overall role in cognition is of a higher order than perceptual and inferential capacities: attention regulates the operation of these other capacities.

To illustrate the point, contrast the role of attentional capacities with perceptual ability. The triviality worry, again, is that *any* cognitive capacity must address the individual's needs in *some* way, and so the Needs-Based Account tells us nothing significant about attention. Likewise, the ability to perceptually track an object as it moves through a visual scene, for instance, clearly must serve some needs of the individual. It will presumably be greatly beneficial for a mobile creature to be able to identify and track sources of food and possible locations of predators. However, the point is that the mere *possession* of perceptual discrimination and tracking abilities is not useful unless those abilities are employed at an appropriate time and applied to track and discriminate among relevant objects. The role of *attention*, I have argued, is to take care of this task; attention directs the application of perceptual abilities (and other cognitive resources) so that they do serve needs of the individual. If one persistently visually attends to a dull rock instead of the easily visible, fast-approaching predator, there is a clear sense in which one's attention is not functioning as designed, even though one may nevertheless manifest a perfectly competent application of perceptual abilities.

3. *Comparison to Other Accounts: Unison, Action, and Organization*

Here I contrast the Needs-Based Account with some other prominent theories in the philosophy of attention; in particular, with Chris Mole's Cognitive Unison theory, Wayne Wu's Selection-For-Action view, and Sebastian Watzl's Structuring Mind theory. The major point of contrast resides in my emphasis on the importance of 'needs'.

3.1 vs. The Cognitive Unison Theory

According to Mole (2010), attention is best understood as *cognitive unison*. Cognitive unison is defined negatively, as the *absence* of task-irrelevant processing in cognitive resources that could serve the individual's performance on the task at hand. Attention is thus understood as a particular *way* or *manner* of performing a task. The rough idea then is that attention is a matter of engaging in a task without distraction.

The most significant point of contrast between the Cognitive Unison theory and the Needs-Based Account is in the states that are supposed to teleologically guide attention. According to the Cognitive Unison account, attention is guided towards the individual's *task*. The notion of 'task' is frequently used in psychological research, generally without explicit definition. This is problematic when the project is to give an account that is to have validity outside of

laboratory settings (in the lab typically there is no ambiguity about a participant's task). Mole is sensitive to this issue and provides a more expansive definition: "A task is defined as an activity of the agent's execution of which is under the guidance of the agent's understanding of that activity" (2010, 52). Mole intends a cognitively undemanding understanding of 'understanding' in this definition, so that he can allow for tasks (and hence attention) in non-human animals and infants. According to Mole, it is sufficient for understanding one's task that one be able to redeploy the cognitive bases of one's performance for dealing with relevantly similar alternative tasks. Guidance of a task by understanding, then, involves a degree of flexibility in the application of cognitive resources: at minimum, the individual must have the ability to use the relevant cognitive resources competently in application to a different set of circumstances.

However, I wish to argue that this understanding of 'task' remains too cognitively complex to serve as an adequate basis for an account of attention. As discussed in section 2.2, attention enables flexibility in action by allowing certain information to be prioritized over other information. The difficulty for Mole's account is that his construal of 'understanding' a task requires that the individual *already* have a capacity for flexible action with respect to the task situation, and so to already have a capacity for attention. The ability to redeploy the cognitive basis of performance in a task for a relevantly similar task requires flexibility in how cognitive bases are deployed. Flexibility in action arguably *just is* the ability to apply the same or a similar set of capacities to navigating various situations. To be able to behave in a particular way in response *only* to a fixed specific environmental circumstance is the characteristic of *in*flexible behavior. Mole's understanding of task-guidance then already presupposes attention, and thus cannot be used as the basis for an account of attention.

We need something cognitively more basic than 'understanding', even on Mole's construal of it, to serve as the basis for an account of attention. I propose that *needs* play this role. Intuitively, needs are more basic than (Mole's account of) tasks. Attention, I have proposed, must accurately track the individual's needs to function properly. But it is no part of the account that an individual must understand its needs (even just in Mole's sense of being able to redeploy cognitive capacities with respect to slight variations in need) in order to have them and be motivated to act in ways that address them. Even behaviorally simple creatures have needs for food, for shelter, and so on, though their behavioral repertoire for meeting those needs in their normal environments may be fixed and limited.

Another point of divergence between the Cognitive Unison Theory and the Needs-Based Account concerns what they can say about phenomena like distraction and mind-wandering. According to the Cognitive Unison Theory, to the extent that one is distracted from one's task, there must be some task-irrelevant processing, and hence to that extent one is not performing the task attentively. In the case of mind-wandering: to the extent that mind-wandering is essentially task-*less* cognition, one whose mind wanders is exactly *not* paying attention (Mole 2010, 57-58). Given Mole's account, any off-task or task-less cognitive processing is by definition *inattentive*.

By contrast, it is open to the Needs-Based Account to recognize some distraction and mind-wandering as genuine instances of attention. We do sometimes say that when one is distracted or mind-wandering, one is not 'paying attention'. However, I think this must be understood to mean that the distracted/wandering individual is not paying attention *to some contextually salient task*. The individually *can* be described as attending to the object of her mind-wandering, or to whatever is distracting her. She is just not paying attention to what she is 'supposed to' be attending to in the situation.

Even if neither distracted thought nor mind-wandering serve a need of the individual as such, because the Needs-Based Account is situated in a teleofunctional framework, distraction and mind-wandering can still count as *attention*—just attention that fails to perform its proper function. It may also be that distraction can serve an individual's needs—for instance, say one needs to devote cognitive resources to multiple important items simultaneously; the 'distracting' item constitutes a genuine demand on attention in addition to one's antecedent task (this is possible given that needs can conflict, as discussed above). Consider the stressful situation of taking an important call for work while also watching over your adventurous young child. Both need to happen, and you are the one to do it. *Failing* to be distracted by one of these tasks while performing the other could result in disastrous consequences.

3.2 vs. Selection-For-Action

Wu (2014) proposes the Selection-For-Action account, according to which attention has the function of selecting an object for action. Wu views attention as the design solution to the 'many-many' problem. This is the problem, arising for behaviorally decoupled creatures, of matching sensory input to behavioral output, or prioritizing one out of many available input-output pairings. According to Wu, attention is the capacity through which a creature can select just one out of many competing alternative objects for action, thus avoiding the 'behavioral chaos' (as Neumann 1987, 374 puts it) that would result from attempting to act on all affordances in the environment at once. Thus, on the Selection-For-Action view, attention enables creatures to navigate complex environments in a flexible manner, and so it avoids the difficulty raised for the notion of 'understanding' used in the Cognitive Unison Theory.

According to the Selection-For-Action view, not just any selection of an object suffices for attention, however. As Wu explains, "Selection that is inconsistent or otherwise at odds with the agents motivations will not yield intentional action but rather inexplicable behavior"; what must be added for genuine attention, is that "selection for intentional action is *motivated* selection: the appropriate selection occurs because of the agent's intention" (2011, 101). Wu views the requirement of a relation to motivation/intention (what he calls the 'intelligibility constraint') as a necessary condition for a process to count as an attentional one. However. one difficulty that this requirement raises is that of accounting for apparently passive attention, as in the case of attention capture and mind-wandering. In attention capture, the object of attention does not appear to be intentionally selected. In mind-wandering, the object of attention does not appear to guide intentional action at all.

In response to this difficulty, Wu explains attention capture as an initially non-intentional and therefore non-attentional mental registering of some object that can then quickly become attentional when that mental registration engages a response, i.e., when it occasions intentional action concerning that object (2014, 91-93). Thus, in the case of attention capture, strictly speaking, attention as such is not involved in the initiating stage, but it is involved as soon as the agent then selects the attention-capturing object or event for further action. For instance, when one's attention is captured by the fire alarm going off, initially the sound of the alarm is not an object of attention but it very quickly becomes such as it engages a response, e.g., covering one's ears and leaving the building.

A difficulty for this response, in my view, is that it seems to provide the wrong order of explanation of the relation of attention and intention in cases of attention capture. We are told, in effect, that when one's attention is captured by a salient stimulus, the stimulus generates or prompts the formation of some intention for action involving the relevant object. It is then in virtue of this intention that one counts as selecting that object for action and

hence as attending to that object. However, a more natural explanation in cases of attention capture—at least, one more in line with the phenomenology of paradigmatic cases like the fire alarm example—has it that a salient object *first* captures attention, and only then can one form an intention to act in relation to that object (see Watzl 2017, 110 for discussion). The Needs-Based Account is consistent with the more natural attention-first explanation. Channeling cognitive resources towards a salient object does not require the intentions of the agent. Indeed, such channeling can happen *contrary* to the agent's intentions, in cases of involuntary attention capture and distraction—for instance, where my intention is to complete this paragraph, but my cognitive resources are persistently diverted to the smell of smoke from the other room. Intention-contrary channeling of cognitive resources can serve my needs well; in this case, I may genuinely need to notice the smoke, because it may alert me to the presence of a dangerous fire (maybe the fire alarm has malfunctioned).

In later work, Wu clarifies that even wholly *passive* forms of action, including passive attention, can be explained as "the fully automatic exercise of agentive capacities" (Wu 2022, 203. See also Wu 2019). As our skills develop, the properties of actions that exercise those skills become increasingly automatic rather than controlled. This automatization does not entail a *lack* of agency, but rather a passive form of agency that reflects practice and expertise. Though Wu does not explicitly discuss mind-wandering here, his discussion of passive agency suggests a way for the Selection-For-Action view to account for it. Mind-wandering, though apparently uncontrolled, nevertheless might be thought to manifest a passive form of agency. When our minds wander, after all, they do not tend to light on completely random thoughts but instead track the concerns of the individual (Smallwood and Schooler 2006).

However, here again, it seems that the Needs-Based Account can offer a more natural explanation of mind-wandering than the Selection-For-Action view. In cases of passive attention guidance, the Selection-For-Action view is committed to the claim that intentions of the agent are involved in some way, albeit if only implicitly, generated automatically as a result of past learning. The problem with this is not that mind-wandering is essentially unintentional—indeed, arguably sometimes we can *intentionally* mind-wander (Irving and Glasser forthcoming)—but that it is not obvious that mind-wandering must *always* be intentional. The Needs-Based Account can remain neutral on the role of intention in mind-wandering. When the wandering mind flows towards the individuals' current concerns, the Needs-Based Account can make sense of this in terms of needs: One's needs can structure the application of cognitive resources directly, without needing mediation through an intention of the agent.

As this discussion illustrates, an important point of contrast between the Selection-For-Action view and the Needs-Based Account is in their explanations of what ultimately guides attention. Where the Selection-For-Action view emphasizes the role of the agents' goals and intentions, the Needs-Based Account focuses on needs. If we are lucky, our goals and intentions will line up with what we need. But this is clearly not always the case. Dissociations between intentions and needs reveal the differing normative implications of the Selection-For-Action view and the Needs-Based Account.

When it comes to determining the object of attention, what is relevant for the Needs-Based Account is the pattern of how cognitive resources are channeled. This will likely line up with the objects of agents' intentional actions. According to the Needs-Based Account, when the flow of cognitive resources does not successfully contribute to fulfilment of needs, this constitutes a failure of attention to function properly. The teleofunctional character of the

account allows us to identify natural norms for attention in this way. Teleofunctional theories are 'normative' in the minimal sense that they enable distinctions between proper and malfunctioning. (The normativity here is 'minimal' in that it does not entail prescriptive ought-claims). It is less clear what (if any) (minimal) normative claims about attention the Selection-For-Action view can ground. Perhaps we can say that attention fails to function properly according to the Selection-For-Action view when one somehow accidentally attends to X when one needs to be attending Y in order to carry out one's intended action. But it's unclear why such a situation could not also be described as one where, in virtue of attending to Y, one's intentions have simply changed from what they initially were. If I set out with the task of determining the number of dots on the screen, and then find myself thinking about dinner instead, have I failed somehow in attending to the screen, or has my intention simply changed to one involving dinner (e.g. deciding what to make)? It's unclear what could settle this issue on the Selection-For-Action view. Accordingly, it's unclear what the view can say about normative assessments of attention.

3.3 vs. Structuring Mind

According to Watzl's Structuring Mind account of attention, attention is a process of organizing mental parts: it is the regulation of what he calls 'priority structures' (2017, Chapter 4). Priority structures are composed from mental parts; they impose a structuring relation on these parts, which ranks them from highest to lowest priority. By 'mental parts', Watzl intends occurrent and subject-level mental states, events, and properties. The priority relation is one of 'weak priority', which can rank mental parts in terms of greater or lower priority, but that allows for ties between items of equal importance. Attention, then, conducts the transitions from one priority structure to another, of raising the priority of some mental parts and lowering that of others, or introducing or eliminating mental parts from the overall structure of mind at a moment.

The Needs-Based Account of attention's function, I think, is largely compatible with Watzl's Structuring Mind view on the metaphysics of mind and attention. What the Needs-Based Account adds is an explication of *natural norms* for attention. The Structuring Mind view provides important resources for analyzing patterns of attention that can be relevant in clinical contexts. But it does not explain what makes one pattern of attention better than any other for an individual.

To illustrate, consider the role of attention in addiction. Attentional bias towards drug-related cues is thought to be a component of addiction (see Field and Cox 2008 for a review). The Structuring Mind view can explain this connection in terms of psychological salience structures (Watzl 2017, 89). Through a history of drug-use and seeking behaviors, addicted individuals' psychological salience structures are 'trained' to automatically prioritize drug-related stimuli. These stimuli are placed and maintained at a location of high or top priority in the individual's priority structures.

However, the Structuring Mind view lacks the resources to explain what is harmful to the individual about such a pattern of attention. The addict's mind may be structured differently from that of non-addicts, but why should one way of structuring a mental priority structure be any better than another for the individual? For instance, Anderson (2016) argues that the attentional patterns taken to be characteristic of addiction are also found independently in research using arbitrary reward-associated attentional training paradigms (or 'value-driven attentional capture'—see Anderson et al. 2013). This suggests that the same cognitive mechanisms underly both addiction and ordinary learned associations between attentional

selection and reward that generally shape psychological salience. What makes addiction a disorder, then, seems not to be simply the nature of the cognitive mechanisms that underly it, but rather how it affects the individual's ability to fulfil her needs. An advantage of the Needs-Based Account is that it can offer a principled explanation of what is malfunctional in disorders of attention. Attention, as such, functions well when it regulates priority structures such that what tends to be of high priority is also what the individual must devote the most cognitive resources towards in order to meet her needs.

3.4 Summary

This section contrasted the Needs-Based Account with several other prominent accounts of the literature. As we have seen, there are points of disagreement between these theories about what counts as instances of attention and why. These differences help to address the worry that the Needs-Based Account is trivial and uninformative: on the contrary, the account makes substantive predictions not shared by all viable philosophical theories of attention.

4. *Conclusion*

The primary goal of the present paper has been to introduce a novel Needs-Based Account of the function of attention and contrast it with some other theories in the philosophy of attention. The Needs-Based Account derives from and precisifies the intuitive idea that attention filters information in ways that are to serve the individual. Other accounts have focused on notions like tasks, goals, and intentions as guiding attention. This focus makes sense when one's aim is to directly incorporate psychological research on attention, given that tasks and goals are standard in psychological research and can be easily experimentally manipulated. The confines of an experimental setting provides participants with well-defined tasks. An individual's 'task set' also serves well to operationalize the notion of a need for experimental purposes, so the Needs-Based Account can incorporate the results of experimental work. But I have argued that we need to think of attention as relating to needs if we are to understand the natural norms that guide attention in everyday life. The Needs-Based Account goes beyond other theories by providing a criteria for distinguishing properly functioning from malfunctioning attention. This makes the Needs-Based Account apt for application in psychiatric contexts, enabling us to theorize and diagnose disorders of attention—an application to be pursued in future work.

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