Other-centred bias in perception and epistemic justification

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Abstract

According to traditional phenomenal approaches to perceptual justification, perceptual experience provides rational support for actions, beliefs, and intentions. When you see a banana as yellow, that perceptual experience makes it reasonable for you to believe that the banana is yellow. Debates about perceptual justification and the merits of the phenomenal approach have been centred on the solitary mind. But decades of research show that other people have an implicit impact on individual perception and cognition: perception is often other-centred or "altercentric". This influence even occurs with the mere presence of others: we unconsciously and spontaneously encode others' perceptual perspectives and shift our frame of reference accordingly. What is the epistemic standing of altercentric biased perception? This paper introduces this phenomenon and maps its epistemic profile. I review empirical evidence suggesting that during altercentric bias, a perceiver represents another's perspectival content, which can introduce a conflict between ego-centric and other-centric contents. I contrast altercentric bias with closely related phenomena, including cognitive penetrability of perception and exogenous attention capture, and argue that under certain conditions it poses unique problems to the epistemic justificatory role of perception, and particularly to the phenomenal approach to perceptual justification.

Keywords: Perspective-taking, Perceptual bias, Social perception, Perceptual justification, Epistemology of perception

1 Introduction

Perceptual experience is often taken to give rational support for our beliefs, intentions, and desires. When you perceive a strawberry as red, that perceptual experience makes it *reasonable* for you to believe that the strawberry is red. Barring extreme scepticism, what we believe about the external world is justified by what we see, hear, touch, smell, and taste (Smithies, 2014). Philosophical theories of perceptual justification have been predominantly centred on the *solitary* mind. The whole perceptual and epistemic process, from sensory intake and phenomenal experience, to belief-formation and judgement, is taken to be the prerogative of an individual isolated mind. Many perceptual experiences, however, are not merely individual, but socially shared: we jointly look at the ball in a basketball game, point to a chosen piece of cake to the baker, hunters track preys together, and musicians jointly attend to the music they play. What happens to the epistemic role of experience when we perceive things together?

A growing body of research shows that other people's perceptual perspectives have an impact on individual perception and cognition (Kampis & Southgate, 2020). Human perception is not necessarily anchored on an egocentric frame of reference. Rather, perception is often other-centred or altercentric: we spontaneously encode others' perceptual perspectives and shift our frame of reference accordingly, even when we are not attending to the same objects (Fig. 1) (Kampis & Southgate, 2020; Southgate, 2020). This altercentric shift often interferes with or biases our own perceptual experiences and judgements. This is the *altercentric perception bias* hypothesis.

Depending on where they are attending, another person's gaze can either facilitate or impair our ability to detect and discriminate objects in a scene (Frischen et al., 2007). In a classic study, Samson and colleagues found that participants were slower in judging the number of dots on a wall when a virtual agent saw a different number of dots (inconsistent perspectives) than when the participant and agent both viewed the same number of dots (consistent perspectives) (Samson et al., 2010; see also Surtees & Apperly, 2012). We are also better at recognising upside-down words when they match someone else's viewpoint (Freundlieb et al., 2018), and detecting nearly imperceptible patterns is easier when someone else shares our viewpoint on the same patterns (Seow & Fleming, 2019). Other people's judgements can even bias our own perception of colours (Zanesco et al., 2019).

This paper aims to introduce and map the epistemic issues surrounding the altercentric perception bias hypothesis as a unique phenomenon. After establishing the epistemic playing field through known problems and related phenomena (section 2), I delve into the empirical evidence to refine the contours of the altercentric perception bias hypothesis, with an eye to its epistemic profile (sections 3 and 4). Finally, in section 5, I argue that while altercentric perception closely approximates the epistemic problems of phenomena like the cognitive penetrability of perception, it nevertheless introduces unique challenges for the epistemology of perception. Specifically, in some situations, altercentric perception bias can introduce ill-formed inferential structures in perception, and in other situations, it can upgrade the epistemic role of perceptual experience.

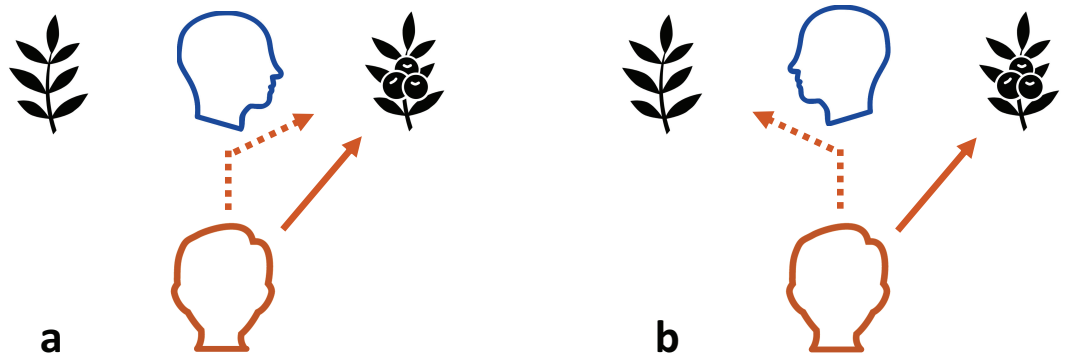

Figure 1: Spontaneous encoding of another person's perspective (dashed arrow) toward the same (A) or a different (B) target or direction compared to one's egocentric perspective (solid arrow).

2 Perceptual justification and hijacked experiences

According to a popular phenomenal approach to perceptual justification, merely having a perceptual experience provides immediate justification to beliefs related to the contents of that experience, at least in part in virtue of their phenomenal character, and absent consciously accessible defeaters (Smithies, 2014; Johnston, 2006). Some views within this approach are known variously as dogmatism (Pryor, 2000; Siegel, 2012), phenomenal dogmatism (Chudnoff, 2013), or phenomenal conservatism (Huemer, 2007). The phenomenal approach provides a simple and appealing take on perceptual epistemic justification: you are justified in believing that the bush contains berries because it *looks* that way. Perceptual experience has this justificatory role because it is directly supported by the relevant sensory information (Smithies, 2014).

Altercentric bias on perceptual experience can break this direct support. When looking for strawberries in a bush, someone else's perspective can affect your experience so that you miss a partially visible berry you would otherwise detect. Your visual experience then becomes biased by *irrelevant* sensory and cognitive information. How does this affect the justificatory role of your biased visual experience? What factors make your perceptual judgement epistemically worse in the social scenario?

Unfortunately, the traditional phenomenal approach to perceptual justification cannot explain the epistemic status of socially influenced perception. For these theories, the *origin* of a perceptual experience — whether it was biased by any other process or phenomena, including the presence of others — plays no clear role in its epistemic force (cf. Huemer, 2007; Silins & Siegel, 2014). They cannot explain why your perceptual judgement is epistemically better or worse in a social scenario compared to a non-social scenario.

This issue has parallels with the epistemic debate on the cognitive penetrability of perception. While perception certainly influences your beliefs about the world, the cognitive penetrability thesis holds that the influence may go the other way: in some cases there is an internal and direct causal influence of cognitive states, such as be-

liefs, desires and intentions, on perceptual experience (Siegel, 2012; Stokes, 2013). If perceptual experiences are themselves influenced by cognitive states, however, their justificatory role would be jeopardised. It brings the danger of introducing a circular justificatory structure. If my previous belief that most bananas are yellow determines my current perceptual experience of the banana in front of me as being yellow, then it becomes suspect to justify my current belief regarding the colour of the banana on that perceptual experience. It does not seem epistemically rational to rely on our perceptual experience to justify or increase the credence of our pre-existing beliefs, if these experiences are already influenced by the very beliefs they are meant to justify. This sort of perceptual experience becomes epistemically downgraded (Siegel, 2017).

This circular justificatory structure in cognitive penetrability is an exemplary case of what Susanna Siegel calls hijacked perceptual experiences — although not the only case —, where there is a pernicious inferential relation holding between the influencing cognitive states, traits or moods, and the influenced perceptual experience or judgement:

> *Hijacked experiences*: When perceptual judgements or perceptual experiences arise from processes that give prior outlooks too much weight and fail to give proper weight to perceptual inputs. (Siegel, 2017, 5)

A hijacked perceptual experience no longer confronts me with objects and properties in the world around me, threatening its justificatory role in forming beliefs about those objects and properties. The phenomenal approach to perceptual justification may not have the resources to address the epistemic threats of experiences with a circular justificatory structure, and of hijacked experiences in general. The main justification-conferring condition in this approach is that the experience has a certain phenomenal character. If the influence of cognitive states on perceptual experience is unconscious or goes unnoticed it would then be irrelevant to the epistemic role of the experience (Huemer, 2006). However, the possibility that perceptual experience may be part of a circular justificatory structure, or that it fails to give proper weight to perceptual inputs, supports the intuition that cognitive influences on perception should count as relevant to epistemic justification. If this is so, then the phenomenal approach cannot account for the epistemic threats that cognitive penetrability and circular justificatory structures bring about (cf. Battich & Deroy, 2022; Siegel, 2012; Puddifoot, 2016; Toribio, 2021).

Here I will not be concerned with the merits and debates surrounding the cognitive penetrability thesis on its own. But the template of circular justificatory structures, and hijacked perceptual experiences more broadly, can be useful for assessing the epistemic profile of altercentric biases in perception.

3 Altercentric perception and exogenous attention capture: seeing where you see

If altercentric perception bias displays a similar pernicious justificatory structure as the hijacked experiences in cognitive penetrability cases, then they will bring up similar epistemic problems for traditional phenomenal approaches to perceptual justi-

fication. But is there a circular justificatory structure involved? The influencing state — other people's perceptual perspectives — is seemingly external and not cognitive. Consider a case where you notice that your visual perception is a bit blurry, and get a new pair of glasses. On putting the glasses on, your visual perception is undoubtedly influenced. But this is not a case of cognitive penetrability: the influence is neither cognitive nor internal, even if you consciously willed to put the glasses on. Altercentric influence seems at first to parallel this situation: the influence on perception is neither cognitive nor internal, and so there is no circular justificatory structure.

However, this is not the whole story. There is a heated debate about how to interpret findings that may show that humans spontaneously and automatically encode other people's perspectives. One question, in particular, is whether altercentric perception is mediated by a domain-general process of attentional orientation, or by a social-specific perspective-taking process. The later process would involve a minimal form of mindreading, where we estimate the mental states of the other person (in this case, their perceptual states: "I see that you *see* x"). The mindreading interpretation of altercentric influences on perception has been challenged. An alternative "submentalising" explanation posits that, during social influences on perception, participants do not represent what the other person is perceiving, but are instead influenced by low-level directional cues from the influencing person (Heyes, 2014). On this view, bodily and behavioural cues, such as head orientation and directional movements, do not need to lead to an estimation of what the other person can see, but are themselves sufficient to draw our attention to a particular direction, and thus influence our perceptual experience. If altercentric perception is mediated by a domain-general orienting mechanism, where there is no estimation of the other's perspective, the influence on perceptual experience will then be neither cognitive nor internal.

Against the "submentalising" hypothesis, several recent studies provide evidence suggesting that altercentric interferences on perception may be cognitively mediated by a minimal mindreading process, even when they occur spontaneously (O'Grady et al., 2020). Several studies report altercentric influences on the perceptual abilities of participants in the presence of a virtual human avatar with directional perspectival states, but no altercentric influence in the presence of an inanimate object with non-perspectival directional cues, such as an arrow, a car, or a desk lamp (Ward et al., 2019; Santiesteban et al., 2014). If altercentric perception is mediated by minimal mindreading processes, then the influence on perception will be, in part, a cognitive influence, where the influenced person attributes a mental state of *seeing* to the other person (or *hearing*, *attending*, *perceiving*, depending on the situation at hand), and in virtue of this cognitive attribution, their perception becomes influenced.

But even if we accept the hypothesis that altercentric biases in perception are in part cognitively mediated, they may still not pose any significant epistemic issues to perceptual justification. This will depend on what precisely is being represented when taking someone's perspective: do I represent merely where you see, or also what you see? In the first instance, I only represent the spatial direction of your perceptual perspective, driving my attention, spontaneously and involuntarily, towards that same direction. This attentional shift will thus alter my phenomenal experience, in the

counterfactual sense that I would not have such experience had I not represented the direction of your perceptual perspective. In this case, the bias on perceptual experience would be brought through a bias in my perceptual attention. And it is not clear whether this should pose epistemic issues similar to those in cognitive penetrability, or any issues at all.

This profile has parallels to exogenous perceptual attention: the spontaneous and involuntary capture of perceptual attention by a salient stimulus in the environment. During our everyday lives, our spatial attention is often swayed by external stimuli, particularly by noticeable ones, like a flash or a loud siren sound, but also by emotional cues, such as angry faces (Carretié, 2014). Many irrelevant stimuli can influence attention unconsciously and involuntarily, which in turn affects perceptual experiences. As long as such influence poses no epistemic worries, if social effects on perception are similar, then there are no clear epistemic worries for them either.

However, the salience of objects, and thus the extent of their attention-grabbing effect, is strongly influenced by their relevance to the perceiver's goals (see Corbetta & Shulman, 2002, for a review). If you are searching for your friend in a crowd, and you know they are wearing a red coat, you will notice more often other people wearing red clothes than people wearing any other colour. The perceiver's cognitive intentions, desires, and goals interact with the bottom-up sensory-driven distinctiveness of the objects in the environment (Corbetta & Shulman, 2002). Berit Brogaard (2019) notes that this may open the door to epistemic concerns. Since external stimuli will grab attention only when they are cognitively relevant to the perceiver, and what is relevant may be in turn heavily influenced by the perceiver's implicit biases, wishful thinking, or erroneous beliefs, we have all the ingredients for the possibility of a circular structure in perceptual justification. For example, a conference chair's implicit gender bias may affect their exogenous attention-grabbing process to the extent that they misperceive whenever a female colleague notes her intention to raise a question. Based on their experience, their bias would lead them to form the mistaken belief that their female colleagues don't ask as many questions in conferences as their male counterparts.

To the extent that the altercentric effect on perception is mediated by attentional mechanisms, altercentric bias would be a special form of stimulus-driven attentional bias. In altercentric influence on perception, however, the degree of saliency that drives exogenous attention is not directly modulated by some implicit bias or some mistaken belief, but it is at first modulated by a tacit impulse or motivation to represent someone else's perception. This impulse may be itself come under the influence of implicit biases, and there is evidence that the tendency to follow someone's perspective can be partly driven by affective states or by one's own behavioural goals (e.g., O'Grady et al., 2020; Binyamin-Suissa et al., 2021; Dalmaso et al., 2020). But the possible danger of an altercentric bias on perception at stake is not just that this bias is itself influenced by other biases (for example, if I tend to follow the perspectives only of people like me in gender, race, or some other factor), but that there is an altercentric bias in the first place.

To recap, the altercentric influence on perception may be mediated through social-specific cognitive mechanisms, whereby a perceiver spontaneously represents the dir-

ection of someone else's perspective. In other words, a perceiver spontaneously and involuntarily encodes the spatial orientation of another agent's perceptual perspective, and in turn that can affect the perceiver's own perceptual experience. But it is not clear that this sort of influence may result in a hijacked perceptual experience with a circular justificatory structure. That is, as long as the altercentric bias only involves sensitivity to the spatial orientation of someone's perspective, it has an epistemic profile similar to non-social exogenous attention capture.

There is mounting evidence, however, that altercentric bias on perception involves more than sensitivity to others' perceptual orientation. Altercentric perception involves not just representing *where* the other person is looking at or attending, but *what* they perceive.

4 Seeing what you see

A long-established distinction in developmental psychology advanced by Flavell and colleagues (1992), defines two levels of visual perspective-taking. Level-1 consists of the ability to understand *what* lies in someone's line of sight, including the recognition that their visual content may differ from our own. Level-2 consists of understanding *how* someone perceives something, present in, for example, the recognition that people with different points of view may see the same thing differently. Most studies showing an altercentric influence on perception address level-1 perspective-taking. Both kinds of perspective-taking rely on, but go further than, the more basic ability to represent *where* someone is looking or attending, i.e. the spatial direction of their perspective.

The use of arrows as purely non-social cues in experimental studies has recently been challenged (Westra et al., 2021). Arrows may have "derivative intentionality" (Haugeland, 1990), as they are endowed with semantic content through the intentions of their authors and/or through social conventions. For this reason, experimental paradigms contrasting arrows with human avatars may not be able provide evidence that altercentric influences on perception underlie a social-specific process where we spontaneously encode the someone's viewpoint.

While it is arguable whether the same criticism applies to objects such as desk lamps, a new body of empirical studies take a novel approach to test altercentric inferences on perception, cementing the evidence for spontaneous level-1 perspective-taking. These studies manipulate the presence or absence of perspectival states of a virtual avatar in the screen, by using objects that impede vision such as blindfolds, barriers, or googles. For example, an avatar wearing a blindfold did not induce any significant influence on the participants' sensitivity to detect nearly imperceptible patterns, but a seeing avatar did (Seow & Fleming, 2019). Furlanetto and colleagues (2016) used a similar manipulation with the dot-counting task (Samson et al., 2010), where participants are required to count the number of dots in a scene where a virtual agent has limited perceptual access to all the dots. In their study, the agent was shown wearing goggles of different colours, which participants believed to be either transparent or opaque. As in previous studies, they found evidence for altercentric influence, so that participants where slower to judge the number of dots when the virtual agent saw

a different number of dots than when they both saw the same number. But this altercentric influence was found only in the trials where the agent wore "transparent" goggles and not in trials with "opaque" goggles. These results are in line with the hypothesis that participants are encoding the perceptual perspective of the avatars, and are not influenced merely by their orientation. In a multisensory study, Nuku and Bekkering (2010) found that a virtual avatar's gaze direction can influence the speed of spatial auditory judgements, but only if the avatar is not wearing a hearing-impairing object like a helmet, suggesting that participant were sensitive to the auditory states of the avatar and not merely to its visual directional cues.

Evidence that obstacles to someone's line of sight, such as barriers, blindfolds, and goggles, can cancel out or diminish the influence of the other's perspective, suggests that when perceivers represent someone's perspective, they represent the *content* of their perspective. This process is taken to involve a minimal form of mindreading that often occurs spontaneously and involuntarily: "I see that you see *X*" (Phillips, 2021; Schneider et al., 2017). Some studies also show evidence for spontaneous level-2 perspective-taking. For example, Freundlieb et al. (2018) report involuntary altercentric biases in recognising words. In their study, participants were shown words displayed vertically, while for another person sitting perpendicular to them, these words appeared either the right way up or upside down. They found that participants were faster when the words were displayed the right way up for the other person, suggesting that participants were spontaneously sensitive not just to the content of the other's perspective, but to how it appeared to them (see also Ward et al., 2019). Other studies, however, have failed to find evidence of involuntary level-2 perspective-taking (Surtees et al., 2016). Nevertheless, a perceiver representing at least part of the content of someone's perspective could already bring up epistemic issues.

In summary, this body of evidence suggests that social influences on perception are mediated by cognitive processes. During these processes, someone else's perspectival content can be encoded in perception, not just its orientation. This influence often occurs spontaneously and involuntarily. There is of course more research to be done to determine precisely what form of minimal mindreading mediates altercentric interference, and what are its underlying mechanisms. One hypothesis is that this process may include spontaneously estimating the probability of whether an agent is perceiving or attending to a stimulus given their bodily and behavioural cues, and which stimulus properties they perceive or attend — a process that may garner cues across multiple sense modalities (Cole et al., 2020; Battich et al., 2020).

5 Epistemic consequences

5.1 Epistemic downgrade

On the altercentric perception bias hypothesis, then, a perceiver represents another's perspectival content. This can bring up a conflict between the represented content from another's perceptual perspective, and the perceiver's own perceptual experiential content. Following Siegel (Siegel, 2012), a useful way to understand the conflict that the altercentric perception bias hypothesis can bring on an individual's perception, is to cast it on counterfactual terms:

> *Altercentric perception bias*: If perceptual experience is amenable to altercentric bias, then it is nomologically possible for two subjects (or for one subject in different counterfactual circumstances, or at different times) to have perceptual experiences with different contents while perceiving and attending to the same distal stimuli under the same external conditions, as a result of differences in their sensitivity to the content of a third subject's perceptual perspective.

If I am looking for berries in a bush, and someone else's perspective is directed towards a patch of the bush with no berries at all, it may affect my experience so that I miss a partially visible berry I would otherwise detect, given my own perceptual perspective. Here, representing the other's perspectival content has a direct impact on how I experience my own perspectival content. In other words, I represent that "You see no berries" (or just "green foliage"). This representation makes me have a perceptual experience of "no berries". I come to judge that there are "no berries". Moreover, I can then come to judge that "I see that there are no berries", a perceptual judgement that I would not have formed, had I restricted myself to my own perceptual perspective without representing yours. The general inferential structure can be spelt out thus:

- I have a perceptual experience of Y
- I represent that "You see X"
- This representation makes me have a perceptual experience of X
- I judge/believe that X
- I judge/believe that "I see X"

This inferential structure is cognitively-mediated, and not purely external, since it involves a minimal cognitive process whereby I represent that you see X. But, in contrast to typical cases of cognitive penetrability, the influencing content is not the content of a previously held cognitive state of the perceiver, but that of someone else's perceptual state. For this reason, there cannot be a circular justificatory structure: the concluding belief ("I see X" or "there is an X in this location"), is not the same belief that prompted the experience ("You see X"). So the altercentric perception bias does not bring up exactly the same epistemic issues from cases of cognitive penetrability with a circular justificatory structure — but circular structures are not the only pernicious ones.

Even though there is no circular justification, the inferential structure above seems nevertheless inappropriate, and does share some of the features of hijacked experiences. Specifically, it counts as an instance of what Siegel calls "jumping to conclusions": "You infer Q from P, in an inference to a Q-state from a P-state. But P doesn't support Q" (Siegel, 2017, 109). Here, there is an inferential jump from "You see X (from your perspective)" to "I see X (from my perspective)". We can redefine an altercentric version of Siegel's hijacked experiences, which starts to highlight the epistemic threats of the altercentric perception bias hypothesis:

> *Altercentric hijacked experiences*: When perceptual judgements or perceptual experiences arise from processes that give information from others'

perspectival frameworks too much weight and fail to give proper weight to perceptual inputs from one's own perspectival framework.

Here, the concluding perceptual judgement is ill-formed to the extent that the content of another's perspective bleeds into the content of your own perspective, impairing your rational sensitivity to the perceptual inputs from your own perspective. As long as there exists a suitable inferential relation holding between the influencing altercentric content from the other's perspective and the influenced perceptual experience, altercentric perception bias will pose related (albeit not the same) epistemic problems as those posed by cases where the influencing state is an internal implicit belief (cf. Siegel, 2017, ch. 6). The question of what would constitute a suitable inferential relation, germane to cognitive penetrability debates, resurfaces for altercentric perception bias. Some philosophers go as far as postulating a semantic criterion for the inferential relation required in cognitive penetrability: "[I]f a system is cognitively penetrable, then the function it computes is sensitive, in a semantically coherent way, to the organism's goals and beliefs, that is, it can be altered in a way that bears some logical relation to what the person knows" (Pylyshyn, 1999, 343). Following Pylyshyn, one may also postulate a semantic criterion for this relation: my perceptual experience is epistemically downgraded only when there is a causal semantically coherent influence between the represented content from another's perceptual perspective and my own perceptual experiential content. Although I do not wish to commit to this postulate, we can at least conclude that altercentric perception brings back some of the epistemic issues of phenomena of hijacked experiences in a new and unique form.

I should note here that, in spelling out the inferential structure of altercentric perception bias, I'm not spelling out the psychological processes or mechanisms underlying this bias. First, it is not necessary that there be two separate perceptual experiences, as spelt out in the structure above (i.e., that I first have a perceptual experience of the object from my own perspective, and then another experience due to representing the content of your perspective). There may never be two separate perceptual experiences, and the actual biased perceptual experience may be some combination of the subpersonal processing of information from my own and your perspective together. Second, and more generally, it is not necessary that the steps in the inferential structure correspond to any temporal or processing steps, neatly following one another, but only that, whatever the mechanistic processes turn out to be, the overall functional profile of the bias can be captured at a suitable level of abstraction by these inferential steps. It may also be the case that the altercentric influence does not act at the level of perceptual experience, but that it comes at a later stage of processing, affecting the judgement that I make based on perception. If this is the case, then the altercentric bias in perception would not be purely perceptual. But all the epistemic issues would remain untouched: for it is the concluding judgement that is nevertheless ill-formed (e.g., "I see X", where, counterfactually, from my own perspective I see Y).

5.2 Epistemic upgrade

I have so far considered cases where the perspectival contents of the perceiver and the other agent are incongruent. It is because of this incongruency that altercentric bias in perception can lead to epistemically ill-formed perceptual judgements. But an epi-

stemic upgrade may occur in some cases of altercentric bias that feature an epistemically appropriate structure. Specifically, an epistemic upgrade can occur when social perspectives are congruent: both agents share the same perceptual content from their respective perspectives.

The phenomenon of sharing perceptual perspectives towards the same target is closely related to the phenomenon of joint attention. They are not strictly the same, as joint attention is usually conceptualised as requiring an extra condition, over and above sharing perceptual attention to the same target: both agents have to be aware that they are so sharing their attention (Bakeman & Adamson, 1984; Tomasello, 1995; Eilan, 2005). For example, I see a berry in the bush and I see that you have also spotted the berry, but you are so focused that you don't notice my presence. Here, I am aware of our sharing attention to the same object, but you are not, so this isn't strictly a case of joint attention. Nevertheless, research on joint attention offers some evidence supporting the view that congruent shared perception can result in the epistemic upgrade of perceptual experience — especially from studies using virtual partners, rather than real, minded, and interactive ones.

It has been suggested that joint attention deepens or enhances the encoding of stimulus information in ways that are not observed when information is individually attended (Mundy, 2018). If individual perceptual attention involves the selective processing of perceptual stimuli in the environment while ignoring others (Eriksen & James, 1986), then joint attention brings about another level of selectivity over an individual's own perceptual attention. Engaging in joint attention allows us to extract from the environment the relevant targets or specific sensory features for further information processing and social coordination (Battich et al., 2020; see also Becchio et al., 2008; Shteynberg, 2015). For example, it is known that people sharing perception towards the same objects with others can facilitate memorisation of the co-attended object (Kim & Mundy, 2012). Sharing perception with another agent, even when this agent does not reciprocate the interaction to engage in full joint attention, can equally facilitate the detection and discrimination of perceptual objects and features (Frischen et al., 2007). Recently, Seow and Fleming (2019) have shown that when we share perceptual perspectives towards the same object, we are better at discriminating subtle differences in contrast. This body of research suggests that congruent altercentric bias can result in a perceptual experience that is neater, more vivid, or more certain. In the congruent case of altercentric bias, then, we have the following general structure for epistemic upgrade:

- I have a perceptual experience of Y
- I represent that "You see Y"
- This representation makes me have a more vivid (or neater) perceptual experience of Y
- I judge/believe that Y
- I judge/believe that "I see Y"

Here, the perceptual experience (or the concluding perceptual judgement) may be less noisy, more vivid, or I may feel more certain of it, compared to the counterfactual experience I would have from my own perceptual perspective alone.

Sharing perception may not be the only case where altercentric bias results in an epistemic upgrade of perceptual experience. Epistemic upgrade may occur with contrasting perspectives on the *properties* of a jointly perceived target: when we both perceive the same object, but *how* we perceive it is different. Suppose I'm looking at a drawing on a paper from an unconventional angle and trying to ascertain if the drawing corresponds to the character R or the character Я. From my perspective at an angle, the task isn't easy, as I need to mentally rotate the drawing to the "correct" angle. But we have evidence that if there is someone else looking at the drawing from the "correct" angle, representing their perspective can facilitate my recognition of the character (Freundlieb et al., 2018; Ward et al., 2019). Here, we have contrasting perspectival representations of the shape of the same object, but this may facilitate my appraisal of its actual shape:

- I have a perceptual experience of ʁ
- I represent that "You see Я"
- This representation makes me have a perceptual experience of Я
- I judge/believe that Я
- I judge/believe that "I see Я"

Even if the altercentric influence does not prompt a *phenomenal experience* of Я, it can nevertheless facilitate the cognitive representation of Я, equally leading to the concluding judgements. In this example, I have vicarious access to aspects of the world that would be difficult or impossible for me to gather from my own perceptual perspective alone. In this case, adopting your perspectival point of view on the object allows me to identify one of its properties (its shape) faster.

5.3 Conscious access

Properly disentangling the epistemic consequences of the altercentic perception bias depends on a further question that has not yet been properly addressed by the available empirical evidence: to what extent are the altercentric influences on perception accessible to consciousness? While previous studies show that altercentric perception occurs spontaneously and may be involuntary (Ward et al., 2019; Kampis & Southgate, 2020; O'Grady et al., 2020), it is still unclear to what extent we can retain any form of conscious access to the social influence.

According to the phenomenal approach to perceptual justification, perceptual experience confers justification because of its particular phenomenal character, a character that is internal in the sense that it refers to the subject's own mental states (Huemer, 2006). Following this internalist condition on perceptual justification, only factors that are consciously accessible to the believer can be relevant to epistemic justification (Feldman & Conee, 2001). If the altercentric influence on perception is unconscious or goes unnoticed by the perceiver, then it would be irrelevant to the epistemic role

of the experience. However, the possibility that perceptual experience no longer gives proper weight to perceptual inputs, and may be part of a justificatory structure where the perceptual judgement is formed by jumping to ill-formed conclusions, support the intuition that altercentric influences on perception should count as relevant to epistemic justification. If this is so, then the phenomenal approach to perceptual justification does not have the resources to account for the epistemic threats posed by the altercentric perception bias.

Moreover, if in some cases perceivers are minimally conscious of the fact that their perception is being influenced by others, they may not be absolved of epistemic threat, but would become epistemically responsible for any judgments or beliefs based on their biased perception. They may even have epistemic obligations to distrust their perceptual judgements formed from biased percepts (cf. Rettler, 2018; Battich & Deroy, 2022).

6 Conclusion

According to the *altercentric perception bias* hypothesis, human perception is often other-centred or altercentric: we spontaneously encode the content of someone else's experience, in ways that interfere with or bias our own perceptual experiences and judgements. Altercentric influences on perception can affect the epistemic role of perceptual experience, when there is a suitable inferential relation between altercentric content and the content of one's own perceptual experience, posing the danger of a pernicious justificatory structure. In contrast to typical cases of cognitive penetrability of perception, the influence during altercentric perception is both external and cognitively mediated. Altercentric perception bias introduces specific epistemic challenges to the justificatory role of perceptual experience: the threat of epistemically downgraded altercentric hijacked experiences in situations where the agents' perspectives are incongruent; and the possibility of an epistemic upgrade in situations where the agents' perspectives are congruent, or when the aspects of the world vicariously gathered by taking the other's perspective lead to well-formed perceptual judgements.

One outstanding question to fully assess the epistemic issues in altercentric perception for phenomenal approaches to perceptual justification, is that of conscious access. If you are unaware that others influence your perceptual experience, are you epistemically responsible for the beliefs and behaviours based on that experience? Similarly, other agents may never be conscious of the effect they have on someone else's perception. What is then, if any, the epistemic responsibility of other agents in distorting, or aiding, an individual's perception?

Cognitive penetrability, hijacked experiences, and their epistemic consequences have been studied and debated as a phenomenon affecting the individual and arising from the individual's own internal mental makeup, even when the influence may be indirectly driven by social factors. There has been an increasing interest in philosophy of perception to analyse the effects of structural implicit biases (Greenwald & Banaji, 1995) and social biases more generally (Dovidio et al., 2010) on perceptual experiences and judgements — how individually-internalised social categories and stereo-

types can affect our perception of physical objects and environments (e.g., Siegel, 2020; Nanay, 2021). The altercentric bias hypothesis brings the issue of social influences on perception to a more basic and immediate level of social interaction.

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