Objectivity, Perceptual Constancy, and Teleology in Young Children

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Abstract

Can young children such as 3-year-olds represent the world objectively? Some prominent developmental psychologists (Perner, Tomasello) assume so. I argue that this view is susceptible to a prima facie powerful objection: to represent objectively, one must be able to represent not only features of the entities represented but also features of objectification itself, which 3-year-olds can't do yet. Drawing on Tyler Burge's work on perceptual constancy, I provide a response to this objection and motivate a distinction between three different kinds of objectivity. This distinction helps advance current research on both objectivity and teleological action explanations in young children.

KEYWORDS

Objectivity; perceptual constancy; development; representation; teleology

1. INTRODUCTION

"Objectivity requires taking subjectivity into account." (Code, 1996, p. 32)

Studies involving standard verbal false-belief tasks and perspective taking suggest that young children such as 3-year-olds are not yet fully[1] able to think in terms of subjective, mental perspectives (e.g., people's beliefs) on objective situations across contexts (Wellman et al., 2001; Schneider et al. 2015; Tomasello, 2018). If 3-year-olds do not yet fully understand that certain states of affairs can be merely subjectively "real" in an individual's mind, how do they represent them? It might seem clear that they simply represent them objectively, that is, they think of them just in terms of objective, mind-independent facts. Developmental psychologists such as Josef Perner and Michael Tomasello have recently advocated this intuitive proposal (Perner et al., 2018, p. 100; Priewasser et al., 2018, p. 71; Tomasello, 2018, 2019, p. 74). I shall call it the *objectivity first* (OF) view.

While the OF view seems natural, it is not obviously correct. After all, representing objectively might involve abilities that 3-year-olds and younger children still lack. In the following, I want to explore the matter. I shall do so by arguing for three points:

(1) The OF view is susceptible to a *prima facie* powerful objection that draws on an idea sometimes attributed to Peter Strawson (1959), namely that to represent objectively, one must be able to represent not only features of the entities represented but also features of objectification itself (Burge, 2010, p. 208). Specifically, one must be able to represent a contrast between appearance and reality. Since empirical studies provide reasons to doubt that 3-year-olds are fully able to do so, there is ground to believe that these children can't yet represent objectively. Call this the *Strawsonian objection* to the OF view.

(2) Advocates of the OF view such as Perner et al. and Tomasello have so far not considered and responded to the Strawsonian objection. I shall come to their defense. Building on Tyler Burge's (2009, 2010) work on perceptual constancy and objective representation, I contend that the Strawsonian objection is mistaken and that children can represent objectively before they represent features of objectification.

(3) The point matters because it supports a distinction between three different kinds of objectivity, what I will call *incipient*, *advanced*, and *comprehensive* objectivity.[2] This three-fold distinction helps advance current psychological research on objectivity and non-mentalistic, teleological action explanations in young children (see, for instance, Perner et al., 2018). It also suggests that the accounts of objectivity underlying both the Strawsonian objection to the OF view and Burge's critique are incomplete.

[1] Some studies using non-verbal measures found that already 7-months-olds seem to have some limited, implicit understanding of people's beliefs in some contexts (e.g., in the violation-of-expectation paradigm; Kovacs et al., 2010). The focus here is on a full grasp of false beliefs that also allows passing verbal false-belief tasks.

[2] These concepts will be explained in due course in sections 5.1 to 5.4.

In section 2, I situate the OF view within Perner et al.'s and Tomasello's research before, in sections 3-5, arguing for points (1)-(3). But first, an important clarification: the OF view, as I shall construe it here, does not involve a commitment to the claim that what 3-year-olds represent is as a matter of fact mind-independent reality. Rather, the view pertains only to what *for the children* (i.e., in their experience and personal-level processing, or for sub-personal cognitive systems in their mind) is objective, mind-independent reality. For instance, even if metaphysical realism is false and a particular external state of affairs thus does not obtain, a 3-year-old might still have/lack a psychological ability to represent that state of affairs objectively, that is, differently from what for her are (merely) subjective perspectives on it. The OF view, as I shall understand it here, concerns this psychological ability and does not imply veridicality and/or metaphysical realism.

2. THE OF VIEW

According to the OF view, 3-year-olds are able to represent objective facts. I will now argue that this is a shared assumption underlying Perner et al.'s, and Tomasello's otherwise different developmental psychological projects.

2.1 Perner et al. and the OF view

Perner and colleagues rely on the OF view in their work on young children's action explanation (Perner & Roessler, 2010, 2012; Perner et al., 2018; Priewasser et al., 2018). They argue that, for instance, 3-year-olds think and explain actions in terms of "objective facts" that are instrumental for an agent to achieve her goal(s) (*Ibid.*). To support this view, Perner et al. appeal to children's performance in the false-belief test (FBT). In the original, verbal version of the FBT (Wimmer & Perner, 1983), children are shown two dolls, Sally and Anne, in a room with a basket and a box. Sally has a marble, puts it into the basket, and leaves the room. While Sally is outside of the room, Anne takes the marble out of the basket and puts it into the box. Sally returns, and the children are asked where she will look for the marble. 3-year-olds tend to say that she will go to the box. It isn't until age 4 that children pass the task and correctly say that Sally will look in the basket (Wellman et al., 2001).[3]

Perner et al. argue that while their FBT performance suggests that 3-year-olds still lack a full understanding of mental states such as beliefs, given the consistency with which these children falsely predict that Sally will go to the box rather than elsewhere, they don't merely guess an answer to the question as to how Sally is going to act. Rather, they determine what Sally will do by using, what Perner et al. call "teleology": by assuming that Sally's action is directed at an objectively desirable goal and based on publicly accessible, objective facts that enable her to achieve that goal (Perner & Roessler, 2010, p. 205; Perner & Esken, 2015, p. 75; Perner et al., 2018, p. 100). Adding developmental details to this teleological account of action explanation, Priewasser, Rafetseder, Gargitter, and Perner (2018) write that already by:

[3] However, studies that involve non-verbal response measures suggest that already infants (e.g., 7-months-olds) have some understanding of false beliefs (Kovacs et al., 2010; for discussion, see Schneider et al., 2015).

> 9-18 months, children become 'teleologists' able to derive an agent's reason for an action without concern for the subjective views provided by mental states. [They] […] see objective facts as providing the reasons for action. For instance: it starts to rain at the birthday party. The teleologist naturally perceives the need for a shelter for the birthday cake […]. Although the evaluation of the cake being under a shelter as 'better' (or desirable) and the 'facts' of the shelter's location are based on the teleologist's subjective view, the teleologist treats these 'subjective facts' as objective. For the teleologist, it is a simple fact that it is better to shelter the cake than leave it in the rain […]. (Rafetseder et al., 2018, p. 71).

Perner et al. call this "pure teleology": From 9 months and at least until they pass the FBT, children "make sense of what [e.g.] you are doing simply in terms of the worldly facts that constitute good reasons for your action, with no regard to your perspective on your reasons" (Perner et al., 2018, p. 100). Given their claims that these children view certain aspects of the world "as facts" that they "see" and "treat … as objective" (Priewasser et al., 2018, p. 71), Perner et al. endorse the OF view. They do not, however, provide much support for it. For instance, they do not appeal to some independently motivated criterion of objectification, that is, a principle that tells us when a subject represents objectively, and then argue that, say, 3-year-olds meet it. Rather, Perner et al. rest their assumption of the OF view on the intuitive plausibility of holding that these children can represent objectively since they reliably take the actual, objectively correct location of a sought-after object (rather than a belief) to be the basis of an agent's action in FBTs.

2.2 Tomasello and the OF view

While Perner et al. are primarily interested in the development of young children's action explanation and the OF view is just one key assumption in their teleological proposal on action explanations, Tomasello (2014, 2018, 2019) focuses more directly and specifically on the development of objectivity in children. Correspondingly, while he agrees with Perner et al. that 3-year-olds can think of the world in terms of objective facts, Tomasello has a more detailed view of how children develop objectivity. He writes, for instance, that children "begin to think in terms of multiple different perspectives on things from as soon as they participate in joint attention with its two perspectives [i.e., 'You' and 'I'] during late infancy" (Tomasello, 2014, p. 87). But there is not yet, "in addition, an objective perspective that needs to be coordinated with these":

> [A]n objective perspective derives from the attempt of individuals who understand perspectives to construct a kind of perspective-less perspective (the 'view from nowhere' …). This requires 'collectivizing' many—potentially an infinity—of perspectives and positing a kind of invariant objectivity that grounds them all. (Tomasello, 2019, p. 77)

Tomasello holds that children gradually isolate and "collectivize" different perspectives (e.g., you- perspectives, we- perspectives, and their-perspectives) in social interactions because in social interactions they will often be forced to coordinate discrepant viewpoints and resolve conflicts between them (Tomasello, 2019, pp. 60–62). When they are confronted with conflicting perspectives on the "same" thing, the "solution to this disequilibrium is a reconceptualization that coordinates these perspectives" (*Ibid.*). By "three years of age", Tomasello continues, children have advanced enough in this coordination and collectivization of increasingly more inclusive social perspectives to:

> construct an objective perspective; this initially creates difficulties for them by putting two or more perspectives into conflict, but ultimately it facilitates solutions to perspective problems. It does these things because the executive level of cognitive functioning abhors a conflict; to resolve it, children are led to construct an understanding of the subjective-objective distinction. (Tomasello, 2019, p. 77)

Relatedly, focusing on 3-year-olds' failure to pass standard FBTs, Tomasello writes that it

> actually represents conceptual progress in that it emanates from an emerging conceptualization of an objective perspective on the situation—how it really is, independent of any individual's subjective perspective. As this understanding is just emerging, three-year-olds apply it too widely, assuming that people guide their search for things by an objective perspective … Three-year-olds fail [in FBTs] as they begin to be able to take an objective perspective on things, which leads them to default to this objective perspective. (Tomasello, 2019, pp. 73–74

Since he maintains that already 3-year-olds can adopt and use (e.g., "over-apply") an objective perspective on reality, Tomasello too endorses the OF view. To support his assumption that 3-year-olds can represent objectively, just as Perner et al., Tomasello doesn't invoke an objectification criterion and then argue that 3-year-olds satisfy it. Rather, like Perner et al., he takes the way these children respond in FBTs (namely, by viewing the actual location of an object as the basis of an agent's action) to indicate that they can think in terms of what 'really is', that is, objective facts (Tomasello, 2018, p. 8492).

Two different versions of the OF view should be kept separate, however. For it might be claimed that children's ability to think in terms of what for them are objective, mind-independent facts involves representing objective facts *as such*. Or it might be claimed that it does not involve that; for instance, a child's non-verbal behavior might indicate that she is able to think in terms of objective facts even when she cannot yet represent them as such. To align this with Tomasello's notion of 'conceptual progress', call the proposal that 3-year-olds can represent objective facts as such the *conceptual* OF view. Call the view that they can represent objective facts without representing them as such the *non-conceptual* OF view.

The conceptual OF view evidently ascribes a more sophisticated ability to children. Since Tomasello explicitly talks about 3-year-olds' "conceptualization of an objective perspective on a

situation" (Tomasello, 2019, p. 73), I will assume that he does not only endorse the non-conceptual but also the conceptual OF view. Perner et al.'s claims are less clear on the matter. I shall thus take them to advocate only the non-conceptual proposal. The discussion to follow will apply primarily to the non-conceptual OF view (henceforth the sole referent of "OF view"). But, as will become clear below (Section 5.3), it also has implications for the conceptual version of the proposal.

3. THE STRAWSONIAN OBJECTION

The OF view is susceptible to a critique that appeals to what Burge (2010) calls a "Strawsonian theme" in the philosophy of language. It is the idea that to intelligibly attribute to a subject *S* the ability to "represent objectively, [*S*] must be able to represent a contrast between the objective and the subjective—a seems/is or appearance/reality distinction" (Burge, 2010, p. 208).[4] That is, *S* "must be able to represent not only features of the entities represented but also features of objectification itself" (Burge, 2009, p. 292). If this thought is combined with empirical research on children's ability to distinguish appearance and reality then, as I will illustrate in a moment, it can be used to develop a *prima facie* compelling and so far in the literature unexplored[5] objection to the OF view. Having said that, I will not endorse that objection. The point here will merely be to spell it out, because even though, as I will argue below, that objection to the OF view fails, having it in mind when exploring the development of objectivity in children is theoretically and conceptually fruitful. The objection at issue can be captured in the following three-step argument.

STEP [1]: Suppose *S* cannot yet fully distinguish and represent a contrast in her thinking between that what merely appears to be the case and that what really is the case. What is real and what is merely apparent will then for her in her thinking be ontologically fused in the sense that for her, in her thinking, appearance and reality are not fully distinguished yet but overlap. Since the two are in her thinking not fully separated yet, in line with the just mentioned Strawsonian idea, we cannot intelligibly attribute to *S* representations of what objectively, really is but at best representations of states of affairs that are undifferentiated with respect to appearance and reality.

STEP [2]: Do 3-year-olds fully distinguish appearance and reality? Consider three types of studies pertaining to the issue:

(1) Flavell et al. (1983, 1986) presented preschoolers with an object that looked like one particular thing but was really another one (for instance, a sponge that looked like a rock, a stone that looked like an egg, etc.). After the children had manually inspected the items, they were asked what a given object looked like and what it really was. 3-

[4] Related arguments can be found in, for instance, Evans (1980), who holds that there is no such thing as a predicate only applicable in principle to one object, say, oneself, since being able to ascribe predicates to oneself requires being able to also ascribe them to others.

[5] For developments of the objection, see Peters and Hildebrandt (2019). For a related argument that does not invoke the empirical research mentioned below, see also O'Madagain (2016).

year-olds tended to commit either an "intellectual realism error", saying that the object not only was (for instance) a sponge but also looked like one, or a "phenomenism error", saying that the object looked like (for instance) an egg and also really was one (*Ibid.*).

(2) Moll and Tomasello (2012) conducted two related experiments, which didn't require verbal reports but only asked children to point at objects. In the first study, 3-year-olds were asked to determine which object—a deceptive one (for instance, an eraser that looked like a chocolate bar) or a non-deceptive object (for instance, a chocolate bar)—an adult requested when asking for the "real X" versus "the one that looks like X". In the second study, children of the same age had to indicate what a single deceptive object (for instance, a chocolate-eraser) looked like and what it really was by pointing at one of two items that represented the object's appearance (a chocolate bar) or identity (an eraser) (all children could use the deceptive object[6] and knew of its functional profile). Most children were successful in the first study but failed in the second one committing "phenomenism errors": Instead of pointing at an instance of the category to which the deceptive object belonged functionally, the children pointed to the object that matched its appearance (Moll & Tomasello, 2012, p. 1129).

(3) Reducing information-processing demands further, Karg et al. (2014) presented great apes and human 2.5-year-olds with a display showing a large and a small food sticks that were, after the subjects had seen them, occluded such that the size relations seemed reversed: The short stick appeared as the longer one, and the longer stick as the shorter. Subjects could then choose which one they wanted. All great ape species and children successfully identified the bigger stick despite its smaller appearance. But they didn't manage to transfer their knowledge about the size relation reversal to a control condition in which they only saw the apparent sizes. Karg et al. (2014) thus conclude: "subjects did not have a general awareness or mistrust that appearance can differ from reality … [and] did not grasp the general concept of an appearance–reality conflict … rather their choice behavior was driven by and depending on recent perceptual input" (Karg et al., 2014, pp. 437–438).

So, currently available findings pertaining to 3-year-olds' ability to distinguish appearance and reality support the view that while these children have some understanding of the appearance-reality distinction, it is still only incomplete.

STEP [3]: Given STEP [1] and STEP [2], we cannot intelligibly attribute to 3-year-olds representations of what objectively is, and so there is reason to doubt that they can think in terms of objective facts.

Call the argument captured in STEPS [1]-[3] the *Strawsonian objection* to the OF view.

[6] Moll and Tomasello (2012) do not specify whether the children were also allowed to taste the objects.

4. RESPONDING TO THE STRAWSONIAN OBJECTION

Proponents of the OF view might respond to the objection just outlined in different ways. I will briefly consider, and note problems with, three of them.

Proponents of the OF view might, for example, reject the interpretation of the empirical studies that the Strawsonian objection relies on and hold that these studies don't show that 3-year-olds lack the ability to fully distinguish appearance and reality. Indeed, there is debate on how exactly extant appearance-reality tasks should be interpreted. Some researchers argue, for example, that 3-year-olds' difficulties with the appearance-reality distinction in these experiments are a mere artifact created by unnecessarily high information-processing demands, odd discourse, or linguistic complexity of the tests rather than evidence of a conceptual limitation (Rice et al., 1997; Deak, 2006).

This response isn't fully convincing, however. The reason is that, for instance, the studies by Moll and Tomasello (2012) and Karg et al. (2014) didn't involve linguistic complexity or high information-processing demands. In Moll and Tomasello's study, children responded by pointing (not verbal reports).[7] Similarly, in Karg et al.'s study, even chimpanzees could understand and perform the task. While they are relatively cognitively undemanding, these studies still found that 2.5- to 3-year-olds don't yet have a full "grasp the general concept of an appearance-reality conflict" (Karg et al., 2014, p. 437).[8]

Another response to the Strawsonian objection that advocates of the OF view might adopt is to insist that, taken together, the currently available data on 3-year-olds' ability to distinguish appearance and reality are at best only inconclusive. They speak neither clearly for nor clearly against the presence of that ability in these children.

However, the problem with that response is that the Strawsonian objection still holds even if we weaken the claim that 3-year-olds can't yet distinguish appearance and reality to the claim that the relevant data are inconclusive. Because to the extent that we don't yet know for sure whether these children are able to draw that distinction but have mixed experimental results, we also don't yet know for sure whether they can think in terms of objective facts. Indeed,

[7] Though they were still asked and had to understand "looks"-related questions.

[8] The OF view could also be weakened such that it only says that 3-year-olds can to *some extent* think in terms of objectivity even though they cannot yet fully distinguish between appearance and reality. Advocates of the OF view may then continue that the data that the Strawsonian objection appeals to do not in fact undermine their view, revised in the way just mentioned, because the data suggest that 3-year-olds do already have at least some understanding of the appearance-reality distinction. Advocates of the OF view could thus hold that to the extent that 3-year-olds have a grasp of the appearance-reality distinction, they can correspondingly also think in terms of objectivity. However, this response assumes that (i) the empirical evidence that the Strawsonian objection invokes show that 3-year-olds do have at least *some* understanding of the appearance-reality distinction and that (ii) the objection requires this to be the case. But as I will argue in a moment, both (i) and (ii) can be rejected. Moreover, as it stands, the OF view in Perner et al. and Tomasello's work doesn't yet involve a qualification to the effect that 3-year-olds can only to some extent think in terms of objectivity. Rather, Perner et al. and Tomasello's comments on 3-year-olds' thinking in terms of objective facts have a broader scope: none of Perner et al. and Tomasello's comments indicates that they hold 3-year-olds' thinking in terms of objective facts is different from adults'. What is at issue here is the tenability specifically of the OF view suggested by Perner et al. and Tomasello's comments.

advocates of the Strawsonian objection might hold that if the OF view were correct then one would expect the data to clearly indicate that 3-year-olds tend to be successful in appearance-reality tasks; that is, the relevant findings shouldn't be inconclusive.

A third response to the Strawsonian objection that advocates of the OF view might adopt is to reject the assumption that 3-year-olds need to draw the appearance-reality distinction in order to represent objectively. Advocates of the OF view might argue that ultimately the Strawsonian objection merely rests on the intuition that it is not intelligible to attribute thinking in terms of objective facts to children who cannot yet fully distinguish appearance and reality. And advocates of the OF view might simply dismiss that intuition.

However, notice that advocates of the OF view do not stay agnostic on the matter but assume that 3-year-olds *do* represent objectively. Since that is so, it is not enough for them to just insist that the intuition underlying the Strawsonian objection is wrong. They need to provide a positive reason for holding that these children do have the ability to represent reality objectively. After all, the point is not self-evident.

Perner et al. and Tomasello have not yet anticipated and responded to the Strawsonian objection. Their proposals, which assume the OF view, are thus in an important respect open to challenge. I want to change this by introducing a positive argument for rejecting the Strawsonian objection. The argument draws on aspects of Tyler Burge's (2009, 2010) work on objectivity and on a particular criterion of objectification. I will first introduce both before returning to the Strawsonian objection.

4.1 Burge on objectivity

Burge (2009) takes objectivity to "consist in veridical representation of a mind-independent reality", and holds that "some capacity to distinguish environmental reality from effects on the individual that do not reflect such reality must be present in the individual's psychology if the individual is to engage in objective empirical representation" (Burge, 2009, pp. 285–286). Crucially, for Burge, objectivity is already present in perception itself (*Ibid.*).

To support this view, he appeals to vision science and argues that a perceptual system achieves objectification by exercising *perceptual constancies* (for details, see Cohen, 2015). These are empirically well-documented psychological capacities to represent a particular, a property, relation, or kind as the same despite significant variations in the registration of proximal stimulation. For instance, even though there might be significant variations in illumination, we can visually perceive a color as the same ("color constancy"). Or we can see an entity as being of the same specific size while taking up more or less of the visual field ("size constancy"). For example, when I look at the Tower Bridge in London and walk around or away from it, the proximal visual stimulation registered on my retina changes systematically with respect to my movement, direction, and eye orientation. Yet, neither the size nor the location ("location constancy") of the Tower Bridge appears to change: The building appears to me as being located in the same place with the same size.

Now, Burge's proposal is that the outputs of the sub-personal mechanisms responsible for such perceptual constancies are *objective* representations. This is because (i) they are representations that have veridicality conditions, that is, conditions of accuracy in representing environmental conditions beyond the sensory registration of proximal stimulation. And (ii) they are about mind-independent reality, as they result from distinguishing aspects of proximal stimulation idiosyncratic to the subject from aspects likely to map environmental reality. I will briefly elaborate on (i) and (ii).

As for (i), Burge (2009, p. 287) argues that perceptual content has two elements, namely at least one singular element referring to a particular, and a "perceptual attributive", which is a general element that functions to group or categorize types of particulars from a perceptual perspective on those types and particulars. This seems intuitive, for subjects[9] perceive physical particulars in the environment as having specific physical attributes, that is, perceptions attribute spatial position and spatial relations, shape, motion, texture, color, and so forth, to particulars. Since that is so, they can be veridical or non-veridical, Burge holds.

Turning to (ii), notice that on Burge's view, a perceiving subject *S* is not the *agent* of the objectification involved. The objectification derives instead from the operation of *sub-personal* mechanisms that separate aspects of proximal stimulation idiosyncratic to the subject from effects of the environment. That is, to represent objectively, *S* herself need not represent conditions of individuation or objectification such as, for instance, a contrast between appearance and reality, even unconsciously. The sub-personal mechanisms at issue simply have to, and as perceptual constancies illustrate do in fact, respond to environmental effects differently than to effects specific to the subject, treating the former but not the latter as "real". When they do so in environmental situations that account for veridicality, objective perceptual representation results, Burge argues. He adds that while perception itself does not involve concepts and propositional content, "perceptual *belief* conceptualizes attributions of perception [i.e., 'perceptual attributives'], embeds its own attributions in capacities for propositional inference", and "inherits the objectivity of perception" (Burge, 2010, pp. 25, 198). That is, the perceptual beliefs tied to perceptual constancies display objectivity themselves, and the processing of these beliefs can thus be viewed as an instance of thinking in terms of objective facts.

These points are relevant for the discussion of the Strawsonian objection to the OF view. In fact, Burge (2009, 2010) himself already uses his view of objectivity to argue that the assumption that objectivity requires an appearance-reality distinction is hyper-intellectualized. In the following, I want to build on Burge's considerations. I shall, however, not rely on his view that perception involves objectivity construed as *veridical* representation of mind-independent reality (for problems with this claim, see Olin, 2016).[10] I need not, because as noted in the introduction, the discussion here is not about objectivity understood as *S*'s capacity

[9] Indeed, for Burge (2010, p. 25) all mammals, perhaps all birds, many fish and reptiles, and some insects have that ability.

[10] There are other problems with Burge's claims about constancy mechanisms; for an interesting discussion, see Schulte (2020).

to form veridical representations of mind-independent reality. It is about objectivity construed as *S*'s capacity to form representations of what *for her* (i.e., for *S* in her personal-level processing or for sub-personal level cognitive systems in her) are objective facts and mind-independent reality. Even if objectivity is understood in this way without appeal to veridicality, Burge's points about perceptual constancies are still useful, as they provide the basis for a criterion for assessing the Strawsonian objection. Or so I shall argue next.

4.2. Building on Burge: a neutral objectification criterion

Drawing on Burge's considerations on perceptual constancy, I propose the following:

> *Basic objectification criterion* (BOC)
> If a subject *S* (at the personal-level or sub-personal level of processing) (i) distinguishes effects on her that reflect environmental reality from effects that do not do so, and (ii) treats the former but not the latter in her belief-formation and acting as real, then she displays objectivity and an ability to think in terms of objective facts.

BOC is supported by the intuitive plausibility of describing a system displaying (i) and (ii) as exhibiting a form of objectivity. To motivate this, consider again the size and location constancies in the example above. When *S* is walking around the Tower Bridge, its size and position appear the same to her even though there are changing variations in proximal stimulation on her retina. *S* thus displays "abilities to re-identify objects despite changes in viewing conditions—distance, lighting, and so on", and to "factor out the contribution of [her] own location and perspective to identify the object itself" (Godfrey-Smith, 2016, p. 65). In other words, her "perceptual constancies show that [she] is perceiving external objects *as* external objects—as objects that can stay the same while [her] vantage point changes" (*Ibid.*).

Importantly, the cognitive system producing these constancies does not only distinguish that what is there from that what is not, but also initiates thoughts (i.e., inferences) and behavioral responses in *S* that to an observer would suggest that she treats only the former as what is real, but not the latter. That is, her perceptual constancies and cognitive-behavioral response to them provide reasons to hold that for *S* in her thinking and action guidance the former but not the latter is real: *S*'s perceptions attribute position, shape, and so forth, to particulars ("perceptual attributives") and these attributions feed into her belief-formation and action-planning (Burge, 2010, pp. 25, 198), producing a functional profile that makes it plausible to describe *S* as displaying objectivity and an ability to think in terms of objective facts, even when she doesn't represent (but merely treat) them *as* such.

While these considerations focus on the functional role and causal effects of perceptual constancies to motivate the view that these constancies indicate that certain aspects of the world are for *S* objective facts, some philosophers have argued that perceptual constancies also ground subjects' *experiences* of objectivity ("phenomenal objectivity") and mind-independence, which then provide the basis for the concept of objectivity and mind-independence (Masrour, 2013; Textor, 2019, p. 882.). These arguments might offer phenomenological support for BOC. But

they rely on appeals to introspection, whose reliability is questionable (Bayne & Spener, 2010) and are susceptible to other kinds of criticism (e.g., O'Madagain, 2016).[11] I shall thus not rehearse or rely on them here. Instead, I will take the above-mentioned points on the way we would describe the functional effects of perceptual constancies to suffice as a *prima facie* plausible motivation for BOC.

Notice that neither these points nor BOC itself beg the question against advocates of the Strawsonian objection. This is because they do not say whether or not the ability (to think in terms of objective facts) that BOC specifies depends on the ability to fully distinguish appearance and reality. For all that BOC says the former ability might require the latter. Since the principle leaves it an open possibility that thinking in terms of objective facts requires fully distinguishing appearance and reality, it does not prejudge the issue against advocates of the Strawsonian objection. Due to this neutrality, BOC becomes useful in considering the tenability of the latter.

4.3 Disarming the Strawsonian objection

The preceding discussion helps provide a response to the Strawsonian objection. We just need to add the further assumption that perceptual constancies are present in 3-year-olds. Empirical studies support this assumption. They suggest, for instance, that size constancy is to some degree an "innate ability", especially when it comes to the perception of nearby objects (for instance, within 3m), though it improves substantially during childhood and with increasing age implicating increasingly more cognitive capacities (Granrud, 2004, p. 75; Slater et al., 1990). I shall thus take it to be safe to rely on the assumption that 3-year-olds display perceptual constancies.

We can now address the Strawsonian objection. Recall first that the objection assumes that to represent objectively, 3-year-olds must be able to fully distinguish and represent a contrast between appearance and reality because otherwise what is merely apparent and what is real will in their thinking be ontologically the same, precluding an intelligible attribution of thinking in terms of objective facts to these children. The preceding discussion, together with the assumption that 3-year-olds display perceptual constancies, suggests otherwise. It provides reasons to hold that these children have sub-personal systems that separate effects on them that reflect environmental reality from effects that do not do so, and treat the former but not the latter in thinking and action-planning as real. 3-year-olds thus meet BOC. Moreover, the sub-personal systems involved do not themselves represent a distinction between the objective and

[11] O'Madagain (2016) argues against Masrour (2016) that experiences of constancy do not suffice for experiences and representations of objectivity because we might experience constancies even in dreams, yet, we do not consider dream experiences to capture objectivity. This point does not undermine the view I propose here, for I motivated BOC by appealing to functional effects of perceptual constancies. That is, I take perceptual constancies to indicate representations of objectivity only if the subject also treats the constant properties that she experiences as real act *acts* accordingly (see (ii) of BOC). This condition is not satisfied when we experience constancies in dreams: we do not, for instance, literally jump aside (out of the bed) when we dream that a car is about to hit us (which presumably involves an experience of perceptual constancy). The motivation I offer here for treating perceptual constancies as indications of representations of objectivity is thus less susceptible to criticism than phenomenological considerations.

the subjective. They just draw that distinction and act in line with it. We hence have a basis (i.e., BOC) for intelligibly attributing to 3-year-olds an ability to represent objectively and think in terms of objective facts, even if these children cannot yet distinguish appearance and reality at the personal level and neither they nor their sub-personal systems are able to represent an appearance-reality contrast. The Strawsonian objection can thus be rejected.

5. IMPLICATIONS

I will now argue that even though the Strawsonian objection fails, its failure is instructive. This is because it calls for a distinction between different kinds of objectivity that help refine the OF view and advance developmental research on objectivity in young children.

5.1 Refining the OF view

The Burgean argument supports the view that we can intelligibly attribute to *S* the ability to represent objectively even when we can't yet attribute to her an ability to represent a contrast between appearance and reality. An important question remains, however. If 3-year-olds *can* represent objective facts then how are we to make sense of their apparent difficulty to fully distinguish appearance and reality in the experimental studies that the Strawsonian objection appeals to?

To provide an answer, suppose that *S*, who displays perceptual constancies, consistently fails in appearance-reality tasks such that she reliably takes that what only appears to be the case as that what is the case. Her behavior would arguably strike us as odd and make us hesitant to maintain that *S*'s ability to represent objective facts is fully developed. At any rate, holding that it is fully developed would become questionable since her behavior indicates otherwise. The oddness in *S*'s behavior thus provides reason to hold that even though meeting BOC and displaying the kind of objectivity tied to perceptual constancies does not require *S* to distinguish appearance and reality at the personal level, a fully developed ability to represent objective facts does.

Given this, it is useful to distinguish between what I shall call *incipient* and *advanced* objectivity. *Incipient objectivity* is the kind of objectivity tied to the discriminatory capacities operative in perceptual constancies. It involves the operation of sub-personal mechanisms that both distinguish effects on the subject that reflect environmental reality from effects that do not do so and treat the former as real but not the latter. It does not yet involve a representation of the distinction between them. In contrast, *advanced objectivity* is displayed when one does not only exhibit incipient objectivity but also distinguishes and represents the contrast between appearance and reality at the personal level.[12] It is in place when one passes standard appearance-reality tasks and understands and tends to correctly use "looks"-statements,

[12] Since it involves representing the system's distinction between appearance and reality itself, advanced objectivity can be viewed as a meta-representational capacity. But "meta-representation is a mixed-bag term" in that it means different things for different authors, often referring to a social cognitive capacity (for instance, beliefs about beliefs) (Gruber & Sievers, 2019, p. 54). Since the present discussion pertains less to social cognition but specifically to objectivity (i.e., thinking about non-mental states of affairs) and the tenability of the OF view, I shall not use the term and not discuss meta-representation here.

indicating a separation of appearance versus reality at the personal level (Flavell et al., 1983, p. 99). While incipient objectivity and advanced objectivity are different capacities, both share the property of involving a separation between the objective and the subjective, albeit at different levels of processing (i.e., sub-personal vs. personal level).

The distinction between incipient and advanced objectivity helps to refine the OF view. For as it stands, the view can avoid the Strawsonian objection only if we specify 3-year-olds' ability to represent objectively in terms of incipient objectivity. If we specify this capacity instead by reference to advanced objectivity, then the intelligibility consideration just outlined, which aligns with the Strawsonian objection, can be used to challenge the OF view. The distinction between the two kinds of objectivity is thus helpful in the analysis of both the OF view and the Strawsonian objection. It also has, as I will illustrate next, interesting implications for Perner et al.'s, and Tomasello's particular proposals involving the OF view.

5.2 Implications for Perner et al.'s proposal

For Perner et al., the OF view is part of their teleological account of action explanation in children. Perner et al. hold that 3-year-olds (and younger children) use teleology in their action explanations because they "see objective facts as providing reasons for action" when these facts are instrumental for an agent to achieve her goal(s) (Priewasser et al., 2018, p. 71). While Perner et al. do not distinguish between different kinds of thinking in terms of objective facts and do not say whether 3-year-olds display incipient or advanced objectivity, these distinctions are relevant for the teleological account of action explanation. To see this, suppose Perner et al. only attribute incipient objectivity to 3-year-olds. Their claim that these children take objective facts as a basis for explaining people's actions then needs to be qualified, because even though these children can think in terms of objective facts in *one* way (as they display incipient objectivity), they cannot yet do so in *another* way (as they do not yet display advanced objectivity). This qualification matters because it suggests that Perner et al.'s current account of teleological action explanations in children is incomplete.

Notice first that in their current account, Perner et al. distinguish only between two kinds of teleology in children's action explanations, what they call *pure teleology* and *teleology-in-perspective* (Roessler & Perner, 2013, p. 46; Perner et al., 2018, pp. 100, 106; for discussion, see also Peters, 2019, p. 5).[13] Pure teleology is assumed to be the simplest kind of teleology and used already by 9-months-olds when they "make sense of what [e.g.] you are doing simply in terms of the [for the children] worldly facts that constitute good reasons for your action, with no regard to your perspective on your reasons" (Perner et al., 2018, p. 100). In contrast, "teleology-in-perspective" is more sophisticated and used later, at around age 4, when a child interprets an agent's action as being based on what from "within the agent's perspective" appears to be an objective fact counting in favor of acting (*Ibid.*; Roessler & Perner, 2013, p. 46). For instance, Perner et al. hold that when children pass FBTs, they make sense of what an

[13] There are other teleological accounts of action explanation in children than Perner et al.'s view; for details, see Perner and Esken (2015, p. 76). I shall only focus on Perner et al.'s particular teleological account.

agent is doing (in FBTs) by considering what from that agent's own point of view (rather than objectively) appears as a good ground for acting (*Ibid.*).

The distinction between incipient and advanced objectivity introduced above helps to show that this two-fold picture of teleology in young children that Perner et al. currently hold is too narrow: Pure teleology in fact includes two distinct kinds of teleology. To illustrate the point, consider two children, Ann and Ben. As it happens, Ann only displays incipient objectivity. Relatedly, she still lacks a full understanding of the fact that people act on the basis of their beliefs or perspectives, and she tends to commit the kind of a "phenomenism error" that Moll and Tomasello (2012) found among 3-year-olds. For instance, she believes that, say, an eraser that merely looks like a chocolate bar is a real chocolate bar even though she has noticed the different functional profile of the chocolate-bar-lookalike-eraser. Suppose that, in contrast, Ben displays advanced objectivity and does no longer commit this kind of error. But, just as Ann, he too still does not yet have a complete grasp of the fact that people act on the basis of their beliefs or perspectives. Suppose further that both Ann and Ben are teleologists: They explain people's action by assuming that an agent's action is based on the worldly facts that allow the agent to satisfy her goals. Suppose finally that Ann and Ben are presented with another individual, Claire, learn that Claire has the goal to get a chocolate bar, see her enter a room with a chocolate-bar-lookalike-eraser in clear view on the table, and are asked whether she will go to the table to get a chocolate bar. How will Ann and Ben respond?

Consider Ann: Since she believes that the chocolate-bar-lookalike eraser is a real chocolate bar and she is a teleologist, it isn't unreasonable to assume that her answer will be "Yes, Claire will go to the table, because that is where the chocolate bar is". Notice that before children have the ability to pass standard appearance-reality tasks, action explanations of the kind Ann provides are likely to be very common (assuming, as Perner et al. do, that teleology is used already in 9-month-olds). How would Perner et al. account for this action explanation? As noted, in their framework, the simplest kind of teleology is pure teleology. Since a child would be using it when explaining Claire's actions in terms of what for her (the explaining child) are objective facts counting in favor of acting (with no regard to Claire's perspective) and since that is precisely what Ann is doing, Perner et al. might hold that Ann too is using pure teleology. But consider now Ben: Unlike Ann, Ben does not believe that the chocolate-bar-lookalike eraser is a real chocolate bar. But he, just as Ann, is a teleologist too. Ben is thus likely to respond to the above question by holding "No, Claire will not go to the table, because there is no chocolate bar, just an eraser". Since Ben would be explaining Claire's actions in terms of what for him are objective facts counting in favor of acting (i.e., the presence of an eraser/absence of a real chocolate bar on the table speaks against going to the table), Perner et al. might hold that Ben too is using pure teleology. That is, on their view, *both* Ann and Ben are using the same type of teleology.

However, the two instances of teleology are clearly importantly different. While both Ann and Ben make sense of what Claire is doing simply in terms of the objective facts that constitute good reasons for her action, with no regard to her perspective on her reasons, Ann's use of teleology is explanatorily distinct from and developmentally prior to that of Ben. After all, Ann

can't yet distinguish between appearance and reality. Perner et al.'s current teleological account does not capture this difference, because as it stands, the concept of pure teleology is too broad, lumping both Ann's, and Ben's teleological action explanations together.

To improve Perner et al.'s account, I suggest that we distinguish between what I shall call *indiscriminate teleology*, on the one hand, and pure teleology, on the other. Indiscriminate teleology is what Ann displays in the scenario above. More generally, it involves a subject *S* explaining an agent's action on the basis of means-end reasoning and by reference to what for *S* are objective facts (e.g., when she displays incipient objectivity), independently of whether *S* is able to distinguish appearance and reality at the personal-level. The use of teleology in that case is "indiscriminate" in the sense that it involves *S* treating both states of affairs that obtain and states of affairs that do not obtain as an appropriate basis for an agent's action as long as they appear to *S* at the personal level as the same.

Notice that although indiscriminate teleology rests on a still incomplete personal-level grasp of the difference between appearance and reality, interestingly, it can yield correct action predictions even in situations when a sophisticated understanding of subjective perspectives seems required. For instance, in the above scenario, Ann predicts that Claire will go to the table (where the chocolate-bar-lookalike-eraser is). This is the same prediction that children and adults passing the FBT are likely to make too: they would take it that since the chocolate-eraser is in Claire's clear view and looks like a real chocolate bar to her, she is going to act on her false belief that there is a real chocolate bar on the table and so go there to get it. The output of the use of indiscriminate teleology will thus in some cases be the same as that of Perner et al.'s "teleology-in-perspective" (Roessler & Perner, 2013, p. 46; Perner et al., 2018, p. 100). In other cases, though, the output of indiscriminate teleology will be the same as that of pure teleology. For instance, in the absence of deceptive objects, say, when there is only a real chocolate bar on the table, both Ann and Ben are likely to produce the same action explanation that Claire will go to the table.

Yet, while the results of the use of indiscriminate teleology overlap to some extent with those of the use of the two types of teleology that Perner et al. already consider, pure teleology and teleology-in-perspective remain importantly different from indiscriminate teleology. For, as noted, indiscriminate teleology does not yet require an ability to fully distinguish appearance and reality at the personal level. It is thus developmentally in place before both pure teleology and teleology-in-perspective, namely when children operate with incipient objectivity.

5.3 Implications for Tomasello's proposal

The distinction between incipient and advanced objectivity does not only allow improving Perner et al.'s teleological account of action explanations. It also helps refine Tomasello's proposal on the development of objectivity in young children. As noted above, he writes that already 3-year-olds engage in a "conceptualization of an objective perspective" on a situation; they view it as it "really is, independent of any individual's subjective perspective" (Tomasello, 2019, p. 73f.). Tomasello holds that the objectification involved derives from these children's

attempt to construct a "perspective-less perspective", the "'view from nowhere'", which in turn "requires 'collectivizing' many—potentially an infinity—of perspectives and positing a kind of invariant objectivity that grounds them all" (Tomasello, 2019, p. 77).

Notice that these claims suggest that Tomasello has a different kind of objectivity in mind than incipient and advanced objectivity. This is because neither of the two needs to involve a subject's collectivizing of different social perspectives. For instance, with respect to incipient objectivity expressed in perceptual constancies, the distinction between aspects mapping environmental reality and aspects that do not is only relative to the subject whose sub-personal mechanisms are doing the distinguishing: Perceptual constancies are centered around the self and its current local position (Godfrey-Smith, 2016, p. 65). The mechanisms underlying these constancies do not yet distinguish between aspects of reality and aspects of sensory stimulation that are idiosyncratic to *other* subjects, say, the proximal stimuli on other people's retina (evidently, the mechanisms at issue do not have visual pathways, that is, access to other people's retinas). They are egocentric and do not require any awareness of or distinction between different social perspectives (Burge, 2010, p. 287). Similarly, turning to advanced objectivity, a child might reliably distinguish between, say, a chocolate-bar-lookalike-eraser and a real chocolate bar and even represent that distinction while only being able to distinguish her perspective from a very limited number of other perspectives (for instance, only her mother's), that is, without being able to distinguish between a wide, potentially infinite range of different social perspectives on (for example) a chocolate-bar-lookalike-eraser. So while incipient and advanced objectivity might be necessary for the kind of objectivity that Tomasello has in mind, they aren't sufficient.

To conceptually mark the difference, I shall call the objectivity that Tomasello takes to result from collectivizing increasingly broader inter-subjective social perspectives *comprehensive objectivity*. Since in his most recent work (Tomasello, 2019), he aims to provide a developmental account of the emergence of objectivity in children and since comprehensive objectivity is more sophisticated than incipient and advanced objectivity, it is somewhat surprising that in his account of comprehensive objectivity, Tomasello does not consider, for instance, incipient objectivity. As it stands, his proposal seems to overlook precursors. By motivating the assumption of and distinction between incipient, advanced, and comprehensive objectivity, the preceding discussion helps remedy this oversight.

6. CONCLUSION

According to the OF view, which is currently assumed by Perner et al. and Tomasello, 3-year-olds, who still lack a full ability to represent and think in terms of mental states and subjective perspectives, are able to think in terms of what for them are objective, mind-independent facts. The OF view faces a Strawsonian objection, according to which, for a subject *S* to represent objectively, *S* needs to be able to distinguish and represent a difference between appearance and reality, which is an ability that 3-year-olds still seem to lack. I defended the OF view against this objection by drawing on Burge's work on objectivity, arguing that 3-year-olds can represent objectively because sub-personal mechanisms in them distinguish the subjective from the

objective and appearance from reality without representing a contrast between the two. This provided a response to the Strawsonian objection to the OF view.

But it still did not capture the point that we would be reluctant to attribute a fully developed ability to represent objectively to a child if the child does not yet distinguish appearance and reality and subjective versus objective perspectives at the personal level. This consideration led me to suggest that during the development of objectivity, children gradually transition from more basic to more complex forms of objectivity, specifically, from incipient to advanced to comprehensive objectivity: Incipient objectivity is expressed in perceptual constancies, which have been found in children already at birth (Granrud, 2004), and results from the operation of sub-personal mechanisms that separate effects of proximal stimulation that are subjective from effects that come from the environment. Incipient objectivity accounts for children's ability to represent objectively even when they cannot yet at the personal level distinguish appearance and reality and subjective and objective perspectives. Advanced objectivity is built on incipient objectivity. It is in place when children do not only display incipient objectivity but also fully distinguish appearance and reality at the personal level and pass standard appearance-reality tasks. This typically happens by age four (Moll & Tomasello, 2012; Tomasello, 2019).[14] Advanced objectivity does not yet suffice for the child to be able to think, for instance, in terms of notions such as truth or falsity, however. For neither incipient nor advanced objectivity yet require a personal-level distinction between a wide range of different, increasingly broader social perspectives on situations to the extent that the idea of a "view from nowhere", which is crucial for attaining the notions of truth and falsity (see Nagel, 1980, p. 78; Davidson, 2004, p. 3; Tomasello, 2019). These notions are not acquired until the stage of comprehensive objectivity, which is in place when children display incipient and advanced objectivity, pass the standard (explicit) theory-of-mind tasks, and additionally have distinguished and extensively collectivized social perspectives to the extent that they can abstract away from the point of view for *everyone* to the "view from nowhere" (Tomasello, 2019, pp. 77-78). I argued that distinguishing between incipient, advanced, and comprehensive objectivity helps develop Perner et al.'s, and Tomasello's current proposals on how young children explain actions and think about the world.

It also contributes to the philosophical theorizing on objectivity. For even though both Strawson's (1959) view on representations of objectivity and Burge's (2009, 2010) critique and alternative proposal are well known, the thought that these views might pertain to different types of objectivity that are gradually acquired during ontogeny has so far only been hinted at (Campbell, 2011) but not much explored in philosophy. The preceding discussion helps make progress on the issue indicating that Strawson's view overlooks the basic kind of objectivity that Burge emphasizes (incipient objectivity), while also highlighting that Burge's proposal, in turn,

[14] While Tomasello seems to overlook incipient objectivity and in some places makes claims that are in tension with the Strawsonian view (which ties objectivity to the appearance/reality distinction) (see, e.g., Tomasello, 2019, pp. 73-76), in other places, he notes the importance of being able to distinguish between appearance and reality in order to possess a full grasp of objectivity (e.g., Tomasello, 2019, p. 74; O'Madagain & Tomasello, 2019). That is, in some places, Tomasello comes close to endorsing the Strawsonian view at least when it comes to what I here call "advanced objectivity".

does not yet capture the two more sophisticated kinds of objectivity distinguished here, namely advanced and comprehensive objectivity.

A number of philosophically and psychologically interesting questions remain. For instance, how do 3-year-olds, who already seem to have some understanding of truth-bearing assertions (e.g., "That cat is sick"; see Tomasello, 2018, p. 8495), understand claims pertaining to truth and falsity if they do not yet display comprehensive objectivity? Are there three different kinds of truth understanding in children corresponding to the three different kinds of objectivity distinguished? I shall leave the exploration of these questions for another occasion. My aim here has just been to motivate asking them and to introduce conceptual distinctions that may help in their exploration.

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