

Relationalism about perceptible properties and the principle of charity

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Abstract. Color relationalism holds that the colors are constituted by relations to subjects. The introspective rejoinder against this view claims that it is opposed to our phenomenally-informed, pre-theoretic intuitions. The rejoinder seems to be correct about how colors appear when looking at how participants respond to an item about the metaphysical nature of color but not when looking at an item about the ascription of colors. The present article expands the properties investigated to sound and taste and inspects the mentioned asymmetry, with a particular focus on the principle of charity. Using a metaphysical item, we find that color and sound are no different from shape, our control for a clearly anti-relational property. Taste, on the other hand, is no different from likability, our control for a clearly relational property. Importantly, we find that the disparity between metaphysical and ascription items is due to participants using a principle of charity to interpret disagreement cases such that both parties can be correct.

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1 Introduction

There are relationalist and anti-relationalist theories of perceptible properties. Relationalism about a property P =df P is constituted by a relation(s) to subject(s) (Cohen, 2004, 2009, p. 10). Relationalism is a kind of mind-dependent view and so has a close affinity to what Locke would call a ‘secondary quality view.’ Although one could be a relationalist about any property, relationalism gets discussed the most in the ontology of color literature. Cohen provides an extremely ecumenical response to variation cases according to which the colors are constituted by relations to subjects such that if an object appears to be red, then it has a relational ‘red’ property (2004; 2009, p. 8-12, 24-36). Contemporary dispositionalism (that the colors are dispositions to appear certain ways if viewed by normal observers, McGinn, 1983; Johnston, 1992) is often categorized as a relational view (McGinn, 1996; Noë, 2004; Cohen, 2004; 2009). If this is right, it is a kind of mind-dependent view, according to the definition of relationalism.³

Anti-relationalism (the negation of relationalism) is normally understood as being a mind-independent view. One could be an anti-relationalist about any property, but anti-relationalism has mainly been discussed in the ontology of color. There are myriad versions of this view on what the colors are. For example, reflectance physicalism is a trendy anti-relationalist view according to which the colors are dispositions to reflect certain proportions of incident light (Byrne and Hilbert, 2003; Tye, 2000). An older cousin is micro-structuralism: an anti-relationalist view that holds that the colors are identical with non-dispositional micro-structural properties (Kripke, 1972; Jackson and Pargetter, 1987). Primitivism (in a narrow sense of this term) is a newer anti-relationalist view that holds that the colors are non-reducible and non-subject involving properties (Yablo, 1995; Westphal, 2005).

³ It is important to recognize that there is dissent. It has been argued that it is misguided to say that the contemporary dispositionalist view holds that relations to subjects constitute the colors (Roberts, 2014).

Both relational and anti-relational views of perceptible properties seriously consider people's intuitions (or judgments).⁴ Thus, it is no surprise that a prominent objection against relationalism (about at least some perceptible properties) is that this view is opposed to our phenomenally-informed, pre-theoretic intuitions and so should be rejected. There are many examples of this introspective rejoinder in the literature, especially with regard to color properties (Armstrong, 1987, p. 36-37; Boghossian and Velleman, 1989, p. 86; Chalmers 2006, p. 56–77ff; Dancy and Hookway, 1986, p. 181; Gibbard, 2006, p. 10; Johnston, 1992, p. 226–27; Yablo 1995, p. 489). Although they all state the objection somewhat differently, their statements fit the general form of the objection, because they can be paraphrased as saying that relationalism is opposed to our phenomenally-informed, pre-theoretic intuitions. As is the case with previous research, we are concerned with the general form of the introspective rejoinder and the abstract definitions of relationalism and anti-relationalism mentioned at the very beginning. This said, here are two examples of the introspective rejoinder as understood by McGinn and Tye.

But surely [relationalism] misrepresents the phenomenology of color perception: when we see an object as red we see it as having a simple, monadic, local property of the object's surface. The color is perceived as intrinsic to the object, in much the way that shape and size are perceived as intrinsic. No relation to perceivers enters into how the color appears; the color is perceived as wholly on the object, not as somehow straddling the gap between it and the perceiver. Being seen as red is not like being seen as larger than or to the left of. The ‘color envelope’ that delimits an object stops at the object's spatial boundaries. So if color were inherently relational, [...] then perception of color would misrepresent its structure – we would be under the illusion that a relational

⁴ We use a very inclusive sense of 'intuition.' We use it to be synonymous with 'judgment.' Importantly, we do not use it in such a way that being non-inferential or non-deliberative would be a necessary condition for being an intuition. (More generally, we are inclined to think that it is unproblematic to use a fairly unrestricted sense of 'intuition' when doing experimental philosophy work on intuitions for reasons similar to those given in Andow, forthcoming).

property is non-relational. Contraposing, given that perception is generally veridical as to color, colors are not relational [...]. (McGinn 1996, p. 541–42)

Still, it may be insisted, the relational view of color [...] surely goes against ordinary color experience. When, for example, a rubber ball looks blue to me, I experience blueness all over the facing surface of the ball. Each perceptible part of the ball looks blue to me. And none of these parts, in looking blue, look to me to have a relational property. On the contrary, it may be said, I experience blueness as intrinsic to the surface, just as I experience the shape of the surface as intrinsic to it. This simple fact is one that relational approaches to color cannot accommodate without supposing that a universal illusion is involved in normal experiences of color – that colors are really relational properties even though we experience them as non-relational. (Tye 2000, p. 152–53)

The rejoinder, broadly conceived, presupposes that *phenomenally-informed* intuitions (intuitions informed by or based on phenomenology) are defeasible evidence about the nature of perceptible properties (although for readability we will often merely talk of ‘intuitions’). This phenomenal principle makes sense for color as well as for other perceptible properties.⁵ For example, the presupposition can be readily observed in the ontology of sound where the phenomenally-informed intuition that sounds have particular locations is taken to be evidence against the wave theory (Casati and Dokic, 2005; Pasnau 1999). O’Callaghan says, “the intuitive and widely accepted view among auditory researchers [is] that hearing perceptually informs subjects about the locations of things and events in egocentric space” (2007, Sect. 3.2). Any account of perceptible properties that did not heed the rich phenomenal characters associated

⁵ We understand that there are debates about the value of intuitions in metaphysics currently underway (Ladyman and Ross, 2007, Dorr 2010, and Maclaurin and Dyke, 2012). We cannot engage in this metaphysical debate in this article. Our opposition does not question the value of intuitions in metaphysics.

with them would seem to be an account that ignores some of the most salient data available. As phenomenology is important to the introspective rejoinder, it is important that the phenomenally-informed intuitions be pre-theoretic (not based on theory). Theoretical commitments may influence one's intuitions hence limiting the extent to which they are based on how perceptible properties phenomenally appear. A worry about theoretical bias is especially strong when it comes to the intuitions of those philosophers who already have a serious stake in the debate on perceptible properties (Goldman, 2007).

Presumably, if anti-relationalism is really the phenomenally and pre-theoretically intuitive position, then the folk, who are certainly more likely to have pre-theoretic intuitions about the nature of perceptible properties, will have these intuitions in addition to anti-relationalist philosophers. To better understand people's intuitions about color properties, Cohen and Nichols (2010) conducted a study in which their undergraduate participants were presented with a disagreement wherein two parties ascribe seemingly incompatible properties to an object. They were then presented with an ascription item, which roughly speaking, asked whether both disagreeing parties can be correct. The expectation was that relationalists would agree with the ascription item. Their findings suggest that people are roughly split between finding color relationalism intuitive and finding color anti-relationalism intuitive, and that more people are relational about color than about shape properties. Hence, their study casts doubt on the idea that the introspective rejoinder correctly captures our intuitions about the nature of color.

Roberts et al (2014) argue that this doubt is unwarranted. The concern most relevant is that Cohen and Nichols probed participants' intuitions about the ascriptions of color properties to objects, rather than participants' intuitions about the metaphysical nature of color. Roberts et al's participants were presented with a similar (although simplified) disagreement case, but in

addition to using an ascription item like Cohen and Nichols, they used a metaphysical item to more directly probe people's intuitions about the metaphysical nature of color. Their metaphysical item asked whether there is an absolute fact of the matter about the color of the object, rather than whether both disagreeing parties can be correct. The expectation was that relationalists would respond to the metaphysical item in an opposite fashion from how they would respond to the ascription item. Their results for the ascription item were roughly in agreement with those of Cohen and Nichols, but this did not hold true for the metaphysical item: participant responses to this item for color were strongly anti-relational and no more so than their responses to the item for shape. Thus, these findings suggest that people are generally anti-relationalists about color and just as much so as about shape.

The first of the two aims of this current study is to extend this work on color to other perceptible properties, namely to sound and (gustatory) taste. As was the case with previous research, we are interested in people's intuitions about relationalism and anti-relationalism as abstractly defined in the first two paragraphs. In line with Locke (1996), many philosophers find it intuitive that taste is a mind-dependent secondary property so that the sourness of a Granny Smith apple is not really 'in' the apple in the way that its shape is. Locke also places color and sound into this secondary quality category. The previously discussed research by Roberts et al suggests that people's metaphysical intuitions are similarly anti-relational for color and shape thus supporting the introspective rejoinder for color, but do people intuit that sound and taste are anti-relational as well? If they do, the introspective rejoinder could be raised against relational views of these properties too. Thus, we would be able to extend an argument especially forceful in the color literature to other properties classically classified as secondary. Doing this would be

a step to overturning the dominant position by supplying an anti-relational account of perceptible properties.

To know whether the introspective rejoinder is correct about people's sound and taste intuitions an understanding of people's intuitions about the metaphysical nature of these properties is needed. There is to date no empirical evidence to support or reject an introspective rejoinder for sound. At most we have the intuitions of philosophers who work on sound, but, as we said, there is a worry that philosophers' theoretical commitments may bias their intuitions. Cohen and Nichols did measure undergraduate intuitions about taste ascriptions and found that they favored a relationalist view of this property. However, in light of Roberts et al's findings for color using a metaphysical item, there is reason to doubt whether the ascription item accurately measures participants' intuitions about the nature of properties. In our study, we ask participants to respond to both ascription and metaphysical items. These items are expected to function similarly to Roberts et al's. We include shape and likability as controls, with the former being our control for a clearly anti-relational property and the latter being our control for a clearly relational property. We expect to replicate Roberts et al's findings for color, for sound to be similar to color, and for taste to be similar to likability. In addition, we include a realism item designed to gauge realist/irrealist intuitions in an effort to see whether some of those who disagree with the metaphysical item might be irrealists instead of relationalists.

The second aim of this study is to investigate what is driving the discrepancy between participants' responses to the ascription and metaphysical items. The discrepancy has to do with a property being no different from shape for the metaphysical item but being different for the ascription item. One might seriously worry that what Roberts et al's data really show is that there is a deep inconsistency in people's intuitions about the metaphysical nature of color, and hence

that there might be good reason to doubt the introspective rejoinder, as Cohen and Nichols's results originally suggested, after all. We suspect that there is a simpler explanation. We think that for the ascription item participants are applying a principle of charity under which they strive to find an interpretation of the presented disagreement case under which both parties can be correct: perhaps participants interpret the case such that both parties must mean different things by their color ascriptions; or perhaps they interpret the case such that both parties must be referring to different parts of the object; or perhaps they interpret the case such that the word 'correct,' which appears in Roberts et al's ascription item, need not track truth (e.g. perhaps 'correct' is interpreted to mean 'in accordance with an easily satisfied norm').⁶ All of these possibilities are compatible applications of the principle of charity.

We expect two things to hold for any property for which our hypothesis is the correct explanation of the discrepancy between the ascription and metaphysical items:

1. The easier it is to be charitable the more people will agree with the ascription item.
2. The metaphysical item should be mostly unaffected by disagreement size.

We test our hypothesis by presenting participants with cases involving large disagreements and cases involving small disagreements (i.e. cases involving disagreements between perceptible properties that are quite different and ones more similar) with the assumption that the smaller the disagreement the easier it is to find a charitable interpretation under which both parties can be correct. Large disagreements are harder to explain away than small ones. We also include a variant of ascription, which we call 'correspondance,' that is more metaphysical and avoids

⁶ As the ascription item uses the word 'correct,' the principle of charity to which we appeal is formulated using this word. We used 'correct' over 'truth,' because there is a concern with using the latter: the folk are known to sometimes interpret 'truth' in a different way from philosophers (Fain and Kaelin, 1960).

notions such as ‘correct’ and ‘right’ to see whether the discrepancy depends on these notions in particular. The idea is that if the discrepancy between the metaphysical and ascription items depends on these notions, then it should not appear for the correspondence item.

2 Method

Design. The experiment is a five by two by two, mixed factorial design. The between-subjects factor, property, has five levels (Shape, Color, Sound, Taste, Likability). The first within-subjects variable, disagreement size, has two levels (Large Disagreement, Small Disagreement), and the second, order, also has two levels (Large Disagreement First, Small Disagreement First). Participant responses to four dependent variables are recorded (Metaphysical, Ascription, Realism, Correspondence).

Participants/Materials. Three-hundred and thirty-four participants without academic training in philosophy were recruited and completed the survey via the University of Warwick’s sona-system. Four participants were removed for inaccurate answers to the comprehension control (see below), although qualitatively all statistical results are the same regardless (by ‘qualitatively’ here and elsewhere we mean that the same comparisons remain significant). Of the remaining 330 participants, 203 were Female ($Mdn_{age} = 20$ years). The survey was created and administered using Qualtrics software, version 2013. The survey typically took participants six minutes to complete ($Mdn = 356$ seconds, $IQR = 282 - 490$).

Procedure. Consenting participants were first presented with one of ten randomly selected cases. These cases described a disagreement between two people, Alex and Harry, about the shape, color, sound, taste, or likability of an object. Shape was included as a control for a clearly anti-relational property and likability as a control for a clearly relational property. The

disagreements were either large or small: shape (3 vs 20 sided or 19 vs 20 sided), color (yellow vs blue or black vs dark-blue), sound (moaning vs beeping or honking vs beeping), taste (plasty vs almondy or walnuty vs almondy), and likability (disgusting vs likable or okay vs likable).⁷

Similar numbers of participants completed each first disagreement case: total $N = 68$ for shape ($N = 34$ for large disagreement and 34 for small), 66 for color (33 large/33 small), 66 sound (33 large/33 small), 62 taste (32 large/31 small), and 66 likability (33 large/33 small). The case below is about the sound of an object, where the parties' claims result in a large disagreement (relevant changes were made for the other cases, as can be seen in the appendix).

Alex and Harry examine an object's sound. Alex and Harry listen to the object in a studio room from the same position. They are both fluent English speakers and have normal hearing. Alex says that the object is only moaning, while Harry says that the very same object is only beeping.

To ensure participants acknowledged and understood the disagreement case, they were given a comprehension control where they were asked to confirm Alex and Harry's claims by typing what each said. They then indicated their agreement with the four philosophical statements in table 1. Examples are only presented for the large disagreement for sound case (necessary changes were made for the other cases, as can be seen in the appendix). Participants indicated their agreement with each statement on a 10-point likert scale with only end points

⁷ We used the determinable shapes n -sided instead of determinate shapes like square. People do not know many determinate shape names, and we needed shapes that were different enough from each other to create our large and small disagreement cases.

indicated as follows: ‘Strongly Disagree’ and ‘Strongly Agree.’⁸ The order in which the items appeared was randomized.

Metaphysical: In reality, there is an absolute fact of the matter about the sound of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.

Ascription: Alex is correct when he says that the object is only moaning and in addition Harry is correct when he says the object is only beeping. In other words, both Alex and Harry's claims are correct.

Realism: The object really has a sound (or sounds).

Correspondence: Alex's statement corresponds with how things are when he says that the object is only moaning, and in addition Harry's claim corresponds with how things are when he says the object is only beeping. In other words, both Alex and Harry's claims correspond with how things are.

Table 1. The philosophical statements for sound, large disagreement

After completing the first disagreement case, participants were presented with a second. This case described a disagreement between Tom and David over the same property factor as the first but for the remaining disagreement size (e.g., if first, moaning vs beeping, then second, honking vs beeping). To ensure participants acknowledged and understood the disagreement, they were again given a comprehension control where they were asked to confirm Tom and David's claims by typing what each said. They then responded using the same likert scale as

⁸ We chose this likert design to allow for easy comparison with Roberts et al (2014). We also wanted to avoid a neutral stage. We did not want participants with weak intuitions not to express them.

before to the same four randomly presented statements, adjusted to reflect the new disagreement size.

Analyses. Recall that the present study has two aims. These two aims are synthesized in a single ANOVA for each item, so it is useful to clarify which analyses are more strongly related to which aims. The between-subjects analyses are most relevant to aim 1 in which we compare participants' intuitions between different properties. The within-subjects analyses are most relevant to aim 2 in which we compare intuitions regarding large and small disagreements within each property in order to test our principle of charity hypothesis.

For each of the four items to which participants responded we first report the marginal means for each property. The responses are then compared using a five by two by two ANOVA with property and order as between-subjects factors and disagreement size as a within-subjects factor.⁹ Where differences are indicated, post hoc tests are performed. Pearson's correlations are then conducted to examine the relationships between the items.

Note that the statistical power (the probability of correctly rejecting the null hypothesis when the alternative hypothesis is true) afforded by some analyses are greater than others, because the number of participants in the groups being compared is not consistent. This paper is most concerned with the two analyses we can be more certain about: the differences between properties and disagreement sizes. The interactions involving order are included for completeness and to encourage further exploration. Our results are explained as if they are not due to chance variations.

⁹ The analyses for both parametric and non-parametric statistics yield the same results, qualitatively.

3 Results

Metaphysical. The marginal mean responses are highest for shape (7.9), followed by color (7.8), sound (7.7), taste (5.3), and likability (4.4). For the between-subjects analyses, a significant effect for property emerges ($F(4, 320) = 29.31, p < 0.001, \eta^2 = 0.27$) but not for order or for the interaction between property and order (all p 's > 0.22). Post hoc Tukey tests find that likability and taste are not different from each other ($p = 0.32$) but are different from all other properties ($p < 0.001$). No other significant differences emerge (p 's > 0.98). *With regard to aim 1*, participants' metaphysical intuitions about sound and color are similar to shape, while their metaphysical intuitions about taste are similar to likability.

For the within-subjects analyses, the following are not significant: disagreement size, the interaction between disagreement size and property, and the three-way interaction (all p 's > 0.17). The interaction between disagreement size and order is significant ($F(1, 320) = 15.55, p < 0.001, \eta^2 = 0.05$). Post hoc tests of simple effects find that regardless of which disagreement size participants consider first there is a tendency for their responses to the second disagreement size to be higher. The increases are significant for participants who received the large disagreement case first ($F(1, 320) = 13.74, p < 0.001, \eta^2 = 0.04$) and trending for those who received the small disagreement case first ($F(1, 320) = 3.50, p = 0.06, \eta^2 = 0.01$). *Regarding aim 2*, this means that participants' metaphysical intuitions are affected more strongly by how many comparisons they consider than by disagreement size. Figure 1 displays the descriptive results.

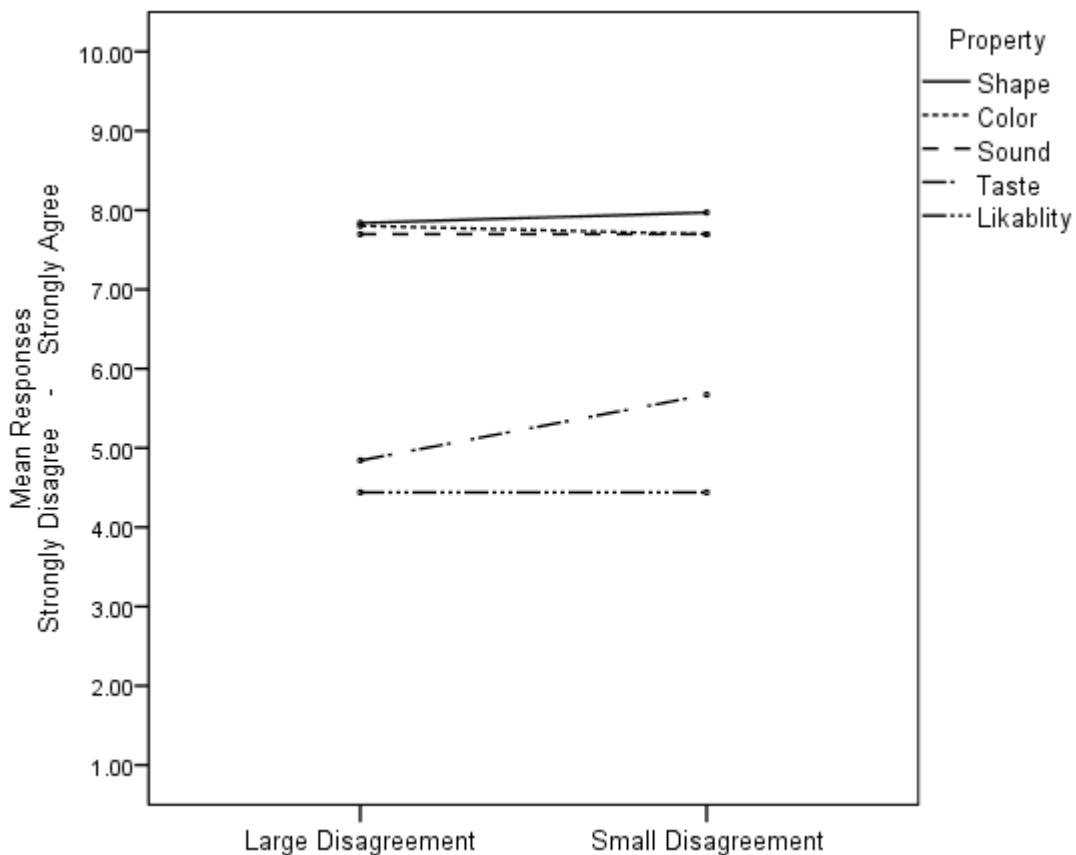


Figure 1. Responses to the metaphysical item.

Because of the descriptive results, we explore the effects of disagreement size on each property. A test for simple effects of disagreement size on each property found only an effect for taste ($F(1, 320) = 7.68, p = 0.006, \eta^2 = 0.02$; all other p 's > 0.64).

Ascription. The marginal mean responses are lowest for shape (3.9), followed by color (5.1), sound (6.1), taste (6.7), and likability (8.1). For the between-subjects analyses, a significant effect for property emerges ($F(4, 320) = 29.25, p < 0.001, \eta^2 = 0.27$) but not for order or for the interaction between property and order (all p 's > 0.25). Post hoc Tukey tests find that shape (p 's < 0.03) and likability (p 's < 0.007) are different from all other properties. In addition, color is different from taste ($p = 0.002$). No other significant differences emerge (p 's > 0.16). *With*

regard to aim 1, ascription intuitions about sound are similar to color but not shape, while ascription intuitions about taste are different from likability. *With regard to the discrepancy* between the metaphysical and ascription items having to do with whether a property is similar to shape, we find that participants' metaphysical intuitions about shape and color are similar but that their ascription intuitions differ, and that this holds for sound too.

For the within-subjects analyses, the effect of disagreement size is significant ($F(1, 320) = 27.78, p < 0.001, \eta^2 = 0.08$), such that participants agree less with cases describing large disagreements than with those describing small disagreements. This effect is tempered by two interactions. First, as is the case with metaphysical intuitions, there is an interaction between disagreement size and order ($F(1, 320) = 6.33, p = 0.01, \eta^2 = 0.02$). However, unlike with metaphysical intuitions, the trends go in opposing directions depending on which disagreement size is first considered. Participants who consider the large disagreement case first tend to report greater agreement for the later small disagreement case ($F(1, 320) = 3.79, p = 0.05, \eta^2 = 0.01$). Participants who consider the small disagreement case first tend to report less agreement on the later large disagreement case ($F(1, 320) = 30.32, p < 0.001, \eta^2 = 0.09$). Put another way, participants' ascription intuitions appear to be affected more by disagreement size than by how many comparisons are considered.

Second, there is an interaction between disagreement size and property ($F(4, 320) = 3.00, p = 0.02, \eta^2 = 0.04$). Tests of simple effects find that not all properties are affected by disagreement size. Specifically, shape and likability are not affected by disagreement size (respectively p 's = 0.65 and 0.40), but the remaining properties are: color $F(1, 320) = 17.94, p < 0.001, \eta^2 = 0.05$, sound ($F(1, 320) = 15.29, p < 0.001, \eta^2 = 0.05$), and taste ($F(1, 320) = 5.37, p = 0.02, \eta^2 = 0.02$). This interaction can also be examined by looking at the differences between

properties for each disagreement size. For the large disagreement size, participants' intuitions about shape and color are not different ($p = 0.20$) but are different for the small disagreement size ($p < 0.001$). The three-way interaction is not significant ($p = 0.25$). *Regarding aim 2*, we find that the ascription item for color and sound are affected by disagreement size but that the metaphysical item is not. This confirms our hypothesis regarding the principle of charity for the discrepancy found for these two properties. Figure 2 displays the descriptive results.

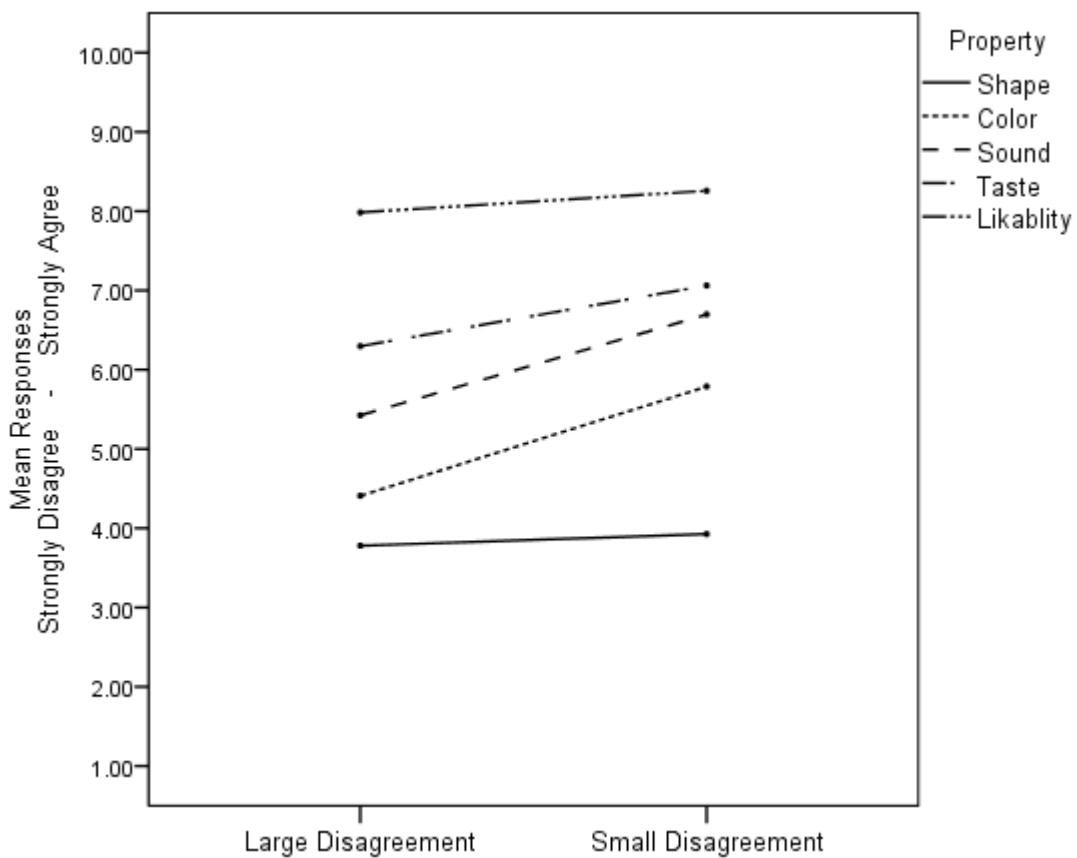


Figure 2. Responses to the ascription item.

Realism. Recall that this item was included to capture those participants whose relational responses might be better explained by their having unrealist intuitions. Thus, the five by two by two ANOVA analyses are only indirectly relevant to aims 1 and 2.

The marginal mean responses are as follows: shape (7.9), color (8.6), sound (8.2), taste (8), and likability (6.5). For the between-subjects analyses, a significant effect for property emerges ($F(4, 320) = 9.72, p < 0.001, \eta^2 = 0.11$) but not for order or for the interaction between property and order (all p 's > 0.21). Post hoc Tukey tests find that likability is significantly different from all other properties (p 's < 0.003). No other differences emerge (p 's > 0.34). This result suggests that participants are generally very realist about perceptible properties, and that it is only with likability that they are less realist.

For the within-subjects analyses, the effect of disagreement size is significant ($F(1, 320) = 23.68, p < 0.001, \eta^2 = 0.07$), such that cases describing large disagreements foster less agreement than those describing small disagreements. It should be noted though that all responses are high in agreement.¹⁰ None of the interactions are significant (all p 's > 0.11). It seems that large disagreement cases cause participants to doubt the reality of perceptible properties. This is hardly surprising given that too much perceptual variation causes philosophers to question the truth of realism for perceptible properties (Hardin, 1988).

Irrealist intuitions. Although most of our participants were not irrealists, there is a worry that irrealists might confound the metaphysical item.¹¹ The item is in effect a statement about, for example, ‘the color of the object.’ An irrealist may think that there can be no true statements about *the color of the object* and so disagree with the metaphysical item to express irrealist intuitions. This is particularly disconcerting, because relationalists, at least in the color literature, reject irrealism. What we found is that quite a few participants who express irrealism (those who responded 5 or lower to the realist item) disagree with the metaphysical item (5 or lower to the metaphysical item). In total approximately half (52%) of the times participants

¹⁰ The means for shape are 7.8 for large disagreement and 8 for small, for color (8.4 large/8.7 small), sound (8.1 large/8.4 small), taste (7.7 large/8.3 small), and likability (6 large/7 small).

¹¹ We would like Keith Allen for this helpful comment.

express irrealist intuitions they disagree with the metaphysical item. Thus, it may be that not all who disagree with the metaphysical item are really relationalists.¹² This said, taking irrealists out has no impact on the differences between properties for the metaphysical item.¹³ Thus, however irrealists might be reading the metaphysical item, they are not confounding its overall results.

Correspondence. Recall that this item was included to avoid notions such as ‘correct’ and ‘right’ in the ascription item. If the discrepancies between participants’ metaphysical and ascription intuitions depend on these notions, then such discrepancies should dissipate when participants consider correspondence. Our results are inconclusive, as the variance is too large to draw clear conclusions. We recommend this item be modified in the future.

The marginal mean responses are lowest for shape (5.6), followed by color (6.1), sound (6.8), taste (6.6), and likability (7.1). For the between-subjects analyses, a significant effect for property emerges ($F(4, 320) = 3.87, p = 0.004, \eta^2 = 0.05$) but not for order or for the interaction between property and order (all p ’s > 0.39). Post hoc Tukey tests find that shape is different from sound ($p = 0.05$) and likability ($p = 0.004$). No other differences emerge (p ’s > 0.13).

For the within-subjects analyses, the effect of disagreement size is significant ($F(1, 320) = 14.86, p < 0.001, \eta^2 = 0.04$), so that participants agree less with cases describing large disagreements than with those describing small disagreements. As with ascription, an interaction also appears between disagreement size and property ($F(1, 320) = 3.52, p = 0.008, \eta^2 = 0.04$). Shape and likability are not affected by disagreement size (p ’s = 1.00 and = 0.70), but the

¹² It is perhaps possible to read ‘the colour of the object’ not to imply that the object has some color. This is not the natural reading, especially given that the context in which the question is asked is one in which there is a disagreement between two parties about which color the object is. However, perhaps the irrealists in our study who disagree with the metaphysical item read it so as not to imply that the object has a color.

¹³ The same five by two by two ANOVA was run but without participants who expressed irrealist intuitions. The same results obtain. The between-subjects analyses find a significant effect of property ($F(4, 244) = 26.45, p < 0.001, \eta^2 = 0.30$) with the same pairwise differences. The within-subjects analyses find an interaction between disagreement size and order ($F(4, 244) = 16.26, p < 0.001, \eta^2 = 0.06$) with the same pairwise differences. No other significant differences emerge.

remaining properties are: color $F(1, 320) = 13.69, p < 0.001, \eta^2 = 0.04$, sound $(F(1, 320) = 3.79, p = 0.05, \eta^2 = 0.01)$, and taste $(F(1, 320) = 10.97, p = 0.001, \eta^2 = 0.03)$. No other interactions are significant (all p 's > 0.20).

Relationship between items. Using Pearson's correlations we examine the relationships between participants' responses to the items for each property. We first confirmed that for each item there are significant correlations between participants' first and second responses (all r 's $> 0.32, p$'s < 0.01). We then looked at the relationships between the items for the first and then the second disagreement cases. For simplicity, we only report those correlations that are consistently significant (i.e. significant for both disagreement cases). The most stable relationship is between ascription and correspondence for shape, color, sound, and likability (all r 's $> 0.44, p$'s < 0.001). Ascription is also inversely correlated with the metaphysical item for shape (all r 's $= -0.24, p$'s < 0.05) and with the realism item for shape (all r 's $= -0.42, p$'s < 0.001). Realism and correspondence are correlated for sound (all r 's $= 0.25, p$'s < 0.03). Metaphysical and realism are correlated for shape (all r 's $> 0.27, p$'s < 0.03).

Experimental stimulus check. Where we did not find significant effects for aim 2, one may question whether participants interpreted our large and small disagreement cases as actually being large and small. To address this concern, after completing the experiment proper 242 participants (147 Female, age $Mdn = 20$ years) were asked for each disagreement case they were given how similar the two properties in each case are to each other. For example, participants who responded to the sound items were asked, 'How similar are the sounds: moaning and beeping?' and 'honking and beeping?' Responses were given on a ten point likert scale with only the anchors: 'Not at all Similar' and 'Extremely Similar.'

The mean similarity ratings are as follows: shape (for the large disagreement case $M = 2.3$ /for the small disagreement case $M = 7.6$), color (2.0 large/8.5 small), sound (2.5 large/6.5 small), taste (2.2 large/7.2 small), likability (1.7 large/4.4 small). A five by two ANOVA with property as a between-subjects factor and disagreement size as a within-subjects factor finds a significant interaction between property and disagreement size ($F(4, 233) = 13.05, p < 0.001, \eta^2 = 0.18$). Looking at the simple effects we find that for every property, participants' similarity ratings for the large disagreement cases are lower than their ratings for the small disagreement cases (all F 's($1, 238$) $> 50.84, p$'s $< 0.001 \eta^2 = 0.18$). However, the relationships between the properties in the large disagreement cases are different from the relationships between the properties in the small disagreement cases.

For the large disagreement cases, the properties are often similarly rated. The only difference is between sound and likability ($p = 0.01$), such that disgusting and likable are seen as more different than plasticy and almondy. For the small disagreement cases, more differences emerge. Likability's similarity ratings are lower than the ratings for every other property (p 's < 0.001). Color's similarity ratings are higher than the ratings for sound, taste, and likability (p 's < 0.008), and trending for shape ($p = 0.06$). Shape's similarity ratings are higher than the ratings for sound ($p = 0.02$). Figure 3 displays the descriptive results.

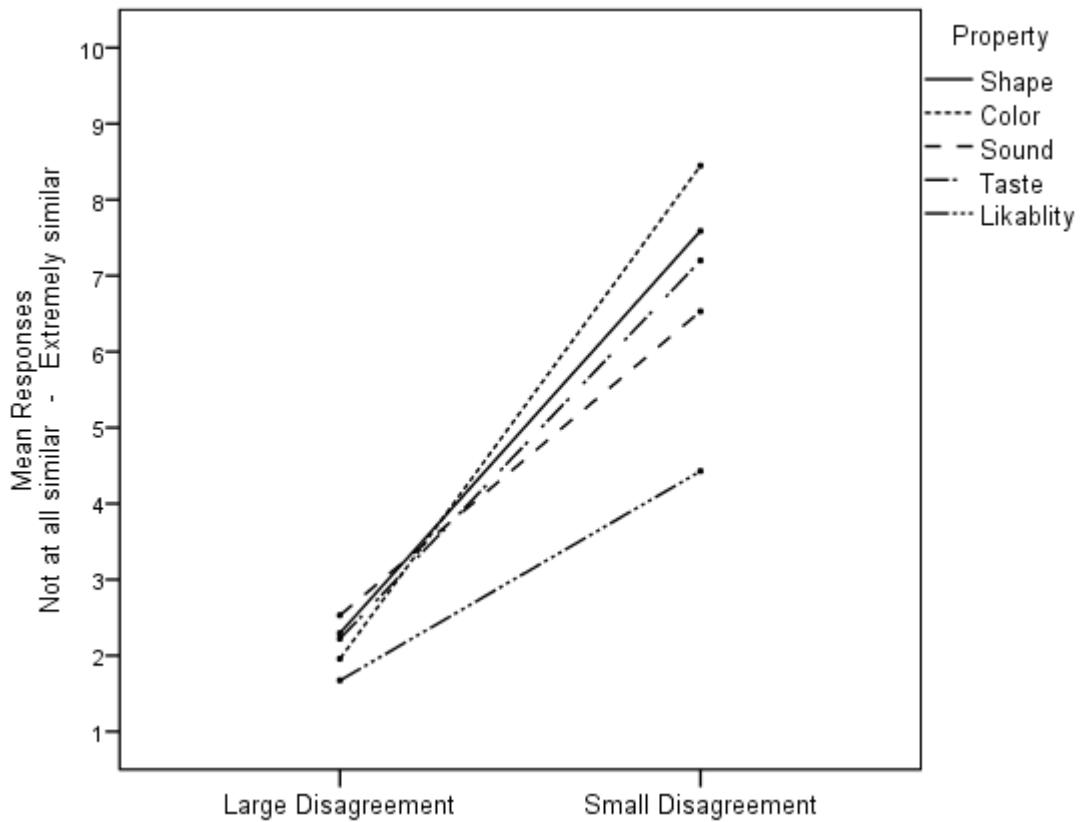


Figure 3. Responses to the similarity ratings of large and small disagreements.

4 Discussion

The following will discuss various aspects of our study: the metaphysical item intuitions, the instability in people's metaphysical intuitions about taste, sounds as properties or events, people's intuitions about realism, our principle of charity hypothesis about the discrepancy between the metaphysical and ascription items, and why disagreement size did not affect shape and likability; we close by addressing general objections against the project.

The metaphysical item intuitions. Cohen and Nichols' (2010) study called the introspective rejoinder into question for color and taste. Using their ascription item, their data suggests that participants' are roughly split on whether relationalism or anti-relationalism about color is intuitive, and that participants' taste intuitions largely favor relationalism. Using our

metaphysical item, our findings suggest that participants' color intuitions are strongly anti-relational and similar to shape, and that their taste intuitions are relational (although not strongly so) and similar to likability. Until now, no empirical data existed for people's intuitions about sound. We find that our metaphysical item yields no difference between shape, color, and sound. So, it seems we can say that our participants are no more anti-relational about sound than shape. This is interesting, as shape is a quintessential example of an anti-relational property.

Given our data, the introspective rejoinder seems to strongly suggest that shape, color, and sound should all be given an anti-relational treatment. This does not mean that these properties must be identified with the same kind of anti-relational property. Shapes are plausibly non-reducible, structural properties. Perhaps, colors and sounds, on the other hand, are anti-relational dispositional properties. As taste is similar to likability, a kind of reverse introspective rejoinder suggests that this property be given a relational treatment. This does not mean that taste must be given the same relational treatment as likability. An interesting conclusion that can be arrived at from this data is that our introspective capacities do not seem to support a unified account of secondary qualities. While Locke's categorization does not match well with most people's intuitions, consistent with Locke's views, people's intuitions do seem to recognize a difference between perceptible properties, with some being more relational and some more anti-relational.

The instability of taste. Unlike with all the other properties, we found that disagreement size had an effect on the metaphysical item for taste. While people's metaphysical intuitions for taste were affected by disagreement size, the effect was never so great as to shift it away from likability. Why does disagreement size have an effect on people's metaphysical intuitions about taste? Perhaps the reason is because it is unclear whether our perceptions of taste are transparent:

it is unclear that when we introspect on taste perceptions that the properties phenomenally presented are represented as properties of the external world.¹⁴ We suspect the reason has something to do with the fact that the sense of taste is intricately linked with the sense of touch. When tasting food we feel the food on our tongue. If it is unclear that taste perception is transparent, participants' anti-relational, metaphysical intuitions about taste may be incredibly weak and so more likely to be influenced by disagreement size. The existence of large disagreements about certain properties, about which participants' anti-relational, metaphysical intuitions are very weak, might cause them to doubt the anti-relationality of these properties. If our hypothesis is correct, one might expect metaphysical intuitions about smell to be affected by disagreement size as well as taste. Smell, like taste, is intricately linked with the sense of touch. We feel air moving in our nose whenever we smell things.

Sounds as properties or events. Unlike with the color literature where it is almost universally held that colors are properties, there is an open debate about whether sounds are properties or events (Casati and Dokic, 2005; Pasnau 1999; O'Callaghan, 2007). Note that our metaphysical item does not imply that sounds are properties. Yes, our metaphysical item does mention 'the sound of the object' but this need not imply the attribution of a property. There are other forms of possession besides property instantiation. This vagueness in the metaphysical item is a happy consequence of the imprecision of ordinary English. It allows our item to be impartial between property views on sound and event views on sound. Thus, our data can be taken to suggest that whether sounds are properties or events, our intuitions favor an account where sounds are not constituted by relations to subjects. Thus, our data militates against a relational

¹⁴ This seems true for likability as well. So, we suspect that there is a tendency for the metaphysical item to be affected by disagreement size for this property too. Descriptively, this is exactly what we find. This said, as likability was not affected by disagreement size for the ascription item either, we suspect that there is something more going on. We speculate about why the ascription item for likability was not affected by disagreement size later.

event view of sound according to which sounds are events that are constituted by relations to subjects, for example, ‘vibrating loudly for normal humans in normal conditions.’

Realist intuitions. We found that people’s intuitions for all the properties tested, including likability, largely favored a realist account. This is not surprising for shapes, colors, sounds, and tastes given that clearly they phenomenally all seem real, which is just to say that we perceive external objects as having these properties. Further, as these properties all seem equally real phenomenally, it is unsurprising that there were no significant differences between these properties for the realism item. Likability was rated as significantly less real than the other properties, but was still rated as overall real. We think that the reason for this overall realism is that, although it does not seem that we perceive likability in the same way we do the other properties, we still attribute it to things that phenomenally seem real (e.g. it is the object’s taste that seems disgusting or likable or only okay). In sum, irrealism does not seem to be any more popular amongst the folk than amongst contemporary philosophers.

The principle of charity. As we said, we find no difference between color, sound, and shape for the metaphysical item. However, we find that shape is significantly different from color and sound for the ascription item. This finding is consistent with what Roberts et al found; they found that color and shape were not different for their metaphysical item but were (borderline) different for their ascription item. The discrepancy between the metaphysical and ascription items for color and sound is a worry for the anti-relationalist, for it suggests an inconsistency in participants’ intuitions about these properties. A corollary is that there might be good reason to doubt the introspective rejoinder for these properties, consistent with what Cohen and Nichols’s results originally suggested, after all. Roberts et al say that the metaphysical item is a better gauge of participants’ relational/anti-relational intuitions than the ascription item,

because relationalism and anti-relationalism are metaphysical views, not views about how language functions (p. 1186). The concern remains, though, that what is really going on is not that participants are generally anti-relationalist about color and sound but that participants have conflicting intuitions about the metaphysical nature of these properties: when measured by the metaphysical item, they intuit that color and sound are no more anti-relational than shape, but when measured by the ascription item, they intuit that color and sound are more relational than shape.

We hypothesized that a principle of charity is driving the discrepancy between the metaphysical and ascription items, not conflicting intuitions about the metaphysical nature of the relevant properties. We expected two things to hold for any property for which our hypothesis is the correct explanation of the discrepancy between the items: the easier it is to be charitable the more people will agree with the ascription item, and the metaphysical item should be mostly unaffected by disagreement size. We tested our hypothesis by presenting participants with large and small disagreement cases. The assumption was that the smaller the disagreement the easier it is going to be to find a charitable interpretation under which everyone can be correct. For color and sound, the properties for which we found the discrepancy between the metaphysical and ascription items, our results strongly support our hypothesis: participants' ascription intuitions that both parties can be correct were higher when the disagreement cases were small than large, while participants' metaphysical intuitions remained unaffected.

Our hypothesis is a deflationary explanation for the discrepancy between the metaphysical and ascription items. Our explanation is deflationary in the sense that it holds that the difference between the items is not due to participants having conflicting intuitions about the nature of the relevant properties. Thus, in addition to ruling out the concern that what the

discrepancy between the metaphysical and ascription items for color and sound really shows is that participants are conflicted about whether relationalism or anti-relationalism for these properties is intuitive, if true, our hypothesis also allows us to rule out a theory that what explains the discrepancy is that participants have selectionist intuitions about color and sound. The discrepancy between the metaphysical and ascription items for color, for example, might be taken to suggest that participants intuit that objects can instantiate a plurality of non-relational colors (Kalderon, 2007). Our data favors our deflationary theory for color and sound over a selectionist theory, because only our deflationary theory predicts that participants should agree with the ascription item more in small disagreements than in large disagreements.

A competing deflationary theory is that the discrepancy between the metaphysical and ascription items for color and sound is explained by a simplicity bias: a bias to agree more with items that are easier to cognitively process. This theory begins with the insight that the ascription item is probably easier to cognitively process in small disagreement cases than in large ones, because large disagreement cases are more unusual. Although we agree with this insight, we do not think that a simplicity bias (alone) can explain our results. Presumably, the metaphysical item for color and sound is easier to cognitively process in cases of small disagreement than in large disagreement too and for the same reason: large disagreements are more unusual. However, disagreement size did not affect the metaphysical item for color and sound. So, it does not seem that the simplicity bias hypothesis can explain our results. This said, if it turned out that a simplicity bias hypothesis were compatible with our findings, then we would happy to admit this. As it is a deflationary theory too, our overall objectives would not be affected.

The insight on which aim 2 of our study is based is that just because participants answer ascription items in a way that suggests they find a particular metaphysical view intuitive does not

mean that they really do. Participants' answers might be heavily influenced by a principle of charity. This insight may be relevant elsewhere. First, Cova and Pain (2010) tested folk intuitions about normativism (the view that aesthetic judgments have universal validity) by using what is basically an ascription item. Their results suggest that people are overwhelmingly not normativists. However, perhaps these results can in part be explained by our insight regarding the principle of charity. Second, some hold that intuitions in favor of faultless disagreement for aesthetic properties, moral properties, and other similar properties, show that some kind of relativism for these properties must be true (Kölbel, 2002; 2004; 2009). However, perhaps intuitions in favor of faultless disagreement tell us more about the pragmatics of language (especially with regard to a principle of charity) than they do about the metaphysical nature of the relevant properties. Further research into these areas is warranted but outside of the present article's scope.

Disagreement size for shape and likability. Why did disagreement size not affect the ascription item for shape and likability? With regard to shape, we think the answer is that it is just hard to be charitable about this property. We considered three ways participants might apply the principle of charity:

1. Participants could interpret the case such that both parties must mean different things by their ascriptions.
2. Participants could interpret the case such that both parties must be referring to different parts of the object.
3. Participants could interpret the case such that the word 'correct,' which appears in the ascription item, does not track truth.

Clearly, 1 and 2 are not easily applied to shape. With regard to 1, it is easy to imagine that people might mean different things by 'honking,' for example, but much harder to imagine that people

might mean different things by ‘19-sided.’ With regard to 2, when people talk about ‘the number of sides of the object’ they seldom are referring to the number of sides of a part of that object, but when people talk about ‘the color of the object’ they are often talking about the color of a part of the object. People say ‘my car is blue’ even though it is not *entirely* blue.

With regard to likability, it is possible we did not get an effect, because the large and small disagreement cases were not different enough for this property. Descriptively, our participants rated the large and small disagreement cases for likability as more similar to each other than they did the large and small disagreement cases for any other property. The reason seems to be that people were less comfortable saying that the small disagreement involved similar properties in the likability case than they were for the other property cases. Having said this, there was a significant difference between the similarity rating for large and small disagreements for likability, as there were for all the properties. Another possibility is just that the principle of charity is not very active for likability, because participants are widely relationalists about this property and so prone to agree with ascription regardless.

Responses to general objections. A general objection facing Cohen and Nichols, Roberts et al, and the current study is to ask why we should care about the intuitions of the folk (i.e. non-philosophers). In reply, it is not that we care about the intuitions of the folk simpliciter; it is that we care about pre-theoretic, phenomenally-informed intuitions, and the intuitions of the folk act as a check on whether philosopher’s intuitions are really phenomenally-informed and pre-theoretic. When McGinn and Tye make statements about how the colors appear, there is a worry that their statements are heavily influenced by their anti-relationalist views. If this is what is happening with them (and others), then the introspective rejoinder, as articulated by them (and others), is ultimately just question begging. However, if the intuitions of McGinn and Tye agree

with the intuitions of the folk, we can say much more confidently that they are indeed reporting phenomenally-informed, pre-theoretic intuitions. The folk are less likely to be influenced by theoretical positions on perceptible properties than philosophers in the area; rather the phenomenology of the colors would seem to be the principle influence (more on this later). Checking philosophers' intuitions is especially important in cases such as exist in the ontology of perceptible properties where philosophers largely disagree about what is intuitive.

A somewhat less general worry, applicable to both this article and Roberts et al's, is that the metaphysical item involves independence from how things appear to Alex and Harry (and Tom and David) and independence from what they think, say, and do, but contemporary dispositionalism holds that, for example, redness is the disposition to appear red to *normal* observers in *normal* conditions. In addition, Cohen (2004; 2009) postulates coarse-grained colors to allow for real color disagreements. Coarse-grained colors are constituted by relations to *normal* observers and conditions so that error can more easily occur with respect to them than can occur with respect to his more ecumenical fine-grained colors. Thus, the problem, one might say, is that someone who agrees with these views should agree with the metaphysical item, even though the views in question are relational. The reason they should agree with the metaphysical item, one might say, is because this item does not involve independence from *normal* observers but independence from Alex and Harry or (Tom and David).

We think that this objection is misguided. In our disagreement cases it is stipulated that Alex and Harry (and Tom and David) are *normal* observers. Further, they are always described as being in conditions that would count as normal (e.g. typical lighting conditions). So, anyone who finds contemporary dispositionalism or Cohen's coarse-grained colors intuitive should disagree with the metaphysical item, as the item is about these cases. Of course, this does not

guarantee that people will respond in the way they should. One reason they might not would be if participants had forgotten or not realized that Alex and Harry (or Tom and David) are normal. We think this unlikely for two reasons. First, as our participants were given a comprehension control where they were asked to confirm Alex and Harry's (or Tom and David's) claims by typing what each said, participants were required to pay attention to the vignettes. Second, at most there were two items presented between the vignette and the metaphysical item, so forgetting would be unlikely.

There is one last objection we wish to consider, which is applicable to this study and Roberts et al's study. Although participants in the current study mainly agreed about the metaphysical nature of shapes, colors, and sounds, nevertheless there was some disagreement about the nature of all the properties tested. The problem one might say is that there is no way of knowing whether everyone's phenomenology is similar, and even if there were a way, there would be no reason to prefer the majority's intuitions. In line with Roberts et al, we think there is reason to prefer the majority's intuitions over the minority's, assuming (for now) that everyone enjoys similar phenomenology about perceptible properties: when it comes to perceptible properties for most of the folk phenomenology is going to be the principle influence (Roberts et al, 2014, p. 1187-1188); it is the phenomenology of perceptible properties that is the most salient aspect of them, not theories folk might have heard. Thus, the minority not the majority must be failing to indicate their phenomenally-informed intuitions. (It is important to note that there is practically always going to be minority disagreement in any empirical study like the ones being discussed.) There is reason to think that our assumption about the folk is right: the majority (81%) was anti-relational about shape, a property that clearly seems anti-relational, and the majority (68%) was relational about likability, which clearly seems relational.

One might wish to push us on our view that when it comes to perceptible properties for most of the folk phenomenology is going to be the principle influence. One might claim that in science the view that colors and sounds are waves is the dominant position, an anti-relational view, and that this view, being so dominant, has biased our participants. In reply, we think it is doubtful that there really is a dominant view on colors and sounds in science. Yes, there is a view to the effect that colors and sounds are waves. However, irrealist views under which external objects are not colored are also popular. For example, the view that external objects are not colored is close to the surface in the work of Galileo, Boyle, Descartes, Newton, Young, Maxwell, and Helmholtz (Maund, 2012). Maxwell, for example, said the following: “It seems almost a truism to say that color is a sensation[.]” (Maxwell 1890/1970, p. 75). In addition, there perhaps exists in science a kind of hybrid view where there are two kinds of colors and sounds: colors and sounds as waves and as sensations. Rossing et al (2001) says:

The word ‘sound’ is used to describe two different things:

1. An auditory sensation.
2. The disturbance in a medium that can cause this sensation. (p.3)

A better indicator of the folk being biased would be if participants mentioned quasi-scientific views on color and sound when justifying their answers. Roberts et al found in a pilot study that only 5/67 explicitly mentioned quasi-scientific views when justifying their answers (2014, p. 1187). Of course, participants could be biased without knowing it. Thus, further research would be required to prove beyond a doubt that the folk are not biased.¹⁵ It would be

¹⁵ It is worth pointing out that there are going to be obvious practical limitations with designing a study that eliminates the possibility of participants being biased, especially if the idea of ‘bias’ is extended to include biases that participants have but are unaware of having.

especially interesting to test whether any significant percentage of the population holds the hybrid view mentioned above. Although we cannot now prove beyond a doubt that our participants are phenomenally informed and not *at all* theoretically biased, the folk are surely less likely to be biased by theories of perceptible properties than philosophers who work in the ontology of perceptible properties. Thus, regardless of whether we can prove they have no biases, our study works as a check on these philosophers' intuitions, which is fundamentally its point. Little in this article would be lost if we talked only of pre-theoretic intuitions, and only of the fact that our participants are more likely to have these than philosophers.

What if our participants have divergent phenomenology? There are perceptual differences between people: some people are colorblind, some people have synesthesia, some people are near/far sighted, etc. These kinds of perceptual differences, though, do not seem to have much to do with the kind of phenomenal divergence at issue. None of them would seem to predict that the majority's phenomenology is such that shapes, sounds, and colors appear anti-relational but a minority's is such that these properties appear relational. Regardless, whether phenomenal divergence actually occurs is an empirical question and one that appears difficult to test, and it is certainly a question outside the scope of this article. In line with Roberts et al, we think that if people have divergent phenomenology that this would be a disaster for the relationalist and the anti-relationalist. If colors appear phenomenally relational to some and anti-relational to others, for example, plausibly it should be inferred that there are both relational and anti-relational colors, but neither of these views allow for this (Roberts et al, 2014, p. 1188).

Conclusion

Our results support the view that anti-relationalism is in accordance with our phenomenally-informed, pre-theoretic intuitions for shape, color, and sound. Moreover, we have shown that these results for the metaphysical item are not threatened by the results for the ascription item for color and sound. Participants applying a principle of charity can explain why the ascription item elicits more-relationalist responses for these properties. Thus, we accept a deflationary view of what is going on with the ascription item for color and sound according to which the item fails to tell us anything about participants' intuitions on the nature of these properties. The introspective rejoinder is used to argue against relationalist views on perceptible properties by saying that such views go against our phenomenally-informed, pre-theoretic intuitions. The rejoinder depends on the following phenomenal principle: our phenomenally-informed, pre-theoretic intuitions are defeasible evidence when it comes to the nature of perceptible properties. This principle does not only seem intuitively true but also is the foundation of many arguments in the ontology of color as well as in the ontology of other perceptible properties, especially sound. Given our results, the introspective rejoinder stands on solid ground for shape, color, and sound.

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References

Andow, J. (2015). Thin, fine and with sensitivity: a metamethodology of intuitions. *Review of Philosophy and Psychology*. doi:[10.1007/s13164-015-0247-2](https://doi.org/10.1007/s13164-015-0247-2)

- Armstrong, D. (1987). Smart and the secondary qualities. In P. Pettit, R. Sylvan, & J. Norman (Eds.), *Metaphysics and Morality: Essays in Honour of J. J. C. Smart*. Oxford: Basil Blackwell.
- Boghossian, P., & Velleman, J. (1989). Color as a secondary quality. *Mind*, 98, 81–103.
- Byrne, A., & Hilbert, D. (2003). Color realism and color science. *Behavioral and Brain Sciences*, 26, 3–64.
- Casati, R., & Dokic, J. (2005). Sounds. In E. N. Zalta (Ed.), *The Stanford Encyclopaedia of Philosophy*. New Haven: Yale University Press.
- Chalmers, D. (2006). Perception and the fall from Eden. In T. Gendler & J. Hawthorne (Eds.), *Perceptual experience* (pp. 49–125). New York: Oxford University Press.
- Cohen, J. (2004). Color properties and color ascriptions: A relationalist manifesto. *The Philosophical Review*, 113, 451–506.
- Cohen, J. (2009). *The red and the real: An essay on color ontology*. Oxford: Oxford University Press.
- Cohen, J., & Nichols, S. (2010). Colors, color relationalism, and the deliverances of introspection. *Analysis*, 70, 218–228.
- Cova, F., & Pain, N. (2010). Can folk aesthetics ground aesthetic realism? *The Monist*, 95, 241–263.
- Dancy, J., & Hookway, C. (1986). Two conceptions of moral realism. *Proceedings of the Aristotelian Society, Supplementary* 60, 167–187.
- Dorr, C. (2010). Review of James Ladyman and Don Ross, every thing must go: Metaphysics naturalized. *Notre Dame Philosophical Reviews*, 2010(6), 16.

- Fain, H., & Kaelin, E. F. (1960). Student philosophical opinions: A survey. *Inquiry*, 3, 137–152.
- Gibbard, A. (2006). Moral feelings and moral concepts. In R. Schafer-Landau (Ed.), *Oxford Studies in Metaethics* (Vol. 1, pp. 195–215). Oxford: Clarendon Press.
- Goldman, Alvin I. (2007). Philosophical intuitions: Their target, their source, and their epistemic status. *Grazer Philosophische Studien*, 74, 1–26.
- Hardin, C. L. (1988). *Color for Philosophers*. Hackett.
- Jackson, F., & Pargetter, R. (1987). An objectivist guide to objectivism about color. *Revue Internationale de Philosophie*, 41, 127–147.
- Johnston, M. (1992). How to speak of the colors. *Philosophical Studies*, 68, 221–63.
- Kalderon, M. E. (2007). Color pluralism. *The Philosophical Review*, 116, 563–601.
- Kölbel, M. (2002). *Truth Without Objectivity*. London: Routledge.
- Kölbel, M. (2004). Faultless disagreement. *Proceedings of the Aristotelian Society*, 104, 53–73.
- Kölbel, M. (2009). The evidence for relativism. *Synthese*, 166, 375–395.
- Kripke, S. (1972). *Naming and necessity*. Cambridge: Harvard University Press.
- Ladyman, J., & Ross, D. (2007). *Every thing must go: Metaphysics naturalized*. Oxford: Oxford University Press.
- Locke, J. (1996). *An essay concerning human understanding*. Indianapolis, ID: Hackett.
(Original work published in 1689).
- MacLaurin, J., & Dyke, H. (2012). What is analytic metaphysics for? *Australasian Journal of Philosophy*, 90, 291–306.

- Maund, B. (2012). Color. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy*. New Haven: Yale University Press.
- Maxwell, J. C. (1890/1970). On color vision. In D. L. MacAdam (Ed.), *Sources of color science*. Cambridge, MA: MIT Press.
- McGinn, C. (1983). *The subjective view: Secondary qualities and indexical thoughts*. Oxford: Oxford University Press.
- McGinn, C. (1996). Another look at color. *The Journal of Philosophy*, 93, 537–53.
- Noë, A. (2004). *Action in perception*. Cambridge, MA: MIT Press.
- O'Callaghan, C. (2007). *Sounds*. Oxford: Oxford University Press.
- Pasnau, R. (1999). What is sound? *The Philosophical Quarterly*, 49, 309–324.
- Roberts, P. (2014). Parsing the rainbow. *Synthese*, 8, 1793–1811.
- Roberts, P., Andow, J., & Schmidtke, K. (2014). Color relationalism and the real deliverances of introspection. *Erkenntnis*, 79, 1173–1189.
- Rossing, T., Moore, F. R., & Wheeler, P. A. (2001). *The Science of Sound*. Boston, MA: Addison-Wesley.
- Tye, M. (2000). *Consciousness, color, and content*. Cambridge, MA: MIT Press.
- Westphal, J. (2005). Conflicting appearances, necessity, and the irreducibility of propositions about the colours. *Proceedings of the Aristotelian Society*, 105, 219–235.
- Yablo, S. (1995). Singling out properties. *Philosophical Perspectives*, 9, 477–502.

Appendix

Note the first disagreement case always spoke of Alex and Harry and the second always spoke of Tom and David.

Cases	Large Disagreement	Small Disagreement
<i>Shape:</i>	Alex and Harry examine an object's shape. Alex and Harry examine the object in typical lighting from the same position. They are both fluent English speakers and have normal eyesight. Alex says that the object is three-sided while Harry says that the very same object is twenty-sided.	Alex and Harry examine an object's shape. Alex and Harry examine the object in typical lighting from the same position. They are both fluent English speakers and have normal eyesight. Alex says that the object is nineteen-sided while Harry says that the very same object is twenty-sided.
<i>Color:</i>	Alex and Harry examine an object's colour. Alex and Harry examine the object in typical lighting from the same position. They are both fluent English speakers and have normal eyesight. Alex says that the object is entirely yellow while Harry says that the very same object is entirely blue.	Alex and Harry examine an object's colour. Alex and Harry examine the object in typical lighting from the same position. They are both fluent English speakers and have normal eyesight. Alex says that the object is entirely black while Harry says that the very same object is entirely dark-blue.
<i>Sound:</i>	Alex and Harry examine an object's sound. Alex and Harry listen to the object in a studio room from the same position. They are both fluent English speakers and have normal hearing. Alex says that the object is only moaning, while Harry says that the very same object is only beeping.	Alex and Harry listen to an object's sound. Alex and Harry listen to the object in a studio room from the same position. They are both fluent English speakers and have normal hearing. Alex says that the object is only honking, while Harry says that the very same object is only beeping.
<i>Taste:</i>	Alex and Harry examine an object's taste. Alex and Harry clear their palate and then taste the object in typical conditions. They are both fluent English speakers and have normal taste perception. Alex says that the object is only plasticy, while Harry says that the very same object is only almondy.	Alex and Harry examine an object's taste. Alex and Harry clear their palate and then taste the object in typical conditions. They are both fluent English speakers and have normal taste perception. Alex says that the object is only walnut while Harry says that the very same object is only almondy.
<i>Likability</i>	Alex and Harry examine an object's taste. Alex and Harry both clear their palate and then taste the object in typical conditions. They are both fluent English speakers and have normal taste perception. Alex says that the object is disgusting, while Harry says that the very same object is very likable.	Alex and Harry examine an object's taste. Alex and Harry both clear their palate and then taste the object in typical conditions. They are both fluent English speakers and have normal taste perception. Alex says that the object is only okay, while Harry says that the very same object is very likable.

<i>Metaphysical Items</i>		
	Large Disagreement	Small Disagreement
<i>Shape:</i>	In reality, there is an absolute fact of the matter about the shape of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.	In reality, there is an absolute fact of the matter about the shape of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.
<i>Color:</i>	In reality, there is an absolute fact of the matter about the colour of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.	In reality, there is an absolute fact of the matter about the colour of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.
<i>Sound:</i>	In reality, there is an absolute fact of the matter about the sound of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.	In reality, there is an absolute fact of the matter about the sound of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.
<i>Taste:</i>	In reality, there is an absolute fact of the matter about the taste of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.	In reality, there is an absolute fact of the matter about the taste of the object regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.
<i>Likability</i>	In reality, there is an absolute fact of the matter about the likability of the object's taste regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.	In reality, there is an absolute fact of the matter about the likability of the object's taste regardless of how it appears to Alex and Harry and regardless of what they think, say, or do.

Ascription Items		
	Large Disagreement	Small Disagreement
<i>Shape:</i>	Alex is correct when he says that the object is three-sided, and in addition Harry is correct when he says the object is twenty-sided. In other words, both Alex and Harry's claims are correct.	Alex is correct when he says that the object is nineteen-sided, and in addition Harry is correct when he says the object is twenty-sided. In other words, both Alex and Harry's claims are correct.
<i>Color:</i>	Alex is correct when he says that the object is entirely yellow, and in addition Harry is correct when he says the object is entirely blue. In other words, both Alex and Harry's claims are correct.	Alex is correct when he says that the object is entirely black, and in addition Harry is correct when he says the object is entirely dark-blue. In other words, both Alex and Harry's claims are correct.
<i>Sound:</i>	Alex is correct when he says that the object is only moaning and in addition Harry is correct when he says the object is only beeping. In other words, both Alex and Harry's claims are correct.	Alex is correct when he says that the object is only honking and in addition Harry is correct when he says the object is only beeping. In other words, both Alex and Harry's claims are correct.
<i>Taste:</i>	Alex is correct when he says that the object is only plasticy, and in addition Harry is correct when he says the object is only almondy. In other words, both Alex and Harry's claims are correct.	Alex is correct when he says that the object is only walnuty, and in addition Harry is correct when he says the object is only almondy. In other words, both Alex and Harry's claims are correct.
<i>Likability</i>	Alex is correct when he says that the object's taste is disgusting, and in addition Harry is correct when he says the object's taste is very likable. In other words, both Alex and Harry's claims are correct.	Alex is correct when he says that the object's taste is only okay, and in addition Harry is correct when he says the object's taste is very likable. In other words, both Alex and Harry's claims are correct.

Realism Items		
	Large Disagreement	Small Disagreement
<i>Shape:</i>	The object really has a shape (or shapes).	The object really has a shape (or shapes).
<i>Color:</i>	The object really has a colour (or colours).	The object really has a colour (or colours).
<i>Sound:</i>	The object really has a sound (or sounds).	The object really has a sound (or sounds).
<i>Taste:</i>	The object really has a taste (or tastes).	The object really has a taste (or tastes).
<i>Likability</i>	The object really has a likability (or likabilities).	The object really has a likability (or likabilities).

Correspondence Items		
	Large Disagreement	Small Disagreement
<i>Shape:</i>	Alex's statement corresponds with how things are when he says the object is three-sided, and in addition Harry's statement corresponds with the way things are when he says the object is twenty-sided. In other words, both Alex and Harry's claims correspond with the way things are.	Alex's statement corresponds with how things are when he says the object is nineteen-sided, and in addition Harry's statement corresponds with the way things are when he says the object is twenty-sided. In other words, both Alex and Harry's claims correspond with the way things are.
<i>Color:</i>	Alex's statement corresponds with how things are when he says that the object is entirely yellow, and in addition Harry's claim corresponds with how things are when he says the object is entirely blue. In other words, both Alex and Harry's claims correspond with how things are.	Alex's statement corresponds with how things are when he says that the object is entirely black, and in addition Harry's claim corresponds with how things are when he says the object is entirely dark-blue. In other words, both Alex and Harry's claims correspond with how things are.
<i>Sound:</i>	Alex's statement corresponds with how things are when he says that the object is only moaning and in addition Harry's statement corresponds with how things are when he says the object is only beeping. In other words, both Alex and Harry's claims correspond with how things are.	Alex's statement corresponds with how things are when he says that the object is only honking and in addition Harry's statement corresponds with how things are when he says the object is only beeping. In other words, both Alex and Harry's claims correspond with how things are.
<i>Taste:</i>	Alex's statement corresponds with how things are when he says that the object is only plasticy, and in addition Harry's statement corresponds with how things are when he says the object is only almondy. In other words, both Alex and Harry's claims correspond with how things are.	Alex's statement corresponds with how things are when he says that the object is only walnuty, and in addition Harry's statement corresponds with how things are when he says the object is only almondy. In other words, both Alex and Harry's claims correspond with how things are.
<i>Likability</i>	Alex's statement corresponds with how things are when he says that the object's taste is disgusting, and in addition Harry's statement corresponds with how things are when he says the object's taste is very likable. In other words, both Alex and Harry's claims correspond with how things are.	Alex's statement corresponds with how things are when he says that the object's taste is only okay, and in addition Harry's statement corresponds with how things are when he says the object's taste is very likable. In other words, both Alex and Harry's claims correspond with how things are.