

The Phenomenal Stance Revisited

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Abstract In this article, we present evidence of a bidirectional coupling between moral concern and the attribution of properties and states that are associated with experience (e.g., conscious awareness, feelings). This coupling is also shown to be stronger with experience than for the attribution of properties and states more closely associated with agency (e.g., free will, thoughts). We report the results of four studies. In the first two studies, we vary the description of the mental capacities of a creature, and assess the effects of these manipulations on moral concern. The third and fourth studies examine the effects of variations in moral concern on attributions of mindedness. Results from the first two studies indicate that moral concern depends primarily on the attribution of experience, rather than the attribution of agency. The results of the latter two studies demonstrate that moral concern increases attributions of mindedness, and that this effect is stronger for attributions of experience than for attributions of agency.

1 Introduction

It seems evident to common sense that some things in the world have minds but other things do not. We find it natural to attribute mental states and capacities to people and pets, for example, but quite unnatural to do the same with pencils and pebbles. Where mere physical objects are concerned, we take up the ‘physical stance’: we think of them in terms of their causal-mechanical properties. With minded things, the situation is more complex, because not all attributions of mindedness are of a piece (Robbins and Jack 2006; Gray et al. 2007). On our view, attributions of phenomenal consciousness are at least partially functionally distinct from attributions of intentional

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agency, and attributions of consciousness play a special role in moral cognition. Where minded things are concerned, then, we have two stances at our disposal in addition to the physical stance. When thinking of something in terms of its capacity for intelligent goal-directed behavior, we take up the ‘intentional stance’. When thinking of something as a locus of conscious experience, we take up the ‘phenomenal stance’—and in so doing regard that thing as a moral patient, entitled to protection from avoidable harm.

At the heart of our model are the following three claims (see Fig. 1):

1. In addition to the physical and intentional stances, a third stance is required to account for our capacity to apprehend the experiential states of others. We call this the phenomenal stance.
2. The folk conception of the mind is inextricably linked to moral cognition. Specifically, there is a tight coupling, in both directions, between regarding something as a bearer of experiential states and feeling moral concern for that thing.
3. The attribution of mental properties intrinsic to intentional agency is compatible with both the physical and the phenomenal stances. There is, however, a fundamental incompatibility between the physical and phenomenal stances. This incompatibility helps to explain the intuitive appeal of mind-body dualism and the ‘explanatory gap’: conscious beings are viewed as being more than mere biological machines, and hence beyond the reach of scientific understanding.

According to our model there is gradation in our conception of the mind. At one pole, we may perceive primitive forms of agency, grasped through a combination of the physical and intentional stances. Examples of agents likely to be understood in this way would be simple robots and perhaps ‘lesser’ animals (e.g., insects; but see Arico et al. 2011, for qualms about this example)—in other words, agents to which only minimal anthropomorphic properties are reliably attributed. Such agents may be

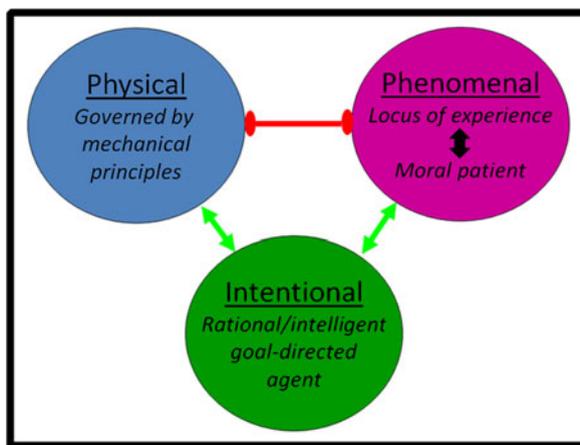


Fig. 1 Three cognitive stances, their relationships to each other, and the perceived properties of objects apprehended by each stance. (*Bidirectional arrows* indicate mutual compatibility; *barbell* indicates mutual antagonism.)

viewed as animate, and as exhibiting goal-directed behavior. They possess basic types of intentionality, which are compatible with their being purely physical information-processing machines whose internal states are amenable to causal-functional analysis (Dretske 1991). But objects in this category are not regarded as moral patients or moral agents, and attributions of intentional states to them are seen as consistent with their behavior being ultimately explicable in mechanistic or quasi-mechanistic terms. At the other pole lie full-blown agents, understood as having rich internal lives, and apprehended through a combination of the intentional and phenomenal stances. Such agents may be seen as possessing genuine, phenomenally robust, intentionality (Searle 1980). They are viewed as having anthropomorphic properties, as experiencing higher emotions, and as being both moral agents and moral patients. For this type of agent, a purely mechanistic account is viewed as incomplete in key respects. They are viewed as conscious agents in possession of free will, and hence as something more than mere mechanisms. Between these poles lie many gradations. Hence, according to our account, mental states may take numerous forms. Some of these forms may involve a tight interweaving of the intentional and the phenomenal, such as the ability to feel higher emotions (e.g., guilt). Other mental states and properties may be more clearly associated with either the intentional or the phenomenal. According to our account models of agency that are perceived to be in tension with purely physical accounts of the constitution of the agent, derive this tension from the perception that these agents possess, of a piece, both phenomenal states and moral properties.

There is more to be said about these considerations, which relate primarily to point 3 of the model. In this article, however, our focus will be on empirical support for points 1 and 2. That is, we will present evidence of a bidirectional coupling between moral concern and the attribution of properties and states that are associated with experience (e.g., conscious awareness, feelings) (point 2). This coupling is also shown to be stronger with experience than for the attribution of properties and states more closely associated with agency (e.g., free will, thoughts). This supports the importance of a distinction between the phenomenal and intentional stances (point 1).

We report the results of four studies. In the first two studies, the connection of interest is from mindedness to moral patiency: How does mind perception affect moral consideration? We vary the description of the mental capacities of a creature, and assess the effects of these manipulations on moral concern. The first study contrasts creatures high in experience and low in agency, with creatures low in experience and high in agency. The second study uses a crossed factors design so that experience and agency are varied independently. Both studies demonstrate that moral concern for an object is tied most strongly to the attribution of experiential properties to that object, and not the attribution of agentic properties.

The third and fourth studies look at the connection from moral patiency to mindedness: How does moral concern affect mind perception? These experiments examine the effects of variations in moral concern, due either to a manipulation or to natural variations in personality, on attributions of mindedness. The third study manipulates moral concern by describing a creature either as a competent adult, or as a vulnerable infant. Although it is generally thought that developmentally immature creatures have lesser cognitive capacities than adults, we find greater attributions of mindedness to

the vulnerable infant. The fourth study expands on the third study in two ways. First, we distinguish attributions of experience from attributions of agency. Second, we use an independent method to test the hypothesis that increases in moral concern lead to increasing attribution of mindedness. In addition to the vulnerability manipulation, we also look at individual differences in empathetic concern, using a well-established and validated self-report measure, the Interpersonal Reactivity Index (Davis 1980). This study demonstrates that the vulnerability manipulation increases attributions of experience, but has no effect on attributions of agency. Independently, we also find that individuals with higher empathetic concern make greater attributions of experience. Experiments 3 and 4 demonstrate that moral concern increases attributions of mindedness, and that this effect is stronger for attributions of experience than for attributions of agency.

2 Experiment 1

In this first study we addressed the effect of mind perception on moral concern using a modified factorial design with two conditions. In each condition, the target was described as high on one of the two dimensions of mind (either experience or agency) and low on the other.

2.1 Participants and Procedure

There were 35 participants in the study, all of them undergraduate students in introductory psychology classes at Washington University in St. Louis, taking part in exchange for course credit. No age or gender information was recorded. The study was certified as exempt by the relevant Institutional Review Board prior to data collection. The study was administered using paper and pen.

Participants in both conditions began by reading the following story:

In the Indonesian islands, lobsters are considered a great delicacy. They are caught by putting traps down on the ocean floor. The traps contain a small amount of food. The lobsters enter to eat the food and cannot get back out. Periodically, fishermen come and pull up their pots to check to see if there are any lobsters inside. They put any lobsters they find into a large cage and bring them back to port. Back at port, the lobsters are quickly bought by local restaurants. They are killed quickly by boiling and they are almost always eaten the same night.

Some fishermen do not check their lobster pots very regularly. When this happens, some lobsters may be stuck in the pot for as long as 2 weeks. Because the small amount of food runs out quickly, some lobsters starve to death in the pots.

Some Indonesians are concerned about this. They don't want to stop people from eating lobsters, but they do want the lobsters to be treated humanely. They want to change the law so that fishermen have to check their pots more regularly, so that lobsters don't starve to death in the traps.

Participants were then instructed as follows:

Please indicate how concerned you feel about the welfare of the lobsters.
(0 = *not at all concerned*, 10 = *very concerned*)

Imagine you are a lobster fisherman or fisherwoman. Due to some unusual circumstances, you are unable to check your pots for 2 weeks. Please rate how bad you would feel if you found that lobsters had starved to death in your traps.

(0 = *it would not affect me at all*, 10 = *I would feel absolutely terrible*)

If the law were changed to encourage fishermen to check their pots more frequently, please rate how strong a penalty should be applied to fishermen who do not comply.

(0 = *no penalty at all*, 10 = *bad offenders should serve jail time*)

After giving their responses, participants were presented with one of two continuations of the story. Those in the high agency/low experience condition read the following:

Now suppose that scientists made the following important discoveries about lobsters:

Lobsters are highly intelligent. They form elaborate search strategies to forage for food. The neural systems responsible for lobster memory and reasoning are similar in important respects to the systems in the human brain. However, lobsters feel little or no emotion. They do not hesitate to remove their own limbs if they become stuck. They have no recognizable neural systems for sensing pain or pleasure. In short, lobsters are very smart but devoid of feeling.

Participants in the low agency/high experience condition read:

Now suppose that scientists made the following important discoveries about lobsters:

Lobsters have rich and complex emotional lives. They are capable of suffering from depression and anxiety. The neural systems responsible for lobster emotion are similar in important respects to the systems in the human brain. However, lobsters are not especially intelligent. They remember little about their environment. They forage for food simply by moving against ocean current. The neural systems responsible for lobster memory are primitive and they have no recognizable system for reasoning. In short, lobsters feel a great deal, but they are not very smart.

Participants were then instructed to respond for a second time to the same three probes administered earlier (rating concern for the lobsters' welfare, guilt about harming them, and the severity of a penalty for violating a protective law), this time while imagining that the scientific findings described in the story were real, rather than merely fictional.

2.2 Results

Analysis of the data revealed a significant effect of the manipulation on changes in patency-related judgment relative to baseline: concern about the lobsters' welfare, $t(35)=-3.850$, $p<.001$; guilt about causing them harm, $t(35)=-5.409$, $p<.001$; and penalty for noncompliance with a protective law, $t(35)=-5.560$, $p<.001$ (see Fig. 2). The effects were striking in that patency ratings actually dropped below baseline when the target was described as high in agency but lacking experience, but increased in the opposite condition. (The manipulation was also effective for patency-related judgments post-baseline: concern, $t(35)=-2.784$, $p=.009$ (2-tailed); guilt, $t(35)=-2.947$, $p=.006$; and penalty, $t(35)=-3.382$, $p=.002$.)

2.3 Discussion

These findings suggest that, as predicted by our model, mind perception differentially affects moral consideration depending on the dimension of mindedness at issue. Creatures described as rich in agency but poor in experience do not invite moral concern in the same way as do creatures described as agentially poor but experientially rich. As such, the results of Experiment 1 vindicate the classical utilitarian view of the moral status of animals: "The question is not, Can they *reason*? nor, Can they *talk*? but, Can they *suffer*?" (Bentham 1789). In other words, what matters most for moral consideration is the capacity to feel, not the capacity to think—or so common-sense would have it.

It's worth noting how the results of this study relate to earlier research on links between mind perception and moral consideration. Two studies in particular are

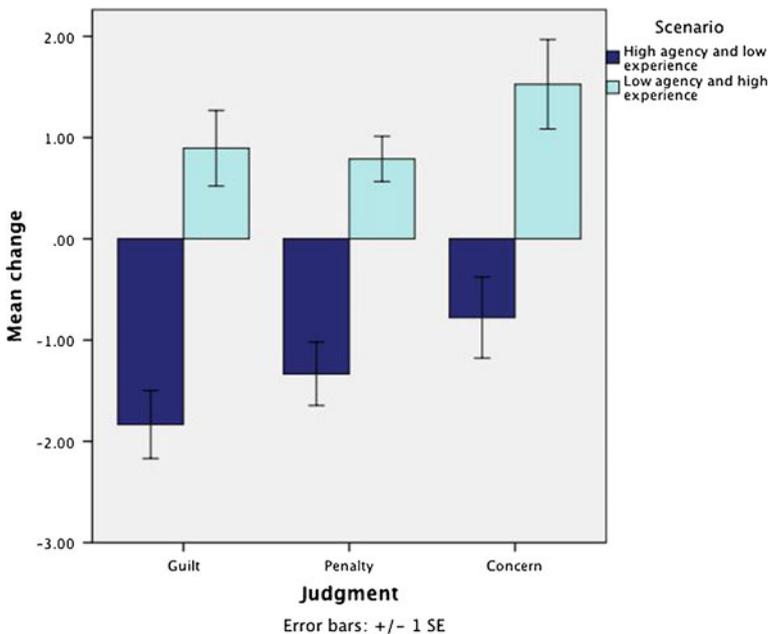


Fig. 2 Mean change in patency-related judgments (Experiment 1)

relevant here. In a seminal article, Gray et al. (2007) reported that attributions of agency and experience were strongly positively correlated with attributions of moral agency and moral patiency, respectively. Their study, however, did not involve manipulating mindedness as an experimental variable. Hence, while their data are consistent with the hypothesis that moral patiency depends on experience rather than agency, their findings are correlational rather than causal. (In several follow-up studies, Gray and Wegner (2009) use experienced pain as a proxy for moral patiency, an identification that goes beyond the evidence.) By contrast, Knobe and Prinz (2008) present evidence that moral consideration causally depends upon mind perception in the experiential dimension. But the experimental design they used differs from ours in two respects. First, it gets at the causal dependence indirectly, by varying the psychological state of a hypothetical observer, rather than that of a target. (In brief: a character in the story is described as wanting to know about the psychological capacities of fish—an agentic capacity (memory) in one condition and an experiential capacity (pain) in the other condition—and respondents are asked to explain why the character might want this information.) Second, data for this study took the form of open-ended free responses rather than numerical ratings. This design raises concerns about inter-rater reliability (not addressed in Knobe and Prinz's paper) that our studies avoid.

3 Experiment 2

To investigate further the effect of moral perception on moral consideration, we conducted a follow-up study using an online survey website to collect survey data. This study used a 2×2 factorial design. The two factors were dimensions of mind (agency and experience), each with two levels (high and low). The dependent variable was moral patiency. The choice of design was motivated by an interest in the possibility of an interaction effect between the two dimensions of mind, a possibility that neither the previous experiment nor any previously published study took into account.

3.1 Participants and Procedure

Participants in this study were recruited both in person, in dining halls on the campus of the University of Missouri, and on Facebook. There were 112 participants, 41 male and 71 female, with a mean age of 27.1 years. No compensation was offered for participation. The study was certified as exempt by the relevant Institutional Review Board prior to data collection. The study was conducted on the Web.

The general format of the study was much as before. Participants were presented with a brief scenario involving the treatment of lobsters and asked to make a baseline rating of moral patiency. In the next step, participants were given hypothetical information about lobsters' psychological capacities and asked to update their patiency rating on the assumption that the information in question was correct. As in the first study, this two-stage procedure was adopted so we could more accurately assess the effect of mindedness information on moral consideration.

The details of the study are as follows. Across all four conditions, participants read a document announcing that Whole Foods Market, a high-end grocery chain, had

decided to stop selling live lobsters due to concerns about the animals' welfare. Then participants were given the following instruction:

Given your own beliefs about lobsters (as opposed to those of the management of Whole Foods, for example), to what extent would you agree or disagree with the following claim?

It is morally wrong to subject farmed lobsters to rough treatment.
(1 = *strongly disagree*, 6 = *strongly agree*)

As earlier, responses to this first question provided a baseline rating of patiency, to be subtracted from the rating made after imaginary discoveries about the psychology of lobsters had been presented.

For the second step, participants were randomly assigned to one of four conditions, corresponding to the four possible combinations of the two dimensions of mind, with each dimension admitting two values: high and low. In the high agency conditions participants first read the following paragraph:

Now, imagine that scientists make an interesting new discovery about lobsters. After many years of extensive research, they determine that lobsters are much more intelligent than previously believed. For example, it appears that lobsters have elaborate strategies for foraging, advanced navigational skills, and excellent memories. They are even capable of sophisticated problem solving and planning.

In the low agency conditions, participants first read the following alternate paragraph:

Now, imagine that scientists make an interesting new discovery about lobsters. After many years of extensive research, they determine that that lobsters have very limited intelligence. Their memories are extremely poor, and they are incapable of simple planning or problem solving. Because their navigational skills are so weak, they rely on crude foraging strategies to find food.

In the high experience conditions, participants read the following second paragraph:

At the same time, however, scientists also discover that lobsters are much more sensitive creatures than previously believed. For example, it appears that lobsters experience pains, pleasures, emotional feelings, and other sensations in much the same way that people do.

In the low experience conditions, participants read the following alternate second paragraph:

At the same time, however, scientists also discover that lobsters are incapable of feeling. It's not just that lobsters do not experience pains, pleasures, emotional feelings, or other sensations in anything like the way that people do—it turns out that lobsters do not experience these states at all.

Next, participants read a summary sentence, for example:

In short, it turns out that lobsters can think, but they cannot feel.

The summary sentence was altered by substituting ‘can’ with ‘cannot’, and ‘but’ with ‘and’, as appropriate to fit the condition. Finally, participants across all conditions read:

Assuming scientists had actually made this discovery, to what extent would you then agree or disagree with the following claim?

It is morally wrong to subject farmed lobsters to rough treatment.
(1 = *strongly disagree*, 6 = *strongly agree*)

This second question, a variant of the first (baseline) measure, was designed specifically to tap into the effect of mind perception on moral consideration. Following our theoretical account, we predicted that only experience would have an effect.

3.2 Results

A two-factor ANOVA revealed a main effect of the mindedness manipulation on change in patency judgments relative to baseline in the experience dimension, $F(1, 108)=29.45$, $p<.001$ (see Fig. 3). There was no effect in the agency dimension, $F(1, 108)=2.369$, $p=.127$. Though there was no interaction effect at $\alpha=.05$, it came close, $F(1, 108)=3.471$, $p=.065$, suggesting that such an effect would likely be detected in a larger sample. (Post-baseline patency judgments also varied as a function of experience, $F(1, 108)=4.108$, $p=.045$, but there was no effect of agency, $F(1, 108)=1.421$, $p=.236$, and no interaction effect, $F(1, 108)=2.786$, $p=.098$.)

3.3 Discussion

The results of Experiment 2 replicate those of the prior experiment, bearing out our contention that mind perception in the experiential dimension, not the agentic dimension, causally influences moral concern. However, the fact that the interaction

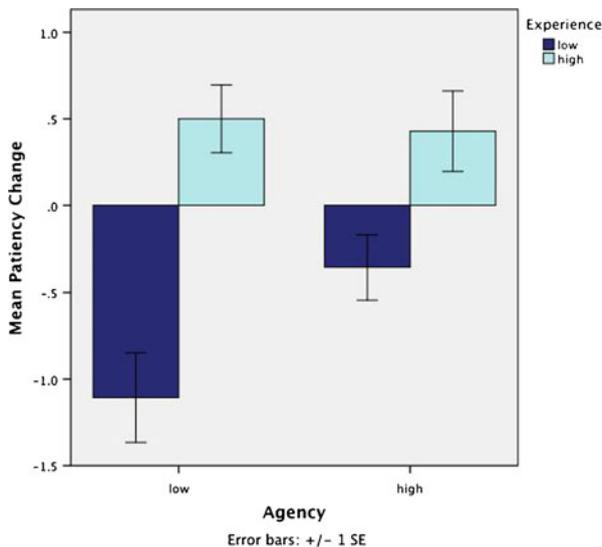


Fig. 3 Mean change in patency judgment (Experiment 2)

between experience and agency approached significance as closely as it did suggests the need for further investigation of this issue.

4 Experiment 3

Next we sought to examine whether a manipulation designed to increase feelings of moral concern for a creature would also increase attributions of mindedness. Youth and vulnerability are strong cues for provoking moral concern. However, this manipulation was judged to be a stringent test of the effect of moral concern on attributions of mindedness, since individuals who are developmentally immature, or who are prone to being incapacitated due to stress, would typically be thought to have lower cognitive function than robust capable adults. We were concerned that, if we invited participants to directly compare competent adult with vulnerable youth conditions, then the act of comparison would encourage them to constrain their responses so that the competent adult would be judged to be more minded than the vulnerable youth. To avoid this problem, we used a different design from that employed in Experiments 1 and 2. We presented each participant with only one scenario and one set of questions featuring the creature under consideration. Under these conditions, we predicted that feelings of moral concern would dominate participants' responses to the scenario, and hence that creatures described as youthful and vulnerable would receive greater attributions of mindedness.

4.1 Participants and Procedure

One hundred and nineteen individuals participated in the study. Fifty-eight self-identified as male, fifty-eight self-identified as female, and three did not specify their gender. The mean age was 22.9 years. The vignette and accompanying questions were part of a larger paper-and-pen-based survey of attitudes about morality and mindedness. Participants were recruited by word of mouth. Data from nine participants was excluded from the analysis because of incomplete responses. The study was certified as exempt by the relevant Institutional Review Board prior to data collection. Participants were not compensated.

Participants in the control condition read the following (*italics did not appear in the text, but are used here to indicate the text that differs between descriptions*):

With the help of advanced deep-sea diving technology, a scientist discovers a new species that lives on the bottom of the ocean. Fully grown, the creatures are about 10 in. long and weigh about a pound. They survive by eating plants that break down the sulfur compounds in emissions vented from gaps in the ocean floor near where it lives. Although they swim about for brief periods to explore, the creatures spend most of their time attached to coral-like structures near the vents. The scientist brings one *adult creature* back to the lab to study. He nicknames it ARTIC23. The scientist constructs a special fish tank, with sulfur vents and coral structures which he hopes are similar enough to the animal's natural habitat. *Surprisingly, ARTIC23 immediately adjusts to its new home. It spends most of the time attached to the coral structures, but also explores the*

fish tank just as it would its natural environment. To the scientist's delight, ARTIC23 is very healthy. The scientist continues to observe and study it.

Participants in the "vulnerability" condition read this:

With the help of advanced deep-sea diving technology, a scientist discovers a new species that lives on the bottom of the ocean. Fully grown, the creatures are about 10 in. long and weigh about a pound. They survive by eating plants that break down the sulfur compounds in emissions vented from gaps in the ocean floor near where it lives. Although they swim about for brief periods to explore, the creatures spend most of their time attached to coral-like structures near the vents. The scientist brings one *baby creature* back to the lab to study. He nicknames it ARTIC23. The scientist constructs a special fish tank, with sulfur vents and coral structures which he hopes are similar enough to the animal's natural habitat. *However, ARTIC23 has difficulty adjusting to its new home. It keeps falling off the coral structures. When the scientist notices it at the bottom of the tank, he carefully re-attaches it to the coral.* After a few weeks of this, ARTIC23 learns to hold on by itself, and also begins to explore its new environment. To the scientist's delight, ARTIC23 is very healthy. The scientist continues to observe and study it.

Participants were then asked to indicate their agreement with the following statements, on a nine-point scale (1 = *strongly disagree*, 9 = *strongly agree*):

1. When injured, ARTIC23 feels pain.
2. ARTIC23 is capable of self-reflection.
3. ARTIC23 can feel happiness.
4. ARTIC23 is intelligent.
5. ARTIC23 can sense how others feel.
6. When the scientist no longer has any use for ARTIC23, it would be wrong for him to destroy it.

4.2 Results

The sixth item was included as a manipulation check. There was a trend in the expected direction for participants to be less willing to destroy the creature described as youthful and vulnerable ($n=45$, $\text{mean}=5.86$, $\text{s.d.}=3.07$) than in the control condition ($n=65$, $\text{mean}=6.80$, $\text{s.d.}=2.65$). This was not significant using a two-tailed independent samples t -test ($t=1.687$, $p=.094$), but it would pass the threshold ($p<.05$) using a one-tailed test. The first five items measured aspects of mindedness. The fourth item was designed to measure intentional agency, whereas the other items (1, 2, 3, and 5) were designed to measure aspects of phenomenal experience. Data from the latter four items were averaged to form a compound measure of experience. The measure had good reliability (Cronbach's $\alpha=0.783$) and was normally distributed (one-sample Kolmogorov-Smirnov, $p=.630$). An independent samples t -test revealed a significant tendency ($t(108)=-2.006$, $p<.05$, two-tailed) to attribute greater mindedness in the vulnerable condition ($n=45$, $\text{mean}=5.00$, $\text{s.d.}=2.20$) than the control condition ($n=65$, $\text{mean}=4.20$, $\text{s.d.}=1.93$). (See Fig. 4.)

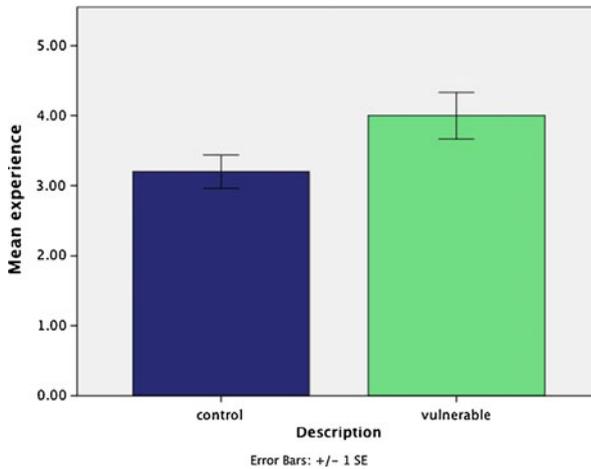


Fig. 4 Mean phenomenal experience as a function of vulnerability status of target (Experiment 3)

This confirmed the predicted finding. However, it does not address the predicted distinction between intentional and phenomenal aspects of mindedness. Hence we performed a post-hoc analysis of the individual items that measure aspects of mindedness, summarized in the table below (see Table 1).

First, we note that the item designed to measure intentional agency was marginally significant. Second, it is curious that the question about self-reflection was the most significant item (the only single item to pass threshold in a two-tailed test), even more so than the item about pain.

4.3 Discussion

Attributions of experience were greater in the vulnerable scenario than in the control (competent adult) scenario. This may seem surprising, insofar as youth and vulnerability cues suggest less cognitive sophistication and less competent agency. In the case of our own species, for example, most people would likely say that adult humans are more intelligent, more capable of self-reflection, and better able to sense how others feel, than infants are. Yet the trend was for each of these capacities to be attributed more to the young and vulnerable target than to its mature and robust counterpart. It appears that the moral concern generated in the vulnerable scenario—in which a young animal struggles to survive and adapt after being displaced from its

Table 1 Post-hoc analysis of mindedness items used in Experiment 3 (scales from 1 to 9)

	Control mean	Vulnerable mean	Mean difference	<i>t</i>	<i>p</i> (two-tailed)
Capable of self-reflection	3.17	4.27	1.10	2.13	0.036
Intelligent	4.60	5.51	0.91	1.88	0.062
Feels pain when injured	6.38	7.27	0.88	1.70	0.092
Senses how others feel	3.00	3.68	0.68	1.40	0.166
Feels happiness	4.25	4.85	0.60	1.12	0.266

natural environment—increases attributions of mindedness. This is what our model predicts.

There may be concerns about the items used to measure mindedness in this experiment. First, the question about intelligence may be regarded as equivocal, since intelligence is often associated with social and emotional intelligence as much as with a more analytic style of intelligence. In Experiments 1 and 2, we emphasized a ‘cold’ form of intelligence (e.g., foraging strategy), but here in Experiment 3 the question used to assess mindedness might have tapped a more generic sense of the term ‘intelligence’. Second, the phrase ‘capable of self-reflection’ might also be considered ambiguous. Intuitively, we suppose that the term ‘self-reflection’ is most likely to evoke thinking about one’s feelings or matters of particular emotional significance. This sense of ‘self-reflection’ is also consistent with our hypothesis about the brain regions involved in adopting the phenomenal stance. A region in dorsal medial prefrontal cortex has reliably been found to be involved in reflecting on both one’s own and others’ emotions (Zaki and Ochsner 2011), and the same region has been implicated both in introspection (Schilbach et al. 2012) and in a more cognitive style of empathizing, as opposed to empathy in the sense of emotional contagion (Krämer et al. 2010; Shamay-Tsoory et al. 2009). However, another sense of reflection has been invoked in the psychological literature which departs from this usage. In particular, the Cognitive Reflection Test (Frederick 2005) has been designed specifically to test a form of cognitive reflection which, according to dual-process theory, conflicts with a more intuitive, affective, or ‘experiential’ mode of thinking. Hence, some might associate self-reflection more strongly with intentional agency than with phenomenal experience. Due to these concerns, we used different items to assess mindedness in Experiment 4.

5 Experiment 4

This study was designed to extend Experiment 3 in two ways. First, we split our mindedness questionnaire more clearly into two parts, one designed to assess attributions of experience, the other designed to assess attributions of agency. Since our theory predicts that moral concern is more tightly linked to mind perception in the experiential dimension, we expected to see a stronger effect of the vulnerability manipulation on attributions of experience than on attributions of agency. In order to achieve a better split between these dimensions, we also changed the items used. For the agency scale, we borrowed items from related work on anthropomorphism (Epley et al. 2008). For the experience scale, we used explicitly experiential terms and dropped the ambiguous term ‘self-reflection.’ Second, we added an additional and independent method for testing our hypothesis that moral concern increases attributions of experience. We used a well-validated measure of empathetic concern (EC), a subscale of the Interpersonal Reactivity Index (IRI), a widely used self-report measure of individual differences in social cognition (Davis 1980). Seven items comprise the IRI-EC. Sample items include: “I often have tender, concerned feelings for people less fortunate than me” and “When I see someone being taken advantage of, I feel kind of protective towards them.” In addition, we included a second individual difference measure, the Three-Item Loneliness scale (Hughes et al.

2004), since a competing account holds that the tendency to anthropomorphize is motivated by loneliness (Epley et al. 2008).

5.1 Participants and Procedure

The study was certified as exempt by the relevant Institutional Review Board prior to data collection. The study was conducted using Amazon's Mechanical Turk, linked to surveys hosted by SurveyMonkey. Participants had to have a HIT approval rate of 95 % or better and have completed 50 HITs to do the survey. Participants were told the survey would take 5 min and were paid \$0.21 if their HIT was approved. One hundred and nineteen participants were included in the analysis (i.e., their work was approved due to their answering the catch questions correctly). Of these, 71 individuals were female and 41 were male, with a mean age of 32.1 years.

Participants first answered some basic demographic questions (age, gender, level of education). Then they filled out three individual difference scales: the IRI-EC, the Callous Affect scale from the Self-Reported Psychopathy scale (SRP-IV; Paulhus et al. [in press](#)), and the Three-Item Loneliness scale (Hughes et al. 2004). They then read one of the two vignettes, randomly assigned.

The control vignette was the same as in Experiment 3. The vulnerability vignette was slightly altered from the prior experiment. Sections that differ from the control vignette are italicized. Sections that differ from the prior vulnerable vignette are bolded:

With the help of advanced deep-sea diving technology, a scientist discovers a new species that lives on the bottom of the ocean. Fully grown, the creatures are about 10 in. long and weigh about a pound. They survive by eating plants that break down the sulfur compounds in emissions vented from gaps in the ocean floor near where it lives. Although they swim about for brief periods to explore, the creatures spend most of their time attached to coral-like structures near the vents. The scientist brings one *small baby creature* back to the lab to study. He nicknames it ARTIC23. The scientist constructs a special fish tank, with sulfur vents and coral structures which he hopes are similar enough to the animal's natural habitat. *However, ARTIC23 has difficulty adjusting to its new home. It keeps falling off the coral structures, sometimes injuring itself in the process. When the scientist notices it at the bottom of the tank, he carefully re-attaches it to the coral. After a few weeks of this, ARTIC23 learns to hold on by itself, and also begins to explore its new environment. It recovers from its injuries and begins to grow in size again.* To the scientist's delight, ARTIC23 is very healthy. The scientist continues to observe and study it.

They were then instructed as follows:

Please give us your best estimate of the degree to which ARTIC23 has the following qualities (1 = *not at all*, 7 = *very much*):

1. experiences basic emotions like pleasure and pain
2. experiences the world around it
3. has an inner mental life

4. has intentions
5. has a mind of its own
6. has free will
7. is a biological organism
8. is a man-made machine

The first three items as listed comprise the experience scale and the second three items the agency scale. The last two items, which have definitive yes-no answers, were used to filter out participants who were not paying attention. The order of items was randomized for each participant.

5.2 Results

The reliability of the experience measure (Cronbach's $\alpha=0.763$) and the agency measure (Cronbach's $\alpha=0.845$) were both respectable. All scales were approximately normally distributed, except for Loneliness.

Figure 5 shows the effects of the manipulation on attributions of experience and agency. As predicted, we saw increased attributions of experience for the vulnerable description compared to the control description, but no difference for attributions of agency. This was confirmed by statistical test: a repeated measures ANOVA with measure (experience vs. agency) as the within-subjects factor and target description (vulnerable vs. control) as the between-subjects factor revealed a significant interaction ($F(1, 116)=7.02, p<.01$).

Next, we examined the correlations between IRI-EC, loneliness short scale, and attributions of experience and agency. We found no significant correlation between loneliness and attributions of mindedness. (Spearman's ρ was -0.106 for experience and -0.017 for agency; a non-parametric measure was used for this comparison only since Loneliness was not normally distributed. Pearson's r

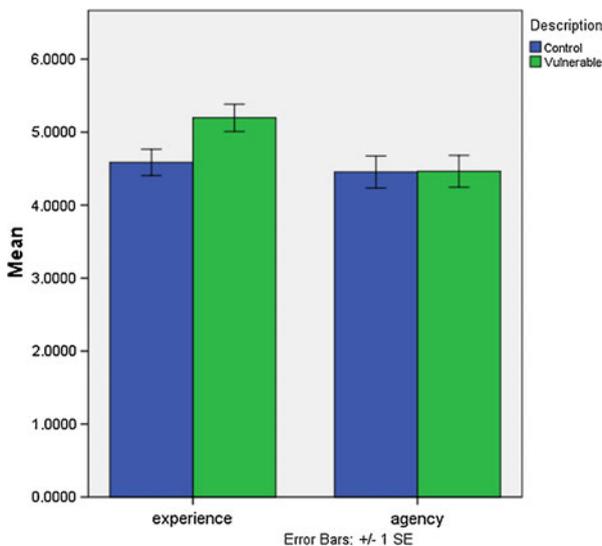


Fig. 5 Mean ratings of experience and agency as a function of vulnerability manipulation (Experiment 4)

revealed similar non-significant negative correlations). However, as predicted, we did find a significant correlation between empathetic concern and attributions of experience ($r=0.215, p<0.05$). This correlation is illustrated in Fig. 6. The correlation between IRI-EC and attributions of agency did trend positive, but did not reach significance ($r=0.151, p=.101$).

Finally, we performed linear regression to see if these effects survived after controlling for other factors. For the regression on experience ($R=0.357, R^2=0.127$) both description (vulnerable or control) and IRI-EC remained significant at $p<.05$ (see Table 2). Using the same factors for the regression on agency ($R=0.200, R^2=0.040$), only the constant term was significant, and no other factors approached significance ($p>.15$, regression table not shown).

Since we had done a posthoc analysis for Experiment 3, we also include a table summarizing means and differences for individual items in this experiment (Table 3). Notably all the experience items showed a trend in the hypothesized direction, with two (“experiences basic emotions,” “experiences the world around it”) being independently significant. By contrast, just one of the agency items (“has a mind of its own”) trended in the same direction, but with a smaller effect size than any of the experience items. The other two agency items (“has free will,” “has intentions”) trended in the opposite direction. The clear division between the items in terms of the vulnerability effect provides convergent validation for operationalizing the phenomenal/intentional distinction using these items.

5.3 Discussion

We found that youth and vulnerability cues, which were described in explicitly mind-neutral terms (e.g., “has difficulty adjusting to its new home,” “keeps falling ...

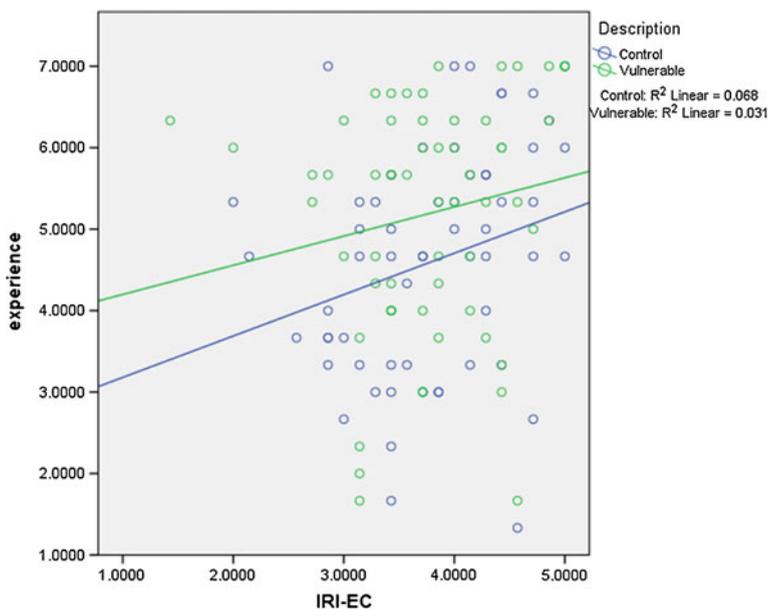


Fig. 6 Correlations between empathetic concern and attributions of experience (Experiment 4)

Table 2 Linear regression on attributions of experience (Experiment 4)

Model	Coefficients ^a			t	Sig.
	Unstandardized coefficients		Standardized coefficients		
	B	Std. Error	Beta		
1 (Constant)	4.980	1.139		4.374	0.000
vulnerable or control	-0.625	0.257	-0.217	-2.435	0.016
IRI-EC	0.384	0.189	0.189	2.029	0.045
loneliness	-0.375	0.240	-0.141	-1.564	0.121
gender	0.301	0.270	0.102	1.114	0.268
age	-0.014	0.012	-0.100	-1.101	0.273
education	0.015	0.084	0.016	0.178	0.859

^aDependent Variable: experience

sometimes injuring itself,” etc.), increased attributions of experience but not attributions of agency. This fits well with the results of Experiments 1 and 2, which showed an increase in moral concern for creatures seen as bearers of experience, but not for creatures seen as intelligent agents. Again, it is surprising that a creature described as injury-prone and immature should be attributed greater cognitive sophistication than a sturdy adult. This provides strong support for our hypothesis that eliciting moral concern increases attributions of experience.

This experiment also produced a second, wholly independent, source of evidential support for our hypothesis that moral concern engenders attribution of experience. We found that individuals who reported higher levels of empathetic concern also attributed more experiential states to the creature described in our vignettes, regardless of whether the creature was described as vulnerable or not. This provides further support for our contention that moral concern is inextricably linked to mind perception in the experiential dimension. It appears not to be the case, as others have claimed (Fiala et al. 2011), that moral concern comes only after the attribution of agency. Rather, moral concern is part and parcel of the attribution of experience.

It is worth noting that individual differences in empathetic concern were not wholly specific in terms of their effects on different types of attribution (experience

Table 3 Post-hoc analysis of mindedness items used in Experiment 4 (scales from 1 to 7)

	Control mean	Vulnerable mean	Mean difference	t	p (two-tailed)
Experiences basic emotions	4.26	5.00	0.74	2.36	0.020
Experiences the world around it	5.21	5.87	0.66	2.16	0.033
Has an inner mental life	4.29	4.72	0.43	1.20	0.232
Has a mind of its own	4.81	5.11	0.31	0.91	0.366
Has free will	4.34	4.25	-0.10	-0.27	0.789
Has intentions	4.21	4.03	-0.17	-0.49	0.627

vs. agency). Although we could only confirm the predicted effect of empathetic concern on experience, we did see a positive correlation between empathetic concern and attributions of agency that was not far below the threshold for significance. This contrasts with the apparent specificity of the vulnerability manipulation, where the effect was found to be significantly greater for experience than for agency. On careful consideration, it is plausible that the moral concern provoked by the vulnerability manipulation influences not just attributions of experience, but also attributions of agency. By default, the most natural assumption would be that the vulnerable youth creature should be described as having lower agency than the competent adult creature. This is perhaps the most clear and obvious implication of the descriptions, where the effective agency of the vulnerable creature is called directly into question. Hence the absence of any difference on attributions of agency may be best explained by this effect, and the effect of moral concern, cancelling each other out. If this viewpoint is adopted, then it would suggest that the relationship between moral concern and mindedness is not as specific to one aspect of mindedness, namely experience, as our theory predicts. This issue will be discussed in more depth in the general discussion.

6 General Discussion

Our account was originally put forward to provide a psychological explanation for the intuitive appeal of mind-body dualism and the existence of the explanatory gap (Robbins and Jack 2006). Here we extend that account by providing some empirical evidence for two key claims associated with our account. Our approach overlaps other significant work in social psychology, in particular work by Susan Fiske and colleagues which distinguish two dimensions of perceived personality, namely ‘warmth’ and ‘competence’ (Fiske et al. 2002). Although these are personality constructs rather than dimensions of mindedness, they clearly have some overlap with our notions of ‘phenomenal’ and ‘intentional’ properties. An even closer distinction to our own has been made by Kurt Gray and colleagues, who distinguish between ‘agency’ and ‘experience’ (Gray et al. 2007; Gray and Wegner 2009). Finally, it is important to note the link to work on dehumanization, which involves the denial of mental and moral properties to others (Leyens et al. 2000; Haslam 2006; Smith 2011). It lies beyond the scope of this article to clarify all the potential points of overlap here. But it is worth noting some general respects in which our theoretical approach differs from others.

First and foremost, our model is derived from work in philosophy, in particular work on the nature of intentionality and on phenomenal consciousness. Hence, in developing our account, we consider an important constraint to be that the distinctions employed remain true to philosophical considerations which characterize and distinguish these two philosophical problems. More specifically, our account is primarily aimed at developing an explanatorily adequate and testable account of the problem of consciousness, that is, an account that can explain the cognitive origins of the explanatory gap. Second, we have developed our account with attention to work in cognitive neuroscience, including functional imaging and clinical studies of autism and psychopathy. Hence, although the methods used in the studies reported here fit

most closely with the methods of social psychology, contact with the literature in social psychology represents the last in a series of steps in the development of our theory. Our hope is that this approach, which can be expected to be iterative and require numerous refinements, will ultimately serve to inform work in all these domains, and provide a more unified approach to the related issues that arise in these different fields.

Since our account was first published, other accounts which are similarly rooted in philosophy and which address the issue of the psychological origins of dualism have emerged. For example, Fiala et al. (2011) provide a dual-process account that assigns a leading role to a primitive AGENCY mechanism (for details of that account and the data adduced in its support, see Arico et al. 2011). On their account, attributions of mindedness in general, and attributions of phenomenal consciousness in particular, are automatically triggered by the AGENCY mechanism when a target shows signs of animacy (e.g., eye movement, biological motion, and contingent interactivity). They write:

Our view here is anticipated in important ways by [Robbins and Jack]... However, Robbins and Jack account for the explanatory gap in terms of moral capacities. They write, “At the heart of our account of why consciousness seems to defy physical explanation is the idea that thinking about consciousness is essentially linked to, indeed partly constituted by, the capacity for moral cognition” (2006, 75). In our view, although moral cognition might be associated with conscious attribution, Robbins and Jack get the order of explanation backward. The AGENCY system is primitive and not directly a moral capacity. Yet, we suggest, the AGENCY mechanism provides the primitive basis for consciousness attribution. As a result, our theory allows for the possibility that a person might lack basic moral capacities while retaining the AGENCY mechanism and the associated attributions of conscious states.

There are various responses that might be made to Fiala et al. concerning the explanatory completeness of their account as compared with our own. Here we will restrict ourselves to addressing empirical evidence for two claims that differentiate our account from theirs. In our 2006 paper, we made two novel points, both of which Fiala et al. resist. These points, outlined in the introduction, can be briefly restated as follows: first, a third stance or mental capacity is needed to account for attributions of experience, in addition to the physical and intentional stances; second, moral concern and attributions of experience are tightly coupled in both directions.

Contrary to Fiala et al. (2011), it does not appear that an adequate explanation of the relationship between moral concern and attributions of mindedness can be generated by postulating a single system whose core role is the attribution of agency. Experiments 1, 2, and 4 all illustrate that moral concern is more tightly coupled to the attribution of experience than it is to the attribution of agency. Hence, the evidence presented supports our contention of the need to postulate a third stance or cognitive capacity, which is associated with moral concern and the attribution of experience, and which is at least partially independent of the capacity to attribute agency. Since this system is involved in the attribution of experiential states, it would appear a better

candidate for forming the primitive basis for consciousness attribution than the system involved in the attribution of agency states.

Fiala et al. (2011) endorse the commonly held view that moral judgments follow from, and are contingent upon, judgments of mindedness. In our 2006 paper we rejected that view in order to provide a better account of the psychological origins of dualism, noting that our account predicts that individuals who lack moral concern for others (i.e., psychopaths) would not attribute full-blown conscious states to others. Here we provide evidence from two sources in favor of our account. We show that descriptions of a creature as young and vulnerable increase attributions of mindedness, and of experiential states in particular, even though those descriptions clearly imply less cognitive sophistication than the control description. Second, in line with our 2006 prediction, we show that individuals higher in empathetic concern attribute more experiential states to the creature, regardless of whether it is described as vulnerable or not.

We take these findings to support the model we proposed in 2006, as opposed to more recent accounts. However, we do wish to address one further issue which is in need of clarification: To what extent, and in what manner, can the intentional and the phenomenal domains be separated? As noted in the discussion of Experiments 2 and 4, our data suggest (but fall short of demonstrating) some interaction between the experience and agency dimensions of mind perception. Relatedly, in their paper in this issue, Sytsma and Machery (2012) present evidence which they interpret as showing that the perception of moral patiency is influenced by mind perception in both of these dimensions. However, in their studies they characterize agency in a way that blurs the boundary between the intentional and the phenomenal:

Imagine that life has developed on a planet in a nearby solar system, Further, imagine that one species—call them the *atlans*—has developed an advanced civilization ... atlans are like us in having thoughts, opinions, beliefs, and desires. They are very intelligent, and engage in highly complex social and political interactions. They have highly developed literary, musical, and artistic traditions, in addition to having made great advances in the sciences.

What is striking in this description of agency is the inclusion of high-level cognitive capacities that surely implicate phenomenal consciousness, such as aesthetic appreciation and social interaction (the emotional bases of which seem undeniable). Indeed, in our view the suggestion that a creature could be capable of sophisticated social, political, literary, musical and artistic behaviors (comparable to those found in our own species) while lacking a rich emotional life and the ability to reflect upon those emotions, seems quite unintuitive. But in that case, the results of Sytsma and Machery's studies are consistent with our model. The key claim for us is that experience is an important constituent of the form of agency which is (a) linked to the perception of moral patiency and (b) cannot be comprehended from the physical stance. That said, we acknowledge that more work needs to be done. First, greater clarity might be brought to the characterization of which mental states and properties should be associated with the intentional and with the phenomenal stances, respectively. Second, more work needs to be done examining the relationship between the intentional and the phenomenal domains. It is our belief that the distinction

between the intentional and the phenomenal may be profitably informed by both the philosophical literature and ongoing work in cognitive neuroscience. We welcome efforts in these directions.

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