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Why belief in species purpose prompts moral condemnation of individuals who fail to fulfill that purpose

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Abstract

Suppose humans exist in order to reproduce. Does it follow that an individual who chooses not to reproduce is committing a moral wrong? Past work suggests that, right or wrong, beliefs about species-level purpose are associated with moral condemnation of individuals who choose not to fulfill that purpose. Across two experiments we investigate *why*. Experiment 1 replicates a causal effect of species-level purpose on moral condemnation. Experiment 2 finds evidence that when a species is believed to exist to perform some action, people infer that the action is good for the species, and that this belief in turn supports moral condemnation of individuals who choose not to perform the action. Together, these findings shed light on how our descriptive understanding can sometimes shape our prescriptive judgments.

Keywords: teleology; explanation; morality; causality

Introduction

Pope Francis once remarked that "a society with a greedy generation, that doesn't want to surround itself with children […] is a depressed society. The choice not to have children is selfish" (Neuman, 2015).

Beliefs that species, such as humans, exist for a purpose are common in everyday discourse, even for those who are nonreligious. For example, some hold that humans exist to reproduce because we evolved in order to do so. And sometimes, this judgment of purpose is associated with a corresponding moral judgment: if humans exist to reproduce, then humans have a moral obligation to reproduce. But why does this inference from "is" to "ought" occur? In other words, why might human purpose be perceived to entail a moral obligation to fulfill it?

There is widespread evidence that people prefer purpose-based explanations across a number of domains, even when these explanations are not scientifically warranted. For example, children endorse teleological explanations for many aspects of the natural world (e.g., "baby birds are for flying" and "mountains are for climbing"; Kelemen 1999), and for some teleological claims (e.g., "birds transfer seeds in order to help plants germinate," "water exists so that life can survive on Earth"), many adults agree (e.g., Kelemen & Rosset, 2009).

While endorsement of teleological explanations has been long-established in the domains of living things and non-living natural objects (e.g., birds and mountains, respectively), research has only recently addressed whether adults hold similar teleological beliefs about human existence. Lewry, Lombrozo, and Kelemen (2020) found evidence that many adults do explain human existence in terms of purpose. Further, they found a causal relationship between believing that a species exists for a purpose and judging species members who do not fulfill their purpose as immoral. Using novel alien species, their study stipulated species-level telos (e.g., Kulvaws exist in order to reproduce) or denied it (Kulvaws reproduce, but they do not exist in order to do so), then measured moral judgments of a species member who did not perform the specified action. They found (for example) that a Kulvaw who does not reproduce is judged as more immoral when doing so is the purpose of Kulvaws, versus merely an action that Kulvaws sometimes perform. While this research provides evidence of a causal link between species-level teleological beliefs and moral judgments of individuals who fail to fulfill the corresponding purpose, no prior research has addressed *why* this link occurs. The aim of the current paper is to shed light on this question.

Prior Work

Kelemen (1999) argued that the teleological bias emerges as early as preschool and "derives from children's understanding of agency and intentional object-directed behavior" (244). While a teleological stance supports learning of artifact function (Casler & Kelemen, 2005), it also leads children to over-extend purpose-based explanations: preschoolers not only state that artifacts exist for a purpose, but that living things and non-living natural objects do as well.

Adults are more selective than children, often restricting teleological claims about the natural world on the basis of structure-function fit: high correspondence between form (e.g., having large paws) and function (e.g., to balance) makes a compelling case that a form exists to fulfill that purpose (Liquin & Lombrozo, 2018). Even in adults,

however, there is evidence that teleology is over-extended: many adults, like children, endorse scientifically-unwarranted teleological claims (e.g., Kelemen & Rosset, 2009; Kelemen, Rottman, & Seston, 2013; Lombrozo, Kelemen, & Zaitchik, 2007).

More recently, Lewry, Lombrozo, and Kelemen (2020) extended research on teleological bias to beliefs in human purpose – for instance, that humans exist to reproduce, to care for each other, or to care for the earth. They found that such beliefs were often endorsed, and moreover that they were associated with corresponding moral judgments. Consistent with the examples in the introduction, participants who agreed that humans exist in order to reproduce, for example, were more likely to consider an individual who chooses not to reproduce immoral. This association seemed to stem from the first claim's teleological content, as a matched control claim (e.g., that humans reproduce, vs. exist in order to reproduce) did not result in the same patterns of association. An additional study, using the alien species described previously, provided evidence that this relationship is not only correlational, but causal: belief in species purpose leads to moral condemnation of purpose violations.

The question that emerges is why this causal relationship exists. In particular, if belief in human purpose is thought to entail a moral obligation to fulfill that purpose, why is this the case? Work on the "existence bias" provides a candidate answer. Eidelman, Crandall, and Pattershall (2009) demonstrate that the mere existence of something leads to judgments that its existence is good or right. For example, participants judged existing degree requirements (32 or 38 credit hours, depending on the condition) as more "right," "good," and "the way things ought to be" than a proposed change (to 38 or 32 hours, respectively). The authors describe this phenomenon as a heuristic which is simple and efficient. But while this work provides compelling evidence that similar kinds of relationships—between existence beliefs and judgments of what is good—exist, it fails to provide an explanation for why. Tworek and Cimpian (2016) similarly address why people infer value ("ought") from existence ("is"). They propose that people tend to prefer explanations that cite inherent facts (e.g., "roses are given on Valentine's day because roses are beautiful"); in turn, inherence is taken to suggest something necessary and inalterable about the explanation, which suggests that things ought to be that way. While this elaborates on the is-ought causal mechanism, it also fails to fully explain the phenomenon: *why* does something being inalterable mean it is valuable, good, or moral?

Across two studies, we investigate why beliefs about species-level purpose prompt the judgment that not fulfilling that purpose is immoral. In Study 1, we test the hypothesis that people believe that if a species exists to perform some action, then they must have "good reason" to perform that action, and in turn judge species members as immoral when they do not fulfill actions that they have good reason to perform. In Study 2, we test the hypothesis that an action being a species' purpose leads people to infer that performing that action is beneficial to the species as a whole, and that species members who fail to perform actions that benefit their species are judged immoral.

Experiment 1

In Experiment 1, we hypothesized that when people believe a species exists to perform some action, people infer that the species has good reason to perform that action, and that it is therefore immoral for individuals to abstain. To test this, we introduced participants to novel alien species. We manipulated whether the species did or did not exist in order to perform some novel action, and we measured participants' character judgments across three traits: morality, warmth, and competence.

In addition to manipulating teleology, we manipulated whether the species had "good reason" to perform the action. If belief in a good reason to perform some action is sufficient to induce harsher moral condemnation for refraining from that action, and if an inference from teleology to "good reason" fully accounts for the effect of teleological information on moral judgments, then we would expect an interaction between the manipulation of teleology and the provision of a good reason. In particular, we would expect teleology to support harsher moral judgments when no additional information about reasons is provided, but cease to have an additional effect when a good reason is stipulated.

Using novel actions (e.g., daxing) rather than familiar actions (e.g., reproduction) allowed us to test the generality of prior results. In addition, the inclusion of morality, warmth and competence character ratings allowed us to test moral judgments more implicitly than prior work, as well as test the effects of teleological information beyond moral judgments.

Method

Participants Participants in Experiment 1 were 94 adults recruited via Prolific. One additional respondent was excluded for failing an attention check. Participants in both studies were paid at a rate of $7.50 per hour, pro-rated to our 8-minute task, and participation was restricted to workers in the U.S. who had completed at least 100 prior tasks with a 95% approval rating. Both studies were pre-registered.

Materials and Procedures Participants were told the following: "Scientists have recently discovered seven new planets. Each planet has a unique group of beings living on it. I'm going to tell you about each group of beings and then ask you to answer some questions about them." First, participants were introduced to two novel species presented serially and in a random order. One item stipulated that the species existed in order to perform a novel action (e.g., "Far away on the planet Glinhondo, there is a group of beings called Kulvaws. Kulvaws do many things, including something called daxing. In fact, Kulvaws exist in order to dax."). The other item stipulated that a species performs some novel action, but that they do not exist in order to perform this action (e.g., "Far away on the planet Thenala, there is a group of beings called Yolnars. Yolnars do many things,

including something called gorking. Yolnars do not exist in order to gork, it's just something that they do."). Participants were then told that although some of the species members choose to perform the action, some of them choose not to. This statement was included to inform participants that not all species members perform the action and that those who do not perform it are making a choice not to do so, rather than being unable to do so.

After each item, participants were asked to rate the extent to which various character traits apply to species members who choose not to perform the action. Nine traits were listed in a random order and participants responded on a scale from "1 - Not at all" to "5 - Extremely" with a midpoint at "3 - Moderately." The traits were selected from Goodwin, Piazza, and Rozin (2014), which identified a list of character traits falling into one of three categories: "high morality, lower warmth," "high warmth, lower morality," or "ability." We selected the first three traits from each list (morality: "courageous," "fair," "principled"; warmth: "warm," "sociable," "happy"; ability: "athletic," "musical," "creative").

Next, participants were introduced to two more species, serially and in a random order. As before, one species existed for some novel purpose and one species performed some novel action but did not exist for that purpose. However, these items also contained information about reasons: for both species, we specified that they perform the action because they have good reason to do so (e.g., "Far away on the planet Maroda, there is a group of beings called Nactans. Nactans do many things, including something called lorping. In fact, Nactans exist in order to lorp. Nactans lorp because they have good reason to lorp."). Participants also made character judgments for the nine traits after reading about each of these species.

Participants then read about two final species, serially and in a random order. For these two, we aimed to understand what participants inferred when they read that a species existed for a purpose or had good reason to perform an action. After reading some information about the species, we asked participants what best explains why the species exists in order to perform the action described (teleology inference) or why the species has good reason to perform the action described (reason inference). Participants could choose one or more options from the following list: "A supernatural being, like a God or gods"; "A natural being, like a human or another species"; "Evolution by natural selection"; "Nature, who is a powerful being"; "The choice or goals of individual [species members, e.g. Rinias]"; "The choice of one powerful [species member]"; "The choice of large groups or communities of [species members]"; "It happened by chance, a totally random process"; "Nothing caused it, it just is that way,"; "Don't know/Not sure."

Results

The primary dependent variables were participants' character judgments. These were calculated by assigning each character trait a score from 0 ("Not at all") to 4 ("Extremely") for the extent to which participants thought each trait applied to a species member who chose not to perform the action. We calculated scores for each trait type by averaging ratings for the three traits belonging to each type (morality, $\alpha = 0.79$; warmth, $\alpha = 0.86$; competence, $\alpha = 0.83$).

Character trait composites were analyzed as the dependent variable in a repeated-measures ANOVA with teleology (stipulated, denied), reason (absent reason, good reason), and trait type (morality, warmth, ability) as independent variables (see Figure 1). This analysis revealed a main effect of teleology, $F(1,1115)=31.96$, $p<.001$), such that characters who chose not to perform an action were judged less favorably when teleology was stipulated vs. denied. There was also a main effect of trait type, $F(2,1115)=12.23$, $p<.001$, such that moral character was rated more highly than warmth or competence, which were not significantly different from each other. However, the main effect of reason was not significant, $F(1,1115)=3.55$, $p=.06$, though there was a marginal trend in the predicted direction, such that aliens were judged more harshly for failing to perform actions they had a good reason to perform. More importantly, however, the reason manipulation did not interact with other factors ($ps>.95$).

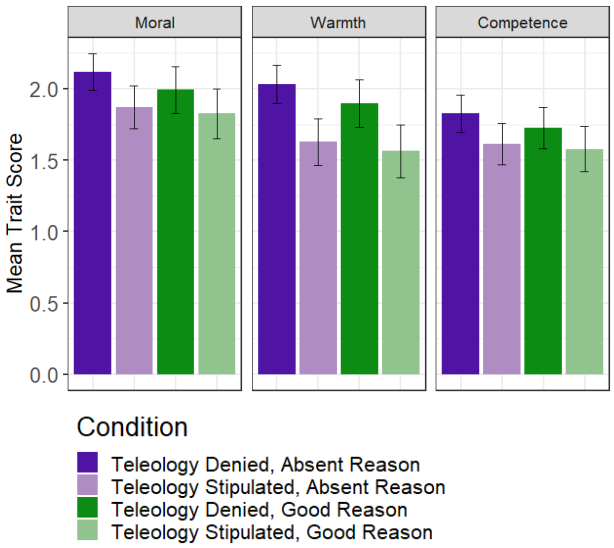

Figure 1: Trait score, grouped by trait type, across each of four conditions. Error bars indicate 95% CI.

To confirm the effect of teleology independently for each type of character trait, we performed a series of post-hoc paired sample *t*-tests, comparing character trait attributions when species function was stipulated versus denied. This revealed that moral judgments were significantly lower when teleology was stipulated ($M=1.85$, $SD=.67$) than when teleology was denied ($M=2.05$, $SD=.57$; $t(93)=-3.24$, $p=.002$), providing evidence for our prediction that even with novel actions, stipulating that a species exists for a purpose negatively affects moral judgments of species members who do not fulfill their species' purpose. Additional post-hoc

paired sample t-tests revealed that judgments of warmth (M=1.60, SD=.75) and competence (M=1.56, SD=.67) were also significantly lower when teleology was stipulated than when teleology was denied (warmth: M=1.96, SD=.61; t(93)=-5.08, p<.001; ability: M=1.78, SD=.55; t(93)=-2.97, p=.004). This suggests that species members who choose not to act on their species' purpose are not only judged more harshly along moral dimensions, but also along those related to warmth and competence.

Table 1 reports participants' responses to the question of what best explains why a species had a certain purpose or why a species had good reason to perform a certain action. The most highly endorsed reasons were evolution by natural selection or the choice of individuals, leaders, or the community. This suggests that participants treated the alien species not merely as artifacts, but instead reasoned about them as evolved, intentional creatures, much like humans.

Table 1: Number of participants who chose each option as an explanation for why a species had good reason to perform a certain action (reason) why a species had a certain purpose or (teleology).

Response type	Reason inference	Teleology inference
Supernatural being	2	8
Natural being	12	10
Evolution	24	36
Nature/Gaia	10	8
Individual choice	19	8
Leader choice	3	3
Group choice	21	8
Chance	7	7
Nothing	8	14
Unsure	7	6

Discussion

The results from Experiment 1 replicate prior work demonstrating a causal link between species-level purpose and moral condemnation of individuals who fail to fulfill that purpose. However, they also go beyond prior work by showing that the causal link between species-level teleology and morality extends to novel actions, to a more implicit measure of moral condemnation (namely moral character), and to additional judgments of character (namely warmth and competence). Although there is some level of artificiality in using alien species, doing so allowed us to assess causality by manipulating the telos of a species, and participant responses suggest that they reasoned about the aliens much like humans.

These results also indicate that stipulating that a species had "good reason" to perform an action did not reliably alter participants' judgments, and that teleology affected judgments above and beyond "good reason." They therefore suggest that the causal mechanism underlying the link between teleology and morality may be unrelated to an inference of having good reason to perform an action, or perhaps more specific in the form this reason takes.

Experiment 2

Experiment 1 found that stipulating a species-level purpose for some action was sufficient to increase moral condemnation of individuals who chose not to perform that action, but that this effect was not attributable to an inference that there is good reason to perform the action. In Experiment 2, we test a more specific version of this hypothesis: that it is morally wrong not to do what is beneficial for the species, and that species purpose supports the inference that an action is beneficial for the species.

We again introduced participants to novel alien species and manipulated whether *not* performing an action was harmful or beneficial to the whole species or to individual species members. We then asked the extent to which individuals who refrained from performing the action were immoral. This allowed us to determine whether people judge others as immoral who do not perform actions that benefit their species.

An additional aim of Experiment 2 was to test the hypothesis that teleology indeed supports the inference that an action is beneficial for the species. To do so, we presented participants with a subsequent task in which we stipulated or denied that some action was a species' purpose, and we asked whether that action was likely to be beneficial to the whole species and to individual species members.

Method

Participants Participants in Experiment 2 were 52 adults recruited via Prolific. Three additional respondents were excluded for failing an attention check.

Materials and Procedures Experiment 2 comprised two tasks: a Moral Judgment Task and a Teleology Inference Task. Participants were randomly assigned to one of four versions of the survey which counterbalanced the specific novel species and actions (e.g., Kulvaws who dax) used for each item.

Moral Judgment Task: All participants first received an introduction to the novel alien species, as described in Experiment 1. This task used a 2 (species consequence: harm, benefit) x 2 (individual consequence: harm, benefit) within-subjects design. For each item, we told participants about a novel action performed by a species, along with information about whether *not* performing the action harmed or benefited the species or the individual. For example, in the Species Harm/Individual Benefit condition, participants read that "Far away on the planet Glinhondo, there is a group of beings called Kulvaws. Kulvaws do many things, including something called daxing. If Kulvaws **do not** dax, it is harmful to the species, but it is beneficial to individual Kulvaws." Participants were then told that although some of the species members choose to perform the action, some of them choose not to. After each item, participants gave a moral judgment: "To what extent is a Kulvaw who chooses **not to dax** immoral?" They responded on a scale from "1 - Neutral" to "5 - Very immoral" with a midpoint at "3 - Somewhat

immoral." All four items in the Moral Judgment task were presented serially and in a random order.

Teleology Inference Task: Participants were informed that they would learn about two additional alien species, but that they would be asked different questions about these last two species. This task used a 2 (teleology type: stipulated, denied) x 2 (benefit target: species, individuals) within-subjects design. Serially and in a random order, participants read about two novel species that performed some action and existed in order to perform that action (teleology stipulated), or that did not exist in order to perform that action (teleology denied). After each item, participants rated the extent to which this action is beneficial to the species (e.g., "To what extent is lorping good for the Nactan species?") and the extent to which this action is beneficial to individual members of the species ("To what extent is lorping good for individual Nactans?"). The rating scale ranged from "1 - Very bad for [individual Nactans/the Nactan species]" to "5 - Very good for [individual Nactans/the Nactan species]" with a midpoint at "3 - Neither good nor bad for [individual Nactans/the Nactan species]".

Results

Moral Judgment Task: The dependent variable was participants' moral judgment scores, where lower scores corresponded to judgment of something as more neutral and higher scores corresponded to judgment of something as more immoral. To determine how moral judgments against individuals who *do not* perform an action are affected by the species-level and individual-level consequences of not performing that action, we conducted a two-way repeated measures ANOVA with species consequence (harm, benefit) and individual consequence (harm, benefit) as independent variables and moral judgment score as a dependent variable (see Figure 2). We found significant main effects of species consequence, $F(1,51)=91.69$, $p<.001$, as well as individual consequence, $F(1,51)=23.41$, $p<.001$, but no significant interaction, $F(1,51)=1.94$, $p=.17$. Post-hoc paired sample *t*-tests showed that moral judgments were significantly harsher when the species was harmed ($M=3.42$, $SD=1.08$) than when the species benefited ($M=1.92$, $SD=1.1$; $t(51)=9.58$, $p<.001$), and significantly harsher when individuals were harmed ($M=3.00$, $SD=1.08$) than when individuals benefited ($M=2.34$, $SD=1.11$; $t(51)=4.83$, $p<.001$).

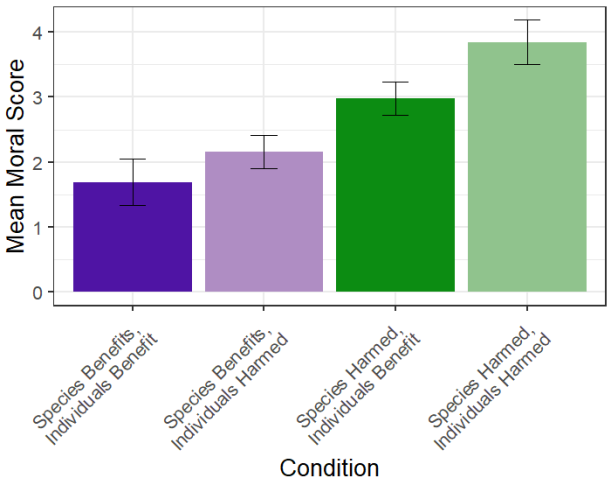

Figure 2: Mean moral scores against species members who *do not* perform an action in each condition, where lower scores indicate harsher moral judgment. Error bars indicate 95% CI.

Next, to determine whether the effect of species harm on moral judgments was larger than the effect of individual harm, we calculated difference scores for the effect of species harm and for the effect of individual harm (e.g., species harm effect = average species harm moral judgment score – average species benefit moral judgment score). Harm done to species affected moral judgments to a significantly greater degree than did harm done to individuals (species harm effect: $M=1.49$, $SD=1.12$; individual harm effect: $M=0.66$, $SD=0.99$; $t(51)=-5.35$, $p<.001$).

Teleology Inference Task: The dependent variable was participants' benefit ratings, where higher ratings indicated inferences that an action is more beneficial. To determine whether stipulating teleology (i.e., that a species exists in order to perform some action) results in an inference that performing that action is good for the species and/or individuals, we conducted a two-way repeated measures ANOVA with teleology (stipulated, denied) and benefit target (species, individuals) as independent variables and benefit rating as a dependent variable (see Figure 3). We found a significant main effect of teleology, $F(1,51)=96.31$, $p<.001$, but no significant main effect of benefit target, $F(1,51)=0.92$, $p=.34$, and no significant interaction, $F(1,51)=3.97$, $p=.05$. Post-hoc paired sample *t*-tests showed that benefit ratings were significantly higher when teleology was stipulated ($M=4.25$, $SD=0.78$) than when teleology was denied ($M=3.14$, $SD=0.63$; $t(51)=-9.81$, $p<.001$).

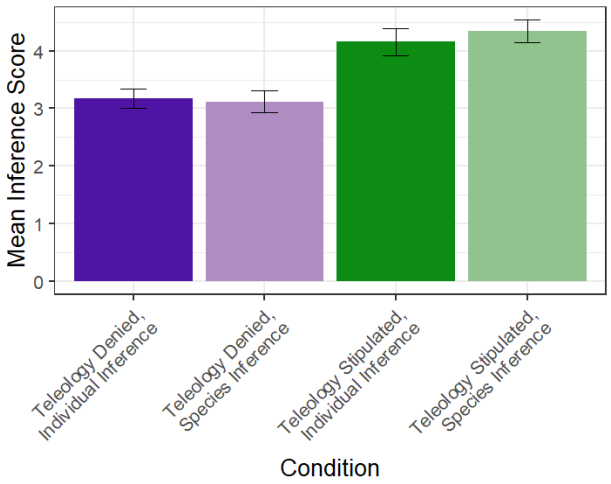

Figure 3: Inferences that an action is beneficial to species or individuals when teleology is stipulated or denied, where a score of 3 indicates that the action is neither good nor bad, and higher scores indicate that the action is good. Error bars correspond to 95% CI.

Discussion

Experiment 2 built on Experiment 1 by investigating a more specific mechanism potentially underlying the link between teleology and morality: that teleology supports the inference that an action is beneficial for the species, and that people judge others as immoral who do not perform actions that benefit their species.

In line with this mechanism, our results provide evidence that stipulating teleology leads people to infer that performing an action is good for the species and good for individual species members. Additionally, our results suggest that participants believe harsh moral judgment is warranted when an individual does *not* perform some species-beneficial action. This is the case even when not performing that action is beneficial to individual species members.

General Discussion

Believing that a species exists for a purpose can support moral condemnation of species members who do not fulfill that purpose, whether condemnation is assessed through character trait inferences (Experiment 1) or attributions of immorality (Experiment 2). This is true even when the species is novel and the purpose/action is novel (Experiments 1-2), and extends to judgments of warmth and competence (Experiment 1).

In addition to better understanding the scope of the link between teleology and morality, the present studies also clarify why this link exists. When people believe that a species exists for some purpose, they tend to infer that the purpose serves a species-level good, such that failing to achieve the purpose is immoral.

While our results are limited to novel alien species to allow for better experimental control, the findings from the inference task in Experiment 1 suggest that participants reasoned about these aliens as creatures who evolved, had individual intentions, and formed social groups, much like humans. Lewry, Lombrozo, and Kelemen (2020) found that many people in fact hold teleological beliefs about human existence, such that humans exist to reproduce or care for the environment. If our results generalize to reasoning about humans, people may infer that reproduction and caring for the environment are beneficial for the human species and good for individual humans. In turn, this inference could result in moral condemnation of individuals who do not reproduce or care for the environment, even when doing so is beneficial to the individuals (for example, someone might not want to have children, or find it inconvenient to recycle).

An important question for future study is the boundary conditions on these effects. For instance, the link from teleology to moral condemnation might depend on whether individuals are aware of their species-level purpose, and able to pursue it. If a honeybee is not aware that its perceived purpose is to produce honey, for example, is it morally condemned for failing to do so? If humans exist to reproduce but a woman is infertile, do people still consider her failure to reproduce immoral? Preliminary data on this latter question suggests that although capability is taken into consideration and moderates judgments, people still blame individuals for failing to fulfill their purpose. Additional research can better characterize the role each of these factors has on the relationship between teleology and morality.

Further research can also investigate the relationship between teleology and other types of judgments (see, e.g., Rose & Nichols, 2019, for links between species-level teleology and classification). In Experiment 1, we find that stipulating a species' purpose affects perceptions of the warmth and competence of individuals who fail to perform that action. It is an open question whether the species-beneficial inference identified in Experiment 2 is also the mechanism which prompts judgments of warmth and competence. Our explanations for the world around us – including our teleological explanations of species and their behaviors – shape our basic understanding of the world. Our findings shed light on how our descriptive understanding, the "is," can sometimes shape our prescriptive understanding, the "ought." Right or wrong, people seem inclined to infer moral value from species function. It's easy to see how this might lead to harm (e.g., in judging a couple's infertility), but it might also be a psychological feature that can be harnessed for good (e.g., in mobilizing care for others or the environment). Our studies are first steps in the larger project of mapping the links between explanation and understanding on the one hand, and prescription and action on the other.

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