



The primacy of communality in humanization

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ABSTRACT

Ascribing and denying humanity has profound consequences, often leading to devastating outcomes (e.g., violence, genocide). As such, understanding what, exactly, makes “someone human” becomes imperative. In this paper, we leverage the ubiquitous Big Two dimensions of social perception (*agency* and *communality*) to examine the process of humanization. In five studies ($N = 1900$), we find that the “Big Two” dimensions—agency (assertiveness, competence) and communality (warmth, kindness)—predict humanization, and critically, we show the primacy of communality in this process. We find that communality takes primacy in humanization when anthropomorphizing, describing an alien species, or ascribing humanness to real-world social targets (Studies 1–3); it is only for contexts where, or targets for whom, agency is particularly relevant that agency predicts humanization (Studies 4–5). We conclude with implications for research on (de)humanization, mind-perception, and social-perception.

“Man is by nature a social animal; an individual who is unsocial naturally and not accidentally is either beneath our notice or more than human. Society is something that precedes the individual. Anyone who either cannot lead the common life or is so self-sufficient as not to need to, and therefore does not partake of society, is either a beast or a god.”

–Aristotle

Human beings are social creatures. The ability to connect, coordinate, and cooperate has been humankind’s greatest advantage, integral to the survival and success of the human species (e.g., Axelrod & Hamilton, 1981; Baumeister & Leary, 1995; Buss, 1991). As such, one might expect that such relational capacities (i.e., communality: warmth, kindness, other-orientation; Abele & Wojciszke, 2007:2014; Fiske, Cuddy, Glick, & Xu, 2002; Ybarra et al., 2008) would be the primary dimension through which we understand what it “means to be human.” Given the profound consequences of ascribing and denying humanity (e.g., genocide, violence) and the robust body of literature examining (de)humanization (e.g., Harris & Fiske, 2009; Haslam, 2006; Haslam & Loughnan, 2014; Leyens et al., 2000), it is surprising that the relationship between communality and humanness has not received more explicit attention. More surprising, the research that has been done on this topic finds that another fundamental dimension of social perception—agency (e.g., assertiveness, competence, goal-directedness)—takes primacy in humanization (Formanowicz et al., 2018).

In this paper, we hypothesize that communality takes primacy in humanization, being more integral to humanizing than other dimensions through which we perceive and understand human beings. To do so, we leverage the “Big Two” dimensions of social cognition as an integrated framework to understand the qualities and characteristics involved in humanization, comparing the primacy of communality versus agency and examining the impact of contextual relevance in the process. We first review literature on the “Big Two” and suggest that because these two broad classes of content encapsulate virtually all *human* traits, the “Big Two” provides an ideal framework to examine the qualities that underly ascriptions of humanness (see also Formanowicz et al., 2018; Harris & Fiske, 2009; Li, Leidner, & Castano, 2014). We next draw on research on social perception (e.g., Cuddy, Fiske, & Glick, 2008; Abele & Wojciszke, 2014) and extend findings from that literature to the process of humanization, arguing that communality should take primacy in ascribing humanness. We then test our hypothesis in five studies, demonstrating the primacy of communality in humanization, as well as reconciling and integrating this finding with work which would suggest otherwise (e.g., Formanowicz et al., 2018).

1. Linking (de)humanization to the “Big Two”

A broad body of literature has examined the profound consequences of ascribing, or failing to ascribe, “humanness” to other people or

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objects. Conferring humanity invokes moral regard, empathic concern, and the appreciation of others' capacity for suffering (Epley & Waytz, 2010), whereas denying it dampens one's awareness of others' pain and suffering, as well as the empathy and guilt that results from inflicting it (Epley, 2018; Haslam & Loughnan, 2014). Humanization promotes protection, welfare, and even love, towards both individuals and non-human entities (Butterfield, Hill, & Lord, 2012; Gray, Gray, & Wegner, 2007; Rauschnabel & Ahuvia, 2014), and dehumanization increases aggression and discrimination towards target groups, sometimes to devastating effect such as genocide (Bandura, Underwood, & Fromson, 1975; Bar-Tal, 1990; Costello & Hodson, 2011; Opatow, 1990; Vaes, Paladino, Castelli, Leyens, & Giovanazzi, 2003). Humanization can entail many different aspects (e.g., emotions, capacities, capabilities), ranging in blatantness and explicitness, and differing in whether the construct refers to absolute or relative levels of humanness. In this paper, we define *humanization*, or *ascriptions of humanness*, as the application of a lay conception of "humanness" (i.e., what people conceive of as human) to people, groups, and non-human entities.

Many have sought to identify the specific capacities or characteristics that are involved when ascribing something or someone with humanness. For example, researchers have examined various forms of humanization including explicitly likening people to animals or robots (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Bastian & Haslam, 2010; Kteily, Bruneau, Waytz, & Cotterill, 2015), implicitly associating people with non-human species (Goff et al., 2008), ascribing mind (i.e., the mental capacity for active mental states such as thoughts and feelings; Gray et al., 2007; Harris & Fiske, 2009), attributing fewer complex socially constructed emotions (e.g., compassion, shame) to outgroups relative to ingroups (Leyens et al., 2000), and failing to activate neural regions associated with *social* cognition when observing traditionally dehumanized groups (Harris & Fiske, 2006), among others. Underlying each of these different perspectives is a slightly different proposal for what constitutes humanness, including secondary emotions (e.g., shame, pride; Leyens et al., 2000), uniquely human traits (e.g., cognitive capacity/refinement, emotionality/warmth; Haslam, 2006), active mental states (Harris & Fiske, 2009), and capacities to feel and to plan (Gray et al., 2007).

Though these aspects of humanness may seem diverse, ranging from emotions and personality traits to capacities and capabilities, they also share at least one similarity: they all encompass human traits that are quite reminiscent of the "Big Two," the most parsimonious model in other areas of psychology (e.g., social-perception; self-perception; Li et al., 2014). The Big Two refer to the dual dimensions into which human traits can be reliably organized: *agency/competence* (i.e., the class of content that pertains to individuality, assertiveness, achievement) and *communality/warmth* (i.e., the class of content that pertains to warmth, morality, and the desire for social connection; Abele, Uchronski, Suitner, & Wojciszke, 2008; Abele et al., 2016; Abele & Wojciszke, 2014; Bakan, 1966; Fiske et al., 2002; Martin & Slepian, 2017; Martin & Slepian, 2020; Ybarra et al., 2008).

The "Big Two" are argued to be primary dimensions through which we perceive and process others due to their historical relevance to survival. When perceiving ourselves, other people, or social groups, we attend to two things: is this person or group capable of maintaining social connections and social functioning (i.e., communal content), and, subsequently, is this person or group capable of goal-achievement and task functioning (i.e., agentic content; Abele & Wojciszke, 2014; Fiske, 2018). These two broad classes of content serve as a primary lens through which we interpret our social environment, and as such, feature prominently in research on social cognition and stereotyping (e.g., Abele & Wojciszke, 2007; Abele & Wojciszke, 2014; Fiske et al., 2002; Martin & Slepian, 2017; Martin & Slepian, 2020). In addition to their prominence in social perception, these two dimensions are echoed in the perspectives on what constitutes "humanness." For example, multiple areas in (de)humanization research have identified two dimensions used in (de)humanization. In *Mind Perception Theory* (Gray et al., 2007;

Waytz, Gray, Epley, & Wegner, 2010), "agency" (the capacity to plan and act) and "experience" (the capacity for feelings and emotions) are the primary capacities involved in ascribing mind, which meaningfully overlap with agentic and communal content, respectively. The *Dual Model of Humanization* (Haslam, 2006) establishes two basic forms of dehumanization—one in which individuals are considered as animals and another where they are considered as mechanistic entities. Animalistic dehumanization consists of the denial of cognitive capacity, control (similar to the agency dimension) whereas mechanistic dehumanization involves the denial of warmth and emotional openness (similar to the warmth dimension; Haslam, 2006).

Thus, there is a clear link between the "Big Two" and (de)humanization, where research has discussed the different capacities, capabilities, and emotions (i.e., human characteristics) involved in humanization (which map onto the "Big Two"); further, multiple (de)humanization literatures have created models around two (human) dimensions. Yet less research has used the "Big Two" to understand the dimensions through which humanity is ascribed and denied (though see Formanowicz et al., 2018; Harris & Fiske, 2006, 2007; Li et al., 2014). The little work that has examined the relationship between the "Big Two" and humanization has examined this relationship using methods and drawing conclusions that differ from the ones used and made in the present work. For example, in a series of functional neuro-imaging studies, Harris and Fiske (2006) found that traditionally dehumanized groups (e.g., homeless people, addicts) who are perceived as lacking both warmth and competence did not activate areas of the brain responsible for social cognition (i.e., dehumanized perception). However, such areas of the brain were activated for groups who were perceived as warm but not competent, competent but not warm, or both warm and competent, thus leaving it unclear if one dimension or the other in the Big Two took primacy in dehumanized perception. Formanowicz et al. (2018) also examined the Big Two and humanization and predicted that given people's intrinsic motivation to achieve goals, agency (as the dimension most relevant to goal-attainment) should be critical to ascriptions of humanness – they indeed found that manipulations of agency (i.e., agentially moving shapes, facial agency of men) led to significantly higher levels of perceived humanness.

These perspectives differ from our proposal, that under most circumstances, *communality* takes primacy in ascriptions of humanness. In the next section we outline the primacy of communality and argue why it should extend to humanization. We not only review literature in support of our hypothesis, but also offer a perspective on when and why the primacy of communality may no longer hold, thus reconciling our findings with the above described work.

2. The primacy of communality in ascriptions of humanness

Although both agency and communality are fundamental dimensions of social perception, the question of whether they are equally implicated in, and important for, predicting humanization remains underexplored and open for debate. The research that directly examines this topic suggests that perceptions of agency drive humanization, more so than communality. In particular, Formanowicz et al. (2018) argue that given the importance of attending to others' intentions and ability to accomplish one's goals, perceptions of agency should outsize the role of communality in ascribing humanness. The authors found that manipulations of agency (e.g., agentic movement, male faces varying in agency) had a causal effect on perceived humanness.

However, these findings stand in contrast with research on social perception, which has broadly found that while both dimensions are important in social cognition, communality has a stronger effect on social evaluation than agency. The Stereotype Content Model argues that human cognition has developed a vigilance to cues that facilitate social connection or prevent against social threats; thus, in the context of social groups, people first attend to the dimension of warmth-communality (Fiske, 2018; Fiske, Cuddy, & Glick, 2007). In other words, to ensure

survival, understanding a group's intentions (as friend or foe) is more important than understanding their ability to act upon those intentions (i.e., agency-competence; Fiske et al., 2007; Abele & Wojciszke, 2014).

This primacy of communality is echoed in research in the context of the self-concept and interpersonal perceptions (e.g., Abele et al., 2016; Wojciszke, Bazinska, & Jaworski, 1998). Studies on information processing have found that people recognize communal content faster than agentic content in lexical decision tasks (Abele & Bruckmüller, 2011; Ybarra, Chan, & Park, 2001). Moreover, in the domain of impression formation, communal content is more chronically accessible, desired by perceivers, and predictive of global evaluations than agentic content (Wojciszke & Abele, 2008; Wojciszke, Brycz, & Borkenau, 1993). For example, in one study, although the "Big Two" accounted for over 80% of the variance in global impressions, communal trait ratings explained 53% of variance, whereas agentic trait ratings explained only 29% (Wojciszke et al., 1998).

Since communality takes primacy in social cognition, we suggest that it will also receive precedence in ascriptions of humanness, as people will first attend to these cues when understanding who—or what—is human. This argument is based on the assumption that people want to successfully navigate their environments as an effective social agent (e.g., Epley, Akalis, Waytz, & Cacioppo, 2008; White, 1959), and as a result, perceivers use specific cues in the environment to shift their attention to information (e.g., agentic or communal content) that will help them do so (i.e., that are *relevant*). Without contextual information, we suggest people attend to communal cues, and thus, communality is more relevant for humanization. We refer to shifting of attention to different classes of content based on context cues as changes in *contextual relevance*. In other words, when perceiving a target, social cognition changes as a function of the beliefs and motivations one brings into the situation (top-down processing) or the visually salient characteristics or other attributes of the target (bottom-up-processing; e.g., Fiske & Neuberg, 1990; Bodenhausen & Hugenberg, 2009). Thus, attention becomes attuned to the information that is most relevant within a context (Bodenhausen & Hugenberg, 2009). We suggest that, under most circumstances, people attend to the class of content that indicates the potential for social connection when assessing humanness: that content is communal.

On the one hand, people's basic need to belong, connect, and maintain strong and stable interpersonal relationships is a primary top-down motivation that enables people to successfully navigate their social surroundings and should thus orient them towards communal information (Abele & Wojciszke, 2014; Axelrod & Hamilton, 1981; Baumeister & Leary, 1995; Buss, 1991). Indeed, recent research has argued that the motivational processes involved in humanizing non-human entities are largely driven by social (i.e., communal) needs. That is, the desire for social connection is a crucial driver of humanization (Waytz et al., 2010). Chronically lonely individuals (i.e., those lacking connection) imbue their pets, gadgets, and celestial bodies with humanity. Further, experimental inductions of social isolation lead people to describe non-human entities in more humanlike ways (Epley et al., 2008; Epley et al., 2007).

On the other hand, people also automatically attend to attributes of a target that signal communality. For example, people more quickly and automatically attend to stimuli with potentially ill-intent (low warmth) such as snakes and spiders and are more reliable judges of facial trustworthiness, an aspect of communality, than other social judgments (Öhman, Flykt, & Esteves, 2001; Willis & Todorov, 2006). Even from the earliest of ages, babies can recognize who is warm (at 6 months) far before they learn who is competent (at 6 years; Hamlin, Wynn, & Bloom, 2007; Roussos & Dunham, 2016). These perceptual processes have implications for humanization. Studies have found that perceptual signals of interest in social interaction (i.e., eye gaze; Wirth, Sacco, Hugenberg, & Williams, 2010), triggers ascription of mind, a form of humanization (Harris & Fiske, 2009; Khalid, Deska, & Hugenberg, 2016). Therefore, given the primacy of communality in human needs, motives, and social

cognition (e.g., Abele & Wojciszke, 2014; Axelrod & Hamilton, 1981; Baumeister & Leary, 1995; Buss, 1991), we predict that, in general, communality will be a stronger predictor of humanization than agency.

However, the primacy of communality in ascribing humanness is not universal. Cues may sometimes signal that other characteristics of a target are relevant to successfully navigating a social context. Because agency imbues a social target with intentionality, goal-directedness, and action-orientation, the need to explain or understand a target's behavior may call to relevance its agentic characteristics as a means to make sense of its behavior (Waytz, Morewedge, Epley, Monteleone, Gao, & Cacioppo, 2010). Indeed, research has found that feelings of uncertainty, unpredictability, and a lack of control prompt individuals to look for agentic information to help understand one's environment (Waytz et al., 2010; Kay, Gaucher, Napier, Callan, & Laurin, 2008; Johnson & Barrett, 2003). From a perceptual perspective, physical signals of a target's capacity to assert and achieve one's goals (e.g., facial dominance or intelligence, physical strength) are used in social judgments and ascriptions of humanness (Deska, Lloyd, & Hugenberg, 2018; Oosterhof & Todorov, 2008). Taken together, these findings suggest that there are contexts in which agency may take precedence in ascribing humanness.

We suggest these times occur when contextual cues signal that agency is relevant to understanding a target. In such cases, people should be more likely to use agency to make inferences about another, and in our case, decide their level of humanness. Informational or perceptual cues can activate perceivers' beliefs and motivations or draw attention to perceptual features of the target. For example, information that suggests a target has an agentic social role might highlight the relevance of agency, and perceptual features such as movement might also signal the importance of intentionality and agency (Bodenhausen & Hugenberg, 2009; Gergely, Nádasdy, Csibra, & Bíró, 1995; Scholl & Tremoulet, 2000). Consistent with this proposition, recent research has found that in such contexts agency does play a crucial role in ascribing humanness (e.g., Formanowicz et al., 2018; Martin & Mason, 2021). Specifically, Formanowicz et al. (2018) demonstrated that agency had a causal effect on ascriptions of humanness in contexts of moving shapes and male faces. These findings are consistent with our theorizing because both moving shapes and male faces signal the relevance of agency. Prior studies have found that moving shapes and other geometric figures call to relevance ideas of intentionality and agency (e.g., Gergely et al., 1995; Schlottmann, Ray, Mitchell, & Demetriou, 2006; Scholl & Tremoulet, 2000). Moreover, extensive research on gender suggests that agency is particularly relevant to the male social role (Diekmann & Eagly, 2000) and used when humanizing men, in particular (Martin & Mason, 2021). Collectively, these findings suggest that cues that highlight the relevance of agency (e.g., perceiver beliefs and motivations, perceptual features of a target) will render agency predictive of ascriptions of humanness in that context.

Taken together, we argue (1) both agency and communality will be implicated in ascribing humanness; but that (2) communality will more strongly predict humanization, (3) unless contextual information signals the relevance of agentic cues, at which point agency will be more strongly implicated in humanness. This work offers several theoretical contributions. First, we extend and amplify prior work that uses the Big Two dimensions of social perception as a lens to examine the process of humanization (Formanowicz et al., 2018; Harris & Fiske, 2009; Li et al., 2014), which has been underutilized as a framework to understand (de)humanization, compared to other models (e.g., Mind Perception Theory; Dual Model of Humanization; Gray et al., 2007; Haslam, 2006; Haslam & Loughnan, 2014). Second, we extend theorizing from social perception to the domain of humanization, comparing the role of communality and agency in humanization, as well as qualifying extant findings to show where and why agency more strongly predicts humanization (Abele & Wojciszke, 2014; Formanowicz et al., 2018). Third, we demonstrate the importance of both top-down and bottom-up processes in shaping perceptions of humanness, highlighting the crucial role of

contextual information in social judgments (e.g., Hester & Gray, 2020). Our work thus provides an integrated account of whether and when the Big Two dimensions of social perception lead to humanization: when contextual information signals the relevance of agency, agency will be more likely to predict humanization. Otherwise, communality prevails.

3. Overview of studies

We test our hypotheses—that communality will generally take primacy in predicting humanness, except when agency is particularly relevant—in five studies (four pre-registered). First, we look at which traits are implicated when humanizing by having participants anthropomorphize a non-living entity (Study 1), imagine an alien encounter (Study 2), and consider real-world social targets (Study 3). We then manipulated the relevance of communality versus agency using perceptual features of a target (movement) in Study 4 to demonstrate the greater role of communality in humanization and provide evidence that context-relevance shifts the predictiveness of a Big Two dimension on humanization. Study 5 manipulates the relevance of communality versus agency using an informational social role manipulation, replicating our prior findings that contextual-relevance of agency results in agency predicting humanization, whereas in the absence of information, communality prevails.

Across all studies, our main results focus on a blatant measure of ascriptions of “humanness” as our dependent variable (adapted from Kteily et al., 2015). We believe this is an especially appropriate operationalization of humanization because our focus is not to define what it means to be “fully human,” (as captured by other measures) but rather to examine whether perceivers’ lay conception of “humanness,” and its application to targets, is driven by their perceptions of the target’s agency and communality. Nevertheless, out of secondary interest, we also include alternative measures of humanization for robustness in Study 1 and 5 (e.g., human nature, human uniqueness, mind ascription; Haslam, 2006; Waytz et al., 2010). Moreover, we also used a variety of established measures of agency and communality drawn from the literature on the Big Two across the studies for robustness.

An a-priori power analysis was conducted with G*Power 3.1, using the average effect size in social psychology ($r = 0.21$; Richard, Bond Jr, & Stokes-Zoota, 2003), indicating that 134 participants would be needed to achieve adequate power ($1-\beta = 0.80$, $\alpha = 0.05$). We collected at least 150 participants in each study, and sample size was determined before any data analysis. Sensitivity analyses across studies revealed that we had 80% power to detect effect sizes (r) from 0.20 to 0.23 – our effect sizes for the relationship between communality and ascriptions of humanness ranged from 0.23 to 0.49 across all the analyses in our studies, suggesting that we had adequate power. We report all measures, manipulations, and exclusions in either the main text or Supplemental Online Material (SOM). All data and materials can be found on OSF (https://osf.io/73tf2/?view_only=569ff2bd855b40b0b1452ab4dd4c8648).

4. Study 1

Study 1 examined whether agency or communion was more strongly related to humanization in the context of ascribing humanness to everyday objects. Researchers have argued that ascriptions of humanness to non-human things (i.e., anthropomorphism) is widespread and involves similar processes to ascribing humanness to people and thus serves as an ecologically valid context to examine our hypothesis (Epley, Waytz, & Cacioppo, 2007). Participants were asked to recall an entity to which they ascribed humanness and then to report the extent to which they ascribed the entity with agentic and communal traits.

4.1. Method

4.1.1. Participants and procedure

Participants ($N = 217$) from MTurk were recruited to take part in a study on “anthropomorphism” for \$0.85. In line with our pre-registration (<https://aspredicted.org/blind.php?x=pa9xb9>), we coded participants’ open-ended responses to the prompt to ensure they completely the task correctly and removed 62 responses that contained nonsensical text. Including them does not change results. Participants ($N = 155$; 55% male, 77% White, $M_{\text{age}} = 37.54$, $SD = 11.51$) were given the following instructions (adapted from Waytz et al., 2010):

Anthropomorphism is the process of ascribing uniquely human qualities to non-human things. Anthropomorphism goes beyond behavioral descriptions or observations (e.g., the object is dark); it entails attributing humanness – such as conscious experience and intentions – to non-human objects or entities (e.g., the object is angry). It can include giving mental capacities that are uniquely human, like having conscious awareness (e.g., understanding of the self) and possessing explicit intentions or desires (e.g., revenge, ambition). It can also include experiencing uniquely-human emotions (e.g., pride, shame, guilt).

Participants were next asked to reflect on something in their life to which they attribute humanness and to write about that entity. We then administered our dependent variables of interest.

4.1.2. Measures

4.1.2.1. Agency and communality. Participants were asked to indicate the extent to which their humanized entity possessed *agency* (aggressive, competitive, powerful, active, efficient, dominant; $\alpha = 0.82$) and *communality* (warm, kind, friendly, supportive, trustworthy, likable; $\alpha = 0.92$; 1 = *not at all* to 5 = *very much*). These items were drawn from existing measures of agency and communality (Formanowicz et al., 2018; Lawson, Martin, Huda, & Matz, 2021).

4.1.2.2. Humanization. Our primary dependent variable is a measure of *ascriptions of humanness* using an adaptation of the Ascent of Man Scale (Kteily et al., 2015), which measures overall levels of humanness. Participants were told “the following scale represents humanness levels. Zero represents very low degree of humanness and 100 represent very high degree of humanness. Choose a number that represents the humanness of the entity you just described” on a scale from 0 = *not at all human* to 100 = *fully human*.¹ We use and report results for this measure of humanization in all subsequent studies in the main manuscript.

To demonstrate robustness across operationalizations of humanization in this study, we also included other established measures of humanization or ascription of distinctly human qualities (e.g., mind-ascription; human-nature; human-uniqueness; Haslam, 2006; Waytz et al., 2010). The mind-ascription measure assessed the extent to which participants saw the entity as possessing the following: intentions, free will, emotions, consciousness, and a mind of its own (1 = *not at all*, 5 = *very much*; $\alpha = 0.92$). We also included two scales featured prominently in the humanization literature: human nature and human uniqueness. The *Human Nature Scale*—features that are seen as fundamental to our humanity—and *Human Uniqueness*—attributes that distinguish people from animals (Bastian & Haslam, 2010; Haslam, 2006). To measure these two dimensions of (de)humanization, we adapted 12 items from Bastian and Haslam (2010), six related to human nature (e.g., “the entity had interpersonal warmth,” $\alpha = 0.81$), and six related to human

¹ Although this scale typically includes photos ranging from ape (0) to upright *homo sapien* (100), we did not include these photos as we were not interested in the specific human versus animal distinction in this work. Rather, we wanted to capture the extent to which participants explicitly imbued an entity with their lay conception of “humanness.”

uniqueness (e.g., “the entity was refined and cultured,” $\alpha = 0.60$). Participants responded to these items on a scale from 1 = *not at all* to 7 = *very much so*.

4.2. Results

As expected, both communality ($r = 0.49, p < .001$) and agency ($r = 0.25, p < .001$) independently predicted ascriptions of humanness; however, when using a multiple regression to account for the shared variance between the two, communality, $b = 10.27, SE = 1.57, t(152) = 6.53, p < .001, CI_{95} = 7.16, 13.38$, was a larger predictor of human ascription, than agency $b = 4.21, SE = 1.80, t(152) = 2.34, p = .020, CI_{95} = 0.66, 7.75$: the effect size for communality ($r = 0.46$) was over two times larger than the effect size for agency ($r = 0.17$), suggesting that communality had a stronger effect on humanization.²

For our alternative measures of humanization, we found similar patterns with communality, where the more participants attributed their entity with communal traits the more humanized they saw their entity to be on dimensions of mind ascription, $b = 0.51, SE = 0.07, t(152) = 7.05, p < .001, CI_{95} = 0.36, 0.65$, human nature, $b = 0.51, SE = 0.06, t(152) = 8.84, p < .001, CI_{95} = 0.40, 0.62$, and human uniqueness, $b = 0.28, SE = 0.05, t(152) = 5.79, p < .001, CI_{95} = 0.19, 0.38$. In contrast agency was not significantly related to mind ascription ($p = .291$) or human nature ($p = .074$), although agency did significantly predict human uniqueness, $b = 0.11, SE = 0.06, t(152) = 2.00, p = .047, CI_{95} = 0.19, 0.38$, but to a lesser degree.

4.3. Discussion

This study offers promising initial evidence for our hypothesis. We found that people consistently prioritized communal traits over agentic traits when ascribing humanness to non-human things. Nevertheless, limitations exist. First, because participants were asked to choose the entities they were to anthropomorphize, we lacked control over the target stimuli, introducing the possibility that unmeasured alternative characteristics of the entities people chose to anthropomorphize drove our effects. Second, prior research has found that processes of object perception may differ from processes of person perception (e.g., Harris, McClure, Van Den Bos, Cohen, & Fiske, 2007), suggesting the need to demonstrate our findings with human targets. Third, we acknowledge that the set of items used to assess agency and communality in this study may not have captured the full conceptual space of those constructs. We address these limitations by providing a fixed target of evaluation, extending our findings to human targets, and broadening the set of items used to assess agency and communality in the next two studies.

5. Study 2

In Study 2, we control and keep constant the target of evaluation, testing whether agency or communality was more strongly related to humanization of an alien species. Additionally, to address concerns that our measures of agency and communality do not cover the full conceptual space of those constructs, we employ a broader measure of the Big Two dimensions in this study that accommodates the multifaceted nature of the Big Two (e.g., Abele et al., 2016; Leach, Ellemers, & Barreto, 2007; Cuddy et al., 2008).

² To ensure these results were not driven by valence, we used the Linguistic Inquiry Word Count (LIWC) software program to code the positivity and negativity in participants' descriptions of their anthropomorphized entity (using the posmo and negmo categories, respectively). Results remain unchanged when including valence (positive and negative emotion) in our model (communality: $b = 10.99, SE = 1.64, t(150) = 6.72, p < .001, CI_{95} = 7.75, 14.22$, and agency: $b = 4.34, SE = 1.80, t(150) = 2.42, p = .017, CI_{95} = 0.79, 7.89$).

5.1. Method

5.1.1. Participants and procedure

In this pre-registered study (<https://aspredicted.org/blind.php?x=t3dy94>), participants ($N = 200$) from Prolific were recruited to take part in a study on impressions for \$0.40. We removed two participants who failed an attention check. Participants ($N = 198$; 43% men; 60% White; $M_{age} = 31.01, SD = 11.33$) were told to imagine that a crew of astronauts landed on the planet “Freon” and discovered an alien species: the Orinthians (see Hoffman & Hurst, 1990 for original paradigm). Participants were exposed to the following information about the Orinthians:

A crew of astronauts have recently landed on a planet named Freon in a nearby solar system (about 14 light years from Earth). On this planet, they have discovered a species called the “Orinthians.” In “Orinthian” society, individuals either live in groups in the countryside or in large cities.

After reading this information, participants were next asked to imagine that they had a positive interaction with a member of this species before then completing measures of agency, communality, and humanization.

5.1.2. Measures

5.1.2.1. Agency and communality. We asked participants the extent to which agentic (10-items: self-confident, stands up under pressure, doesn't give up easily, has leadership qualities, feels superior, efficient, capable, intelligent, competent, clever; $\alpha = 0.87$) and communal traits (10-items: warm, empathetic, caring, affectionate, friendly, just, fair, considerate, trustworthy, reliable; $\alpha = 0.89$) described the alien (1 = *not at all* to 5 = *extremely*; Abele et al., 2016). This broader set of items accommodates the multifaceted nature of agency and communality and serves as a more complete measure of these dimensions (Abele et al., 2016).

5.1.2.2. Humanization. We used the same ascriptions of humanness measure as in Study 1.

5.2. Results

Although both communality and agency correlated with ascriptions of humanness ($r_{communality} = 0.49, r_{agency} = 0.24; ps < 0.001$), using a multiple regression, only communality predicted humanization, $b = 16.68, SE = 2.46, t(195) = 6.79, p < .001, CI_{95} = 11.84, 21.52$, whereas agency did not, $b = -2.53, SE = 2.86, t(195) = -0.89, p = .377, CI_{95} = -8.17, 3.10$.

5.3. Discussion

Study 2 conceptually replicates our findings from Study 1: communality is a stronger predictor of humanization than agency in perceptions of a fictional alien species. In holding constant the entity to which participants ascribed humanness, we reduce concerns that our observed effects in Study 1 were driven by unobserved characteristics of the entities that people chose to humanize. In addition, the more expansive set of items used to assess agency and communality in this study lend

further robustness to our findings.³ We do note, however, that it may be possible that the items assessing agency and communality differ in their valence. For example, some of the items for agency in Studies 1–2 (e.g., aggressive, competitive, feels superior) may have more negative connotations than those for communality (e.g., warm, kind, considerate). Furthermore, as in Study 1, we examined our hypothesis in the domain of a non-human entity, which may not allow for generalization to real-world human targets. We address both these limitations in Study 3.

6. Study 3

Whereas Studies 1 and 2 examined our hypothesis in ascribing humanness to objects and fictional beings, Study 3 tests whether our prediction that communality will more strongly predict humanization extends to real-world social groups. Another goal of this study was to ensure that our findings are not an artifact of the relative positivity of communal traits (e.g., warm, kind, considerate) over agentic traits (e.g., aggressive, competitive, feels superior) used in the prior studies – we therefore used an even more comprehensive set of Big Two traits, a subset of which were validated as equal on valence in prior research (Abele & Wojciszke, 2007; Wojciszke & Abele, 2008).

6.1. Method

6.1.1. Participants and procedure

In this pre-registered study (<https://aspredicted.org/blind.php?x=h y2xt2>), participants ($N = 602$) from Academic Prolific took part in a study on “Impressions and Personality” for \$0.50. Those who failed an attention ($n = 6$) or manipulation check ($n = 8$) were removed. Participants ($N = 594$; 42% men; 63% White; $M_{\text{age}} = 34.28$, $SD_{\text{age}} = 12.08$) were randomly assigned to imagine a positive interaction with an individual from one of four social groups (homeless people, drug addicts, Muslims, ex-convicts) and then evaluated them on agency, communality, and humanization.

6.1.2. Measures

6.1.2.1. Agency and communality. We measured agency and communality using 20 agentic traits (same items as in Study 2; independent, assertive, decisive, dynamic, active, innovative, open-minded, resourceful, self-dependent, thinks prospectively) and 19 communal traits (same items as in Study 2; sympathetic, loves children, helpful, understanding, likable, empathic, honest, loyal, tolerant). These traits were taken from established measures of the Big Two dimensions (Abele et al., 2016; Abele & Wojciszke, 2007). Moreover, to address concerns that the communal traits in Studies 1 and 2 were more positive in valence than the agentic traits, we included a subset of traits that were validated as being equal in valence (*agency*: active, innovative, open-minded, resourceful, self-dependent, thinks prospectively; *communality*: caring, considerate, empathic, honest, loyal, tolerant Wojciszke & Abele, 2008).

6.1.2.2. Humanization. We used the same ascriptions of humanness measure as in Studies 1–2.

³ Based on helpful feedback from our review team, we also examined another model in which we separated the warmth and morality facets of communality, given research that suggests morality may have a different influence on impression formation than warmth (e.g., Goodwin, 2015). We therefore regressed ascriptions of humanness on agency, warmth, and morality, and found that only the warmth dimensions predicted human ascription, $b = 11.32$, $SE = 3.11$, $t(194) = 3.64$, $p < .001$, whereas morality ($p = .197$) and agency ($p = .586$) did not. We discuss the implications of this finding in our general discussion.

6.2. Results

We examined our hypothesis by regressing ascriptions of humanness on communality, agency, and dummy codes for each social target (homeless condition as non-included baseline; see Table 2 for within-target results). Using all traits for agency and communality, we found that only communality predicted humanization, whereas agency did not. To ensure that our findings were not driven by any differences in valence between the Big Two dimensions, we used the valence-matched traits for both agency and communality as predictors and found that communality was a stronger predictor of humanness than agency – the partial correlation for communality ($r = 0.23$, $p < .001$) was two times larger than the partial correlation for agency ($r = 0.10$, $p = .014$; see Table 1 for unstandardized coefficient regression results).

We also examined whether our effect held for each individual social target by regressing humanization on the Big Two dimensions within each social target condition. We found that for homeless people, drug addicts, and ex-convicts, communality was a significant predictor of humanization whereas agency was not. Neither communality nor agency were significant predictors of humanization of Muslim people, although the coefficients were directionally consistent with our hypothesis (see Table 1). We address this finding in the discussion.

6.3. Discussion

These results again demonstrate that communality is a stronger predictor of humanization than agency across a variety of social groups. However, one interesting finding in this study is that neither communality nor agency predicted humanization when participants perceived a Muslim person. We do not wish to overly speculate on this surprising result, but we do note that the Muslim person was significantly more humanized than any of the other social targets and had the lowest variance in human ascriptions out of the four conditions. Given that our measure of human ascription was blatant, a ceiling effect may have attenuated our ability to detect a relationship between communality and humanization. Future research might thus examine this relationship using more subtle and implicit forms of dehumanization of Muslim people.

Table 1
Agency and communality as predictors of humanness of social targets.

Aggregate Results	Humanness					
	<i>M</i>	<i>SD</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Agency (all traits)	3.06	0.73	−0.01	1.91	−0.01	0.994
Communality (all traits)	3.16	0.82	13.06	1.71	7.64	<0.001
Agency (valence-matched)	3.19	0.77	3.97	1.62	2.46	0.014
Communality (valence-matched)	3.18	0.86	8.92	1.53	5.82	<0.001
Condition	<i>M</i>	<i>SD</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>P</i>
Homeless (Humanness Ascription)	81.30	20.81				
Agency	3.05	0.75	−0.85	3.43	−0.25	0.805
Communality	3.35	0.77	9.43	3.36	2.81	0.006
Addict (Humanness Ascription)	72.76	24.89				
Agency	2.53	0.65	0.89	3.97	0.22	0.823
Communality	2.66	0.75	18.27	3.46	5.28	<0.001
Muslim (Humanness Ascription)	88.18	16.70				
Agency	3.45	0.55	2.80	3.84	0.73	0.468
Communality	3.69	0.60	5.06	3.49	1.45	0.150
Ex-convict (Humanness Ascription)	73.96	22.63				
Agency	3.24	0.62	0.24	3.98	0.06	0.952
Communality	2.97	0.76	15.22	3.26	4.66	<0.001

Note: All aggregate results include dummy codes for social target. Analyses by condition use all traits for agency and communality.

Nevertheless, this study broadly replicates our findings from Studies 1 and 2 in the context of real-world social targets. The use of a broad set of items to assess agency and communality, along with valence-matched traits, also provides robustness to our findings – in all our analyses, communality was consistently a stronger predictor of humanization than agency.⁴ Taken together, Studies 1–3 provide consistent support for the idea that communality takes primacy in humanization of non-human entities and humans alike.

7. Study 4

We have demonstrated that communality more strongly predicts ascriptions of humanness to objects, an alien species, and various groups of people than does agency. However, this evidence was cross-sectional and thus subject to alternative explanations. Study 4 sought to address this limitation by manipulating the contextual relevance of communality versus agency using a manipulation of physical movement cues of a target (c.f., Formanowicz et al., 2018) and then measuring participants' ascriptions of humanness. Specifically, we used the classic Heider and Simmel (1944) video of moving shapes as our targets of evaluation and randomly assigned participants to focus on the movement of one particular shape in the video. Heider and Simmel (1944) found that people generated elaborate narratives and ascribed goals and intentions to the geometric shapes in the video (see Kassin, 1982, for a review). For example, studies have found that people tend to attribute traits such as aggressiveness and dominance, which fall under agentic content, to the triangle and attribute traits such as cooperativeness and helpfulness, which fall under communal content, to the circle and that it is specifically the dynamic movement of the shapes in the video that lead to such perceptions (Berry, Misovich, Kean, & Baron, 1992; Heider & Simmel, 1944). Therefore, we randomly assigned participants to focus on either the large triangle (agency-relevant condition) or the small circle (communality-relevant condition). We predicted that participants would ascribe more humanness in the communality-relevant condition than the agency-relevant condition and that ascriptions of communality, more so than agency, would explain this difference (see <https://www.youtube.com/watch?v=VTNmLr7QX8E>).

7.1. Method

7.1.1. Participants and procedure

In this pre-registered study (<https://aspredicted.org/blind.php?x=3bh4un>), participants ($N = 401$) from Prolific Academic took part in a study on “Perceiving Moving Objects” for \$0.85. Participants were assigned to one of two shape conditions. Participants ($n = 6$) who failed an attention check were removed. Participants ($N = 395$; 49% men; 65% White; $M_{\text{age}} = 30.18$, $SD_{\text{age}} = 10.88$) in both conditions were instructed to watch a video of moving shapes, taken from Heider and Simmel (1944), which has been shown to induce anthropomorphism (Schweitzer & Waytz, 2020). In the *agentic-shape condition*, participants focused on the movement of a large triangle that moved in an agentic manner (e.g., sharp movements, “chasing” other shapes), whereas in the *communal-shape condition*, participants focused on the movement of a circle that moved in a communal manner (e.g., smooth movements, following other shapes). After watching the video, participants completed measures of agency, communality, and humanization of the shape they focused on.

⁴ As in Study 2, we ran another model in which we separated the morality and warmth dimensions of communality. We regressed ascriptions of humanness on agency, warmth, morality, and dummy codes for condition (with homeless person as baseline) and found, as in Study 2, that only warmth predicted ascriptions of humanness, $b = 8.20$, $SE = 1.76$, $t(587) = 4.67$, $p < .001$, whereas morality ($p = .374$) and agency ($p = .153$) did not. Again, we discuss the implications of this finding in the General Discussion.

7.1.2. Measures

7.1.2.1. Agency and communality. We used 5-items each to assess agency (self-confident, stands up under pressure, doesn't give up easily, has leadership qualities, feels superior; $\alpha = 0.75$) and communality (warm, empathetic, caring, affectionate, friendly; $\alpha = 0.96$). Participants responded on a scale of 1 = *not at all* to 5 = *extremely* (Abele et al., 2016).

7.1.2.2. Humanization. We used the same ascriptions of humanness measure as in Studies 1–3.

7.2. Results

We first examined whether participants ascribed different levels of agency, communality, and humanness to the communal circle versus agentic triangle using independent *t*-tests. Showing that our manipulation had its intended effect, participants perceived the large triangle to be more agentic than the circle and perceived the circle to be more communal than the large triangle. Most importantly, the communal circle was ascribed significantly more humanness than the agentic triangle, demonstrating that communality (as opposed to agency) has a causal effect on ascriptions of humanness (see Table 2).

To directly examine the role of agency and communality in explaining the difference in humanization of the circle versus the triangle, we conducted a mediation analysis with condition (1 = communal circle, 0 = agentic triangle) as the independent variable, agency and communality (z-scored) as parallel mediators, and humanness as the dependent variable with structural equation modeling using the *lavaan* package in R statistical software. Communality significantly mediated the relationship between condition and ascribed humanness, $b = 14.53$, $SE = 2.75$, $z = 5.29$, $p < .001$, $CI_{95\%}: 9.22, 19.94$, such that the circle was perceived as relatively more communal which in turn related to more humanization. Agency also mediated the relationship between condition and ascribed humanness but as a suppressor variable, $b = -2.74$, $SE = 1.13$, $z = -2.42$, $p = .015$, $CI_{95\%}: -5.15, -0.70$, such that the circle was perceived as relatively less agentic which in turn related to less humanization (see Fig. 1). By using a bottom-up, visual processing manipulation to make communality and agency context-relevant in the communal-shape and agentic-shape conditions, respectively, we support our hypothesis that when agency is context relevant, it should be a dimension people use to humanize. We do note, however, that this mediational analysis does not allow for causal conclusions and that other models are possible, and thus interpret this analysis with caution.

To provide better support for this hypothesis—that when agency is context-relevant, it will be a primary dimension people use to humanize—we conducted linear regression models predicting humanization with a condition dummy code, agency, communality, and the two-way interactions between condition and both agency and communality as predictors. We conducted two analyses with either the “agentic triangle” or the “communal circle” condition as the comparison group in the condition dummy. When focused on communal movement (i.e., circle), participants' ratings of communality predicted humanness ($p < .001$), whereas ratings of agency did not ($p = .785$). In contrast, when focused on agentic movement (i.e., triangle), ratings of agency predicted humanization ($p < .001$), whereas ratings of communality did not ($p = .625$). See Table 3.

7.3. Discussion

Collectively, these findings demonstrate that communality exerts a causal effect on ascriptions of humanness, more so than agency. As demonstrated above, a target that moved in a connected, submissive, cooperative fashion (circle) was perceived as more communal and one that moved in a jagged, aggressive, dominant manner (triangle) was perceived as more agentic (Berry et al., 1992; Heider & Simmel, 1944),

Table 2
Differences in agency, communality and humanness ratings across conditions.

	Triangle	Circle	<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>	95% <i>CI</i>
Agency	3.38 (0.77)	2.77 (0.98)	-6.94	369.93	<0.001	-0.70	-0.79, -0.44
Communality	1.28 (0.49)	2.87 (1.07)	18.99	273.46	<0.001	1.93	1.43, 1.76
Humanization	54.77 (30.63)	61.73 (27.97)	2.36	390.76	0.019	0.24	1.15, 12.76

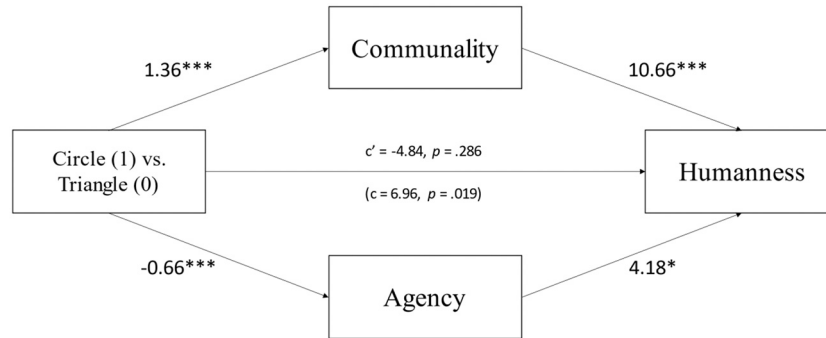


Fig. 1. Mediation analysis for Study 4.
Note: *** = *p* < .001, * = *p* < .05.

Table 3
Agency and communality as predictors of humanness across conditions.

Condition	Humanness					
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>P</i>	LCI	UCI
Communal Movement - Circle						
Agency	-0.71	2.59	-0.27	0.785	-5.79	4.38
Communality	14.41	2.43	5.93	<0.001	9.63	19.19
Condition (Tri = 1, Circ = 0)	1.91	4.40	0.43	0.664	-6.73	10.55
Condition x Agency	7.78	3.76	2.07	0.039	0.40	15.17
Condition x Comm	-16.39	4.72	-3.48	<0.001	-25.66	-7.11
Agentic Movement - Triangle						
Agency	7.08	2.72	2.60	0.010	1.72	12.43
Communality	-1.98	4.04	-0.49	0.625	-9.92	5.97
Condition (Tri = 0, Circ = 1)	-1.91	4.40	-0.43	0.664	-10.55	6.73
Condition x Agency	-7.78	3.76	-2.07	0.039	-15.17	-0.40
Condition x Comm	16.39	4.72	3.48	<0.001	7.11	25.66

and these targets were humanized along communal and agentic dimensions, respectively. This study further provided preliminary evidence for the hypothesis that the dimension which predicts humanness changes as a function of relevance: when communal information was context-relevant, communality more strongly predicted humanness, whereas the reverse occurred when agentic information was context-relevant. We examine the role of contextual relevance of a Big Two dimension in ascribed humanness more directly in Study 5.

8. Study 5

In Study 5, we examine how contextual relevance of a Big Two dimension moderates the relative predictiveness of agency versus communality in ascriptions of humanness. In so doing, we outline how our findings reconcile with conflicting results found in Formanowicz et al. (2018). Our theorizing suggests that when contextual information suggests that agency is more relevant to understanding a target, agency should be a stronger predictor of humanization than communality, and vice versa in contexts where communality is more relevant. We manipulated the contextual relevance of communality versus agency

through a social role manipulation. Past research has found that different social roles lead to differences in agentic and communal stereotypes (Hoffman & Hurst, 1990; Koenig & Eagly, 2014). For example, someone who works in the city and serves as a breadwinner (e.g., worker) activates the relevance of agency, whereas someone who stays at home and takes care of others (e.g., caretaker) activates the relevance of communality (Hoffman & Hurst, 1990). This suggests that agentic information is more relevant to understanding the worker-role, whereas communal information is more relevant to understanding the caretaker-role. We therefore examine the relative importance of agency and communality in ascriptions of humanness when contextual information signaling the relevance of either agency or communality was manipulated using social role information and compare these conditions to a “no information” control, where we predicted communality would take primacy.

8.1. Method

8.1.1. Participants and procedure

Participants (*N* = 573) from MTurk took part in a study on “meeting alien life,” for \$0.85. Participants were assigned to one of three role conditions. Participants (*n* = 25) were excluded, using the same criteria as in Study 1. As in Study 2, participants (*N* = 558; 56% male, 74% White, *M*_{age} = 40.24, *SD* = 12.75) imagined themselves in a scenario where they interacted with the alien species “the Orinthians.” In the caretaker and worker conditions, they were told that an important role Orinthians have is either being a caretaker who “...take[s] responsibility for taking care of others and community building of their species” or a city-worker who “...travel[s] to the city each day, where all of the business, industry, technology is concentrated” (see SOM for statements). The “no-role” control condition contained no information about Orinthians beyond the fact that they were an alien species. In particular, unlike in Study 2, we did not ask participants to imagine a “positive interaction” with the alien species – the removal of this instruction helps to ensure that no aspects of our instructions might have explicitly activated ideas of communality or positive social connection. Participants wrote several sentences about the Orinthian and completed our dependent measures.

8.1.2. Measures

8.1.2.1. Agency and communality. Participants were asked the extent to which they believed a number of traits were characteristic of the Orinthian (1 = not at all to 5 = very much). We used eight items each to measure agency (independent, self-reliant, dominant, competitive, stands up under pressure, assertive, skilled, active; $\alpha = 0.82$) and communality (sympathetic, warm, kind, friendly, supportive, nurturing, honest, trustworthy; $\alpha = 0.94$).

8.1.2.2. Humanization. We used the same ascriptions of humanness measure as in Studies 1–4.

8.2. Results and discussion

As a manipulation check, we used a one-way ANOVA to examine differences in agency ratings of the target between conditions. We find significant differences between conditions, where agency was more ascribed in the worker condition and communality was more ascribed in the caretaker condition, and both dimensions were ascribed more in the care-taker and worker-conditions than the control condition (see Table 4).

We next examined our hypotheses: (1) the inclusion of communal or agentic information would lead to significantly more humanization, relative to when this information was not provided (no-information control); (2) targets that were described in communal terms would be more humanized than those who were described in agentic terms; (3) ratings of agency would predict ratings of humanization, only in the context where it was relevant (agentic-relevant condition). We thus regressed ascriptions of humanness on two contrast codes (Contrast 1: caretaker condition = +1, worker condition = +1, no information control = -2; Contrast 2: caretaker condition = +1, worker condition = -1, no information control = 0). This analysis allowed us to investigate the first predicted comparison of no information vs. contextual relevance of both agency and communality (Contrast 1) as well as the second predicted effect of communality compared to agency (Contrast 2) on ascriptions of humanness.

Our first contrast revealed that contextual relevance of either communality or agency (i.e., when communal or agentic information was provided) led to significantly higher levels of human ascription compared to no information, $b = 6.13, SE = 0.79, t(545) = 7.76, p < .001$. The second contrast revealed that those assigned to the caretaker condition (communality-relevant) reported more ascriptions of humanness than those in the worker condition (agency-relevant), although this difference was not significant, $b = 2.66, SE = 1.38, t(545) = 1.93, p = .054$ (see Table 4).

To examine the extent to which agency and communion predict humanness, we implemented an approach which examines a three-level variable, within regression-based modeling (e.g. Martin & Slepian, 2018). We created three dummy variables, capturing experimental condition, one representing the control condition (1 = control, 0 = worker, 0 = caretaker), one representing the caretaker condition (1 = caretaker, 0 = worker, 0 = control), and one representing the worker

Table 4
Differences in agency and communality ratings across conditions.

	Control	Worker	Caretaker	$F(2, 545)$	p	η_p^2
Agency	3.31 _a (0.79)	3.50 _b (0.75)	2.92 _c (0.74)	27.45	<0.001	0.09
Communality	2.93 _a (1.02)	3.28 _b (0.84)	4.04 _c (0.77)	79.03	<0.001	0.23
Humanization	54.84 _a (29.63)	70.56 _b (25.04)	75.88 _b (23.55)	32.44	<0.001	0.11

Note. Different subscripts represent significant differences ($p < .05$) between conditions.

condition (1 = worker, 0 = caretaker, 0 = control). When entering any two dummy variables, they are independent of each other and relative to non-included dummy variable; thus, all three levels of condition are represented when entering two of the dummy variables. To account for interactions with a three-level variable, we entered our communality and agency measures, two dummy variables, and their interactions in a regression model to test whether agency and communality would predict humanization.

Full regression results can be seen in Table 5. Summarized briefly, when no contextual information about the Orinthian was provided, ratings of communality ($p < .001$), predicted humanness, whereas ratings of agency did not ($p = .735$). Similarly, in the caretaker condition, ratings of communality uniquely predicted humanization ($p < .001$), whereas ratings of agency did not ($p = .178$). It was only when participants were given role information requiring agentic information (i.e., the “worker” role) that both communality ($p = .003$), and agency ($p = .004$), predicted humanization. Together, these results show that communality takes primacy over agency in perceptions of humanness overall, and when it is context-relevant (i.e., caretaker-condition), with the exception of when agency is context-relevant (i.e., worker-condition).

9. Meta-analysis

Following procedures outlined in Goh, Hall, and Rosenthal (2016), we compared the extent to which agency and communality predicted humanization in all studies where contextual relevance of a Big Two dimensions was not manipulated (i.e., Studies 1–3, 5 [control condition], Supplemental Study 1). We find that both communality and agency were correlated with humanization, although the effect size for communality ($r = 0.48, p < .001$) was larger than it was for agency ($r = 0.30, p < .001$). However, upon accounting for shared variance between the two, only communality ($r = 0.31, p < .001$) was a significant predictor, while agency was not ($r = 0.004, p = .888$).

10. General discussion

We found support for the hypothesis that communality takes primacy

Table 5
Communality and agency as predictors of humanness.

Condition	Humanness					
	b	SE	t	p	LCI	UCI
Control						
Agency	0.81	2.40	0.34	0.735	-3.89	5.52
Communality	12.86	1.85	6.94	<0.001	9.22	16.51
Worker	8.48	2.82	3.00	0.003	2.94	14.02
Caretaker	4.20	3.18	1.32	0.187	-2.04	10.44
Worker x Agency	6.59	3.51	1.88	0.061	-0.31	13.49
Caretaker x Agency	-4.02	3.37	-1.19	0.234	-10.64	2.61
Worker x Comm	-5.90	2.96	-1.99	0.047	-11.72	-0.08
Caretaker x Comm	2.40	2.96	0.81	0.419	-3.42	8.22
Caretaker	b	SE	t	p	LCI	UCI
Agency	-3.20	2.38	-1.35	0.178	-7.87	1.46
Communality	15.26	2.31	6.60	<0.001	10.72	19.80
Worker	4.28	3.16	1.36	0.176	-1.92	10.48
Control	-4.20	3.18	-1.32	0.187	-10.44	2.04
Worker x Agency	10.61	3.50	3.03	0.003	3.73	17.48
Control x Agency	4.02	3.37	1.19	0.234	-2.61	10.64
Worker x Comm	-8.30	3.27	-2.54	0.011	-14.71	-1.88
Control x Comm	-2.40	2.96	-0.81	0.419	-8.22	3.42
Worker	b	SE	t	p	LCI	UCI
Agency	7.40	2.57	2.88	0.004	2.36	12.45
Communality	6.96	2.31	3.02	0.003	2.43	11.50
Caretaker	-4.28	3.16	-1.36	0.176	-10.48	1.92
Control	-8.48	2.82	-3.00	0.003	-14.02	-2.94
Caretaker x Agency	-10.61	3.50	-3.03	0.003	-17.48	-3.73
Control x Agency	-6.59	3.51	-1.88	0.061	-13.49	0.31
Caretaker x Comm	8.30	3.27	2.54	0.011	1.88	14.71
Control x Comm	5.90	2.96	1.99	0.047	0.08	11.72

over agency in ascriptions of humanness, but this pattern is reversed or qualified when there are cues that signal the contextual relevance of agency. Specifically, we found across a wide range of targets from everyday objects to aliens to real-world social groups that communality is used more heavily than agency to humanize (Studies 1–3). However, when perceptual features of a target or perceivers' beliefs and motivations are activated that highlight the relevance of agency – such as when physical movement activates agentic content (Study 4) or when social role information is provided that connotes agency (Study 5) – agency then becomes a significant predictor of ascriptions of humanness. Our findings thus suggest a consistent but still nuanced story about how we conceive of and ascribe humanness. Humanness is primarily communal, but agentic when relevant.

These findings offer several theoretical contributions. First, we show an important counterpoint to recent work linking the Big Two and humanization, which has found that agency, more than communality, is a stronger predictor of humanness (Formanowicz et al., 2018). We find a more nuanced pattern: under most circumstances, communality takes primacy, unless agency was made relevant, at which point it becomes predictive of ascriptions of humanness. Our findings are thus not only consistent with the findings of Formanowicz et al. (2018), as their targets were moving shapes and male faces (domains that activated the relevance of agency), but also serve as an important clarification of the relationships between the Big Two and humanization. This is especially notable, as much research in dehumanization literature has looked at this phenomenon in settings of unequal power differences and intergroup conflict: contexts which call to relevance of agency (Haslam & Loughnan, 2014; Shnabel & Nadler, 2015). We suggest that a closer look at (de)humanization, and the components that are involved, may be required, as (de)humanization is not just present in hostile intergroup settings; it is an everyday phenomenon that is as common as it is ubiquitous (Epley, 2018).

Second, our insight that agency and communality differentially influence humanization, as a function of perceptual features of the target or the beliefs and motivations of the perceiver, suggests the need for a contextualized approach to understanding humanization. Extant research has examined in great detail what constitutes “humanness” (e.g., Gray et al., 2007; Haslam, 2006; Leyens et al., 2000) but has done so with the implicit idea that there exist some invariant traits and qualities that form the essence of humanity. Our results suggest a more dynamic portrait of humanness. That is, humanness might vary as a function of the target and nature of the perceiver's relationship with the target. This possibility dovetails with recent perspectives that propose that social judgments, such as humanization, should consider aspects of the targets' identity (Hester & Gray, 2020; Waytz et al., 2010; Alaei, Deska, Hugenberg, & Rule, 2021). For example, qualities used to humanize one race may not as strongly apply to another (see Hester & Gray, 2018), and qualities that are used to humanize men may not apply to women (Alaei et al., 2021). Future research might elaborate upon these possibilities. For example, given that social perceptions such as the Big Two serve a functional purpose of facilitating interpersonal behavior (Fiske, 1992), future investigations might elaborate on how various beliefs (e.g., gender stereotypes) and motivations (e.g., desire for self-definition) affect when and why people ascribe or deny minds and humanness.

Third, these results provide a bridge between processes of mind-perception and social-perception. Researchers have carefully delineated the commonalities and differences between them, for example, describing mind perception as a pre-attributional process in which one infers momentary mental states in others that precedes judgments of more enduring traits such as agency or communion (Harris & Fiske, 2015; Epley & Waytz, 2010). In a similar vein, an extensive line of research from social neuroscience has revealed that dehumanized targets, or those who are not ascribed mind and thus do not activate brain regions associated with social cognition, are perceived as lacking in both trait warmth and competence, whereas those who do activate social cognition are able to be perceived as either warm, competent, or both (e.

g., Harris & Fiske, 2009). This pattern of findings suggests that the ascription of mind is a necessary precondition for subsequent social judgments such as communality and agency. Our findings, however, reveal that communal and agentic perceptual cues can induce humanization, suggesting that ascribing “humanness” or mind and ascribing traits such as communality and agency may be intimately related. As such, the phenomena of mind- and social-perception may be less delineated than previously thought.

This is not to say, however, that ascriptions of humanness are indistinguishable from other broad-level impressions. Previous research has examined the relationship between the Big Two and such broad-level impression formation – two lines of research stand out as relevant to our findings. First, some researchers have argued and found that the moral dimension of communality (represented by traits such as kindness, sincerity, tolerance, and trustworthiness) plays a stronger role in global positive or negative evaluations than warmth (defined as sociability and the capacity for social connections; Goodwin, Piazza, & Rozin, 2014; Goodwin, 2015). Second, other scholars have identified moral traits as the most central and defining features of personal identity, more so than other psychological characteristics (Strohinger & Nichols, 2014). These lines of research would suggest then that moral characteristics should play a stronger role than warmth in a broad-level impression such as ascriptions of humanness. However, we observe the opposite. In two analyses presented in footnotes in Studies 2 and 3, where we measured the separate facets of communality (warmth and morality), we found that only warmth, but not morality, significantly predicted ascriptions of humanness.

This pattern of findings is curious and begs for further investigation. One possible explanation is that our distinction between warmth and morality—which derives from Abele et al. (2016) facets model—does not align with the conceptual distinction between morality and sociability identified in this prior work (e.g., Goodwin et al., 2014). Our measure of morality consists of traits that not only indicate positive intentions (e.g., considerate, trustworthy) but also an adherence to normative rules used to suppress selfishness (e.g., just, fair, reliable; Haidt, 2008), while our measure of warmth also consists of traits that indicate positive intentions (e.g., warm, empathetic, caring). Because there are meaningfully different conceptualizations of morality in the literature (e.g., Abele et al., 2016; Haidt, 2008) and our measure of warmth includes assessments of positive intention, this may explain why we do not observe that moral characteristics, as we measured them, play a stronger role than warmth in predicting ascriptions of humanness.

10.1. Limitations and future directions

As always, there are opportunities for improvement and future research. Our investigation focuses on the dimensions of content that underlie overt ascriptions of humanness, or the application of one's lay conception of what it is to be human. Given our use of a blatant form of humanization as our dependent variable of interest, it is likely that we lack the sensitivity to detect how the Big Two relate to more subtle and implicit forms of humanization. We encourage future research to examine these other forms of humanization, as they may shed additional light on what traits and characteristics lead us to perceive another as “fully human.” Although we found that the dimensions of the “Big Two” were differently applied, depending on context, to ascriptions of humanness, we would also encourage research to examine whether human capacities (Gray et al., 2007), emotions (Leyens et al., 2000), and/or traits (Haslam, 2006) vary across contexts and targets.

Further, our research primarily examines the process of ascribing, or applying, lay conceptions of “humanness.” Although humanization and dehumanization are often thought of as two ends of the same spectrum, it may be that the application of humanness to targets may not involve the same processes or underlying traits and characteristics as denying humanness in real-world contexts. In other words, crossing the boundary between “fully human” and less human may involve differing

psychological mechanisms than crossing the boundary between “completely non-human” to somewhat human. Thus far, research on humanization has highlighted the differences between those who are completely dehumanized (e.g., drug addicts, homeless people) and those who are not (e.g., Harris & Fiske, 2006, 2007), whereas this future avenue of research might highlight the value in examining the difference between those who are “completely humanized” and those who are not.

11. Conclusion

Perceiving something or someone as human has profound consequences for how we relate to and interact with others. We identify the Big Two dimensions of social perception—agency and communality—as crucial determinants of humanization. Our findings contrast with the recent literature in this area, finding that communality takes primacy over agency in evaluations of humanization, *except* when agentic information is relevant to understanding a given target or context. This research contributes to, and invites further investigations into, the pernicious and dangerous effects of (de)humanization.

Appendix A. Supplementary data

Materials, data, supplemental online material (SOM), and pre-registrations can be found on OSF (https://osf.io/73tf2/?view_only=569ff2bd855b40b0b1452ab4dd4c8648). Supplementary data to this article can be found online at [<https://doi.org/10.1016/j.jesp.2021.104224>].

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