

Intuition or Reasoning? Decision-Making Patterns of Prosocial Behavior and Perception of Human Nature

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Abstract

Prosocial behavior may involve complex decision-making mechanisms; however, few studies have examined how different decision-making modes adopted when people engage in prosocial behavior affect social cognition and judgment. The present study conducted four experiments ($N = 1657$) to investigate people's judgments of humanity toward prosocial actors who adopted intuitive or deliberative decision-making modes in high and low emotional arousal contexts. The results revealed: In high emotional arousal contexts, intuitive prosocial actors were rated higher on the dimension of essential attributes of humanity than deliberative prosocial actors, but no difference was found in unique attributes (Experiments 1–3); in low emotional arousal contexts, deliberative prosocial actors were rated higher on the dimension of unique attributes of humanity than intuitive prosocial actors, while results for essential attributes might depend on contextual factors (such as consequences, Experiments 2–4). Therefore, Experiment 4 introduced positive and negative behavioral consequences in a low emotional arousal context and found that positive behavioral consequences might increase humanity judgments toward intuitive prosocial actors. This research aligns with complex real-world social situations, helps us better understand the diversity of prosocial behavior, and deepens our understanding of human nature.

Full Text

Intuition or Deliberation? Decision-Making Strategies in Prosocial Behavior and Judgments of Humanness

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Abstract

Prosocial behavior may involve complex decision-making mechanisms, yet few studies have examined how different decision-making strategies employed in prosocial actions influence social cognition and judgment. Through four experiments ($N = 1,657$), this study investigated humanness judgments of prosocial actors who adopted intuitive versus deliberative decision-making strategies in high- and low-emotional-arousal contexts. The results revealed that in high-emotional-arousal situations, intuitive prosocial actors were rated higher on the Human Nature (HN) dimension of humanness than deliberative prosocial actors, but no difference emerged on the Human Uniqueness (HU) dimension (Experiments 1–3). In low-emotional-arousal situations, deliberative prosocial actors received higher HU ratings than intuitive prosocial actors, while the pattern for HN appeared to depend on contextual factors such as consequences (Experiments 2–4). Experiment 4 further introduced positive and negative behavioral outcomes within low-arousal situations, finding that positive outcomes could increase humanness judgments of intuitive prosocial actors. By grounding our investigation in complex real-world social contexts, this research enhances our understanding of the diversity of prosocial behavior and deepens our comprehension of humanness.

Keywords: prosocial behavior, humanness perception, intuition, deliberation

Classification Code: B849: C91

1 Introduction

Prosocial behavior refers to voluntary actions that benefit others (Eisenberg et al., 1984). People typically hold those who engage in prosocial behavior in high regard, while viewing those who refuse to help as selfish, cold, or even lacking in humanness (Haslam, 2006). However, as society has evolved, evaluations of prosocial actors appear to have become more “complex.” For instance, following widely publicized incidents where helpers were later accused of wrongdoing, genuine acts of kindness have become matters requiring careful thought, hesitation, and strategic planning. Simultaneously, public attitudes toward those who “rashly” offer assistance have shifted from simple affirmation and praise to opposition and criticism. While individuals certainly wish to benefit others and gain positive self-experiences through prosocial acts, complex social contexts may cause well-intentioned people to hesitate or engage in more extensive cognitive processing before acting. How, then, do people perceive those who rely on intuition to quickly enact prosocial behavior versus those who help after careful deliberation? To address this question, the present research examines how people evaluate the humanness of prosocial actors who employ different thinking strategies across varying social contexts. This investigation not only deepens our understanding of prosocial behavior but also contributes to research on humanness judgments and dehumanization.

1.1 Prosocial Behavior and Humanness

Prosocial behavior manifests in diverse forms throughout human society and plays a crucial role in social development and progress (Henrich & Henrich, 2006). Altruistic tendencies emerge during early human infancy and appear in our close primate relatives such as chimpanzees (Warneken & Tomasello, 2006). Nevertheless, human prosocial behavior also connects to uniquely human cognitive capacities such as self-control (Hare, 2017). Due to its universality and complexity, social psychology has generated multi-level theoretical models to explain prosocial behavior, including kin selection theory, social exchange theory, and reciprocal altruism models (Penner et al., 2005). Although these theories debate whether prosocial behavior stems from egoistic or altruistic motives, such behavior is generally considered socially normative and socially approved. People tend to assign more favorable evaluations to prosocial actors, even linking prosocial behavior to humanness, as Mencius stated: “The heart of compassion is possessed by all” (*Mencius · Gaozi Shang*).

Indeed, social psychological theory and empirical research demonstrate that whether individuals engage in prosocial behavior influences others’ evaluations of their humanness. For example, Batson (1987) argued that people cannot remain indifferent to others’ suffering; whether to alleviate their own distress or that of others, they experience a genuine desire to help. This empathic capacity is considered one of the uniquely human, higher-order emotions in infrahumanization theory (Leyens et al., 2000). Similarly, other humanness frameworks, such as Haslam’s (2006) dual-dimension model of Human Nature (HN) versus Human Uniqueness (HU) and Gray et al.’s (2007) mind perception theory of experience-agency, recognize the central importance of empathy in humanness. Helping others enhances well-being because it satisfies various psychological needs, particularly the need for connection with others (Weinstein & Ryan, 2010). When people feel connected to others, they are more likely to view themselves as complete human beings; conversely, socially rejected individuals are dehumanized (Epley et al., 2008; Haslam, 2022). Additionally, despite distinctions, prosocial behavior is often linked to morality, which is believed to reflect an individual’s true self (Newman et al., 2015) and constitutes an important or even central component of personal identity and humanness (Aquino & Reed, 2002; Gray et al., 2007; Haslam, 2006).

In the present research, as noted, our focus is not on the association between prosocial behavior per se and humanness judgments, but rather on whether the decision-making strategy underlying prosocial behavior influences perceptions of the actor’s humanness. Grounded in Haslam’s HN-HU dual-dimension model of humanness, we also incorporate the emotional arousal level of the situation. In Haslam et al.’s theoretical framework (Haslam, 2006; Haslam et al., 2007), the HN dimension represents characteristics that distinguish humans from inanimate objects, such as agency, flexibility, interpersonal warmth, and emotional responsiveness, whereas HU represents features unique to humans relative to other animals, such as self-control, culture, and higher-order cognitive and emo-

tional functions. Consequently, HN is relatively more associated with innate, spontaneous emotional responses, while HU is more associated with developed rationality and logic. Nevertheless, HN and HU do not perfectly correspond to emotion and rationality: HN includes relatively basic spontaneous thinking abilities, and HU involves higher-order emotions such as pride and shame. Thus, both dimensions may be influenced by emotional and rational factors.

1.2 Prosocial Decision-Making Strategies and Humanness Perception

Any behavioral decision, including prosocial behavior, may be based on two distinct decision-making modes: intuition and deliberation. These concepts originate from dual-processing models in cognitive theory, which posit that individuals possess two cognitive thinking styles: an unconscious, fast, automatic, intuitive process and a conscious, slow, thoughtful, reflective process (Evans, 2008).

Previous research has primarily focused on whether intuition or deliberation is more likely to produce prosocial behavior. Some studies suggest that prosocial behavior requires rational thinking to overcome egoistic impulses (e.g., Steinbeis et al., 2012; Stevens & Hauser, 2004), whereas others find that people are more likely to act prosocially under time pressure and that longer deliberation increases egoistic tendencies, concluding that intuition promotes prosocial behavior (e.g., Rand et al., 2012; Shi & Liu, 2019). Overall, no definitive conclusion can be drawn about which decision mode yields more prosocial behavior, likely because the adoption of intuitive versus deliberative strategies depends on multiple factors such as situational urgency, individual prosocial tendencies, and thinking habits (Liang et al., 2021; Shi et al., 2020). Therefore, rather than asking which decision mode dominates prosocial behavior, the present research focuses on the psychological consequences of employing different decision strategies in prosocial behavior.

Research indicates that people generally believe behavior based on intuitive responses reflects the decision-maker's true self to a greater extent (Maglio & Reich, 2019). This implies that intuitive prosocial behavior is perceived as expressing the actor's genuine feelings and authentic concern for others (Kernis & Goldman, 2006). Consequently, people may attribute more authentic and intense prosocial motivations to intuitive actors and thus assign them higher levels of humanness traits. However, we propose two boundary conditions: which dimension of humanness (HN or HU) is measured, and the emotional arousal level of the situation.

Different situations evoke varying levels of emotional arousal. For example, witnessing someone suddenly fall ill clearly elicits higher emotional arousal than a colleague asking to borrow a car. According to the empathy-altruism hypothesis (Batson, 1991), when emotions are highly aroused, people are more likely to feel others' suffering and spontaneously engage in intuitive prosocial behavior. Stronger emotional arousal also predisposes individuals toward intuitive

thinking modes (Epstein, 2012). In such contexts, intuitive thinking represents traits like emotion and caring that align well with the HN dimension. We therefore infer that humanness judgments of helpers will be dominated by emotional arousal in these situations. Intuitive helping represents spontaneous emotional responses to assist others and thus receives higher HN evaluations. Conversely, if people still act deliberately in such situations, their behavior appears contrary to situational demands, resembling a “processed” performance driven by self-interest rather than genuine concern (Greene et al., 2008), thereby negatively affecting their HN ratings.

On the other hand, intuitive helpers appear more impulsive and lack rationality and self-control compared to deliberative helpers. Therefore, on the HU dimension, which aligns more closely with rational thinking, the enhancement from emotional arousal may be offset by deficiencies in rationality, resulting in no advantage over deliberative helpers. That is, due to the canceling effects of emotion and rationality, we may not observe differences between the two types of prosocial behavior on HU. Thus, we propose Hypothesis 1:

H1: In high-emotional-arousal situations, intuitive prosocial actors will receive higher HN judgments than deliberative prosocial actors.

In low-emotional-arousal situations, however, the pattern differs. Here, emotional arousal is insufficient to fully drive prosocial behavior, so rational processing components may dominate. Indeed, in most everyday situations, people likely cannot completely eliminate cost-benefit considerations before acting prosocially. For instance, individuals weigh behavioral costs to balance self-loss against altruism, and when costs or stakes are high, such considerations become particularly careful (Epley et al., 2008; Sorrapera et al., 2019). Although rationally processed behavior may no longer represent authentic and kind motives, its impact on humanness perception is not necessarily negative. In economic decision-making, for example, rational processing yields higher trust than impulsive choices (Parkes & Wellman, 2015). In low-arousal contexts, deliberative prosocial behavior may demonstrate an individual’s maturity and cognitive sophistication—reflecting higher HU traits—whereas intuitive actors may be judged as impulsive, naive, or even “foolish,” receiving lower HU evaluations. For HN, because deliberative helpers appear less sincere and emotionally engaged than intuitive helpers (Maglio & Reich, 2019), the HN-enhancing effect of their situation-appropriate rational behavior may be offset by the negative effect of low emotional arousal on HN, resulting in nonsignificant differences between the two helper types. Thus, we propose Hypothesis 2:

H2: In low-emotional-arousal situations, deliberative prosocial actors will receive higher HU evaluations than intuitive prosocial actors.

If, as we hypothesize, intuitive actors receive lower HU judgments in low-arousal situations, could this pattern change under certain conditions? When prosocial behavior may entail substantial costs and negative consequences, people believe rational deliberation is necessary to minimize risks (Zhan et al., 2023; Slovic &

Peters, 2006). We propose that anticipated outcomes may influence humanness evaluations of prosocial actors employing different decision strategies. One reason people may assign lower HU judgments to intuitive actors in low-arousal situations is that intuitive, affect-based actions are perceived as risky, unwise, and potentially leading to negative consequences. This “foolishness” may exert a stronger influence on HU than the inherent kindness reflected by intuition. Indeed, in social judgment, people often base evaluations on outcomes rather than motives. For example, attitudes toward moral behavior are influenced by behavioral consequences, with positive outcomes yielding more favorable moral judgments and negative outcomes producing harsher evaluations (e.g., Dubljević et al., 2018; Forsyth, 1985). Therefore, if intuitive prosocial behavior produces positive outcomes, it may offset the negative impact of intuitive thinking on HU. Thus, we propose Hypothesis 3:

H3: In low-emotional-arousal situations, an interaction exists between consequences and decision strategy. The HU evaluation difference between intuitive and deliberative prosocial behavior will be smaller when consequences are positive.

1.3 Overview of Studies

This study aims to examine whether perceptions of humanness differ between intuitive and deliberative prosocial actors in high- versus low-emotional-arousal contexts. We conducted four experiments to test our hypotheses sequentially. All studies employed hypothetical scenario paradigms administered via the Qualtrics platform. All data, experimental materials, and preregistration files are publicly available on the OSF platform (https://osf.io/96fx8/?view_only=23deba4c3345453fb3182a156e53dacf).

2 Experiment 1: Intuitive and Deliberative Prosocial Behavior in High-Emotional-Arousal Situations

Experiment 1 tested Hypothesis 1, examining whether intuitive prosocial actors receive higher HN evaluations than deliberative prosocial actors in high-emotional-arousal situations.

2.1 Participants and Design

We recruited 178 participants, two of whom failed the attention check (specifically, “Please select ‘completely disagree’ for this item”), yielding a final sample of 176 valid responses. The sample included 81 males (46.02%) and 95 females (53.98%), with a mean age of $M = 23.99$ years, $SD = 3.23$ years. All participants received ¥2 compensation upon completion. A sensitivity analysis using G*Power software (Faul et al., 2007) indicated that this sample size provided 80% statistical power to detect a medium effect size of $d = 0.425$ ($\alpha = 0.05$, two-tailed).

2.2 Materials and Procedure

This study employed a single-factor between-subjects design with two levels (decision mode: intuitive vs. deliberative), with participants randomly assigned to one of the two conditions. The scenario depicted an everyday situation: “witnessing someone suddenly fall down.” In a pilot study with 48 participants, this scenario was rated as evoking high emotional arousal ($M = 5.75$, $SD = 0.93$ on a 7-point scale). This pilot also included materials used in Experiments 2 and 4, measuring situational severity, urgency, cost, and risk. To further characterize the situation, we conducted an additional post-study validation with 100 participants using a forced-choice task to classify situations as high or low in emotional arousal. In this task, the falling scenario was predominantly classified as high-emotional (78 vs. 22), $\chi^2(1) = 31.36$, $p < 0.001$.

After providing informed consent, participants read the scenario description. The intuitive and deliberative prosocial behavior conditions were described as follows:

- **Intuitive:** “X was walking alone on the street when they saw someone ahead suddenly collapse. Without thinking, X rushed to help.”
- **Deliberative:** “X was walking alone on the street when they saw someone ahead suddenly collapse. After thinking for a long time, X went to help.”

Following the scenario, all participants rated the humanness of actor X using Bastian and Haslam’s (2010) scale, which comprises 12 items divided into HN and HU dimensions (six items each). Sample HN items include “I feel that X has rich and abundant emotions” (Cronbach’s $\alpha = 0.87$); sample HU items include “I feel that X is rational and logical” (Cronbach’s $\alpha = 0.78$). All items were rated on a 7-point Likert scale (1 = completely disagree, 7 = completely agree). After completing the task, we collected demographic information.

2.3 Results

We first conducted a MANOVA on the two dependent variables (HN and HU). Results revealed a significant difference between the two decision modes on overall humanness perception, $F(1, 174) = 38.27$, $p < 0.001$, $\eta^2 = 0.307$, 90% CI [0.1009, 0.2623]. Subsequent independent samples *t*-tests showed that on HN scores, intuitive prosocial actors ($M = 5.90$, $SD = 0.89$) were rated significantly higher than deliberative prosocial actors ($M = 5.10$, $SD = 1.07$), $t(174) = 5.44$, $p < 0.001$, $d = 0.820$, 95% CI [0.5114, 1.1271]. On HU scores, no significant difference emerged (intuitive: $M = 4.87$, $SD = 0.88$; deliberative: $M = 5.01$, $SD = 0.91$), $t(174) = -1.02$, $p = 0.309$, $d = -0.154$, 95% CI [-0.4496, 0.1424] (see Figure 1 [Figure 1: see original paper]).

2.4 Discussion

Experiment 1 preliminarily found that in high-emotional-arousal situations, intuitive prosocial actors were evaluated as possessing higher HN attributes than

deliberative prosocial actors, supporting Hypothesis 1. However, this study only examined high-emotional-arousal situations. In Experiment 2, we added low-emotional-arousal situations to further test our findings and examine the influence of situational differences.

3 Experiment 2: Intuitive and Deliberative Prosocial Behavior in High- and Low-Emotional-Arousal Situations

Building on Experiment 1, Experiment 2 expanded the range of prosocial situations by including both high- and low-emotional-arousal scenarios to further test Hypothesis 2 and explore how people evaluate the humanness of intuitive versus deliberative prosocial actors across different emotional contexts.

3.1 Participants and Design

We used the Superpower online platform (<https://arcstats.io/shiny/anova-exact/>; Lakens & Caldwell, 2021) to calculate the required sample size. Results indicated that to achieve 80% statistical power for detecting a small effect size of $p^2 = 0.020$ ($\alpha = 0.05$), 88 participants per cell were needed. Anticipating data loss during recruitment, we planned to recruit 420 participants. After excluding 16 participants who failed the attention check (same as Experiment 1), the final sample comprised 404 valid responses, including 156 males (38.61%) and 248 females (61.39%), with a mean age of $M = 21.87$ years, $SD = 2.77$ years. All participants received ¥2 compensation.

3.2 Materials and Procedure

This study employed a 2 (decision mode: intuitive vs. deliberative) \times 2 (situational emotionality: high vs. low) between-subjects design, with participants randomly assigned to one of four conditions.

As in Experiment 1, participants read the scenario after providing informed consent. The high-emotional-arousal scenario involved helping someone having an asthma attack, while the low-arousal scenario involved lending a car to a colleague. Pilot study results confirmed that these two situations differed significantly in emotional arousal, $t(47) = 5.24$, $p < 0.001$, $d = 0.756$, 95% CI [0.4316, 1.0743] (high-arousal: $M = 5.79$, $SD = 0.99$; low-arousal: $M = 4.73$, $SD = 1.14$). In a forced-choice classification task, the asthma scenario was predominantly rated as high-emotional (87 vs. 13), $\chi^2(1) = 54.76$, $p < 0.001$, while the car-lending scenario was rated as low-emotional (29 vs. 71), $\chi^2(1) = 17.64$, $p < 0.001$.

Specifically, the high- and low-arousal scenarios for intuitive and deliberative prosocial behavior were described as:

- **High-arousal intuitive:** “X was walking down the street when they noticed someone gasping for breath, appearing to have an asthma attack.

Without thinking, X approached to ask what medication was needed and helped purchase it from a nearby pharmacy.”

- **High-arousal deliberative:** “X was walking down the street when they noticed someone gasping for breath, appearing to have an asthma attack. After thinking for a long time, X approached to ask what medication was needed and helped purchase it from a nearby pharmacy.”
- **Low-arousal intuitive:** “X’s colleague urgently needed to drive to handle important business but couldn’t use their own car due to license plate restrictions, so they asked to borrow X’s car. Without thinking, X lent their car to the colleague.”
- **Low-arousal deliberative:** “X’s colleague urgently needed to drive to handle important business but couldn’t use their own car due to license plate restrictions, so they asked to borrow X’s car. After thinking for a long time, X lent their car to the colleague.”

After reading the scenario, participants completed a manipulation check item: “How did X make their decision in the above scenario?” ($-3 =$ intuitive, $3 =$ rational). All participants then rated actor X’s humanness using the same scale as Experiment 1 (HN Cronbach’s $\alpha = 0.75$; HU Cronbach’s $\alpha = 0.81$). Finally, demographic information was collected.

3.3 Results

The manipulation check confirmed the effectiveness of our decision mode manipulation: intuitive condition ratings ($M = -0.57$, $SD = 2.07$) were significantly lower than deliberative condition ratings ($M = 1.36$, $SD = 1.55$), $t(402) = -10.58$, $p < 0.001$, $d = -1.053$, 95% CI $[-1.2604, -0.8441]$.

MANOVA results revealed a significant interaction between decision mode and situational emotionality, $F(1, 400) = 4.41$, $p = 0.013$, $p^2 = 0.022$, 90% CI $[0.0004, 0.0336]$. Both main effects were also significant, $F_s(1, 400) = 15.34$ and 17.98 , $p_s < 0.001$, $p^2_s = 0.071$ and 0.083 , 90% CIs $[0.0124, 0.0714]$ and $[0.0161, 0.0794]$.

Subsequent two-way ANOVAs on each humanness dimension (see Figure 2 [Figure 2: see original paper]) showed:

For HN: The interaction between decision mode and situational emotionality was significant, $F(1, 400) = 8.79$, $p = 0.003$, $p^2 = 0.022$, 90% CI $[0.0042, 0.0501]$. The main effect of decision mode was nonsignificant, $F(1, 400) = 0.07$, $p = 0.795$, $p^2 < 0.001$, 90% CI $[0.0000, 0.0072]$, while the main effect of situational emotionality was significant, $F(1, 400) = 29.23$, $p < 0.001$, $p^2 = 0.068$, 90% CI $[0.0333, 0.1103]$. Simple effects analysis revealed that in high-arousal situations, intuitive prosocial actors ($M = 5.90$, $SD = 0.63$) showed a marginally higher HN rating than deliberative actors ($M = 5.69$, $SD = 0.84$), $F(1, 400) = 3.45$, $p = 0.064$, $p^2 = 0.009$, 90% CI $[0.0000, 0.0295]$. Conversely, in low-arousal situations, deliberative prosocial actors ($M = 5.51$, $SD = 0.74$) received significantly higher HN ratings than intuitive actors ($M = 5.26$, $SD =$

0.88), $F(1, 400) = 5.10$, $p = 0.024$, $p^2 = 0.013$, 90% CI [0.0008, 0.0364].

For HU: The interaction between decision mode and situational emotionality was significant, $F(1, 400) = 4.36$, $p = 0.037$, $p^2 = 0.011$, 90% CI [0.0003, 0.0334]. Both main effects were significant, $F_s(1, 400) = 19.23$ and 30.19 , $p_s < 0.001$, $p^2_s = 0.046$ and 0.070 , 90% CIs [0.0180, 0.0830] and [0.0348, 0.1128]. Simple effects analysis showed that in high-arousal situations, HU ratings did not differ significantly between intuitive ($M = 5.26$, $SD = 0.89$) and deliberative ($M = 5.48$, $SD = 0.83$) prosocial actors, $F(1, 400) = 2.94$, $p = 0.087$, $p^2 = 0.007$, 90% CI [0.0000, 0.0272]. However, in low-arousal situations, deliberative prosocial actors ($M = 5.16$, $SD = 0.97$) received significantly higher HU ratings than intuitive actors ($M = 4.56$, $SD = 1.01$), $F(1, 400) = 20.55$, $p < 0.001$, $p^2 = 0.049$, 90% CI [0.0199, 0.0868].

3.4 Discussion

In high-emotional-arousal situations, Experiment 2 did not fully replicate the significant HN difference between decision modes found in Experiment 1, but the marginally significant result still suggests that intuitive strategies positively influence HN evaluations. In low-arousal situations, results supported Hypothesis 2: deliberative actors were judged as possessing higher HU attributes than intuitive actors. Additionally, we found that deliberative actors even received higher HN ratings than intuitive actors in low-arousal contexts. This suggests that in low-emotional-arousal prosocial situations, considerations of emotion and authentic motivation become less important, while deliberation about the situation itself and cost-benefit calculations more strongly influence humanness perceptions. We replaced the scenarios in Experiment 3 to further validate the robustness of these findings.

4 Experiment 3: Replication of Experiment 2

Because the HN difference between decision modes in high-arousal situations did not reach significance in Experiment 2, Experiment 3 improved the materials and attempted to replicate the differences in humanness evaluations of intuitive versus deliberative prosocial actors across emotional contexts. This study was preregistered.

4.1 Participants and Design

We preregistered the study on the AsPredicted platform (<https://aspredicted.org/>) before data collection. According to the preregistration, we planned to recruit 480 participants. After excluding 16 participants who failed the attention check (same as Experiment 1), the final sample comprised 464 valid responses, including 192 males (41.38%) and 272 females (58.62%), with a mean age of $M = 22.61$ years, $SD = 3.54$ years. All participants received ¥2 compensation.

4.2 Materials and Procedure

This study used the same experimental design and procedure as Experiment 2, with identical humanness measures (HN Cronbach's $\alpha = 0.76$; HU Cronbach's $\alpha = 0.78$). The scenarios were changed to better control for other features of helping situations. The high- and low-emotional-arousal scenarios for intuitive and deliberative prosocial behavior were described as:

- **High-arousal intuitive:** “X was sitting in the front of a bus, traveling across town, when an elderly person carrying a basket and bags boarded, appearing unsteady on their feet. Without thinking, X offered their seat to the elderly person.”
- **High-arousal deliberative:** “X was sitting in the front of a bus, traveling across town, when an elderly person carrying a basket and bags boarded, appearing unsteady on their feet. After thinking for a long time, X offered their seat to the elderly person.”
- **Low-arousal intuitive:** “X was sitting in the front of a bus, traveling across town, when someone carrying heavy items boarded. Without thinking, X offered their seat to this person.”
- **Low-arousal deliberative:** “X was sitting in the front of a bus, traveling across town, when someone carrying heavy items boarded. After thinking for a long time, X offered their seat to this person.”

After completing all tasks, participants rated the emotional arousal level of the situation, which differed significantly between conditions (high-arousal: $M = 5.59$, $SD = 1.10$; low-arousal: $M = 5.18$, $SD = 1.24$), $t(462) = 3.77$, $p < 0.001$, $d = 0.350$, 95% CI [0.1668, 0.5336]. Additionally, forced-choice classification showed that offering a seat to an elderly person was more often considered high-emotional (72 vs. 28), $\chi^2(1) = 19.36$, $p < 0.001$, while offering a seat to someone with heavy items was more often considered low-emotional (30 vs. 70), $\chi^2(1) = 16.00$, $p < 0.001$.

4.3 Results

The manipulation check confirmed the effectiveness of the decision mode manipulation: intuitive condition ratings ($M = -0.33$, $SD = 2.21$) were significantly lower than deliberative condition ratings ($M = 1.57$, $SD = 1.65$), $t(462) = -10.51$, $p < 0.001$, $d = -0.976$, 95% CI [-1.1679, -0.7828].

MANOVA results showed a significant interaction between decision mode and situational emotionality, $F(1, 460) = 3.53$, $p = 0.030$, $p^2 = 0.015$, 90% CI [0.0000, 0.0261]. The main effect of decision mode was significant, $F(1, 460) = 10.71$, $p < 0.001$, $p^2 = 0.045$, 90% CI [0.0056, 0.0497], while the main effect of situational emotionality was marginally significant, $F(1, 460) = 2.76$, $p = 0.064$, $p^2 = 0.012$, 90% CI [0.0000, 0.0230].

Separate two-way ANOVAs for each humanness dimension (see Figure 3 [Figure 3: see original paper]) revealed:

For HN: The interaction between decision mode and situational emotionality was significant, $F(1, 460) = 5.49$, $p = 0.020$, $p^2 = 0.012$, 90% CI [0.0010, 0.0332]. Neither main effect was significant, $F_s(1, 460) = 1.74$ and 0.50 , $p_s = 0.188$ and 0.480 , $p^2_s = 0.004$ and 0.001 , 90% CIs [0.0000, 0.0186] and [0.0000, 0.0117]. Simple effects analysis showed that in high-arousal situations, intuitive prosocial actors ($M = 5.99$, $SD = 0.61$) received significantly higher HN ratings than deliberative actors ($M = 5.72$, $SD = 0.86$), $F(1, 460) = 6.57$, $p = 0.011$, $p^2 = 0.014$, 90% CI [0.0018, 0.0368]. In low-arousal situations, HN ratings did not differ significantly between intuitive ($M = 5.77$, $SD = 0.84$) and deliberative ($M = 5.84$, $SD = 0.86$) actors, $F(1, 460) = 0.55$, $p = 0.458$, $p^2 = 0.001$, 90% CI [0.0000, 0.0120].

For HU: The interaction between decision mode and situational emotionality was significant, $F(1, 460) = 6.14$, $p = 0.014$, $p^2 = 0.013$, 90% CI [0.0015, 0.0354]. Both main effects were significant, $F_s(1, 460) = 6.36$ and 4.69 , $p_s = 0.012$ and 0.031 , $p^2_s = 0.014$ and 0.010 , 90% CIs [0.0016, 0.0361] and [0.0005, 0.0304]. Simple effects analysis revealed that in high-arousal situations, HU ratings did not differ between intuitive ($M = 5.62$, $SD = 0.78$) and deliberative ($M = 5.63$, $SD = 0.85$) actors, $F(1, 460) < 0.01$, $p = 0.965$, $p^2 < 0.001$. In low-arousal situations, deliberative prosocial actors ($M = 5.65$, $SD = 0.85$) received significantly higher HU ratings than intuitive actors ($M = 5.24$, $SD = 1.06$), $F(1, 460) = 13.00$, $p < 0.001$, $p^2 = 0.029$, 90% CI [0.0081, 0.0563].

4.4 Discussion

In high-emotional-arousal situations, Experiment 3 replicated Experiment 1's findings, providing stronger support for Hypothesis 1. Across Experiments 1–3, we obtained consistent conclusions about humanness judgments in high-arousal contexts: intuitive prosocial actors were rated higher on HN but did not differ from deliberative actors on HU.

In low-arousal situations, Experiment 3 replicated the HU findings from Experiment 2, supporting Hypothesis 2 and demonstrating that when emotional arousal is low, deliberative strategies are perceived as reflecting higher HU. However, unlike Experiment 2, deliberative actors were not rated higher on HN than intuitive actors in this context. One possible explanation is that the car-lending scenario in Experiment 2 involved greater cost and risk than the seat-offering scenario in Experiment 3 (see footnotes 2 and 3), making rationality more important and influencing both HU and HN evaluations. To further clarify this issue, we designed Experiment 4 to examine whether humanness evaluations of actors using different decision strategies in low-arousal situations would be affected by behavioral consequences. Although consequences differ from anticipated costs and risks, by manipulating outcomes as good versus bad, we could control for costs and risks to clarify the factors influencing humanness judgments in low-arousal contexts.

5 Experiment 4: Intuitive and Deliberative Prosocial Behavior with Different Consequences in Low-Emotional-Arousal Situations

Experiment 4 focused on low-emotional-arousal situations to examine how outcome valence moderates the effect of decision mode on humanness perceptions. We tested Hypothesis 3: the positive effect of deliberative (vs. intuitive) prosocial behavior on humanness judgments would primarily emerge when consequences were unknown or negative, but this difference would diminish when consequences were positive.

5.1 Participants and Design

We used the Superpower online platform (<https://arcstats.io/shiny/anova-exact/>; Lakens & Caldwell, 2021) to calculate the required sample size. Results indicated that to achieve 80% statistical power for detecting a small effect size of $p^2 = 0.020$ ($\alpha = 0.05$), 103 participants per cell were needed. Anticipating data loss, we planned to recruit 654 participants. After excluding 41 participants who failed the attention check (same as Experiment 1), the final sample comprised 613 valid responses, including 343 males (55.95%) and 270 females (44.05%), with a mean age of $M = 22.78$ years, $SD = 4.39$ years. All participants received ¥2 compensation.

5.2 Materials and Procedure

This study employed a 2 (decision mode: intuitive vs. deliberative) \times 3 (behavioral consequence: positive vs. control vs. negative) between-subjects design, with participants randomly assigned to one of six conditions.

The procedure followed previous studies, with scenarios changed to a phone-lending situation. Our pilot study indicated this scenario evoked relatively low emotional arousal ($M = 5.13$, $SD = 1.25$). Forced-choice classification also showed this situation was more often considered low-emotional (37 vs. 63), $\chi^2(1) = 6.76$, $p = 0.009$. The positive, control, and negative consequence scenarios for intuitive and deliberative prosocial behavior were described as:

- **Positive consequence intuitive:** “X was waiting at an intersection when a girl approached, saying it was her first time in the city and she had arranged for someone to pick her up, but her phone battery died and she couldn’t make contact. She asked to borrow a phone to reach her ride. Without thinking, X lent their phone. The girl successfully contacted her ride and thanked X repeatedly.”
- **Positive consequence deliberative:** “X was waiting at an intersection when a girl approached, saying it was her first time in the city and she had arranged for someone to pick her up, but her phone battery died and she couldn’t make contact. She asked to borrow a phone to reach her ride. After thinking for a long time, X lent their phone. The girl successfully

contacted her ride and thanked X repeatedly.”

- **Control intuitive:** “X was waiting at an intersection when a girl approached, saying it was her first time in the city and she had arranged for someone to pick her up, but her phone battery died and she couldn’t make contact. She asked to borrow a phone to reach her ride. Without thinking, X lent their phone.”
- **Control deliberative:** “X was waiting at an intersection when a girl approached, saying it was her first time in the city and she had arranged for someone to pick her up, but her phone battery died and she couldn’t make contact. She asked to borrow a phone to reach her ride. After thinking for a long time, X lent their phone.”
- **Negative consequence intuitive:** “X was waiting at an intersection when a girl approached, saying it was her first time in the city and she had arranged for someone to pick her up, but her phone battery died and she couldn’t make contact. She asked to borrow a phone to reach her ride. Without thinking, X lent their phone. Shortly after the girl left, X discovered their phone had been infected with malware that stole private information.”
- **Negative consequence deliberative:** “X was waiting at an intersection when a girl approached, saying it was her first time in the city and she had arranged for someone to pick her up, but her phone battery died and she couldn’t make contact. She asked to borrow a phone to reach her ride. After thinking for a long time, X lent their phone. Shortly after the girl left, X discovered their phone had been infected with malware that stole private information.”

This study used a shortened version of Bastian et al.’s (2012) humanness scale, adapted from the original 12-item measure, comprising 8 items with 4 items per dimension (HN Cronbach’s $\alpha = 0.58$; HU Cronbach’s $\alpha = 0.71$). Demographic information on gender and age was collected at the end.

5.3 Results

We first analyzed the control condition (no consequence information) to verify replication of previous findings. Consistent with Experiment 2, deliberative prosocial actors received higher ratings than intuitive actors on both HN and HU (deliberative HN: $M = 5.50$, $SD = 0.90$; deliberative HU: $M = 5.23$, $SD = 0.95$; intuitive HN: $M = 5.06$, $SD = 0.94$; intuitive HU: $M = 4.47$, $SD = 1.12$), $t(194) = 3.35$ and 5.11 , $ps < 0.001$, $ds = 0.478$ and 0.731 , 95% CIs [0.1941, 0.7626] and [0.4402, 1.0192].

Incorporating the consequence variable, two-way ANOVA results (see Figure 4 [Figure 4: see original paper]) showed:

For HN: The interaction between decision mode and consequence was non-significant, $F(2, 607) = 1.59$, $p = 0.205$, $p^2 = 0.005$, 90% CI [0.0000, 0.0166]. Both main effects were significant, $F_s(2, 607) = 9.17$ and 25.54 , $p = 0.003$

and < 0.001 , p^2 s = 0.015 and 0.078, 90% CIs [0.0098, 0.0527] and [0.04515, 0.1113], indicating higher HN ratings for deliberative decision modes. For consequences, the positive consequence group marginally differed from the control group, $t(398) = 2.40$, $p_{\text{bonf}} = 0.050$, $d = 0.242$, 95% CI [0.0432, 0.4366]. The negative consequence group scored significantly lower than both the positive group, $t(415) = 7.03$, $p_{\text{bonf}} < 0.001$, $d = 0.671$, 95% CI [0.4907, 0.8859], and the control group, $t(409) = 4.53$, $p_{\text{bonf}} < 0.001$, $d = 0.447$, 95% CI [0.2517, 0.6445].

For HU: The interaction between decision mode and consequence was significant, $F(2, 607) = 4.17$, $p = 0.016$, $p^2 = 0.014$, 90% CI [0.0014, 0.0306]. Both main effects were significant, $F_s(2, 607) = 25.28$ and 43.30 , p s < 0.001 , p^2 s = 0.040 and 0.125, 90% CIs [0.0446, 0.1104] and [0.0849, 0.1637]. Simple effects analysis revealed that with positive consequences, HU ratings did not differ between intuitive ($M = 5.45$, $SD = 0.97$) and deliberative ($M = 5.59$, $SD = 1.02$) actors, $F(1, 607) = 1.42$, $p = 0.234$, $p^2 = 0.002$, 90% CI [0.0000, 0.0130]. In the control condition, deliberative actors ($M = 5.50$, $SD = 0.90$) scored significantly higher than intuitive actors ($M = 5.06$, $SD = 0.94$), $F(1, 607) = 24.80$, $p < 0.001$, $p^2 = 0.039$, 90% CI [0.0176, 0.0671]. Similarly, with negative consequences, deliberative actors ($M = 4.64$, $SD = 1.00$) scored higher than intuitive actors ($M = 4.39$, $SD = 0.85$), $F(1, 607) = 7.16$, $p = 0.008$, $p^2 = 0.012$, 90% CI [0.0017, 0.0296].

This interaction can also be interpreted as showing that HU rating differences across consequences were significant within both decision modes, $F_s(2, 607) = 26.05$ and 21.17 , p s < 0.001 , p^2 s = 0.079 and 0.065, 90% CIs [0.0463, 0.1129] and [0.0354, 0.0969]. Specifically, in the intuitive mode, the positive consequence group scored significantly higher than both the control group, $t(200) = 3.78$, $p_{\text{bonf}} < 0.001$, $d = 0.512$, 95% CI [0.2506, 0.8120], and the negative consequence group, $t(206) = 6.96$, $p_{\text{bonf}} < 0.001$, $d = 0.988$, 95% CI [0.6773, 1.2524], with the latter two groups also differing significantly, $t(208) = 3.14$, $p_{\text{bonf}} = 0.006$, $d = 0.442$, 95% CI [0.1592, 0.7068]. In the deliberative mode, the negative consequence group scored significantly lower than both the positive group, $t(207) = 5.79$, $p_{\text{bonf}} < 0.001$, $d = 0.775$, 95% CI [0.5182, 1.0820], and the control group, $t(197) = 5.84$, $p_{\text{bonf}} < 0.001$, $d = 0.823$, 95% CI [0.5382, 1.1184], while the latter two did not differ significantly, $t(196) = -0.20$, $p_{\text{bonf}} = 1.000$, $d = -0.030$, 95% CI [-0.3074, 0.2505].

5.4 Discussion

When behavioral consequences were not presented, we fully replicated the HU findings from Experiments 2 and 3: deliberative prosocial actors received higher HU evaluations than intuitive actors. For HN, we replicated Experiment 2's pattern: deliberative actors also received higher HN ratings. Although the phone-lending scenario involved lower risk and cost than the car-lending scenario in Experiment 2 but higher cost than the seat-offering scenario in Experiment 3, the HN results suggest that in low-arousal situations, sensitivity to cost and

risk may dominate humanness judgments, giving deliberation sufficient weight to offset its perceived “inauthenticity” and coldness.

When behavioral consequences were introduced, as predicted, positive outcomes eliminated the humanness perception differences between decision modes. Specifically, positive consequences primarily enhanced humanness perceptions of intuitive actors, suggesting that people indeed perceive intuitive decision modes as potentially risky and costly. When informed that outcomes were positive, concerns about risk and cost dissipated, elevating humanness evaluations of intuitive prosocial actors. Negative consequences reduced humanness levels for both decision modes, though deliberative actors still received higher HU ratings than intuitive actors. Overall, Experiment 4 demonstrated that in low-emotional-arousal situations, behavioral consequences substantially influence humanness judgments, particularly for intuitive actors. When events unfold positively, intuitive actors are no longer viewed as “naive” or “foolish” and receive humanness evaluations equivalent to deliberative actors.

6 General Discussion

Through four experiments using everyday prosocial scenarios, we investigated how intuitive versus deliberative decision strategies influence humanness evaluations across high- and low-emotional-arousal contexts. Our studies yielded consistent findings. First, in high-emotional-arousal situations, intuitive prosocial actors were rated higher on HN than deliberative actors. Second, in low-emotional-arousal situations, deliberative prosocial actors received higher HU ratings than intuitive actors. Third, in low-arousal situations, positive behavioral consequences enhanced HU judgments of intuitive actors, eliminating differences between the two decision modes. These results carry important implications for understanding prosocial behavior and the relationship between decision strategies and humanness perceptions.

6.1 Differences in Humanness Between Intuitive and Deliberative Prosocial Actors Across Contexts

Do people consider intuitive prosocial actors more human, or do they view deliberative actors as more human? Intuitively, one might assume the former—helping others without thinking reflects genuine goodwill from the heart, which seems central to humanness (Carlo, 2013; Haslam, 2006). However, real-world experience suggests that rash helping does not always garner higher evaluations and may even invite criticism. Moreover, humanness itself is complex and cannot be defined solely by good intentions. Therefore, we made two key attempts: separately examining the two dimensions of humanness (HN and HU) and incorporating situational factors and behavioral consequences.

Different contexts demand different balances of emotion and rationality. In high-emotional-arousal situations, we indeed found that intuitive prosocial behavior was associated with higher humanness judgments, but this association

emerged only for the HN dimension, not HU. That is, although intuitive prosocial behavior better represents genuine motives and reflects essential human attributes like emotionality and prosociality, it does not demonstrate higher HU than deliberative behavior even in high-arousal contexts. HU primarily encompasses rationality, logic, and civility—attributes highly consistent with deliberative thinking—thus offsetting the disadvantage of appearing less authentic and emotionally warm. More importantly, in low-emotional-arousal situations, the advantage of intuitive prosocial behavior on humanness judgments disappeared entirely. Deliberative actors received higher HU ratings than intuitive actors. Furthermore, in Experiments 2 and 4, we even found that deliberative actors received higher HN ratings. This highlights the important role of rationality in humanness evaluations. Even for prosocial behavior—seemingly driven by emotion—rationality significantly influences judgments of actors’ humanness. The higher HN ratings for deliberative actors indicate that in low-arousal contexts, deliberative strategies affect not only judgments of rational, mature HU attributes but also spill over to emotional, vital HN attributes. When situational emotionality is weak, rationality prevails (Norris & Epstein, 2011; Slovic & Peters, 2006). Individuals who help without rational consideration of optimal solutions receive lower humanness evaluations.

These findings challenge common sense and typical intuitions. They suggest that people do not evaluate others’ humanness based solely on whether their actions stem from sincere, kind intentions. The notion that a well-intentioned person is more human likely reflects naive assumptions. Both prosocial behavior and humanness are highly complex. Intuitive behavior in high-arousal situations and deliberative behavior in low-arousal situations both represent context-appropriate actions that enhance humanness judgments. However, even in high-arousal situations, intuitive actors were not rated higher on HU. Conversely, in low-arousal situations, deliberative actors were rated higher on HN. This suggests that rationality carries at least equal weight to emotion in humanness judgments of prosocial actors. Although perceiving others’ suffering and caring for them represent fundamental human capacities and important drivers of helping (Batson, 1990; Hein et al., 2011), in “cooler” situations, the capacity for thoughtful deliberation about helping behavior may be more important for humanness judgments.

We speculate that in low-arousal situations, the lower HU and HN ratings for intuitive actors relate to outcome expectations—that is, intuitive behavior is perceived as more risky, unwise, and likely to produce negative consequences, leading to lower humanness evaluations (Lerner & Keltner, 2000; Rode et al., 1999). If behavioral outcomes are positive, providing help without causing unnecessary trouble or loss, people may not rate intuitive actors as less human. Experiment 4 tested this possibility by manipulating consequences, revealing that outcomes indeed influence humanness judgments, particularly for intuitive actors. When positive consequences were presented, differences between decision modes disappeared. This suggests that in low-arousal situations, intuitive actors receive lower humanness ratings largely because people expect intuitive actions

may lead to negative consequences. These negative outcome expectations lead intuitive actors to be perceived as lacking rational, mature HU characteristics.

6.2 Theoretical and Practical Implications

First, our findings deepen understanding of prosocial behavior and its evaluation. Recent research shows that not all seemingly kind prosocial behaviors receive uniform praise. For instance, when actors or their associates may benefit from prosocial actions, evaluations decrease (Lin-Healy & Small, 2012), and behaviors yielding reputational or material rewards are judged more harshly than those yielding emotional rewards (Barasch et al., 2014). This demonstrates that prosocial behavior evaluations focus not on surface actions but on underlying motives (Berman & Silver, 2022). Our research reveals that although intuitive prosocial behavior appears more purely motivated and deliberative altruism seems less altruistic or even egoistic (Levine et al., 2018; Silver et al., 2021), their impact on humanness judgments is complex, depending on situational demands and humanness dimensions. Our findings particularly highlight the importance of rationality and behavioral consequences in humanness judgments of prosocial behavior. Developmental research shows that expressing pure sympathy and helping motives occurs only in early childhood, with individuals later learning to use prosocial behavior instrumentally to achieve goals like reputation management and relationship maintenance (Grueneisen & Warneken, 2022). Thus, people may view rationality as a more mature approach in most situations (except those with high emotional arousal that elicit instinctive kindness), especially when it leads to better outcomes for the actor, consequently assigning higher humanness.

Second, this research extends dehumanization research by examining the relationship between prosocial behavior and humanness. Previous studies primarily evaluated humanness based on whether individuals engaged in prosocial behavior (Haslam, 2022). Our findings demonstrate that the decision strategy behind behavior also matters. On one hand, evaluations of different humanness aspects may be dissociated and depend on different antecedents, though under certain conditions, evaluations of one dimension may spill over to others. On the other hand, although intuition and rationality correspond to some degree with HN and HU dimensions, their influence on humanness judgments remains context-dependent. For example, in low-arousal situations, intuitive prosocial actors were not rated higher on HN than deliberative actors. Whether these results generalize to other behavioral domains awaits future research. Nonetheless, this study represents the first investigation of the relationship between decision strategies and humanness judgments, offering pioneering insights into the roles of rationality and emotion in humanness perception.

Returning to real-world implications, we can infer that when people witness news of well-intentioned but rash prosocial behavior leading to negative consequences, they may be swayed by the outcomes to criticize helpers as naive, impulsive, and lacking sophistication. Such public criticism may further heighten

caution and hesitation in similar situations, which could promote more rational action but might also inhibit genuine expressions of kindness, reducing interpersonal trust and prosocial behavior in society.

6.3 Limitations and Future Directions

Through a series of experiments, we examined how intuitive versus deliberative decision strategies in prosocial behavior influence humanness evaluations across contexts. We preregistered several studies and replicated our hypotheses across multiple experiments, demonstrating good robustness. However, several limitations warrant discussion and suggest directions for future research.

First, this research relied entirely on hypothetical scenarios. Although we validated our scenarios through pilot studies, judgments of imagined behavior differ from those of actual behavior. Future research could manipulate real decision-making processes (e.g., through time pressure manipulations) to present intuitive versus deliberative prosocial behavior (Bago et al., 2021), rather than relying solely on textual descriptions. Second, we adopted Haslam's (2006) dual-dimension theory as our framework, examining how decision strategies influence humanness through HN and HU. Given the complexity of humanness and multiple theoretical perspectives in dehumanization research (e.g., Gray et al., 2007; Leyens et al., 2000), future studies should examine prosocial behavior's impact on humanness from other theoretical angles. Finally, although Experiment 4 provided clues about outcome expectations' role, we did not deeply investigate the mechanisms underlying how different decision strategies lead to different humanness judgments. Future research should explore factors such as empathy, motivation, and authenticity in this process.

7 Conclusion

Across four experiments, we found that: (1) In high-emotional-arousal situations, intuitive prosocial actors were rated higher on Human Nature (HN) than deliberative prosocial actors. (2) In low-emotional-arousal situations, deliberative prosocial actors were rated higher on Human Uniqueness (HU) than intuitive prosocial actors. (3) In low-arousal situations, positive behavioral consequences enhanced HU judgments of intuitive prosocial actors, eliminating differences between decision modes. This research deepens our understanding of the relationships among prosocial behavior, decision strategies, and humanness perception.

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Note: Figure translations are in progress. See original paper for figures.

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