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Effectiveness of Perceiving Normal and Extreme Outgroups' Bivalent Emotions in Reducing Infrahumanisation (or Intergroup Preference)

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Abstract

People tend to consider outgroups inferior to the ingroup and express prejudice against them, though such expressions are less blatant in modern days. For example, instead of denying full humanness to outgroup members, people may perceive them as less capable of experiencing uniquely human (UH) emotions (i.e., *infrahumanisation*). Recent researchers, however, have questioned whether people actually infrahumanise outgroup members or simply reserve positive emotions, UH or not, more for their ingroup than for outgroups (i.e., *intergroup preference*). Drawing on preliminary evidence that bivalent emotional experiences (e.g., happy and sad) involve cognitive complexity and are viewed as a positive quality, we recruited 88 British participants to test the hypothesis that presenting outgroup members' bivalent emotions was more effective in reducing intergroup preference (and not infrahumanisation) than presenting their univalent emotions. We further predicted that the effect of perceived bivalent emotions was less pronounced for outgroups that are more stigmatised (e.g., drug addicts vs. Uzbeks). Results showed that our bivalent-emotion manipulation did not have any significant impact on attitudes towards an outgroup, thereby failing to support both of our hypotheses. However, we found an unexpected significant interaction between humanness and prosociality (η_p^2 = .37), which indicated that antisocial emotions were ascribed more strongly to the outgroup than were prosocial ones (consistent with intergroup preference) when the emotions were non-UH (consistent with infrahumanisation). Further, this pattern was stronger for drug addicts, which are the more stigmatized outgroup, than Uzbeks (η_p^2 = .18). Taken together, the current study offers a new perspective on explaining prejudice against outgroup members — that is, both infrahumanisation and intergroup preference seem to operate in tandem, especially when intergroup relations are at their worst. Finally, we surprisingly found that Uzbeks were evaluated not only more favourably than drug addicts but also more favourably than the average person (*d*s > .40).

Keywords: bivalent emotions, dehumanisation, infrahumanisation, intergroup preference, prejudice

1. Introduction

During the Holocaust, Nazi propaganda portrayed Jews as rats. In the late 20th century, Hutus in Rwanda referred to the Tutsi population as cockroaches during the genocide. Such language exemplifies dehumanization, the denial of humanness to members of certain social groups (Haslam, 2006; Smith, 2011). This process persists in today's society. For instance, during the current Israel-Gaza war, political leaders and media commentators from both sides have referred to each other as "animals" and "beasts" using different animalistic slurs.

Tajfel and Turner's (1979) social identity theory posits that people have an inherent inclination to categorise themselves and others into distinct groups (social categorisation). By grouping individuals based on shared characteristics and distinguishing those with different traits, people are able to navigate and understand their social surroundings more efficiently. Through this process, people identify with a particular group (ingroup) to foster a sense of belonging to the social world (social identification). To uphold self-esteem and maintain positive distinctiveness, the ingroup often seeks favourable comparison with another group, the outgroup, with which they do not identify (social comparison). In doing so, the ingroup tends to attribute more desirable qualities to themselves than to the outgroup. Dehumanisation occurs when the ingroup associates the fundamental essence of humanity with themselves while denying it to the outgroup.

Dehumanisation can also take on subtler forms, where members of an ingroup perceive those from an outgroup as somewhat less human rather than entirely non-human. People might believe that outgroup members have lower levels of mental capabilities (Harris & Fiske, 2006), UH characteristics (dual model; Haslam, 2006), or UH emotions (infrahumanisation; Leyens et al., 2000, 2001). The present study specifically examined infrahumanisation, which has been repeatedly shown to coincide with overt dehumanisation (Kteily et al., 2015). Cuddy et al. (2007) and Vaes et al. (2003) also linked infrahumanisation to diminished prosocial behaviours towards outgroup members.

Secondary emotions, such as shame and remorse, are considered central to the essence of being human (Leyens et al., 2000). These emotions are thought to be cognitively complex, as they require reflection on the self, past experiences, or future events. In contrast, primary emotions, such as anger and happiness, are immediate reactions to environmental stimuli and are thus considered non-UH, shared by humans and other animals (for a review, see Demoulin et al., 2004; Ekman, 1992). In research by Leyens et al. (2001), ingroups were found to ascribe a greater ability to feel secondary emotions — both positive and negative — to themselves than to outgroups. This trend has been observed in many other studies using explicit and implicit measures (Boccato et al., 2007; Paladino et al., 2002). It has also been replicated in different religious and racial groups (Banton et al., 2020) as well as minimal groups (Simon & Gutsell, 2020).

Beyond secondary emotions, there is growing evidence that *bivalent emotions* (i.e., experiencing positive and negative emotions simultaneously; Larsen et al., 2001) serve as an indicator of human uniqueness. This is because they, as with secondary emotions, require cognitive complexity, particularly the capacity to evaluate the same event from multiple viewpoints and integrate conflicting emotions (Labouvie-Vief, 2015). Indeed, research by Larsen et al. (2007) found that similar to secondary emotions, children develop a more nuanced understanding of bivalent emotions and are increasingly likely to experience them as they age. Furthermore, bivalent emotions have been associated with 'wise reasoning,' a cognitive process characterised by recognising multiple possible outcomes and reducing biased judgments (Grossmann et al., 2019). Of particular relevance to the current study, Grossmann

et al. (2019) reported that individuals who experience greater levels of bivalent emotions are more likely to be perceived as 'wise' by their peers compared to those who experience lower levels of bivalent emotions.

If the capacity to feel bivalent emotions can be used to infer cognitive complexity and even unique human qualities, showing that outgroup members possess such emotions might elevate their perceived human status and, in turn, enhance ingroup attitudes towards them. Prati and Giner-Sorolla (2018) investigated this hypothesis and found general support across multiple studies. They demonstrated that individuals attributed more UH emotions, displayed less prejudice, and were more willing to connect socially with outgroup members depicted as having bivalent emotions compared to those as having univalent emotions.

Empirical research on infrahumanisation began two decades ago with Leyens and colleagues (2000), who first explored this subtle, everyday manifestation of dehumanisation. Since then, this topic has garnered significant attention, becoming extremely influential in psychology. However, in recent years, critiques have emerged that question the theoretical underpinnings of both infrahumanisation and dehumanisation. For instance, some scholars argue that perceiving outgroups as "less than human" is less prevalent than initially proposed. As Manne (2016) pointed out, historical examples such as Nazi propaganda — where Jews were frequently described as treacherous and corrupt — highlight that victims said to be "dehumanised" were often still perceived as humans. Descriptors like "treacherous" or "corrupt" make little sense when applied to non-human entities like animals or machines, underscoring this critique.

The central tenet of infrahumanisation theory lies in its exclusive focus on the humanness of emotions. According to Leyens et al. (2000, 2001), UH emotions are associated more strongly with ingroups than outgroups, even when these emotions are negative. This suggests that "humanness" here is distinct from "goodness". Although previous research has largely upheld this theory (e.g., Cortes et al., 2005; Leyens et al., 2001), it has overlooked the social dimension of emotions (Parkinson, 1996). Emotions can differ not only in their valence (positive or negative) but also in their sociality (prosocial or antisocial). It is important to appreciate the conceptual distinctiveness between these dimensions. Positive emotions may be generally considered prosocial, and negative emotions may be generally considered antisocial. However, some emotions that are pleasant to experience can be unkind to others (e.g., schadenfreude), and some emotions that are unpleasant to experience do not necessarily reflect antisociality (e.g., remorse; Stearns & Parrott, 2012). This oversight has prompted scrutiny of the explanatory power of infrahumanisation, especially when non-antisocial negative emotions, such as remorse and melancholy, are often included in previous research to measure infrahumanisation (e.g., Banton et al., 2020; Prati & Giner-Sorolla, 2018).

Recently, psychologists have begun debating whether infrahumanisation is separate from *intergroup preference* (i.e., the tendency to favour one's group over an outgroup; Tajfel & Turner, 1979; Taylor & Doria, 1981) by employing the prosociality of emotion terms as stimuli. Enock et al. (2021), across seven studies, demonstrated that intergroup differences in emotion ascriptions are better explained by prosociality than by humanness. Their findings revealed that prosocial emotions were attributed less to outgroups than ingroups, whereas antisocial emotions — including the UH ones — were more frequently attributed to outgroups. These results challenge infrahumanisation theory, suggesting that intergroup emotion ascriptions may stem more from intergroup preference than infrahumanisation.

Over (2020, 2021) further critiques infrahumanisation theory, arguing that while outgroup members may be denied certain UH characteristics, they are often ascribed others. For instance,

antisocial UH emotions, such as bitterness and envy (a volatile mix of respect and hostility), are felt towards high-status outgroup members who monopolise societal resources. Therefore, lower-status outgroups would be more likely to be perceived as experiencing these emotions (Harris et al., 2008). By contrast, other antisocial UH emotions, such as contempt, are felt by high-status outgroup members who look down on lower-status counterparts. Therefore, the former would be more likely to be perceived as experiencing these emotions (Fischer & Giner-Sorolla, 2016). Moreover, specific social contexts may grant outgroups particular UH emotions. Immigrants, for example, might be perceived as experiencing optimism (high aspirations for the future) or nostalgia (longing for their places of origin) more than ingroup members. These nuances in emotion attribution raise doubts about whether previous evidence for infrahumanisation might instead be explained by other factors.

Adding to this scepticism, Hackel et al. (2014) found that the thresholds for mind perception depend on group membership: people demand greater evidence of humanness from outgroup than ingroup members to attribute minds to them. Social cognitive models of person perception (Brewer, 1988, Fiske & Neuberg, 1990) suggest that people are more motivated to individuate ingroup members, processing them in greater depth because those members represent targets whom they frequently interact and seek social affiliation from in daily life. These motivations influence mind attribution (e.g., Epley et al., 2008; Waytz and Epley, 2012), leading to more lenient thresholds for perceiving minds in ingroup than outgroup members, a process that aligns with intergroup preference instead of infrahumanisation.

In light of these recent critiques and findings, it is imperative to revisit Prati and Giner-Sorolla's (2018) work and re-examine the effects of their manipulation of bivalent emotions. Using a similar methodology, the present research sought to determine whether presenting outgroup members' bivalent emotions really reduces infrahumanisation or intergroup preference.

Another aim of the present study was to examine whether the effects of the bivalent-emotion manipulation differ between a *normal* outgroup and an *extreme* outgroup, as infrahumanisation (or intergroup preference) is expected to be more pronounced for the latter. In this research, a "normal" outgroup is defined as one that British participants do not usually identify with but do not hold negative attitudes towards. In contrast, an "extreme" outgroup is considered as a group perceived as low in both warmth and competence per the stereotype content model (i.e., the "lowest of the low"; Fiske et al., 2002), evoking feelings of disgust. When an outgroup threatens an individual's worldview, is disliked, or is alienated, it is especially prone to infrahumanisation (Leyens, 2009). Feelings of disgust, particularly, are linked to perceptions of moral transgression and aggression towards others (Haidt et al., 1997). Drug addicts are a classic example of an extreme outgroup (Harris & Fiske, 2006), often seen as unworthy of social support or empathy (Corrigan et al., 2009). Harris and Fiske (2009) also showed that the medial prefrontal cortex (mPFC) does not activate when people observe images of drug addicts, indicating that they are not fully recognised as human. Additionally, both blatant dehumanisation and infrahumanisation have been found to be stronger for drug addicts than for other stigmatised groups (Sumnall et al., 2021). Testing their emotion manipulation on three outgroups, Prati and Giner-Sorolla (2018) observed significant effects on emotion ascriptions for a fictitious species (aliens) and an unfamiliar group (Uzbeks) but not for a familiar yet disliked group (Muslims, when using an Italian sample). This indicates that presenting outgroup members' bivalent emotions may have a weaker effect on reducing infrahumanisation (or intergroup preference) when a disliked outgroup is concerned. Thus, we included both normal and extreme outgroups to see if the effects reported by Prati and Giner-Sorolla (2018) apply to extreme outgroups. If our findings support this, it will suggest that communicating the emotional complexity of outgroup members could help enhance intergroup relations, even

when these relations are at their most challenging. Based on prior research, we selected Uzbeks and drug addicts as representative of the normal and extreme outgroups, respectively, for our comparisons.

In summary, this study re-evaluated the effects of perceiving bivalent emotions in outgroup members to explore whether this manipulation improves intergroup attitudes, as found in Prati and Giner-Sorolla's (2018) work. It also aimed to unravel whether any observed improving effects were due to reduced infrahumanisation or decreased intergroup preference. Finally, we compared the results between normal and extreme outgroups to see whether the effects of the emotion manipulation were evident for both types of outgroups.

2. The Present Study

Enock et al. (2021) have recently highlighted that variations in emotion ascriptions to ingroup and outgroup members are more indicative of intergroup preference than of infrahumanisation. Building on their methodology, we modified the emotion ascription task by introducing terms that varied in human uniqueness and social desirability. If presenting bivalent emotions, as opposed to univalent emotions, leads participants to ascribe antisocial emotions less to the outgroup — regardless of UH level — this would indicate that the manipulation reduces intergroup preference, thus supporting Enock et al.'s (2021) critique. Conversely, if the manipulation results in a greater attribution of UH emotions to the outgroup, independent of prosociality, it would replicate Prati and Giner-Sorolla's (2018) findings, reinforcing infrahumanisation theory (Leyens et al., 2001). Finally, as extreme outgroups tend to face stronger stigma, we hypothesised that the bivalent-emotion manipulation would be less effective for drug addicts compared to Uzbeks.

2.1 Methods

2.1.1 Participants

Our key prediction was that presenting outgroup members' bivalent (as opposed to univalent) emotions would more effectively reduce intergroup preference when evaluating a normal (as opposed to extreme) outgroup. To test this, we conducted a power analysis for a three-way interaction between Emotion, Group, and Prosociality, incorporating a random intercept term as a control variable to account for intraindividual correlations and unobserved heterogeneity, as each participant was exposed to every level of Prosociality. In the second experiment by Prati and Giner-Sorolla (2018), which focused on Uzbeks as the target outgroup, a medium-to-large effect size was observed (d = .64). We used this as a benchmark for determining our sample size. To detect a similar medium effect size (f^2 = .15) with 80% power and a 5% alpha level for linear multiple regression (fixed model, R^2 increase) with four tested predictors (three IVs and a three-way interaction) plus an additional predictor (a random intercept), G*Power (version 3.1; Faul et al., 2009) determined that a minimum of 85 participants would suffice. If the observed effects of the bivalent-emotion manipulation were driven by infrahumanisation, then this should be evident in a significant three-way interaction between Emotion, Group, and Humanness (which was manipulated within-subjects). We therefore ran a similar power analysis, which yielded the same sample size recommendation.

Considering the possibility that effects of the bivalent-emotion manipulation on intergroup preference (or infrahumanisation) might be independent of the outgroup type, we conducted an additional power analysis with three tested predictors this time (Emotion, Prosociality or Humanness, and a two-way interaction) plus a random intercept. It is also possible that our bivalent-emotion manipulation had no impact on emotion attribution in terms of either

prosociality or humanness. Instead, it might only lead to more emotions being attributed to the normal (vs. extreme) outgroup in general. To detect this two-way interaction, we conducted a power analysis again with three tested predictors only (Emotion, Group, and a two-way interaction). All analyses indicated that a sample of 77 participants would suffice to detect medium-sized effects for these two-way interactions.

Based on the above results, we decided to recruit 88 participants (54 female, 34 male; M_{age} = 39.06, SD_{age} = 14.29) on Prolific (Peer et al., 2017). All participants were adults, UK nationals, and proficient in reading and writing English.

2.1.2 Design

This study employed a 2 x 2 x 2 x 2 mixed design. There were two between-subjects factors: Emotion (bivalent vs. univalent) and Group (normal vs. extreme outgroup). There were also two within-subjects factors: Humanness (UH vs. non-UH terms) and Prosociality (prosocial vs. antisocial terms). The primary dependent variable was emotion attribution. Details of the study design and analysis plans are preregistered and available at https://osf.io/nbjak/?view_only=d9b4792c521246cfb306123a76a89a75.

2.1.3 Stimuli Development

In Prati and Giner-Sorolla's (2018) studies, emotional valence was manipulated across levels of humanness in the emotion ascription task. Within the category of UH emotions, three of the eight emotions they used were rated as highly prosocial in Enock et al.'s (2021) dataset (compassion, optimism, and admiration; each scoring over 70 points out of 100), while four were rated as neutral (remorse, regret, pride, and melancholy; all scoring within 3 points of the midpoint). Only one emotion was rated highly antisocial (envy; scoring below 30 points). Therefore, in the original task, there was an unequal representation of prosocial and antisocial terms, making it difficult to disentangle infrahumanisation from intergroup preference.

To address this limitation, we modified the task to manipulate humanness and prosociality dimensions. Further, in order to ensure that the task contained emotion terms that are perceived as most and least UH and most and least prosocial, we chose emotions from Enock et al.'s (2021) dataset which provided subjective ratings of humanness and prosociality for 54 common emotions terms. These ratings ranged from 0 ("highly unique to other species" and "extremely unkind") to 100 ("highly unique to humans" and "extremely kind"), with 50 representing the midpoint ("applied equally to humans and other species" and "neither kind nor unkind").

Table 1: Emotion terms included in the emotion ascription task

	Prosocial	**Antisocial**
UH	Nostalgia	Arrogance
	Optimism	Schadenfreude
	Humility	Scorn
	Hope	Greed
Non-UH	Love	Hostility
	Friendliness	Irritation
	Empathy	Anger
	Patience	Jealousy

Note. All emotion terms were selected based on the subjective ratings collected by Enock et al. (2021).

Based on these subjective ratings, we identified 16 emotions that best represented four key categories: UH/prosocial, UH/antisocial, non-UH/prosocial, and non-UH/antisocial (see Table 1). It should be noted that the least UH emotion scored 48.6, slightly below the midpoint,

indicating that none of the 54 emotions were seen as highly unique to other species. From the pool of most and least UH terms, we chose eight rated as highly prosocial (scoring 64.6-86.3 in prosociality) and eight rated as highly antisocial (scoring 20.9-29.1 in prosociality). Therefore, humanness ratings between the chosen prosocial and antisocial emotions were closely matched at each level of humanness. This allowed us to separate effects of Humanness from those of Prosociality as the two dimensions were now made orthogonal. Additionally, we accounted for valence ratings to ensure an equal distribution of positive and negative emotions across the emotion attribution task. Half of the chosen terms were categorised as extremely positive to experience (scoring 60.8-91.7 in positivity) and the other half as extremely negative to experience (scoring 17.8-35.6 in positivity).

In line with Prati and Giner-Sorolla's (2018) research, we intentionally selected the four least UH emotions to form bivalent emotional pairs for our manipulation. This approach was necessary because informing participants that outgroup members experienced highly UH emotions would hinder our ability to assess their beliefs about the outgroup's capacity to feel such emotions. Additionally, expressions of highly UH emotions from outgroup members are often met with scepticism or disbelief and may even provoke more negative responses (for a review, see Vaes et al., 2012; Wohl et al., 2012). Therefore, before developing stimuli employed in the modified emotion ascription task, we reserved two highly positive (happiness, tenderness; scoring 95.5 and 77.0 respectively in positivity) and two highly negative emotions (sadness, fear; scoring 18.1 and 23.3 respectively in positivity) that were perceived as least unique to humans (all scoring 48.6-56.1 in humanness) for our manipulation.

2.1.4 Measures

Perceptions of outgroup. Participants were asked to rate their prior knowledge about the presented outgroup, using a slider that ranged from 0 ("No knowledge at all") to 100 ("A great deal of knowledge"). Following this, they assessed the perceived warmth of the outgroup members on a 7-point Likert scale, where 1 indicated "Not friendly at all/Extremely hostile" and 7 represented "Extremely friendly/Not hostile at all". Based on these evaluations, participants were then instructed to rate the perceived competence of the outgroup members regarding their ability to provide assistance or cause harm, again using a 7-point Likert scale (1 = "Extremely incompetent", 7 = "Extremely competent"). Subsequently, participants indicated their level of identification with the outgroup on a scale from 1 ("Not at all") to 7 "Extremely"). These four ratings functioned as a manipulation check to verify that both drug addicts and Uzbeks were viewed as outgroups by the British participants, with drug addicts being perceived as a more extreme outgroup than Uzbeks.

Emotional attribution. Participants assessed the extent to which they believed the outgroup members could experience each of the 16 emotions listed in Table 1 compared to the average human population, using a Likert scale ranging from 1 ("Much less than the average population") to 7 ("Much more than the average population"). The midpoint score of 4 was explicitly labelled as "Neither less nor more than the average population" to avoid interpretation errors. These anchor statements were chosen in line with previous studies that applied the scale in the same way to compare UH emotion and human trait attributions between a target outgroup and the average human population (Prati et al., 2015; Prati & Giner-Sorolla, 2018).

Perceptions of bivalent emotions. Participants were asked to express the degree to which they believed the capacity to experience bivalent emotions reflected a complex mind and was considered a socially desirable trait, using separate scales ranging from 1 ("Not at all") to 7 ("Extremely").

2.1.5 Procedure

Participants were randomly allocated to evaluate the normal outgroup (Uzbeks) or the extreme outgroup (drug addicts) after providing informed consent. They first indicated how closely they identified with the group and how familiar they were with it, then read a fabricated news excerpt providing background information about the group and rated the group on warmth and competence. Please see Appendix A for the exact news excerpt used in each group condition.

Following this, participants read a second passage about the outgroup and were randomly assigned to either the bivalent- or univalent-emotion condition. In the bivalent-emotion condition, half of the participants read about the outgroup expressing two opposite-valence emotions, followed by another two opposite-valence emotions. On the other hand, the remaining participants encountered these emotion pairs in the reverse order. In the univalent-emotion condition, half of the participants read about two positive emotions followed by two negative ones, with the order reversed for the other half. This manipulation was based on Prati and Giner-Sorolla's (2018) methodology. Please see Appendix B for the exact passages used in each condition.

Once participants finished reading the passage, they were asked to complete the modified emotion ascription task. To further explore the impact of presenting bivalent emotions, participants also rated their perceptions of the bivalent emotional experience. Finally, at the end of the study, they provided demographic information, including age, gender, and ethnicity, and were then debriefed and thanked for their participation.

2.2 Results

2.2.1 Manipulation Checks

Table 2 presents the means, *SD*s, and independent samples t-test results for all measures across the two outgroups. Participants exhibited low levels of identification with both groups, with significantly lower identification ratings for drug addicts than for Uzbeks. Although participants reported being more familiar with drug addicts than with Uzbeks, they rated the former significantly lower in both warmth and competence. These findings indicate that participants recognised both Uzbeks and drug addicts as outgroups, with the latter seen as a particularly extreme outgroup due to their lower warmth and competence ratings, despite being more familiar.

Table 2: Means, standard deviations, and independent samples t-test results of identification, knowledge, perceived warmth, and percevied competence for drug addicts and Uzbeks

Variable	Drug addicts (n = 44)		Uzbeks (n = 44)		t(86)	d
	M	*SD*	*M*	*SD*		
Identification	1.25	0.61	1.80	1.49	-2.25*	-.48
Knowledge	38.86	23.32	8.27	12.53	7.67***	1.63
Perceived *warmth*	3.02	1.09	4.27	1.04	-5.50***	-1.17
Perceived *competence*	3.64	1.24	4.57	1.25	-3.51***	-.75

*Note. N = 88. *p < .05; **p < .01; ***p < .001.*

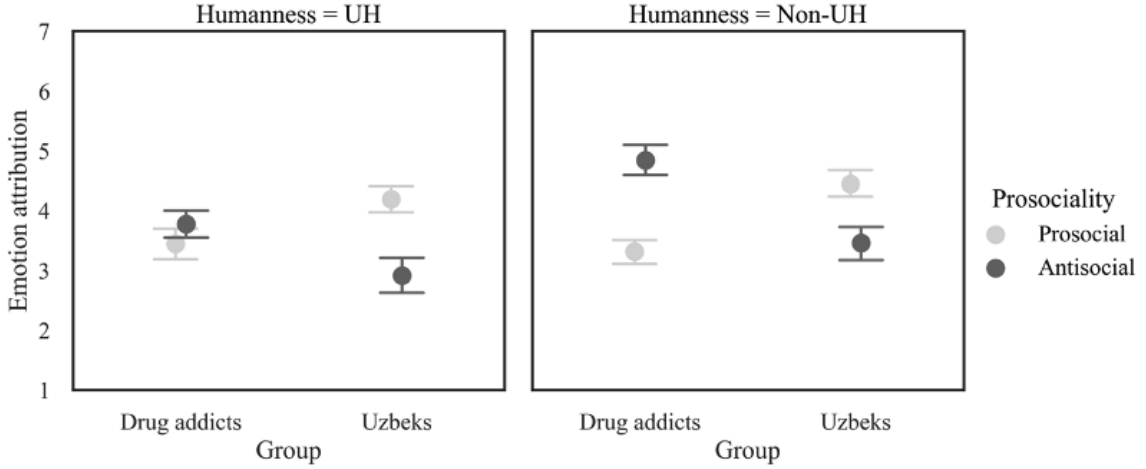
2.2.2 Emotion Attribution

A 2 (Emotion) x 2 (Group) x 2 (Humanness) x 2 (Prosociality) mixed ANOVA on emotion attribution ratings showed no significant main effect for the bivalent-emotion manipulation (p = .40). Additionally, neither the main effect for group nor for prosociality was significant (ps > .40). There was, however, a significant main effect of humanness (F(1, 84) = 77.99, p < .001,

η_p^2 = .48), with participants generally attributing more non-UH than UH emotions to both outgroups, independent of prosociality or the manipulation condition.

A significant two-way interaction was found between humanness and prosociality (F(1, 84) = 49.01, p < .001, η_p^2 = .37). Further, Bonferroni-corrected pairwise comparisons revealed that the difference in attributions between non-UH and UH emotions was significant only when the emotions were antisocial (p < .001) but not when they were prosocial (p = .75). Additionally, a significant interaction was found between prosociality and group (F(1, 84) = 67.59, p < .001, η_p^2 = .45), indicating that participants attributed more antisocial emotions to drug addicts and more prosocial emotions to Uzbeks (ps < .001). No other two-way interactions reached significance (ps > .18).

Figure 1: Three-way (humanness x prosociality x group) interaction



Note. The left panel presents mean ratings for prosocial (lighter lines) and antisocial (darker lines) emotions that were classified as UH and the right panel presents mean ratings for prosocial and antisocial emotions that were non-UH. Both panels show differences in the corresponding emotion attribution ratings for drug addicts and Uzbeks. Error bars represent 95% confidence intervals (CI).

Furthermore, a significant three-way interaction emerged between humanness, prosociality, and group (F(1, 84) = 18.28, p < .001, η_p^2 = .18; see Figure 1), further qualifying the earlier two-way interactions. To interpret this three-way interaction, we calculated simple two-way interactions (prosociality x group) for each level of humanness. These interactions were significant for both non-UH (F(1, 86) = 82.82, p < .001, η_p^2 = .49) and UH emotions (F(1, 86) = 37.02, p < .001, η_p^2 = .30). Further analysis of simple simple main effects indicated that for non-UH emotions, antisocial emotions were more strongly attributed to drug addicts, while prosocial ones were more strongly attributed to Uzbeks (ps < .001). Similar patterns were observed for UH emotions (ps < .001), though the magnitude of the differences was attenuated. Figure 1 reveals that the difference between groups was most pronounced in the non-UH/antisocial condition, suggesting that the evaluation of an extreme outgroup is exacerbated when attributing least desirable emotions. No additional three-way interactions were significant (ps > .33), and there was no significant four-way interaction (p = .19). The means and *SD*s for emotion attribution as a function of emotion and group are presented in Table 3.

Table 3: Means and standard deviations of emotion attribution and perceptions of bivalent emotions as a function of emotion and group

Variable	Bivalent			
	Drug addicts (n = 22)		Uzbeks (n = 22)	
	M	*SD*	*M*	*SD*
UH emotion attribution				
Prosocial	3.48	0.89	4.02	0.79
Antisocial	3.78	0.82	2.74	0.91
Non-UH emotion attribution				
Prosocial	3.24	0.78	4.41	0.69
Antisocial	4.98	0.86	3.36	1.07
Variable	Univalent			
	Drug addicts (n = 22)		Uzbeks (n = 22)	
	M	*SD*	*M*	*SD*
UH emotion attribution				
Prosocial	3.41	0.88	4.35	0.84
Antisocial	3.76	0.73	3.09	1.01
Non-UH emotion attribution				
Prosocial	3.39	0.63	4.48	0.82
Antisocial	4.70	0.87	3.56	0.77

Note. N = 88.

Performing one-sample t-tests, we confirmed that attribution ratings for antisocial emotions were significantly higher than the neutral point of 4 ("Neither less nor more than the average population") when drug addicts were being evaluated (M = 4.31, SD = 0.97; $t(87)$ = 2.95, p = .004, d = .32). Conversely, these ratings were significantly lower than 4 when Uzbeks were being assessed (M = 3.19, SD = 0.98; $t(87)$ = -7.77, p < .001, d = .83). For prosocial emotions, attribution ratings were significantly lower than 4 for drug addicts (M = 3.38, SD = 0.79; $t(87)$ = -7.36, p < .001, d = .78), but above 4 for Uzbeks (M = 4.32, SD = 0.79; $t(87)$ = 3.72, p < .001, d = .40).

2.2.3 Perceptions of Bivalent Emotions

Participants rated the extent to which they believed the capacity for bivalent emotions reflected cognitive complexity and social desirability, with mean ratings of 4.86 (SD = 1.30) and 4.82 (SD = 1.39), respectively. Using one-sample t-tests, we found that both means were significantly above the scale midpoint (complexity: $t(87)$ = 6.25, p < .001, d = .67; desirability: $t(87)$ = 5.54, p < .001, d = .59). This suggests that participants viewed bivalent emotions as strong indicators of both traits. A two-way factorial ANOVA revealed no significant effects of group or emotion condition on these ratings (ps > .17).

2.3 Discussion

This study extended Prati and Giner-Sorolla's (2018) research, exploring the portrayal of outgroup members' emotional complexity — specifically, their experience of bivalent emotions — as a possible way to improve intergroup relations. We included two types of outgroups, a relatively neutral one (Uzbeks) and a more stigmatised one (drug addicts), to assess if this approach could influence intergroup attitudes even in extreme cases. Informed by the work of Enock et al. (2021), we adapted the emotion ascription task to include emotion terms varying in both humanness and prosociality, aiming to measure infrahumanisation and intergroup preference.

The results revealed that while participants generally viewed bivalent emotions as markers of cognitive complexity and social desirability, the manipulation — presenting outgroup members' bivalent emotions — did not produce any significant changes in emotion attribution compared to presenting univalent emotions. Thus, our hypotheses regarding the effects of this manipulation were not supported. The lack of a manipulation check might have been a factor: participants might not have fully absorbed the provided information, which in turn reduced the impact of the manipulation. Future studies should include a measure to verify participants' understanding of the outgroup information provided. Additionally, even if the participants did process the information, the manipulation might not have been strong enough to effectively emphasise the cognitive complexity or social desirability associated with bivalent emotions. It is worth mentioning that Prati and Giner-Sorolla (2018) also found inconsistent effects of this manipulation across different outgroups, suggesting that the strategy may not be reliability effective. Therefore, a more robust intervention is needed to reduce both intergroup preference and infrahumanisation of outgroups, especially the strongly stigmatised ones.

Prati and Giner-Sorolla (2018) have already demonstrated that perceiving outgroup members' bivalent emotions can be somewhat effective in reducing intergroup differences in emotion attribution, so the challenge lies in amplifying this effect, particularly in contexts where intergroup relations are highly strained. We propose an alternative approach to harness the power of bivalent emotions: drawing on preliminary evidence that the experience of bivalent emotions can foster less heuristic thinking and greater open-mindedness (for a review, see Rothman & Melwanie, 2017), future studies could induce bivalent emotions in participants before presenting the emotional complexity of outgroup members. This extra step may enhance participants' receptiveness to counter-intuitive information, such as the notion that members of highly disliked groups are capable of feeling UH emotions, consequently reducing infrahumanisation and intergroup preference.

Infrahumanisation theory posits that UH emotions — regardless of whether they are positive or negative — are ascribed more to ingroups than outgroups (Leyens et al., 2001). Conversely, the intergroup preference account proposes that antisocial emotions, even if they are UH, are more strongly attributed to outgroups (Enock et al., 2021). In our study, we unexpectedly found that emotion attribution was influenced by both the prosociality and humanness of emotions. Specifically, although our results provided support for infrahumanisation theory as non-UH emotions were more strongly attributed to outgroups than UH emotions, this pattern was only significant for antisocial and not prosocial emotions — a finding predicted by the intergroup preference account. Comparing the two outgroups, antisocial emotions, particularly non-UH ones, were ascribed more to drug addicts than to Uzbeks, while prosocial emotions were more strongly attributed to Uzbeks. This pattern suggests a tendency for people to attribute socially undesirable emotions more strongly to stigmatised groups, especially for emotions that are shared with animals rather than uniquely human.

Another notable result was that participants perceived drug addicts as experiencing more antisocial and fewer prosocial emotions compared to the average person, while Uzbeks were perceived as having more prosocial and fewer antisocial emotions than the average. This pattern suggests that participants viewed the normal outgroup (Uzbeks) more positively than the extreme outgroup (drug addicts) and even more favourably than the average person, despite lacking a strong identification with Uzbeks. This favourable perception may be due to participants' unfamiliarity with the outgroup. When encountering an unfamiliar group, people may lack a basis for social comparison (Tajfel & Turner, 1979) and attempt to relate the group to their own, a cognitive process known as *assimilation* (Di Paolo et al., 2014). This process probably already makes people see the outgroup as being very close to their own in terms of

warmth and competence. Further, social desirability pressures may encourage people to evaluate an unfamiliar group more positively than if those pressures are lifted to avoid appearing biased (Gawronski & De Houwer, 2014). Without prior knowledge or impressions of an outgroup, people may feel uncertain about public attitudes towards that group, unlike stigmatised outgroups. Thus, even if participants in our study did view Uzbeks as inferior to their own, they might have consciously controlled their evaluations to avoid appearing "bad". Future research could address social desirability pressures by complementing self-report responses with implicit ones, such as the Implicit Association Test (IAT), which assesses unconscious associations between emotional capacities and social groups (Goff et al., 2008; Simon & Gutsell, 2020).

Another explanation for the favourable evaluations of Uzbeks is rooted in the *better-than-average effect* (BTAE; Alicke et al., 1995; Taylor & Brown, 1988). According to social identity theory (Tajfel & Turner, 1979), people tend to reserve desirable qualities for their ingroup to secure high self-esteem and positive distinctiveness. In interpersonal contexts, the BTAE reflects people's tendency to compare themselves against the average person and believe they are superior. Recent research suggests that this effect may arise because people interpret "average" as below the median rather than the median (Kim et al., 2017). Applying this self-enhancement phenomenon to the present study, participants likely excluded themselves and their own group from the comparison between Uzbeks and "the average human population," treating the latter as a normative standard. This mindset might have allowed participants to rate Uzbeks above average without perceiving a threat to their ingroup's status. Notably, ratings for Uzbeks were close to (though significantly different from) the midpoint (antisocial emotions: M = 3.19; prosocial: M = 4.32), suggesting that participants were willing to evaluate this unfamiliar group favourably, but not at the expense of their own group's status and image.

The unexpected findings with Uzbeks have important implications for contact-based interventions aimed at reducing prejudice. First, unfamiliarity with an outgroup appears to foster more favourable perceptions of the group, allowing it to be viewed similarly to the average person or even slightly better. This positive effect of unfamiliarity warrants further exploration. Past research has considered intergroup contact (i.e., social interactions among members of different groups; Allport, 1954) a promising avenue for reducing prejudice (for a review, see Paluck & Green, 2009), with positive pre-intervention contact moderating its effectiveness. Specifically, Reimer et al. (2021) found that contact-based interventions prepare people, especially those with less prior positive contact experiences, for more positive intergroup interactions in the future by alleviating intergroup anxiety. Intergroup anxiety arises from expectations of negative consequences associated with interactions with outgroup members, often rooted in stereotypes or historical conflicts (Stephan & Stephan, 1985). Building on these findings, we suggest that unfamiliarity with an outgroup could amplify the benefits of contact. It can be manipulated in interventions by introducing a stigmatised group (e.g., drug addicts) under a made-up name (e.g., Nathirs) and framing them as an isolated population. Without prior interactions or expectations of negative consequences, participants may form initially favourable impressions of the group, which could buffer against subsequent revelations about the group's real identity and consequently enhance the intervention's effectiveness.

Second, the methodology of using "the average human population" as a reference group in emotion attribution tasks (Prati et al., 2015; Prati & Giner-Sorolla, 2018) should be reconsidered in light of the possible effects of the BTAE. Participants' tendency to view the average as inferior to their ingroup may distort comparisons, thereby undermining the validity of results. Future studies should explicitly investigate whether participants compare the target

outgroup to their ingroup (e.g., the British population) or to another outgroup (the average human population) when completing the tasks. For example, researchers could include a separate scale requiring participants to compare their ingroup to the average human population on emotional capacities. Such a methodological adjustment would help clarify whether participants are engaging in ingroup-outgroup or outgroup-outgroup comparisons, ensuring greater accuracy in the interpretation of findings.

3. Conclusion

Although bivalent emotions are typically regarded as markers of cognitive complexity and social desirability, their use in describing outgroup members did not significantly affect intergroup relations in this study. However, our findings contribute new evidence that infrahumanisation and intergroup preference are not mutually exclusive, as neither mechanism alone fully accounts for emotion attribution differences between groups. Specifically, we found that non-UH emotions were attributed more strongly to outgroups than UH emotions (consistent with infrahumanisation theory), and this pattern was particularly pronounced when the emotions were antisocial and not prosocial (consistent with the intergroup preference account). These findings provide a nuanced perspective on the recent critique of infrahumanisation literature by advocating a middle ground: rather than framing infrahumanisation and intergroup preference as competing explanations, we propose that these two mechanisms should be considered as complementary processes that operate in tandem. This integrative approach could foster a more comprehensive understanding of intergroup relations.

The observed differences in emotion attribution between the extreme (drug addicts) and normal (Uzbeks) outgroups further underscore how stigma can amplify the combined effects of these mechanisms. This highlights the importance of revisiting and examining the moderating roles of prior knowledge (familiar vs. unfamiliar) and pre-existing attitudes (stigmatised vs. neutral) toward outgroups. A deeper understanding of these factors could guide psychologists in designing interventions that address the multifaceted nature of prejudice, particularly in highly challenging intergroup contexts. By exploring how these variables shape the interplay between infrahumanisation and intergroup preference, future research could inform more effective strategies for mitigating bias and improving intergroup relations.

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Appendices

1. Appendix A

1.1 The First Except About Drug Addicts

"Drug addicts are individuals who compulsively seek and use drugs. More than 0.4% of people around the world suffer from drug addiction, according to a recent report released by the United Nations Office on Drugs and Crime (UNODC)."

1.2 The First Except About Uzbeks

"Uzbeks are Central Asia's largest population group. Although they make up over 0.4% of the world's population, very little is known about them among people in the West."

2. Appendix B

2.1. The Second Excerpt About Drug Addicts

"In order to increase knowledge about this population, interviewers from the British Broadcasting Corporation (BBC) went to a rehabilitation centre and spent several days getting to know a group of drug addicts there. The interviewers remarked on the changing emotional tone as they got to know the drug addicts. The drug addicts frequently expressed [first emotion pair]; then over time, these emotions changed to [second emotion pair].
Interviews with a psychologist, who is a long-time employee of the rehabilitation centre, confirmed that this pattern of emotions is typical of drug addicts."

2.2. The Second Excerpt About Uzbeks

"In order to increase knowledge about this population, interviewers from the British Broadcasting Corporation (BBC) went to Uzbekistan and spent several days getting to know a village of traditional Uzbeks, in the Namangan province to the east of the capital Tashkent. The interviewers remarked on the changing emotional tone as they got to know Uzbeks. Uzbeks frequently expressed [first emotion pair]; then over time, these emotions changed to [second emotion pair].
Interviews with an anthropologist, who is a long-time resident of Uzbekistan, confirmed that this pattern of emotions is typical of Uzbeks."