



Contents lists available at ScienceDirect

Journal of Experimental Social Psychology

journal homepage: www.elsevier.com/locate/jespHow people perceive dispositionally (non-) ambivalent others and why it matters[☆]Ruiqing Han^{a,*}, Travis Proulx^a, Frenk van Harreveld^b, Geoffrey Haddock^a^a School of Psychology, Cardiff University, UK^b Faculty of Social and Behavioral Sciences, University of Amsterdam, Netherlands

ARTICLE INFO

Keywords:

Attitude ambivalence
 Person perception
 Social interactions
 Mental representations
 Warmth
 Competence

ABSTRACT

While research has studied the consequences of being ambivalent about a single attitude object, we know little about how *dispositionally* ambivalent and non-ambivalent targets are perceived. Across six experiments we examined how people perceive and mentally represent dispositionally ambivalent and non-ambivalent others, and how people expect to interact with dispositionally ambivalent and non-ambivalent targets. Experiment 1 demonstrated that a non-ambivalent target was expected to share fewer resources relative to ambivalent targets. Using a reverse correlation paradigm, Experiment 2 demonstrated that people have different mental representations of dispositionally ambivalent and non-ambivalent targets, who were evaluated differently on a range of outcomes. Experiment 3 demonstrated that participants could link descriptions of attitudinal ambivalence to representations of dispositionally ambivalent and non-ambivalent faces. Experiment 4 demonstrated that a non-ambivalent target was perceived as most likely to be unfair to others. Experiment 5 demonstrated that representations of dispositionally ambivalent and non-ambivalent targets influenced perceptions of the targets' values, willingness to help others, and suitability for looking after a sick relative. Experiment 6 replicated Experiment 5, using verbal descriptions of targets' ambivalence. Across experiments, warmth and competence mediated effects of dispositional ambivalence on outcomes. Overall, dispositionally ambivalent and non-ambivalent targets are perceived differently, and a target's inferred dispositional ambivalence influences how they are evaluated.

Understanding how others see the world is vital in navigating everyday life. For example, knowing your neighbor's opinion about the current Prime Minister will likely influence how you speak with them in a political discussion. Similarly, knowing how a potential partner feels about parenthood might impact whether you pursue a romantic relationship with them. Of course, people's views about important issues are often ambivalent (i.e., evaluatively mixed). Our neighbor might strongly favor some of the PM's policies while also feeling abhorrent about the PM's views on other issues. The potential partner might like children, while also expressing strong views about the financial burden associated with having them. While considerable research has focused on what attitudinal ambivalence is, as well its antecedents and consequences (see e.g., Maio, Haddock, & Verplanken, 2018; van Harreveld, Nohlen, & Schneider, 2015), there is little research about how ambivalent and non-ambivalent *people* are perceived and judged. The current paper examines how people perceive others who are (or are not) *dispositionally ambivalent*, and interpersonal implications of knowing whether someone else is

(or is not) dispositionally ambivalent.

The paper is structured as follows. We begin by introducing research that is relevant to the concept of dispositional ambivalence, which we define as an action tendency toward possessing and expressing ambivalent attitudes. This research shows that while there are important outcomes linked with *being* dispositionally ambivalent, there is a scarcity of research on the interpersonal consequences of being *perceived* as dispositionally (non-) ambivalent. However, there is research that has examined how people evaluate individuals who are (or are not) ambivalent about a single attitude object (i.e., state ambivalence), which we review. Integrating these literatures, we then report six experiments assessing how people perceive dispositionally ambivalent and non-ambivalent individuals, and how people expect to interact with targets who are (or are not) dispositionally ambivalent.

[☆] This paper has been recommended for acceptance by Dr. Pranjal Mehta.

* Corresponding author at: School of Psychology, Cardiff University, 70 Park Place, Cardiff CF10 3AT, UK.

E-mail address: HanR1@cardiff.ac.uk (R. Han).

<https://doi.org/10.1016/j.jesp.2023.104518>

Received 22 July 2022; Received in revised form 17 July 2023; Accepted 17 July 2023

Available online 11 August 2023

0022-1031/© 2023 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

1. Dispositional attitudinal ambivalence

Attitudinal ambivalence refers to simultaneously having positive and negative feelings about an attitude object. Ambivalent attitudes have been found to be less stable over time and less predictive of behavior than univalent attitudes (Armitage & Conner, 2000; Sawicki et al., 2013). Past research has demonstrated differences between ambivalence and concepts such as neutrality, ambiguity, and indecisiveness (see Ng & Hynie, 2016; Schneider & Schwarz, 2017). Dating back to Heider (1946) and Festinger (1957), a substantial literature has indicated that humans are motivated toward evaluative consistency, and this motivation arguably lies at the heart of the relation between attitudinal ambivalence and psychological discomfort (van Harreveld, Rutjens, Rotteveel, Nordgren, & Van Der Pligt, 2009).

While the vast majority of research on ambivalence addresses ambivalence toward a single attitude object, relatively little research addresses ambivalence at a more dispositional level. In one line of work, Thompson and Zanna (1995) examined the correlates of what they referred to as *chronic* ambivalence, which was operationalized as having ambivalent attitudes across a range of objects. Across two studies, these researchers found that higher chronic ambivalence was negatively correlated with individual differences in the need for cognition (Cacioppo & Petty, 1982) and positively correlated with individual differences in the personal fear of invalidity (Kruglanski, 1989), with these two constructs sharing between 3 and 16% of their variance with individual differences in ambivalence.

In another line of research, Simons, Schneider, and Sanchez-Burks (2018) investigated the magnitude of individual differences in attitudinal ambivalence. These researchers found that ambivalence varied significantly more across individuals than across attitude objects. Building upon these results, Schneider, Novin, van Harreveld, and Genschow (2021) developed the Trait Ambivalence Scale (TAS), a measure assessing individual differences in the general degree to which a person experiences ambivalence (a sample item being “Many topics make me feel conflicted”). Schneider et al. (2021) found that people scoring high on the TAS expressed fewer attributional biases, while Hohnsbehn, Urschler, and Schneider (2022) found that individuals with higher TAS scores were less likely to engage in confirmation biases. These researchers also found that greater ambivalence was positively correlated with fear of invalidity, dialectical thinking, and, in one study, negatively correlated with need for cognition (Schneider, Novin, & van Harreveld, 2022). One study testing links between the TAS and the Big 5 found that TAS scores were positively correlated with neuroticism, and negatively correlated with agreeableness and conscientiousness (with non-significant associations with extraversion and openness to experience). That said, the largest correlation (with conscientiousness) shared <14% of the variance with TAS scores (Schneider, 2023).

The current research focuses on dispositional ambivalence, but rather than examining consequences associated with being dispositionally ambivalent, we consider how people perceive and evaluate targets who are, or are not, dispositionally ambivalent. This is important in helping us better understand the social implications of how people perceive others' attitudes and whether their views, controversial or not, matter.

2. Evaluating people who are ambivalent about a single attitude object

While research has not examined how dispositionally ambivalent people are evaluated, previous studies have addressed how objective ambivalence toward a *single* attitude object (i.e., the assessed difference between positive and negative evaluations about an attitude object) influences how a target is perceived. Pillaud, Cavazza, and Butera (2018) examined how people evaluated targets who expressed ambivalence or non-ambivalence about controversial and non-controversial topics. In one study, participants were shown three fictitious targets'

attitudes toward immigration (a controversial issue in the country the data were collected). The targets' attitudes were created by the researchers varying the targets' supposed responses to a series of questions about their views on immigration. After seeing the three targets' attitudes, participants evaluated each target on their perceived warmth and competence, two fundamental components of how people perceive and evaluate individuals and groups (see Fiske, 2018, for a review). The results revealed that expressed objective ambivalence about a single controversial issue was linked with being evaluated as particularly competent, having resulted from a thoughtful consideration of both sides of the issue. In another study, participants viewed the attitudes of three fictitious targets who once again differed in expressed objective ambivalence, but about a relatively non-controversial issue (organic products). In this case, the target with the positive attitude was evaluated as warmer and more competent relative to the ambivalent and negative targets. Together, these studies imply that in the context of being ambivalent about a single object, ambivalence has important consequences for one's perceived warmth and competence, and that these consequences differ as a function of whether a target is ambivalent about a controversial or non-controversial issue.

Of course, knowing that a target is objectively ambivalent (or not) about a single controversial topic may result in different evaluative consequences compared to knowing that a target is ambivalent (or not) at the dispositional level. As discussed by Pillaud et al. (2018), explicitly reporting that one simultaneously sees the positives and negatives about a particular controversial issue is likely to be perceived by others as demonstrating cognitive flexibility and being knowledgeable, eliciting perceptions of competence. In contrast, we posit that someone who describes themselves as generally feeling torn across attitude objects is likely to be perceived by others as weak and reluctant to take clear positions, eliciting perceptions of reduced competence. Similarly, describing oneself, or being perceived as, dispositionally non-ambivalent (i.e., rarely feeling torn across issues) is likely to signal enhanced competence given that (a) chronic non-ambivalent attitudes are perceived as a reflection of being resolute and strong (see e.g., van Harreveld et al., 2015), and (b) that being perceived as strong is linked with being perceived as competent (e.g., Klofstad, Anderson, & Nowicki, 2015). Regarding warmth, being perceived as dispositionally ambivalent can signal a consideration and willingness to engage with diverse perspectives, which aligns with communion (parallel to warmth) by demonstrating an openness to different views, a desire for social harmony, and a willingness to establish connections and understanding with others (Abele & Wojciszke, 2018).

To the best of our knowledge, links between dispositional ambivalence, warmth, and competence have not been directly addressed. However, various strands of research, studying concepts relevant to dispositional ambivalence, are consistent with our suggestion that dispositional non-ambivalence is linked with perceptions of enhanced competence and reduced warmth. Regarding competence, cross-cultural research by Abele et al. (2016) found positive links between assertiveness and competence; assertiveness has been found to be linked with strength and influence (Anderson & Kilduff, 2009). Cuddy, Glick, and Beninger (2011) reported evidence demonstrating that displays of a target's social power were linked with perceptions of enhanced competence, while research by Eaton, Visser, Krosnick, and Anand (2009) found links between social power and possessing stronger (i.e., non-ambivalent) attitudes across topics. Conceptual links between strength and non-ambivalence were addressed above. Regarding warmth, Teeny and Petty (2022) found that participants were more willing to socially engage with a target perceived as possessing greater attitudinal openness (similar to the dialectic and balanced nature of those with an ambivalent disposition). In addition, Halevy, Chou, and Murnighan (2012) found that displaying competitive behavior, which has been conceptualized as indicative of strength (see Fong, Zhao, & Smillie, 2021), resulted in decreased perceptions of warmth.

Taken together, these lines of research are all consistent with the

proposal that being perceived as dispositionally non-ambivalent should be associated with being judged as more competent and less warm. In our research, we directly test whether targets who are (or are not) dispositionally ambivalent differ in the extent to which they are perceived as warm and/or competent, and whether these perceptions have further downstream effects in mediating other outcomes.

3. The present research

Integrating extant research in novel and important ways, we explore whether people make inferences about a target based on their perceived dispositional ambivalence, how people perceive dispositionally ambivalent and non-ambivalent targets, and whether people expect ambivalent and non-ambivalent targets to possess different attributes and behave in different ways. Further, we explore the degree to which perceived warmth and competence might play a role in understanding people's expectations about dispositionally ambivalent and non-ambivalent targets.

We report six experiments addressing these aims. In some of the experiments, participants were provided with verbal descriptions of targets who were described (or described themselves) in ways implying that they were dispositionally ambivalent or non-ambivalent. In other experiments, we presented participants with images of dispositionally ambivalent or non-ambivalent targets that were derived from a reverse correlation procedure (Dotsch & Todorov, 2012). By using different paradigms, we sought to assess whether the effects of dispositional ambivalence would apply across different presentation modes, as well as gathering novel information about how people mentally represent dispositionally ambivalent and non-ambivalent individuals. Given past research demonstrating that the implications of state ambivalence are influenced by what a target is ambivalent about (i.e., something that is or is not controversial; Pillaud et al., 2018), we incorporated targets who differed in whether they were ambivalent toward only controversial issues, ambivalent toward controversial and non-controversial issues, or non-ambivalent.

Experiment 1 examined how fairly participants expected a dispositionally ambivalent or non-ambivalent target to behave. Experiment 2 used a reverse correlation paradigm (Dotsch & Todorov, 2012) to generate mental representations of dispositionally ambivalent and non-ambivalent faces, which were then evaluated by another sample on a series of attributes (e.g., open-mindedness, likeability, warmth, and competence). Experiment 3 examined whether people could link attitudinally ambivalent and non-ambivalent faces, as generated in Experiment 2, to targets who verbally described themselves as dispositionally ambivalent or non-ambivalent. Experiment 4 tested whether dispositionally ambivalent and non-ambivalent targets would exhibit less or more dominant behavior in an economic game. Experiments 5 and 6 replicated the earlier findings and further explored how perceived ambivalence influences social interactions. Across the experiments, we consider the roles of warmth and competence in mediating observed effects. The materials and data for all six experiments are available online at https://osf.io/xep4k/?view_only=eebb8ca6da094d4d87a25d4b4ba8d24f (with Experiments 5 and 6 being pre-registered). In all six experiments we report all measures, manipulations and exclusions, and sample sizes were set before any data analysis. All experiments received approval from the Cardiff University School of Psychology Ethics Committee.

4. Experiment 1

Experiment 1 explored the links between a target's dispositional ambivalence and expectations regarding their attributes and behavior. Specifically, we tested how participants would evaluate targets who described themselves as dispositionally ambivalent or non-ambivalent, and whether they would expect ambivalent and non-ambivalent targets to exhibit more or less equitable behavior. This was tested using the

Dictator Game (Forsythe, Horowitz, Savin, & Sefton, 1994; Kahneman, Knetsch, & Thaler, 1986), a commonly used economic game in which a dictator decides how many tokens to share with a partner, with the partner being unable to negotiate with the dictator. Ruessmann and Unkelbach (2021) examined the inferences people make about dictators who act fairly or unfairly, finding that participants expected agentic dictators to be less fair than communal dictators. As research has found that warmth is associated with cooperativeness (Fragale, Overbeck, & Neale, 2011), whereas competence is associated with dominance and less sharing of resources (Cheng, Tracy, Foulsham, Kingstone, & Henrich, 2013), we considered whether warmth and competence might underlie effects of inferred dispositional ambivalence on a target's expected behavior.

We adapted the Dictator Game paradigm to examine how participants would expect ambivalent and non-ambivalent individuals to behave as the dictator. Participants read information allegedly written by one of three different targets: one who was ambivalent toward controversial issues, one who was ambivalent toward everything, and one who was non-ambivalent. Next, participants evaluated the target on a series of dimensions before being asked to imagine that they were playing the Dictator Game with the target. Participants then made two judgments. First, they estimated how many tokens they believed the target would allocate as the dictator. An effect on this measure would provide evidence on the link between a target's stated ambivalence and expectations of their cooperative behavior. Second, and at a more exploratory level, participants estimated how many tokens they themselves would allocate to the target as the dictator. This measure was included to examine whether participants' expectations of their own behavior might be affected by expectations about the target.

We hypothesized that participants would perceive a dispositionally non-ambivalent target as more competent and less warm relative to the ambivalent targets, whereby the non-ambivalent target would be expected to share fewer tokens than the ambivalent dictators. It was unclear whether the participant's own behavior would be affected by whether they perceived themselves as being paired with an ambivalent or non-ambivalent target.

4.1. Method

4.1.1. Participants

223 participants (197 females, 21 males, 4 other, 1 did not say; $M_{\text{age}} = 19.65$ years; range = 18 to 40) were recruited from Cardiff University. Nine additional participants failed to complete the study. A sensitivity power analysis for the between-participant F tests, conducted in G*Power (Faul, Erdfelder, Buchner, & Lang, 2017; alpha = 0.05, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.209$. A sensitivity power analysis for the mixed ANOVA, conducted in G*Power (Faul et al., 2017; alpha = 0.05, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.104$.

4.1.2. Procedure

Participants completed the study via Qualtrics. After providing consent, participants learned about the Dictator Game. They were then randomly assigned to one of three conditions where they were asked to imagine playing the game with a target described themselves as either (a) ambivalent toward controversial issues, (b) ambivalent toward all issues, or (c) non-ambivalent. The text used in the descriptions was adapted from items on the TAS (Schneider et al., 2021).

The target who was ambivalent toward controversial issues (i.e., the A-C target) stated that: "When thinking about my own attitudes and opinions, I would say that I often feel torn between two sides of an issue, mainly for controversial issues. In reality, many controversial topics make me feel conflicted. Some people say that their thoughts and feelings are in conflict when considering controversial issues, and that they

usually find the pros and cons to such things. I would say that is very true of me.”

The target who was ambivalent about controversial and non-controversial issues (i.e., the A-ALL target) indicated that: “When thinking about my own attitudes and opinions, I would say that I often feel torn between two sides of an issue, even on issues that most people take for granted. In reality, most topics make me feel conflicted. Some people say that their thoughts and feelings are in conflict when considering most issues, and that they usually find the pros and cons to everything. I would say that is very true of me.”

The target who was non-ambivalent (i.e., the NA target) indicated that: “When thinking about my own attitudes and opinions, I would say that I rarely feel torn between two sides of an issue. In reality, few topics make me feel conflicted. Some people say that their thoughts and feelings are in conflict when considering different issues, and that they usually find the pros and cons to everything. I would say that is not true of me.”

After reading about their target, participants rated the target on eight attributes: having mixed views, warmth, competence, likeability, dominance, unpredictability, ordinariness, and informality (having mixed views was presented first, the others presented in random order). The first served as a manipulation check, the next set was intended to measure warmth (warmth and likeability) and competence (competence and dominance), whereas the final three dimensions (taken from Chandler, 2018) were added as foils, and are not discussed.

After rating the target on these attributes, participants were asked to imagine playing the Dictator Game with the target they had read about. First, they indicated how many tokens they believed the target would share with them if the target was the dictator. Second, they indicated how many tokens they would share with the target if they were the dictator.

Finally, participants rated the extent to which the information they learned about the target person influenced how they thought (a) the target would behave as the dictator and (b) how they would behave as the dictator (1 = *Not at all influential*, 9 = *Extremely influential*) as well as measures of general ambivalence, personal need for closure, and empathy, and demographic questions (see supplemental information).

4.2. Results

4.2.1. Did the targets differ in their perceived ambivalence?

To start, we tested whether the three targets differed in how they were perceived as generally having mixed views. This was tested using a one-way ANOVA. Participants perceived the non-ambivalent target as having less mixed views than both ambivalent targets (both $p < .001$; see Table 1). This implies that our text descriptions differentiated between

Table 1
Mean ratings on the attributes for the three targets: Experiment 1.

	A-C (n = 74)	A-ALL (n = 72)	NA (n = 77)		η_p^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Mixed	5.24 ^a [5.02, 5.46]	5.35 ^a [5.10, 5.59]	1.70 ^b [1.41, 1.99]	$F(2, 220) = 269.26^{***}$	0.71
Warm	5.34 ^a [5.02, 5.66]	5.44 ^a [5.10, 5.77]	4.00 ^b [3.65, 4.35]	$F(2, 220) = 23.33^{***}$	0.18
Competent	4.30 ^b [3.98, 4.63]	4.42 ^b [4.08, 4.76]	6.17 ^a [5.82, 6.52]	$F(2, 220) = 38.75^{***}$	0.26

Note. Superscripts that differ in one row represent a mean difference < 0.05 . A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. *** $p < .001$.

dispositionally ambivalent and non-ambivalent targets.

4.2.2. Structure and ratings of attributes

We factor analyzed responses to the attributes (see supplemental analyses). The factor analysis yielded two dimensions, one representing warmth (warm and likeable), the second representing competence (competent and dominant). We conducted a one-way ANOVA on each dimension and found significant differences on both (see Table 1). The non-ambivalent target was perceived as less warm and more competent compared to both ambivalent targets (all $p < .001$).

4.2.3. The number of tokens allocated

To examine whether the target's description influenced the sharing of tokens, we conducted a 3 (Target: ambivalent toward controversial issues, ambivalent toward all issues, non-ambivalent) \times 2 (Dictator: target, self) mixed ANOVA (see Table 2). The main effect of target was significant, $F(2, 220) = 7.71, p < .001, \eta_p^2 = 0.07$; participants who read about the non-ambivalent target stated that fewer tokens would be shared compared to participants who read about the ambivalent targets ($M_{NA} = 32.71, M_{A-C} = 41.37, M_{A-ALL} = 38.03$, both $p \leq .019$). The main effect of dictator was not significant, $F(1, 220) = 0.65, p = .420, \eta_p^2 = 0.003$. More importantly, there was a significant interaction, $F(2, 220) = 20.61, p < .001, \eta_p^2 = 0.16$. When the target was the dictator, the non-ambivalent target was expected to share significantly fewer tokens than both ambivalent targets, $F(2, 220) = 24.82, p < .001, \eta_p^2 = 0.18$. However, when the participant was the dictator, the number of tokens expected to be shared did not differ across targets, $F(2, 220) = 1.12, p = .330, \eta_p^2 = 0.01$.

4.3. Mediation analyses

To examine whether the relationship between the targets' perceived ambivalence and their allocated resources was influenced by their perceived warmth and competence, we conducted a mediation analysis using the PROCESS package in SPSS (Hayes, 2018). In this model, we examined how perceived ambivalence, as measured by ratings of how mixed the assigned target's views were perceived to be, affected the predicted allocation via warmth and competence. The analysis combined data across the three targets.

The results (see Fig. 1) revealed that, firstly, the total effect of ambivalence on allocation was positive. When participants perceived the target as more ambivalent, they expected the target to share more tokens ($F(1, 221) = 72.22, p < .001, R^2 = 0.25$).

Second, perceived ambivalence positively predicted warmth ($F[1, 221] = 69.97, p < .001, R^2 = 0.24$) and negatively predicted competence ($F[1, 221] = 109.45, p < .001, R^2 = 0.33$). In other words, targets perceived as more dispositionally ambivalent were judged as warmer and less competent.

Taking perceived ambivalence, warmth, and competence into consideration together, we found that the expected allocation was

Table 2
The number of tokens the dictator would offer: Experiment 1.

	TARGET was the dictator	PARTICIPANT was the dictator
	M [95% CI]	M [95% CI]
A-C	43.26 ^a [40.39, 46.12]	39.47 [35.92, 43.03]
A-ALL	40.63 ^a [37.49, 43.76]	35.43 [31.14, 39.72]
NA	26.74 ^b [22.30, 31.18]	38.68 [34.56, 42.79]
	$F(2, 220) = 24.82^{***}$	$F(2, 220) = 1.12$
η_p^2	0.18	0.01

Note. Superscripts that differ in one column represent a mean difference < 0.05 . A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. *** $p < .001$.

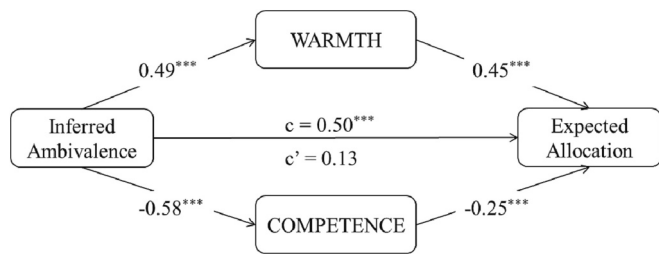


Fig. 1. The effect of inferred ambivalence and expected allocation through warmth and competence.

marginally positively predicted by ambivalence ($p = .075$) and positively predicted by warmth ($p < .001$), and negatively predicted by competence ($p < .001$), $F(3, 219) = 49.38$, $p < .001$, $R^2 = 0.40$. That is, participants expected to receive more tokens from a target perceived as more ambivalent, warmer, and less competent.

Overall, both warmth and competence mediated the association between inferred ambivalence and expected allocation. The standardized indirect effect of perceived ambivalence on allocation was 0.36 (Bootstrap 95% CI [0.26, 0.46], $SE = 0.05$). This implies that the relationship between perceived ambivalence and the expected tokens allocated by the target was mediated by warmth and competence.

4.4. Discussion

Experiment 1 examined how a target's dispositional ambivalence would influence how they were evaluated, as well as participants' allocation judgments. Consistent with our hypothesis, the target's ambivalence influenced the expected allocation, with a reduced allocation associated with the dispositionally non-ambivalent target.

Regarding target attributes, the results were somewhat divergent from previous research studying the effects of ambivalence toward a single attitude object. Pillaud et al. (2018) found that a target who expressed non-ambivalence toward a single controversial issue was evaluated as less competent than one with an ambivalent attitude. However, we found that the target who described themselves as dispositionally non-ambivalent was rated as colder but more competent than the ambivalent targets. These patterns could be attributable to different processes. First, in Pillaud et al.'s (2018) study, the valence of targets' attitude (positive, negative or ambivalent) was salient, which was not the case in our study. Further, and of particular importance, Pillaud et al. focused on a single attitude object, whereas our descriptions focused on general dispositions. The latter difference might reflect disparities in implications associated with state versus dispositional ambivalence.

Regarding mediation, perceived ambivalence predicted warmth and competence, with warmth (competence) positively (negatively) related to the expected allocation. This is consistent with previous research showing that warmth predicts more friendly behavior (e.g., sharing), whereas competence predicts less sharing of resources (Cheng et al., 2013).

5. Experiment 2

Experiment 1 found that verbal descriptions of targets' dispositional ambivalence influenced how they were evaluated and how they were expected to behave. Experiment 2 builds upon these findings by addressing the novel question of how people mentally represent dispositionally ambivalent and non-ambivalent targets, and whether differences in mental representations of ambivalent and non-ambivalent targets impact subsequent judgments. To the extent that there is comparability across presentation modes, we would predict the non-ambivalent target to be perceived as colder and more competent than the ambivalent targets, and that warmth and competence should

mediate further effects.

To test this question, we adopted the reverse correlation procedure (Dotsch & Todorov, 2012). The procedure starts with participants in one sample (i.e., generators) completing a computer-based task whereby they selectively generate their own representation of a typical group member (e.g., in our research, someone who is either generally attitudinally ambivalent or non-ambivalent). These individual representations are then averaged across respondents within each generation condition, resulting in a single classification image characterizing the average facial representation of a category member. These classification images are then evaluated by another sample of participants, unaware of how the faces were created.

Numerous studies have used the reverse correlation paradigm to assess the importance of such representations in understanding social perception. In one study, Brown-Iannuzzi, McKee, and Gervais (2018) assessed participants' representations of atheists and theists, which were then rated by a naïve sample. These researchers found that the atheist image was judged as less trustworthy, moral and likeable than the theist image. Haddock, Foad, and Thorne (2022) found that mental representations of mindful and non-mindful targets were judged as differing in likeability, warmth, and competence, as well as perceived as holding different values. The paradigm has also been applied with target groups such as welfare recipients (Brown-Iannuzzi, Dotsch, Cooley, & Payne, 2017) and perceptions of liberals and conservatives (Proulx, Costin, Magazin, Zarzeczna, & Haddock, 2023).

Experiment 2 used the reverse correlation paradigm to assess how people mentally represent individuals whose attitudes generally tend to be ambivalent or non-ambivalent. Specifically, we assessed whether people have different representations of (a) someone who is generally ambivalent about controversial issues only (i.e., A-C), (b) someone who is generally ambivalent about controversial and non-controversial issues (i.e., A-ALL), and (c) someone who is generally non-ambivalent (i.e., NA). After we generated these three images, a second group of participants (i.e., raters), unaware of how the images were generated, evaluated the images on a range of outcomes. The raters first evaluated the three images on their warmth and competence. Previous research has demonstrated that participants can infer warmth and competence on the basis of reverse correlation classification images (Imhoff, Woelki, Hanke, & Dotsch, 2013). In our experiment, after judging the targets on their perceived warmth and competence, we also asked participants to indicate how they would expect to interact with the targets and to provide their judgment of each target's suitability for various professions (where being ambivalent or non-ambivalent might be useful). These outcomes were selected to begin to assess the potentially diverse effects of encountering a dispositionally ambivalent or non-ambivalent individual.

Building upon Experiment 1, we expected the dispositionally non-ambivalent target to engage in more dominant behavior, be perceived as more suitable for roles such as soldier and business executive, and less suitable as a social worker. Further, we tested whether such effects would be mediated by warmth and competence. In both phases, participants completed measures of general ambivalence, personal need for closure, empathy and reported their own frequency and comfort about holding ambivalent attitudes (see supplemental information).

5.1. Method

5.1.1. Image generation phase

5.1.1.1. *Participants.* 292 participants (217 females, 69 males, 4 other, 2 did not answer; $M_{age} = 30.80$ years; range = 18 to 74) were recruited. 116 students ($M_{age} = 19.74$ years; range = 18 to 35) were recruited from Cardiff University; 176 ($M_{age} = 38.10$ years; range = 18 to 74) were recruited from Prolific (www.prolific.ac), who were paid £3 for taking part. Eight additional participants did not complete the experiment,

whereas 19 others failed an attention check (see below).

5.1.1.2. Procedure. A base face was created by morphing three Caucasian adult female faces and three Caucasian adult male faces. Next, 400 pairs of images were generated from the base face with the R package *rcicr* (Dotsch & Todorov, 2012). For each pair, one image was superimposed by a random pattern of white noise; the other image was superimposed with the opposite pattern of white noise.

Generators were randomly assigned to one of three conditions, where the sole difference was a description of how frequently the target reported possessing ambivalent attitudes. In the A-C condition, the target described themselves as having ambivalent attitudes about controversial issues: “I often feel torn between two sides of an issue, especially for controversial issues.” In the A-ALL condition, the target described themselves as having ambivalent attitudes about both controversial and non-controversial issues (“I often feel torn between two sides of an issue, even on issues that most people take for granted”), whereas participants in the NA condition were presented with information about a target who described themselves as having non-ambivalent attitudes (“I rarely feel torn between two sides of an issue”).

The image generation task consisted of 410 trials, including 10 attention checks. In each trial, participants were shown two facial images presented side-by-side, along with the target's description. Participants were asked to select the image that best represented the target. In the attention check trials, a child face and an adult face were presented, and participants were asked to select the adult face. The data from 19 generators whose performance on the attention check was below 50% were excluded (we retained the data from four others who scored 50%). There was a break after 205 trials. Participants pressed the space bar when they were ready to continue.

A participant's selected choices were then processed to derive their individual mental representation of their assigned target, and these individual representations were then aggregated across participants within each condition. These three average classification images (displayed in Fig. 2) were used in the study's rating phase, where new participants evaluated the images.

5.1.2. Image rating phase

5.1.2.1. Participants. 196 participants (140 females, 53 males, 1 other, 2 prefer not to say; $M_{age} = 34.14$ years; range = 18 to 78) were recruited from Prolific and paid £1.50 for taking part. A sensitivity power analysis for the within-participant *F* tests, conducted in G*Power (Faul et al., 2017; $\alpha = 0.05$, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.091$. A sensitivity power analysis for the between-participant *F* tests, conducted in G*Power (Faul et al., 2017; $\alpha = 0.05$, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.223$.

5.1.2.2. Apparatus/materials. After providing consent, participants completed the questionnaire via Qualtrics. First, participants rated all three images on 10 attributes (open-mindedness, trustworthiness, decisiveness, likeability, warmth, competence, attractiveness, dominance, masculinity, age). The faces and attributes were presented in random order. All ratings were made on a seven-point scale (1 = *Not at all*; 7 = *Extremely*), except for age, where participants provided a numerical value.

Second, participants were randomized into one of three conditions and answered how they would expect to interact with one of the three generated faces in two different scenarios:

- Imagine that you were going to meet this person and that you would be working with them on a project. When working in pairs, usually one person ends up taking the lead role. To what extent do you think you or the person in the picture would take the lead role when working together? (1 = *I would be very likely to take the lead role*; 6 = *They would be very likely to take the lead role*).
- Imagine that you are a car salesperson interacting with the person in the picture above. Based solely on this picture, how easy do you think it will be to persuade them to buy the car? (1 = *Extremely easy*; 6 = *Not at all easy*). Next, how much information do you think this person will want to know about the car? (1 = *A great deal*; 5 = *Very little*). Finally, do you think this person would only ask you questions about what they perceive as the car's positive features, or would they also ask you questions about what they perceive as the car's negative features? (1 = *They would only ask about positive features*; 5 = *They would ask about both positive and negative features*).

Third, we presented participants with all three images and asked them which one would be the best person for each of five different professions (politician, social worker, soldier, salesperson, business executive) and two office roles (colleague and boss). These were presented in random order across participants.

Finally, for exploratory purposes we asked participants to consider the differences and similarities between two of the three images. Analyses relevant to these items are described in supplemental materials.

5.2. Results

5.2.1. Structure and ratings of attributes

We factor analyzed responses to the attributes (see supplemental analyses). The factor analysis yielded two dimensions, one representing warmth (and included the items warm, likeable, trustworthy, open-minded, and attractive) and the second representing competence (and included the items competent, dominant, decisive, and masculine). We conducted a one-way ANOVA on both dimensions (see Table 3). The non-ambivalent target was perceived as less warm than the A-C target ($p < .001$), and more competent compared to both ambivalent targets

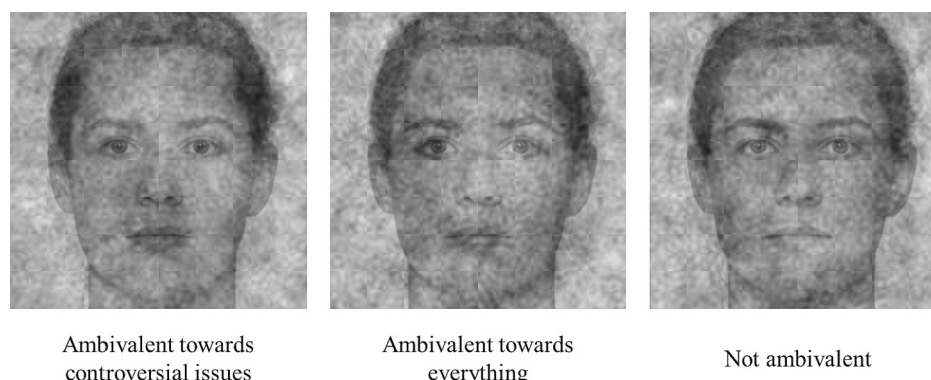


Fig. 2. Average classification images.

Table 3
Mean ratings on the attributes for the three classification images: Experiment 2.

	A-C	A-ALL	NA		η_p^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Warm	4.09 ^a [3.95, 4.22] 3.75 ^b	3.88 ^b [3.75, 4.00] 3.85 ^b	3.77 ^b [3.64, 3.90] 4.86 ^a	$F(1.84, 357.85) = 13.38^{***}$	0.06
Competent	[3.64, 3.86]	[3.74, 3.97]	[4.73, 4.99]	$F(1.84, 356.48) = 165.47^{***}$	0.46

Note. Superscripts that differ in one row represent a mean difference < 0.05. A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. *** $p < .001$.

(both $p < .001$), who themselves marginally differed ($p = .067$). These findings show strong overlap with the results of Experiment 1, using a far more nuanced procedure to assess a target's dispositional ambivalence.

5.2.2. Expectations of interactions with the targets

To examine how participants would expect to interact with the targets, we conducted one-way ANOVAs (see top portion of Table 4). Building upon Experiment 1, we expected the non-ambivalent target to engage in more dominant behavior. Starting with the judgment of how likely the target would be to take the lead when working together with the participant, we found that the non-ambivalent target was judged as more likely to take the lead compared to the two ambivalent targets. On the sales items, ratings of the persuasion item differed across the three targets. The target who was non-ambivalent was judged as significantly more difficult to persuade compared to the A-C target (but not the A-ALL target). There were no differences on the information items (both $p \geq .200$).

Table 4
Judgments about interacting with target and judgments on professions and roles: Experiment 2.

	A-C (n = 64)	A-ALL (n = 65)	NA (n = 66)		η^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Take the Lead	3.14 ^c [2.82, 3.46]	3.60 ^b [3.28, 3.92]	4.06 ^a [3.74, 4.38]	$F(2, 192) = 8.07^{***}$	0.08
Persuadable	3.28 ^b [3.00, 3.56]	3.74 ^a [3.46, 4.02]	4.05 ^a [3.77, 4.32]	$F(2, 192) = 7.48^{***}$	0.07
Information	2.89 [2.61, 3.17]	2.63 [2.35, 2.91]	2.77 [2.49, 3.05]	$F(2, 192) = 0.83$	0.01
PN	3.52 [3.25, 3.78]	3.75 [3.49, 4.02]	3.83 [3.57, 4.10]	$F(2, 192) = 1.51$	0.02

	A-C (%)	A-ALL (%)	NA (%)	
Politician	25.5	27.0	47.4	$\chi^2(2, 196) = 17.64^{***}$
Soldier	12.2	18.4	69.4	$\chi^2(2, 196) = 115.76^{***}$
Salesperson	20.0	26.7	53.3	$\chi^2(2, 195) = 36.40^{***}$
Business Exec	14.3	30.1	55.6	$\chi^2(2, 196) = 51.13^{***}$
Social worker	53.6	38.3	8.2	$\chi^2(2, 196) = 62.77^{***}$
Colleague	42.3	42.9	14.8	$\chi^2(2, 196) = 30.32^{***}$
Boss	34.2	39.8	26.0	$\chi^2(2, 196) = 5.64^*$

Note. Superscripts that differ in one row represent a mean difference < 0.05. A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. * $p = .060$, *** $p < .001$.

5.2.3. Professions and office role ratings

We conducted chi-square tests to assess the degree to which participants perceived each image as best suited for each profession and office role (see bottom portion of Table 4). The non-ambivalent target was judged as best suited for the roles of politician, soldier, salesperson, and business executive, and least well suited as a social worker (all $p < .001$). Further, the non-ambivalent image was rated as the target participants would least want to have as a work colleague ($p < .001$), with a marginally significant effect on not wanting to have the non-ambivalent image as a boss ($p = .060$).

5.3. Mediation analyses

To examine whether the relationship between the targets' ambivalence and outcomes was affected by perceived warmth and competence, we conducted mediation analyses. The analysis combined data across the three targets. Our independent variable was whether participants were presented with an ambivalent (coded as 1) or non-ambivalent image (coded as -1), the warmth and competence indices served as mediators, with a separate analysis conducted for each outcome variable. We only examined the items on which participants rated the targets differently.

The results revealed that, firstly, that the non-ambivalent target was more likely to be expected to take the lead and be more difficult to persuade.

Secondly, ambivalence positively predicted warmth, $\beta = 0.17, SE = 0.07, F(1, 193) = 5.40, p = .021, R^2 = 0.03$; while negatively predicting competence, $\beta = -0.49, SE = 0.07, F(1, 193) = 53.20, p < .001, R^2 = 0.22$. In other words, targets who were more ambivalent were judged as warmer and less competent (for total effect and direct effect, see Table 5).

5.4. Discussion

The aim of Experiment 2 was to assess how people mentally represent targets who are (or are not) dispositionally ambivalent, and whether the qualities of these representations have meaningful consequences. As expected, the ambivalent and non-ambivalent targets were evaluated differently on their perceived warmth and competence, with the non-ambivalent target judged as colder and more competent. This is consistent with what we found in Experiment 1. The faces also differed in whether participants believed the targets would take the lead in a task, how easily the targets could be persuaded, and how suitable they were perceived to be for different professions and office roles. Warmth and competence played important roles in mediating the effects of ambivalence on the outcome variables. Taken together, the results offer an initial demonstration that people have a general mental representation of individuals who are or are not dispositionally ambivalent, and these representations contain information that influences raters' perceptions and behavioral intentions, even when the raters have no information about how the representations were generated.

The study included two outcome variables assessing how participants would expect to interact with an ambivalent or non-ambivalent target. We found that participants expected the non-ambivalent target to be most likely to take the lead when working together with the participant. We also found that the non-ambivalent target was judged as more difficult to persuade compared to both ambivalent faces, possibly because of being perceived as holding stronger attitudes. This possibility is consistent with research regarding attitudinal ambivalence and persuasion (e.g., Clark, Wegener, & Fabrigar, 2008; Maio, Bell, & Esses, 1996). Our evidence is novel in suggesting that mental images of what it means to be (non-) ambivalent lead to meaningful and important distinctions, even when people have no insight into how these ambivalent and non-ambivalent classification images were derived.

The non-ambivalent face differed from the ambivalent faces on how suitable it was judged to be for a range of professions and office roles,

Table 5
The effect of ambivalence on expected social interactions through warmth and competence.

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect	
					Effect (BootSE)	Bootstrap 95% CI
Take the Lead	-0.05 (0.11)	-0.15* (0.10)	0.36***(0.10)	-0.25***(0.10)	-0.20 (0.06)	[-0.32, -0.10]
Persuade	-0.15 ¹ (0.10)	-0.16* (0.09)	-0.11 (0.09)	-0.23***(0.09)	-0.08 (0.05)	[-0.17, 0.02]
X + M · > Y				Total effect		
Take the Lead	$F(3, 191) = 12.18, p < .001, R^2 = 0.16$			$F(1, 193) = 11.96, p < .001, R^2 = 0.06$		
Persuade	$F(3, 191) = 5.15, p = .002, R^2 = 0.07$			$F(1, 193) = 9.49, p = .002, R^2 = 0.05$		

Note. ¹ $p = .087$, * $p < .05$, ** $p < .01$, *** $p < .001$

which were selected on qualities such as leadership (business executive), demonstrations of strength (politician), needing to make swift decisions (soldier), and empathizing with others (social worker). To our knowledge, this represents the first experiment examining how reverse correlation classification images impact respondents' views on images' suitability for different roles, though research has examined how people evaluate classification images of faces exemplifying different professions (e.g., Hehman, Flake, & Freeman, 2015; Imhoff et al., 2013). The scope of effects derived from these ratings speak to the strength of the mental representations in conveying meaningful information (see Sutherland & Young, 2022).

6. Experiment 3

Experiment 2 demonstrated that people have different mental representations of ambivalent and non-ambivalent targets and that these representations have diverse and important implications. Building upon these findings, Experiment 3 directly considers whether participants perceived the three reverse classification images as differing in their dispositional ambivalence. This is important because in Experiment 2, participants who evaluated the three faces were only presented with the images, without information about the targets' ambivalence. By directly examining the degree to which the classification images are linked with dispositional ambivalence, we can further understand how people conceptualize dispositional ambivalence, as well as addressing the breadth of effects associated with the reverse correlation images.

We presented participants with the written target descriptions used in Experiment 1, in which a target described themselves in a way that would lead the participant to infer that the target was (or was not) dispositionally ambivalent. After reading about a target, participants reported the extent to which the description represented each of the three reverse correlation classification images. We hypothesized that participants would be able to differentiate between the ambivalent and non-ambivalent targets and the reverse correlation images. Given the visual similarities between the two ambivalent reverse correlation images, we were uncertain as to whether participants would show a clear differentiation between these two images.

6.1. Method

6.1.1. Participants

86 participants (77 females, 7 males, 2 other; $M_{age} = 18.94$ years; range = 17 to 25) were recruited via a participant panel from Cardiff University. Five additional participants were excluded for failing an attention check. A sensitivity power analysis for the within-participant F tests, conducted in G*Power (Faul et al., 2017; $\alpha = 0.05$, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.138$.

6.1.2. Procedure

Participants completed the study via Qualtrics. To start, participants

read text in which a target stated the extent to which their attitudes were generally ambivalent. Specifically, participants read the target descriptions used in Experiment 1.

After reading about the target, participants evaluated the target on the extent to which this person had mixed views (1 = *Not at all mixed*; 6 = *Extremely mixed*). Next, participants were individually presented with the three classification images (presented in a random order) and indicated the likelihood that the image was the target described in the text (1 = *Extremely unlikely*, 9 = *Extremely likely*), before being presented with the three images together, and selecting the single image they thought was most likely to be the target. This sequence was then repeated for the two remaining targets, after which participants were presented with an attention check item. Participants then rated themselves on two additional questions (see supplemental information) and reported their age and gender before debriefing.

6.2. Results and discussion

To start, we conducted a one-way repeated measures ANOVA assessing how ambivalent (or mixed) each target was perceived to be (see upper portion of Table 6). The results revealed a significant effect, $F(1.75, 148.54) = 296.02, p < .001, \eta_p^2 = 0.78$. Overall, the target who was ambivalent about everything was perceived as most ambivalent ($M = 5.33$), followed by the target who was ambivalent toward controversial issues ($M = 4.76$) and the non-ambivalent target ($M = 1.66$). All means were different from each other at $p < .001$.

Table 6
The likelihood and frequency that each image was each target: Experiment 3.

	A-C	A-ALL	NA
	M [95% CI]	M [95% CI]	M [95% CI]
How mixed	4.76 ^a [4.52, 4.99]	5.33 ^b [5.12, 5.53]	1.66 ^c [1.44, 1.88]
$F(1.75, 148.54) = 296.02^{****}, \eta_p^2 = 0.78$			
A-C Image	4.95 ^{ab} [4.58, 5.33]	5.31 ^a [4.92, 5.71]	4.50 ^b [4.10, 4.90]
A-ALL Image	5.35 ^a [4.95, 5.75]	5.19 ^a [4.84, 5.54]	4.49 ^b [4.17, 4.81]
NA Image	4.64 ^b [4.25, 5.03]	4.05 ^b [3.67, 4.42]	5.79 ^a [5.36, 6.22]
	$F(2, 170) = 3.00^*$	$F(1.85, 156.90) = 12.65^{****}$	$F(2, 170) = 12.48^{****}$
η_p^2	0.03	0.13	0.13
A-C Image	36	42	18
A-ALL Image	33	28	16
NA Image	16	15	51
	$\chi^2(2) = 8.21^{**}$	$\chi^2(2) = 12.87^{***}$	$\chi^2(2) = 27.27^{****}$

Note. A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. **** $p < .001$; *** $p < .01$, ** $p < .05$, * $p = .053$.

To examine whether participants linked the target's ambivalence with the classification images, we conducted a 3 (Target: ambivalent toward controversial issues, ambivalent toward all issues, non-ambivalent) \times 3 (Image; A-C, A-ALL, NA) repeated measures ANOVA. Neither main effect was significant, $F_{\text{target}}(1.83, 155.18) = 0.71, p = .481, \eta_p^2 = 0.01$; $F_{\text{image}}(2, 170) = 0.87, p = .419, \eta_p^2 = 0.01$. However, as expected, there was a significant interaction, $F(3.65, 310.44) = 11.84, p < .001, \eta_p^2 = 0.12$ (see Table 6). To understand the pattern of the interaction we conducted a one-way repeated measures ANOVA for each target. For the target who described themselves as ambivalent about controversial issues, the non-ambivalent image was judged as least likely to be that target compared to the image that was ambivalent about everything, $p = .019$. For the target who described themselves as ambivalent about everything, the non-ambivalent image was again judged as least likely to be that individual compared to both ambivalent images, both $p < .001$, with no difference between the ambivalent images, $p = .641$. Finally, for the target who described themselves as non-ambivalent, the non-ambivalent image was judged as most likely to be that individual, both $p < .001$, with no difference between the two ambivalent images, $p = .967$.

We also conducted a chi-square test to examine differences in the frequency with which each description was judged as *most likely* to be each image. The results revealed a significant effect, $\chi^2(4) = 46.45, p < .001$. As seen in Table 6, the non-ambivalent image was least likely to be selected as both of the ambivalent targets, and most likely to be selected as the non-ambivalent target.

The aim of Experiment 3 was to examine whether participants could link a verbal description of a target's self-reported dispositional ambivalence with the reverse correlation classification images that were generated in Experiment 2. Compared to the ambivalent images, the non-ambivalent image was perceived as the best fit for the non-ambivalent description and the worst fit for the ambivalent descriptions, offering evidence that individuals directly linked a target's ambivalence to the classification images.

7. Experiment 4

Given the findings of Experiments 1–3, our next step was to further understand how people expect ambivalent and non-ambivalent targets to behave. This was partly addressed in Experiment 1, where we found that knowing a target's dispositional ambivalence influenced how participants expected the target to behave as a dictator. In Experiment 4, we returned to the Dictator Game and examined whether fair versus unfair dictators would be linked with the reverse correlation classification images.

In Experiment 4, participants learned about three fictitious dictators, each of whom shared their resources with different levels of fairness. After learning about an individual dictator's behavior, participants were presented with the three reverse correlation classification images and indicated (a) the likelihood that each classification image was that dictator and (b) which of the three images was most likely to be that dictator. This procedure was repeated for each dictator.

In Experiment 1, the non-ambivalent target was perceived as colder and more competent than the ambivalent targets. As competence is linked with the capacity to control resources, whereas warmth is linked with cooperativeness (Fragale et al., 2011), we expected the non-ambivalent target to be perceived as most likely to be the most unfair dictator, and least likely to be the fairest dictator, compared to the ambivalent targets.

7.1. Method

7.1.1. Participants

91 participants (80 females, 10 males, 1 other; $M_{\text{age}} = 19.80$ years; range = 18 to 48) were recruited via the participant panel from Cardiff University. A sensitivity power analysis for the within-participant F

tests, conducted in G*Power (Faul et al., 2017; alpha = 0.05, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.134$.

7.1.2. Procedure

Participants completed the study via Qualtrics. After learning basic information about the Dictator Game, participants were presented with information about a dictator before being asked to make judgments about them. Participants learned about three dictators: Dictator A played the game in a *fair* manner, offering 55 of 100 tokens. Dictator B played the game in a *moderately unfair* manner, offering 25 of 100 tokens. Dictator C played the game in an *unfair* manner, offering 2 of 100 tokens. Participants learned and answered questions about one dictator before proceeding to the next dictator, and the order of presentation was random across participants.

After learning about a dictator's behavior, participants were individually shown the three classification images and indicated the likelihood that each target was the dictator (1 = *Extremely unlikely*, 9 = *Extremely likely*). The three images were presented in random order. Next, participants were shown all three images together and asked to indicate which one was most likely to be the dictator they just learned about. After completing the task, participants indicated the importance of a range of attributes in determining their likelihood judgments (i.e., open-mindedness, trustworthiness, decisiveness, likeability, warmth, competence, and dominance; 1 = *Not at all important*, 9 = *Extremely important*) as well as completing measures of ambivalence, personal need for closure, and empathy were measured, along with demographic items (see supplementary materials).

7.2. Results and discussion

7.2.1. Differences in likelihood ratings

To examine differences in participants' likelihood ratings, we first conducted a 3 (dictator: fair, moderately fair, unfair) \times 3 (target: A-C image, A-ALL image, NA image) repeated measures ANOVA. The main effect of the dictator was marginally significant, $F(2, 180) = 2.40, p = .093, \eta_p^2 = 0.03$. Overall, the difference between Dictator A (i.e., the fair dictator) and Dictator C (i.e., the unfair dictator) was marginally significant ($M_A = 4.80, M_C = 5.10, p = .052$). Unexpectedly, the main effect of target was significant, $F(2, 180) = 3.54, p = .031, \eta_p^2 = 0.04$. Overall, the target who was ambivalent toward all issues (i.e., A-ALL) was perceived as least likely to be the dictator compared to either the target who was either ambivalent toward only controversial issues (i.e., A-C) or the non-ambivalent (i.e., NA) target ($M_{\text{A-ALL}} = 4.74, M_{\text{A-C}} = 5.03, M_{\text{NA}} = 5.11$, both $p \leq .035$). The difference between the latter two targets was not significant ($p = .636$).

More importantly, the target by dictator interaction was significant, $F(3.15, 283.46) = 8.00, p < .001, \eta_p^2 = 0.08$. To understand the pattern of the interaction, we conducted one-way repeated measures ANOVAs for each target. As expected, the non-ambivalent target was perceived most likely to be the unfair dictator and least likely to be the fair dictator, compared to the two ambivalent targets (all $p \leq .027$; see Table 7).

We also conducted a chi-square test to examine differences in the frequency with which each target was judged as most likely to be each dictator. The results revealed a significant effect, $\chi^2(4) = 14.58, p = .006$. As can be seen in Table 7, participants were significantly more likely to perceive the non-ambivalent target as the unfair dictator, with no differences for the fair and moderately unfair dictators.

To summarize, we found that the non-ambivalent target would be most likely to be perceived as the most unfair dictator and least likely to be perceived as the fair dictator. This is consistent with Experiment 1, where the non-ambivalent target was expected to share the least resources. This suggests that participants have different expectations for representations of dispositionally ambivalent or non-ambivalent targets, and that participants linked the images with different levels of

Table 7
The likelihood and frequency that each target was each dictator: Experiment 4.

	Fair Dictator	Mod. Unfair Dictator	Unfair Dictator
	M [95% CI]	M [95% CI]	M [95% CI]
A-C	5.16 ^a [4.73, 5.60]	5.06 [4.66, 5.45]	4.88 ^b [4.46, 5.30]
A-ALL	4.91 ^a [4.51, 5.31]	4.80 [4.46, 5.14]	4.52 ^b [4.16, 4.87]
NA	4.31 ^b [3.90, 4.72]	5.10 [4.72, 5.48]	5.91 ^a [5.50, 6.33]
	$F(2, 180) = 5.12^{**}$	$F(2, 180) = 0.85$	$F(1.86, 167.01) = 12.39^{***}$
η_p^2	0.05	0.01	0.12
A-C	32	27	23
A-ALL	35	35	21
NA	24	29	47
	$\chi^2(2) = 2.13$	$\chi^2(2) = 1.14$	$\chi^2(2) = 13.80^{***}$

Note. Superscripts that differ in one row represent a mean difference < 0.05 . A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. $^{***}p < .001$; $^{**}p < .01$.

cooperative behavior. What makes these effects particularly striking is that participants in Experiment 4 had no knowledge regarding how the classification images were created.

Overall, Experiments 1 and 4 demonstrate a bidirectional link between perceptions of a target's dispositional ambivalence and how equitable they are expected to behave. The results of the two experiments provide consistent findings regarding the link between non-ambivalent attitudes and the expectation of an unfair allocation in the Dictator Game, regardless of how the target's ambivalence is made salient (i.e., images or text description).

8. Experiment 5

Experiments 1, 2, and 4 show how perceived ambivalence influences how people evaluated the targets and their expectations of a target's behavior. Building upon these findings, Experiment 5 sought to further extend our understanding of the implications of dispositional ambivalence, this time by focusing on potential effects on targets' perceived values, as well as examining outcomes that have more important interpersonal consequences relative to those assessed in our previous experiments.

Values are important in serving as abstract ideals that influence our goals, attitudes, and behavior (Maio, 2017). In an influential model of human values, Schwartz (1992, Schwartz et al., 2012), differentiates among four primary types of values. Along one dimension, *self-transcendence* values refer to caring for others (e.g., equality, helpfulness), whereas *self-enhancement* values refer to focusing on one's own interests (e.g., power, success). Along a second dimension, *openness to change* values refer to acceptance of change in one's environment (i.e., adventurousness), whereas *conservation* values refer to the care and protection of the status quo (e.g., conformity, social order). Previous research has linked different mental representations of social groups to different value priorities (e.g., Haddock et al., 2022). In Experiment 5, we tested whether dispositionally ambivalent and non-ambivalent individuals would differ in how strongly they were perceived to espouse self-transcendent and self-enhancement values. Given links among power, dominance, and self-enhancement values (Schwartz et al., 2012), we expected the dispositionally non-ambivalent target to be perceived as attaching greater importance to self-enhancement values and less importance to self-transcendence values, relative to the ambivalent targets.

Experiment 5 also examined additional behavioral implications associated with being dispositionally (non-) ambivalent. We felt it was important to test the degree to which perceived ambivalence would impact judgments on core decisions that people might make when evaluating another person's behavior. Specifically, we focused on the extent to which perceiving someone as dispositionally ambivalent or non-ambivalent would affect judgments on targets' suitability to look after a participant's sick relative, the likelihood that a target volunteered

at a homeless shelter and donated funds to charity, and the likelihood of voting for a target. For parsimony, we refer to these first three items as moral behaviors, with the final item labelled political support. To the extent that the dispositionally non-ambivalent target is perceived as attaching greater importance to self-enhancement values and less importance to self-transcendence values (which focus on caring and helping others), we expected this target to be perceived as less likely to engage in the moral behaviors.

Together, Experiment 5 examined whether the mental representations of ambivalent and non-ambivalent targets would be perceived differently on their values and political and moral behaviors. This experiment was pre-registered (<https://doi.org/10.17605/OSF.IO/7ZMXJ>).

8.1. Method

8.1.1. Participants

98 participants residing in the UK (49 females, 49 males; $M_{age} = 40.32$ years; range = 18 to 74) were recruited from Prolific and paid £1.50 for taking part in the experiment. A sensitivity power analysis for the within-participant F tests, conducted in G*Power (Faul et al., 2017; alpha = 0.05, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.099$.

8.1.2. Apparatus/materials

This experiment built upon the methodology used in the rater component of Experiment 2, but included new items assessing and behavioral consequences associated with being perceived as dispositionally (non-) ambivalent.

After providing consent, participants completed the questionnaire via Qualtrics. First, participants rated all three images on the following attributes: having mixed views, open-minded, trustworthy, decisive, likeable, warm, competent, attractive, dominant, masculine, age, rich, well-educated and competitive (the latter four included for exploratory purposes).

The three classification images generated in Experiment 2 were used in this experiment. The images and attributes were presented in a random order (except for having mixed views, which was always presented first). All ratings were made on a seven-point scale (1 = *Not at all*; 7 = *Extremely*), except for age, where participants provided a numerical value.

Second, participants answered questions about their perception of the values of the individuals displayed in the three classification images. These were measured using an adapted version of the Schwartz Values Survey (see Haddock et al., 2022). Specifically, for each image (which was presented in a random order), participants were asked: To what extent do you think the values are important to the person below? (0 = *Not at all important*; 100 = *Extremely important*):

- a) Honesty, equality, forgiveness, protecting the environment.
- b) Ambition, wealth, power, success.
- c) Freedom, curiosity, adventurousness, excitement.
- d) Politeness, respect for tradition, social order.

Third, participants answered how they would expect to interact with one of the three images scenarios representing moral behaviors and political support. Four situations were addressed with these items:

- a) How much would you trust this person to look after a sick relative of yours? (1 = *Not at all*; 6 = *Extremely*).
- b) How likely is it that this person volunteers at a homeless shelter? (1 = *Not at all*; 6 = *Extremely*).
- c) How likely is it that this person donates money every month to a children's charity? (1 = *Not at all*; 6 = *Extremely*).
- d) How likely would you be to vote for this person if they were running for Prime Minister? (1 = *Not at all*; 6 = *Extremely*).

Finally, we presented participants with all three images and asked them to rate the targets' suitability for the professions and office roles.

8.2. Results

8.2.1. Evaluation of attributes

Table 8 presents mean ratings on the items assessing the extent to which each image was perceived as having mixed views, as well as the indices of perceived warmth and competence. Ratings of the individual attributes are found in the supplemental materials.

First, we examined whether the three images differed in the degree to which they were perceived as having mixed views. The results showed that the NA target was evaluated as having significantly less mixed views compared to the A-C target ($p = .043$) and marginally less mixed views compared to the A-ALL target ($p = .052$). The A-C and A-ALL targets did not differ ($p = .838$).

Next, we examined whether the three images differed in their perceived warmth and competence (using the same items as in Experiment 2). The results showed that the NA target was evaluated as significantly less warm than the A-C target ($p = .023$) and marginally less warm than the A-ALL target ($p = .065$); the A-C and A-ALL targets did not differ ($p = .449$). Regarding competence, the NA target was evaluated as more competent than both the A-C and A-ALL targets (both $p < .001$); the A-C and A-ALL targets did not differ ($p = .976$).

8.2.2. Perceptions of the targets' values

To examine whether the targets differed in their perceived values, we conducted a 3 (target: A-C, A-ALL, NA) \times 4 (value: self-transcendence,

self-enhancement, openness to change, conservation) repeated-measures ANOVA. The main effect of target was not significant, $F(1.89, 181.03) = 0.24, p = .776, \eta_p^2 = 0.002$. The main effect of value was marginally significant, $F(2.59, 248.58) = 2.50, p = .069, \eta_p^2 = 0.025$. Overall, the targets were perceived to attach marginally more importance to self-enhancement values relative to self-transcendence and openness to change values ($M_{SE} = 61.30, M_{ST} = 57.97, M_{OIC} = 58.44$, both $p < .056$). The means between the other values did not differ ($p \geq .137$). More importantly, there was a significant interaction, $F(4.73, 454.20) = 15.47, p < .001, \eta_p^2 = 0.14$, which was followed up via one-way ANOVAs (see Table 9). We found that that the non-ambivalent target was perceived to attach less importance to self-transcendence values compared to both ambivalent targets (both $p < .001$), who themselves did not differ ($p = .126$). Further, the non-ambivalent target was perceived as attaching more importance to self-enhancement values compared to both ambivalent targets (both $p < .001$), who themselves differed at $p = .060$. No effects were found on openness to change and conservation values.

8.2.3. Expectations of moral behaviors and political support

For each of the four scenarios, we conducted a one-way ANOVA (see Table 10). We found that participants presented with the non-ambivalent target judged that individual as less suitable to look after a sick relative of the participant, volunteer at a homeless shelter, and donate money to charity, compared to the two ambivalent targets (all $p < .001$), who themselves did not differ ($p = .481, 0.282, 0.546$, respectively). Participants reported they would be less likely to vote for the A-C target as Prime Minister compared to the NA and A-ALL targets (both $p < .034$), who themselves did not differ ($p = .560$).

8.2.4. Professions and office role ratings

We conducted chi-square tests and one-way ANOVAs to assess how participants perceived each image as suited for each profession and office role. The results are presented in Table 11. The non-ambivalent target was judged as best suited for the roles of politician, soldier, salesperson, and business executive (all $p < .031$), and least well suited as a social worker (both $p < .001$). Further, the non-ambivalent image was rated as the person participants would least want to have as a work colleague. These results largely replicate those obtained in Experiment 2.

8.3. Mediation analyses

We had anticipated using inferred ambivalence as the independent variable in our mediation analyses. However, because inferred ambivalence was not correlated with warmth and competence, we used condition as the distal variable (as in Experiment 2), where we grouped the two ambivalent images together and compared that to the non-ambivalent image.

8.3.1. Values

The results firstly suggest that the non-ambivalent target was judged as attaching less importance to self-transcendence values and more importance to self-enhancement values (see Table 12).

Secondly, the non-ambivalent target was judged as marginally lower in warmth, $\beta = 0.11, SE = 0.05, F(1, 292) = 3.09, p = .080, R^2 = 0.01$; and significantly higher in competence, $\beta = -0.47, SE = 0.05, F(1, 292) = 72.46, p < .001, R^2 = 0.20$.

Taking the target ambivalence condition variable, warmth, and competence into consideration together, we found that warmth played a predominant role in mediating self-transcendence values, whereas competence played a predominant role in mediating self-enhancement values.

8.3.2. Political support and moral behaviors

The results revealed that, firstly, the total effects of ambivalence

Table 8
Mean ratings on attributes for the three classification images: Experiment 5.

	A-C	A-ALL	NA		η_p^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Mixed	3.94 ^a [3.70, 4.18]	3.92 ^{ab} [3.68, 4.16]	3.68 ^b [3.42, 3.95]	$F(1.88, 182.09) = 3.05^1$	0.03
Warm	4.17 ^a [4.02, 4.31]	4.12 ^{ab} [3.96, 4.28]	3.97 ^b [3.78, 4.16]	$F(1.65, 159.64) = 3.75^*$	0.04
Competent	3.86 ^b [3.69, 4.03]	3.86 ^b [3.69, 4.04]	4.78 ^a [4.60, 4.95]	$F(1.88, 182.76) = 62.28^{***}$	0.39

Note. Superscripts that differ in one row represent a mean difference < 0.05 . A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. *** $p < .001$; * $p < .05$, ¹ $p = .053$.

Table 9
Judgments about values of each target: Experiment 5.

	A-C	A-ALL	NA		η^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Self-transcendence	62.42 ^a [58.79, 66.05]	59.08 ^a [54.87, 63.29]	51.63 ^b [47.28, 55.99]	$F(2, 194) = 11.53^{***}$	0.11
Self-enhancement	54.47 ^b [50.80, 58.15]	57.81 ^b [54.38, 61.25]	71.62 ^a [67.87, 75.37]	$F(1.87, 179.84) = 40.42^{***}$	0.30
Openness to change	58.96 [54.96, 62.96]	59.56 [55.50, 63.62]	56.83 [52.73, 60.92]	$F(2, 194) = 0.90$	0.01
Conservation	60.08 [56.12, 64.04]	60.87 [56.50, 65.24]	57.67 [53.46, 61.88]	$F(2, 194) = 0.93$	0.01

Note. Superscripts that differ in one row represent a mean difference < 0.05. A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. *** $p < .001$.

Table 10
Judgments about interacting with target: Experiment 5.

	A-C	A-ALL	NA		η^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Look	3.63 ^a	3.54 ^a	3.12 ^b	$F(2, 194) = 8.43^{***}$	0.08
After	[3.39, 3.87]	[3.30, 3.79]	[2.87, 3.37]		
Volunteer	3.52 ^a	3.38 ^a	2.68 ^b	$F(2, 194) = 21.23^{***}$	0.18
	[3.29, 3.75]	[3.15, 3.61]	[2.44, 2.93]		
Donate	3.45 ^a	3.36 ^a	2.89 ^b	$F(1.83, 177.06) = 8.99^{***}$	0.09
	[3.22, 3.68]	[3.12, 3.59]	[2.65, 3.12]		
Vote	2.82 ^b	3.21 ^a	3.13 ^a	$F(1.84, 178.38) = 4.92^{**}$	0.05
	[2.57, 3.06]	[2.96, 3.46]	[2.86, 3.40]		

Note. Superscripts that differ in one row represent a mean difference < 0.05. A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. ** $p < .01$, *** $p < .001$.

Table 11
Judgments on professions and roles: Experiment 5.

	A-C	A-ALL	NA		η^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Politician	3.06 ^c	3.28 ^b	3.64 ^a	$F(2, 194) = 9.15^{***}$	0.09
	[2.81, 3.31]	[3.03, 3.52]	[3.37, 3.91]		
Soldier	3.14 ^b	3.36 ^b	4.16 ^a	$F(2, 194) = 23.20^{***}$	0.19
	[2.85, 3.43]	[3.07, 3.64]	[3.90, 4.42]		
Salesperson	3.45 ^c	3.70 ^b	4.06 ^a	$F(2, 194) = 7.37^{***}$	0.07
	[3.19, 3.70]	[3.47, 3.94]	[3.80, 4.32]		
Business Exec	3.32 ^c	3.62 ^b	4.36 ^a	$F(2, 194) = 24.22^{***}$	0.20
	[3.06, 3.57]	[3.38, 3.87]	[4.12, 4.60]		
Boss	3.07 ^b	3.43 ^a	3.48 ^a	$F(2, 194) = 5.20^{**}$	0.05
	[2.78, 3.36]	[3.17, 3.69]	[3.21, 3.75]		
Social worker	3.87 ^a	3.86 ^a	3.09 ^b	$F(1.84, 178.10) = 18.57^{***}$	0.16
	[3.62, 4.11]	[3.62, 4.09]	[2.83, 3.35]		
Colleague	4.18 ^a	4.33 ^a	3.86 ^b	$F(2, 194) = 8.69^{***}$	0.08
	[3.97, 4.40]	[4.11, 4.55]	[3.60, 4.11]		
Scientist	3.76	3.79	3.66	$F(2, 194) = 0.50$	0.01
	[3.48, 4.03]	[3.53, 4.04]	[3.41, 3.92]		

Note. Superscripts that differ in one row represent a mean difference < 0.05. A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. ** $p < .01$, *** $p < .001$.

suggested that the non-ambivalent target was perceived as less suitable/likely to engage in moral behaviors (see Table 13).

Secondly, as noted earlier, ambivalence positively predicted warmth and negatively predicted competence.

Taking the target ambivalence condition variable, warmth, and competence into consideration together, we found that warmth played a predominant role in mediating outcomes, whereas there was no consistent pattern for competence.

8.3.3. Professions and office role ratings

The results showed that, firstly, the total effects of ambivalence suggested that the non-ambivalent target was perceived as less suitable for a social worker and more suitable for a soldier, salesperson and business executive (see Table 14). Secondly, as noted earlier, ambivalence positively predicted warmth and negatively predicted competence. Taking ambivalence, warmth and competence into consideration together, we found that warmth and competence both played a role in mediating outcomes.

8.4. Discussion

Experiment 5 built upon our previous findings by further assessing how people evaluated classification images associated with dispositional ambivalence. Consistent with Experiment 2, participants perceived the non-ambivalent target as having less mixed views compared to both ambivalent targets. The NA target was also perceived as colder than the A-C target and more competent than both ambivalent targets. The results on the professions items largely replicated what was found in Experiment 2. Building upon our previous results, the images differed in the extent to which they were perceived as having different values, differing in their likelihood of carrying out moral behaviors, and in political support.

The results on the values and moral behaviors measures are particularly noteworthy, given their potential implications. Images of the ambivalent and non-ambivalent targets were sufficient to elicit naïve participants reporting meaningful differences in targets' perceived values and the likelihood that the targets were likely/suitable to engage in prosocial and moral behaviors. Regarding values, the non-ambivalent target was perceived as attaching less importance to self-transcendence values and greater importance to self-enhancement values. On the moral behavior items, the non-ambivalent target was judged as being less suitable to look after a participant's sick relative, as well as being less likely to volunteer and donate. Mediation analyses highlighted the role of warmth and competence in underlying these effects.

Overall, the results of Experiment 5 showed strong convergence with those of Experiment 2. People evaluated mental representations of ambivalent and non-ambivalent targets differently on the degree to which they held mixed views, as well as their perceived warmth and competence. Our results also showed that the perceived warmth and competence of the images impacted perceptions of the targets' suitability for different professions, values, and their likelihood of engaging in moral behaviors.

Table 12
The effect of ambivalence on values through warmth and competence – Experiment 5.

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect	
					Effect (BootSE)	Bootstrap 95% CI
Self-transcendence	0.13* (1.20)	0.54*** (1.24)	-0.06 (1.17)	0.22*** (1.26)	0.09 (0.05)	[-0.00, 0.18]
Self-enhancement	-0.19** (1.17)	0.07 (1.21)	0.44*** (1.15)	-0.39***(1.15)	-0.20 (0.04)	[-0.27, -0.13]
X + M - > Y					Total effect	
Self-transcendence				$F(3, 290) = 46.86, p < .001, R^2 = 0.33$	$F(1, 292) = 13.12, p < .001, R^2 = 0.04$	
Self-enhancement				$F(3, 290) = 42.67, p < .001, R^2 = 0.31$	$F(1, 292) = 46.86, p < .001, R^2 = 0.14$	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 13
The effect of ambivalence on expected social interactions through warmth and competence – Experiment 5.

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect	
					Effect (BootSE)	Bootstrap 95% CI
Look After	0.13* (0.08)	0.45*** (0.08)	-0.03 (0.07)	0.19** (0.08)	0.06 (0.04)	[-0.02, 0.15]
Volunteer	0.16* (0.08)	0.30*** (0.08)	-0.25*** (0.08)	0.31***(0.07)	0.15 (0.04)	[0.08, 0.22]
Donate	0.10 ¹ (0.07)	0.41*** (0.08)	-0.15* (0.07)	0.22***(0.07)	0.11 (0.04)	[0.03, 0.19]
Vote	-0.07 (0.08)	-0.40*** (0.09)	0.03 (0.08)	-0.05 (0.08)	0.03 (0.04)	[-0.06, 0.11]
X + M - > Y					Total effect	
Look After				$F(3, 290) = 27.90, p < .001, R^2 = 0.22$	$F(1, 292) = 9.56, p = .002, R^2 = 0.03$	
Volunteer				$F(3, 290) = 24.30, p < .001, R^2 = 0.20$	$F(1, 292) = 27.68, p < .001, R^2 = 0.09$	
Donate				$F(3, 290) = 25.02, p < .001, R^2 = 0.21$	$F(1, 292) = 12.89, p < .001, R^2 = 0.04$	
Vote				$F(3, 290) = 19.31, p < .001, R^2 = 0.17$	$F(1, 292) = 0.55, p = .460, R^2 = 0.00$	

Note. 1 $p = .097$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 14
The effect of ambivalence on suitability for professions through warmth and competence.

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect	
					Effect (BootSE)	Bootstrap 95% CI
Politician	-0.10 (0.09)	0.08 (0.09)	0.19* (0.09)	-0.18** (0.08)	-0.08 (0.03)	[-0.15, -0.02]
Soldier	-0.15* (0.09)	-0.11* (0.10)	0.31*** (0.09)	-0.31***(0.09)	-0.16 (0.04)	[-0.23, -0.09]
Salesperson	-0.17* (0.09)	0.17** (0.09)	0.08 (0.08)	-0.19** (0.08)	-0.02 (0.04)	[-0.10, 0.06]
Business Exec	-0.27***(0.08)	0.11* (0.09)	0.17** (0.08)	-0.34***(0.08)	-0.07 (0.03)	[-0.14, -0.00]
Social worker	0.19** (0.08)	0.34*** (0.08)	-0.16** (0.08)	0.30***(0.08)	0.11 (0.04)	[0.05, 0.18]
Colleague	0.07 (0.07)	0.47*** (0.07)	-0.10² (0.07)	0.17** (0.07)	0.10 (0.04)	[0.02, 0.18]
Boss	-0.05 (0.09)	0.20*** (0.10)	0.12¹ (0.09)	-0.08 (0.08)	-0.04 (0.04)	[-0.12, 0.04]
Scientist	-0.02 (0.09)	0.15* (0.09)	-0.10 (0.09)	0.04 (0.08)	0.06 (0.04)	[-0.01, 0.13]
X + M - > Y					Total effect	
Politician				$F(3, 290) = 7.37, p < .001, R^2 = 0.07$	$F(1, 192) = 9.10, p = .001, R^2 = 0.03$	
Soldier				$F(3, 290) = 19.44, p < .001, R^2 = 0.17$	$F(1, 292) = 28.21, p < .001, R^2 = 0.09$	
Salesperson				$F(3, 290) = 7.51, p < .001, R^2 = 0.07$	$F(1, 292) = 9.80, p = .002, R^2 = 0.03$	
Business Exec				$F(3, 290) = 16.57, p < .001, R^2 = 0.15$	$F(1, 292) = 33.76, p < .001, R^2 = 0.10$	
Social worker				$F(3, 290) = 23.61, p < .001, R^2 = 0.20$	$F(1, 292) = 25.65, p < .001, R^2 = 0.08$	
Colleague				$F(3, 290) = 30.29, p < .001, R^2 = 0.24$	$F(1, 292) = 7.88, p = .005, R^2 = 0.03$	
Boss				$F(3, 290) = 6.78, p < .001, R^2 = 0.07$	$F(1, 292) = 1.86, p = .174, R^2 = 0.01$	
Scientist				$F(3, 290) = 2.62, p = .051, R^2 = 0.03$	$F(1, 292) = 0.44, p = .506, R^2 = 0.00$	

Note. 1 $p = .054$, 2 $p = .084$, *** $p < .001$, ** $p < .01$, * $p < .05$.

9. Experiment 6

In Experiment 1, we examined whether verbal descriptions of dispositional ambivalence were associated with perceived fairness. In Experiment 2, representations of ambivalent and non-ambivalent targets were judged differently on a range of attributes and behavioral consequences. Building upon the warmth and competence ratings in Experiment 2, Experiment 5 found that the non-ambivalent image was

perceived as having different values than the ambivalent targets and less likely to engage in moral behaviors. Experiment 6 sought to further consolidate the results of Experiment 5 by examining how verbal descriptions of a target's dispositional ambivalence would impact the moral behavior outcomes assessed in Experiment 5. We expected to replicate the primary findings from Experiment 5 (and our earlier experiments). This experiment was pre-registered (<https://doi.org/10.17605/OSF.IO/R86AQ>).

9.1. Method

9.1.1. Participants

164 participants (83 females, 79 males, 1 other, 1 prefer not to say; $M_{age} = 38.82$ years; range = 18 to 76) were recruited from Prolific and paid £1.80 for taking part in the experiment. A sensitivity power analysis for the within-participant F tests, conducted in G*Power (Faul et al., 2017; alpha = 0.05, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.099$. A sensitivity power analysis for the between-participant F tests, conducted in G*Power (Faul et al., 2017; alpha = 0.05, power = 0.80) indicated that, with our sample size, the study was sufficiently powerful to detect a minimum effect size of $f = 0.245$.

9.1.2. Method

In this experiment participants read a verbal description of a target's dispositional ambivalence. Outcome variables were measured using the same questions from Experiment 5, with some changes. We did not assess values and included an item asking participants how willing they would be to date someone who described themselves like the target.

9.1.3. Apparatus/materials

After providing consent, participants completed the questionnaire via Qualtrics. First, participants rated all three descriptions on the attributes measured in Experiment 5. The descriptions and attributes were presented in a random order (except for having mixed views, which was presented first).

Second, participants were randomized into one of three conditions and indicated how they would expect to interact with one of the three descriptions in a range of scenarios. These included items from Experiments 2 and 5, with the new dating measure (How much would you want to date someone who describes themselves like this person? 1 = *Not at all*; 6 = *Extremely*).

9.2. Results

9.2.1. Evaluation of attributes

Table 15 presents mean ratings on the items assessing the extent to which each image was perceived as having mixed views, as well as the indices of perceived warmth and competence. Ratings for the individual attributes are found in the supplemental materials.

First, we examined whether the three descriptions differed in having mixed views. The results showed that the NA target was evaluated as having the least mixed views, followed by A-C and A-ALL targets, who themselves also differed (all $p < .001$).

Next, we examined whether the three descriptions differed in perceived warmth and competence (using the same items as in Experiment 2). The NA target was evaluated as less warm than the A-C and A-ALL targets, who themselves differed (all $p < .025$). The NA target was evaluated as more competent than the A-C and A-ALL targets, who themselves differed (all $p < .032$).

9.2.2. Expectations of interactions with the targets

To examine how participants would expect to interact with the individuals depicted in the descriptions, we conducted one-way ANOVAs (see Table 16). Starting with the items used in Experiment 2, we found that the non-ambivalent target was judged as being more likely to take the lead, seek out less information about a car, and less likely to seek out both positive and negative information.

Mean responses to the moral behavior, political support, and dating items are presented in the bottom portion of Table 16. Participants reported that the NA target was less well suited to look after the participant's sick relative, as well as being less likely to volunteer at a homeless shelter and donate to a charity. Participants reported that they were less willing to date the NA target relative to the ambivalent targets. There was no effect on judgments of voting for the NA target. These results

Table 15

Mean ratings on attributes for the three descriptions: Experiment 6.

	A-C	A-ALL	NA	F	η^2_p
	M [95% CI]	M [95% CI]	M [95% CI]		
Mixed	5.91 ^b [5.74, 6.07]	6.34 ^a [6.18, 6.49]	2.04 ^c [1.83, 2.24]	$F(1.58, 256.71) = 605.08^{***}$	0.79
Warm	4.90 ^b [4.79, 5.01]	5.02 ^a [4.89, 5.14]	3.18 ^c [3.04, 3.32]	$F(1.33, 216.79) = 244.70^{***}$	0.60
Competent	3.88 ^b [3.74, 4.01]	3.72 ^c [3.56, 3.89]	4.77 ^a [4.60, 4.94]	$F(1.36, 222.39) = 42.94^{***}$	0.21

Note. Superscripts that differ in one row represent a mean difference < 0.05 . A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. $^{***}p < .001$.

Table 16

Judgments about interacting with target: Experiment 6.

	A-C ($n = 56$)	A-ALL ($n = 58$)	NA ($n = 50$)	F	η^2
	M [95% CI]	M [95% CI]	M [95% CI]		
Take the Lead	2.91 ^b [2.56, 3.26]	2.33 ^c [2.03, 2.62]	4.60 ^a [4.22, 4.98]	$F(2, 161) = 46.64^{***}$	0.37
Information	2.54 ^b [2.15, 2.92]	2.29 ^b [1.94, 2.64]	3.10 ^a [2.72, 3.48]	$F(2, 161) = 4.85^{**}$	0.06
PN	4.14 ^a [3.90, 4.39]	4.09 ^a [3.82, 4.35]	3.16 ^b [2.80, 3.52]	$F(2, 161) = 14.02^{***}$	0.15
Persuadable	3.80 [3.49, 4.12]	4.02 [3.65, 4.38]	3.58 [3.16, 4.00]	$F(2, 161) = 1.42$	0.02
Look After	4.23 ^a [3.90, 4.56]	3.83 ^b [3.49, 4.17]	2.82 ^c [2.51, 3.13]	$F(2, 161) = 18.71^{***}$	0.19
Date	3.80 ^a [3.47, 4.13]	3.38 ^b [3.00, 3.76]	2.34 ^c [1.97, 2.71]	$F(2, 161) = 16.69^{***}$	0.17
Volunteer	3.55 ^a [3.24, 3.87]	3.76 ^a [3.47, 4.05]	2.44 ^b [2.17, 2.71]	$F(2, 161) = 22.26^{***}$	0.22
Donate	3.66 ^a [3.37, 3.95]	3.66 ^a [3.39, 3.92]	2.66 ^b [2.39, 2.93]	$F(2, 161) = 16.70^{***}$	0.17
Vote	2.89 [2.51, 3.27]	2.45 [2.02, 2.88]	2.74 [2.32, 3.16]	$F(2, 161) = 1.26$	0.02

Note. Superscripts that differ in one row represent a mean difference < 0.05 . A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. $^{**}p < .01$, $^{***}p < .001$.

largely replicate Experiment 5.

9.2.3. Professions and office role ratings

We conducted chi-square tests and one-way ANOVAs to assess the degree to which participants perceived each description as suited for each profession and office role. The results are presented in Table 17. The non-ambivalent target was judged as best suited for the roles of politician, soldier, salesperson, and business executive, and least well suited as a social worker and a scientist (all $p < .001$). Further, the non-ambivalent description was rated as the person participants would least want to have as a work colleague ($p < .001$). These findings largely replicate our previous results.

Table 17
Judgments on professions and roles: Experiment 6.

	A-C	A-ALL	NA	
Politician	29.9	20.7	49.4	$\chi^2(2) = 21.09^{***}$
Soldier	7.9	7.9	84.1	$\chi^2(2) = 190.55^{***}$
Salesperson	16.5	14.0	69.5	$\chi^2(2) = 96.74^{***}$
Business Exec	22.0	14.6	63.4	$\chi^2(2) = 68.10^{***}$
Social worker	41.5	44.5	14.0	$\chi^2(2) = 27.74^{***}$
Colleague	44.5	36.6	18.9	$\chi^2(2) = 16.92^{***}$
Boss	46.3	25.6	28.0	$\chi^2(2) = 12.63^{**}$
Scientist	24.4	56.1	19.5	$\chi^2(2) = 38.83^{***}$

	M [95% CI]	M [95% CI]	M [95% CI]	η^2	
Politician	2.89 ^b [2.49, 3.30]	2.38 ^c [2.01, 2.75]	3.62 ^a [3.14, 4.10]	$F(2, 161) = 8.86^{***}$	0.10
Soldier	2.64 ^b [2.32, 2.97]	1.83 ^c [1.54, 2.11]	4.78 ^a [4.33, 5.23]	$F(2, 161) = 73.21^{***}$	0.48
Salesperson	3.11 ^b [2.80, 3.41]	2.41 ^c [2.10, 2.73]	4.44 ^a [4.03, 4.85]	$F(2, 161) = 35.67^{***}$	0.31
Business Exec	2.89 ^b [2.58, 3.21]	2.40 ^c [2.06, 2.74]	4.28 ^a [3.85, 4.71]	$F(2, 161) = 28.34^{***}$	0.26
Social worker	4.32 ^a [3.97, 4.67]	3.33 ^b [2.92, 3.73]	2.38 ^c [2.03, 2.73]	$F(2, 161) = 26.53^{***}$	0.25
Colleague	4.20 ^a [3.86, 4.53]	4.09 ^a [3.74, 4.44]	2.90 ^b [2.49, 3.31]	$F(2, 161) = 15.05^{***}$	0.16
Boss	3.46 ^a [3.08, 3.85]	2.79 ^b [2.45, 3.14]	3.12 ^{ab} [2.67, 3.57]	$F(2, 161) = 3.03^*$	0.04
Scientist	3.88 ^a [3.53, 4.22]	3.79 ^a [3.38, 4.21]	2.46 ^b [2.06, 2.86]	$F(2, 161) = 16.03^{***}$	0.17

Note. Superscripts that differ in one row represent a mean difference < 0.05. Top portion represents %; bottom portion represents mean and CI. A-C = target who is ambivalent toward controversial issues only; A-ALL = target who is ambivalent toward controversial and non-controversial issues; NA = target who is non-ambivalent toward controversial and non-controversial issues. * $p < .051$, *** $p < .001$.

Table 18
The effect of inferred ambivalence on expected social interactions through warmth and competence.

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect	
					Effect (BootSE)	Bootstrap 95% CI
Take the Lead	-0.32 ^{***} (0.06)	-0.20 ^{**} (0.10)	0.32 ^{***} (0.09)	-0.60 ^{***} (0.05)	-0.28 (0.07)	[-0.42, -0.15]
Information	-0.07 (0.07)	-0.28 ^{**} (0.11)	-0.00 (0.10)	-0.25 ^{**} (0.05)	-0.17 (0.08)	[-0.33, -0.02]
PN	0.14 (0.06)	0.23 [*] (0.09)	-0.07 (0.08)	0.32 ^{***} (0.04)	0.18 (0.08)	[0.02, 0.32]
Look After	0.03 (0.06)	0.47 ^{***} (0.10)	-0.11 (0.09)	0.38 ^{***} (0.05)	0.35 (0.07)	[0.21, 0.48]
Date	0.02 (0.07)	0.51 ^{***} (0.11)	0.01 (0.10)	0.34 ^{***} (0.05)	0.32 (0.07)	[0.17, 0.45]
Volunteer	0.15 (0.06)	0.39 ^{***} (0.09)	-0.10 (0.08)	0.44 ^{***} (0.04)	0.29 (0.08)	[0.14, 0.44]
Donate	0.09 (0.05)	0.44 ^{***} (0.08)	-0.04 (0.08)	0.38 ^{***} (0.04)	0.29 (0.08)	[0.13, 0.46]

	X + M -> Y	Total effect
Take the Lead	$F(3, 160) = 43.38, p < .001, R^2 = 0.45$	$F(1, 162) = 90.16, p < .001, R^2 = 0.36$
Information	$F(3, 160) = 6.46, p < .001, R^2 = 0.11$	$F(1, 162) = 10.59, p = .001, R^2 = 0.06$
PN	$F(3, 160) = 8.06, p < .001, R^2 = 0.13$	$F(1, 162) = 18.12, p < .001, R^2 = 0.10$
Look After	$F(3, 160) = 20.12, p < .001, R^2 = 0.27$	$F(1, 162) = 27.06, p < .001, R^2 = 0.14$
Date	$F(3, 160) = 20.01, p < .001, R^2 = 0.27$	$F(1, 162) = 21.02, p < .001, R^2 = 0.11$
Volunteer	$F(3, 160) = 21.18, p < .001, R^2 = 0.28$	$F(1, 162) = 39.18, p < .001, R^2 = 0.19$
Donate	$F(3, 160) = 18.54, p < .001, R^2 = 0.26$	$F(1, 162) = 27.97, p < .001, R^2 = 0.15$

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

9.3. Mediation analyses

9.3.1. Expectations of interactions with the targets

To examine whether the relationship between targets' perceived ambivalence and expectations of interactions was affected by their perceived warmth and competence, we conducted mediation analyses. The analysis combined data across the three targets. To maintain maximal comparability, warmth and competence were derived using the same items as in Experiments 2 and 5.

First, the total effects of ambivalence suggested that the more a target was perceived as non-ambivalent, the more they were expected to take the lead, require less information (and be less likely to request both positive and negative information when making a decision), as well as being less likely to volunteer in a homeless shelter and donate money, as well as being less suitable to look after a participant's sick relative and as a dating partner.

Secondly, perceived ambivalence positively predicted warmth, $\beta = 0.63, SE = 0.03, F(1, 162) = 107.41, p < .001, R^2 = 0.40$; while negatively predicting competence, $\beta = -0.46, SE = 0.04, F(1, 162) = 42.78, p < .001, R^2 = 0.21$. In other words, targets who were perceived as more ambivalent were also perceived as warmer and less competent (for total and direct effects, see Table 18).

Taking perceived ambivalence, warmth and competence into consideration together, we found that warmth played a predominant role in mediating outcomes, whereas competence played a less important role.

9.3.2. Professions and office role ratings

On these outcomes, the total effects of ambivalence suggested that the more a target was perceived as non-ambivalent, the more suitable they were judged for the roles of politician, soldier, salesperson, business executive, and less suited for the roles of social worker, work colleague, and boss (see Table 19).

Secondly, as noted earlier, perceived ambivalence positively predicted while warmth and negatively predicted competence.

Third, taking perceived ambivalence, warmth and competence into consideration together, we found that roles best suited for the non-ambivalent target were positively predicted by competence, whereas roles least suited for the non-ambivalent target were positively predicted by warmth.

Table 19
The effect of inferred ambivalence on suitability for professions through warmth and competence.

DV	Direct effect	Warmth	Competence	Total effect	Indirect effect	
					Effect (BootSE)	Bootstrap 95% CI
Politician	-0.21 ¹ (0.08)	0.04 (0.13)	0.22* (0.12)	-0.28*** (0.06)	-0.08 (0.09)	[-0.24, 0.09]
Soldier	-0.34*** (0.07)	-0.28*** (0.11)	0.24*** (0.10)	-0.63*** (0.05)	-0.29 (0.06)	[-0.40, -0.18]
Salesperson	-0.31** (0.06)	-0.10 (0.10)	0.31*** (0.10)	-0.52*** (0.05)	-0.21 (0.07)	[-0.35, -0.06]
Business Exec	-0.33*** (0.07)	0.01 (0.11)	0.31*** (0.10)	-0.46*** (0.05)	-0.13 (0.08)	[-0.28, 0.02]
Social worker	0.09 (0.07)	0.35*** (0.12)	-0.13² (0.11)	0.37*** (0.05)	0.28 (0.07)	[0.13, 0.41]
Colleague	-0.01 (0.07)	0.51*** (0.10)	-0.10 (0.10)	0.35*** (0.05)	0.37 (0.07)	[0.23, 0.50]
Boss	-0.25* (0.08)	0.36*** (0.12)	0.07 (0.11)	-0.06 (0.05)	0.19 (0.08)	[0.03, 0.34]
Scientist	0.24* (0.08)	0.20* (0.12)	0.03 (0.11)	0.35*** (0.05)	0.11 (0.08)	[-0.04, 0.27]
		X + M -> Y			Total effect	
Politician		$F(3, 160) = 7.37, p < .001, R^2 = 0.12$			$F(1, 162) = 14.14, p < .001, R^2 = 0.08$	
Soldier		$F(3, 160) = 46.85, p < .001, R^2 = 0.47$			$F(1, 162) = 104.68, p < .001, R^2 = 0.39$	
Salesperson		$F(3, 160) = 28.01, p < .001, R^2 = 0.34$			$F(1, 162) = 59.87, p < .001, R^2 = 0.27$	
Business Exec		$F(3, 160) = 22.02, p < .001, R^2 = 0.29$			$F(1, 162) = 44.27, p < .001, R^2 = 0.21$	
Social worker		$F(3, 160) = 14.44, p < .001, R^2 = 0.21$			$F(1, 162) = 25.82, p < .001, R^2 = 0.14$	
Colleague		$F(3, 160) = 20.54, p < .001, R^2 = 0.28$			$F(1, 162) = 23.25, p < .001, R^2 = 0.13$	
Boss		$F(3, 160) = 5.30, p = .002, R^2 = 0.09$			$F(1, 162) = 0.51, p = .474, R^2 = 0.00$	
Scientist		$F(3, 160) = 9.56, p < .001, R^2 = 0.15$			$F(1, 162) = 23.09, p < .001, R^2 = 0.12$	

Note. 1 $p = .057$, 2 $p = .095$, *** $p < .001$, ** $p < .01$, * $p < .05$.

9.4. Discussion

The aim of Experiment 6 was to replicate and extend our previous findings by assessing how verbal descriptions of dispositional ambivalence influenced the profession and office items from Experiment 2 and 5, the moral behavior and political support items used in Experiment 5, an item on willingness to date, and whether any effects of perceived ambivalence are mediated by warmth and competence. Consistent with Experiments 1, 2, 4 and 5, participants inferred targets' ambivalence, and the non-ambivalent target was judged as colder and more competent than the ambivalent targets. Consistent with Experiments 2 and 5, the targets differed in their suitability for professions and office roles. Findings on the moral behavior and political support items were largely consistent with Experiment 5, and the willingness to date item found that participants were less willing to date the non-ambivalent target. Mediation analyses again highlighted the importance of warmth and competence in underlying these effects. Overall, the results offer additional evidence regarding how the inference of a target's dispositional ambivalence has implications on a range of outcomes, through the mediation of warmth and competence.

10. General discussion

The overarching aim of this research was to examine how people perceive and evaluate targets who differ in their dispositional attitudinal ambivalence. While previous research has investigated the correlates of being ambivalent (e.g., Hohnsbehn et al., 2022; Schneider et al., 2021; Thompson & Zanna, 1995) and the interpersonal consequences of being ambivalent about a single attitude object (e.g., Pillaud et al., 2018), our research integrated these findings, allowing us to ask conceptually important and novel questions about attitude ambivalence. Across six experiments, we addressed (a) whether people perceive dispositionally ambivalent and non-ambivalent targets differently on related attributes and behavioral expectations, (b) whether people have different mental representations of dispositionally ambivalent and non-ambivalent targets, (c) whether people can link mental representations of ambivalent and non-ambivalent targets with descriptions representing attitudinal ambivalence, (d) whether people expect to interact differently with ambivalent or non-ambivalent others and (e) the role of warmth and competence in underlying observed effects. The findings show how people evaluate and mentally represent dispositionally ambivalent and non-ambivalent individuals, the implications associated with being

perceived as ambivalent or non-ambivalent, as well as the underlying mechanism.

Across experiments, where a target's dispositional ambivalence was made salient in different ways, we consistently found that participants could infer a target's ambivalence, and that the targets were evaluated differently on their perceived warmth and competence – fundamental components of the Stereotype Content Model (Fiske, 2018). The experiments also examined implications associated with being perceived as dispositionally ambivalent or non-ambivalent. Experiments 1 and 4 considered the behavioral implications of perceiving someone as attitudinally ambivalent or non-ambivalent. In Experiment 1, participants learned about a target's self-reported dispositional ambivalence before indicating how they expected the target to play the Dictator Game. In Experiment 4, participants learned how fairly three different targets played the Dictator Game and indicated whether an ambivalent or non-ambivalent target was most likely to be a fair or unfair dictator. Experiment 1 showed that participants expected the dispositionally non-ambivalent target to share less resources as the dictator, while Experiment 4 showed that participants linked an unfair dictator's behavior with the dispositionally non-ambivalent target. Together, these experiments provide strong evidence linking perceived ambivalence and expected behavior, regardless of how the target's ambivalence is made salient (by a written description in Experiment 1 or reverse correlation classification images in Experiment 4).

Experiment 2 used a reverse correlation paradigm (Dotsch & Todorov, 2012) to generate classification images of attitudinally ambivalent and non-ambivalent targets, which were then rated by another sample, unaware of how the images were generated. We found that the ambivalent and non-ambivalent targets were evaluated differently on a diverse range of attributes. Further, the faces differed in the extent to which participants thought the targets could be easily persuaded and how suitable they were perceived to be for different professions and office roles.

Experiment 3 examined whether participants were able to link descriptions of a target's ambivalence to the reverse correlation images. The results showed that people were able to link the written ambivalent and non-ambivalent descriptions with the ambivalent and non-ambivalent classification images.

Experiments 5 and 6 replicated and extended our initial findings by considering whether dispositionally ambivalent and non-ambivalent targets are judged to differ in their perceived values (Experiment 5) and their likelihood of engaging in moral behaviors (Experiments 5 and

6), as well as participants' willingness to vote for the targets (Experiments 5 and 6) and participants' desire to date a target (Experiment 6). The primary findings of these experiments were convergent: the non-ambivalent target was perceived as colder but more competent than the ambivalent targets, was expected to behave differently, perceived as more or less suitable for different professions, less likely to engage in moral behaviors, and less suitable as a dating partner.

Taken together, our findings support a number of perspectives fundamental to social cognition. First and foremost, our research has clear links with models that have considered how warmth (i.e., communion, getting along with others) and competence (i.e., agency, getting ahead of others) contribute to how we perceive and evaluate other people (Abele, Ellemers, Fiske, Koch, & Yzerbyt, 2021). At the attribute level, across a series of studies we consistently found that a dispositionally non-ambivalent target was perceived as colder and more competent compared to targets who were dispositionally ambivalent. Importantly, these judgments impacted subsequent effects. For example, at the behavioral level, a non-ambivalent target was evaluated as less inclined to share resources, less suitable for caring responsibilities, and perceived as more or less suitable for certain professions, with these effects mediated by warmth and competence.

Second, our experiments found consistent effects using text-based descriptions and reverse correlation classification images for the manipulation of dispositional ambivalence. The impact of the reverse correlation images is consistent with suggestions that significant variance in impressions can be predicted by physical cues from facial images (see Sutherland & Young, 2022). In our work, the classification images impacted perceptions of warmth and competence, and are aligned with research from the face perception literature demonstrating that the warmth and competence dimensions are fundamental to visual cognition (see e.g., Sutherland & Young, 2022; Todorov, Said, Engell, & Oosterhof, 2008; Walker & Vetter, 2016). Further, our research provides evidence that reverse correlation classification images can be differentiated along the warmth and competence dimensions (see also Imhoff et al., 2013; Oliveira, Garcia-Marques, Dotsch, & Garcia-Marques, 2019). Our findings extend previous work by offering mediational evidence of warmth and competence judgments derived from classification images.

Third, at a broader level, the mediating role of warmth and competence was evident across various outcome measures, which is also relevant to recent work on trait space theory (e.g., Stolier, Hehman, & Freeman, 2018, 2020). This framework considers how bottom-up and top-down processes work together to construct a trait space that serves to guide social perception processes. Our findings align with this perspective, in that a target's perceived dispositional ambivalence was linked with perceptions of warmth and competence in influencing a range of social judgments and predictions of behavior. At the same time, there are three caveats that we wish to note. First, it would be beneficial to better understand how dispositional ambivalence might relate to other dimensions of attitude strength that could be operationalized at a dispositional level, in the same way that research has examined relations among attitude strength dimensions at the level of individual attitude objects (see e.g., Krosnick, Boninger, Chuang, Berent, & Carnot, 1993). Second, whilst we repeatedly found that a dispositionally ambivalent target was perceived as warm, one study found that people who perceived *themselves* as more ambivalent also rated themselves as less agreeable at a trait level (Schneider, 2023). These divergent patterns might reflect different processes regarding how people make judgments about other people and their attributes versus making judgments about the self. Third, we note that while we focused on the novel question assessing the effects of dispositional ambivalence on person perception and behavioral expectations, other concepts, such as dominance, are also known to impact person perception and evaluations of faces (see e.g., Todorov et al., 2008; Todorov, Olivola, Dotsch, & Mende-Siedlecki, 2015). Future research would benefit from a more detailed consideration of associations between dispositional ambivalence and concepts

such as dominance, and to consider their relative contributions in relation to outcomes such as those addressed in our research.

Regarding warmth and competence, we found that warmth emerged as the predominant mediator of outcomes. This is in line with findings from various research domains demonstrating that social judgments tend to be more influenced by others' disposition to help or harm rather than their actual ability to do so (Carrier, Louvet, Chauvin, & Rohmer, 2014; Eisenbruch & Krasnow, 2022). From a social psychological perspective, the enhanced influence of warmth relative to competence may be attributed to the greater consequentiality of individuals' disposition to help or harm compared to their ability to do so (Abele & Wojciszke, 2007). In an anthropological context, it has been suggested that ancestral humans faced greater variability in the warmth of potential cooperative partners compared to their competence, while competence exhibited greater variability over time within cooperative relationships. These differences in distributions, rather than inherent consequentiality, contribute to the increased predictive power of warmth for future benefits (Eisenbruch & Krasnow, 2022).

It is worth noting that our findings on dispositional ambivalence, warmth, and competence are somewhat divergent from findings observed assessing the evaluative implications of a person's ambivalence toward a single attitude object. Whereas we expected and found that non-ambivalence was linked with enhanced competence, Pillaud et al. (2018) found that a target who was ambivalent about a single controversial issue was perceived as most competent. As noted earlier, this disparity could be attributable to fundamental differences across the research programmes. Reporting that one simultaneously sees the positives and negatives about a particular controversial issue can convey an impression of demonstrating cognitive flexibility and being knowledgeable, eliciting perceptions of competence. In contrast, learning about someone who describes themselves as generally feeling torn across attitude objects, regardless of importance or complexity, can convey a perception of being weak and reluctant to take clear positions, eliciting perceptions of reduced competence. This variation offers support for the notion that we successfully captured the characteristics of dispositional ambivalence and indicates that the concept of dispositional ambivalence differs from that of state ambivalence.

Our findings also diverge from evidence by Silver and Shaw (2022), who found that deliberately "staying out of it" (i.e., not taking a side on an issue) could be seen as a deceptive strategy of impression management, lowering trust (and presumably warmth, where our dispositionally ambivalent targets were rated higher than the non-ambivalent target). That said, it is worth noting that the experiments in Silver and Shaw's research were all based on not taking a stand on a single issue, and also highlighted that the target was expressing neutrality (which is different from ambivalence). Thus, we suggest that there is rather limited comparability between the two sets of experiments.

Regarding suitability for profession/office roles, across multiple studies we found that the non-ambivalent target was perceived as more suitable for roles that require leadership (i.e., politician, business executive and boss), quick thinking (i.e., soldier), and skills to persuade (i.e., salesperson). Ambivalent targets were perceived as more suitable for roles that require warmth and trustworthiness (i.e., social worker and co-worker). These findings imply that it might be advantageous to express non-ambivalence in social contexts that require decisiveness and leadership, whereas it might be advantageous to express ambivalence in social contexts that require friendliness and cooperation.

One particularly interesting aspect of our findings relates to political judgments. On the one hand, we found that the non-ambivalent target was rated as best suited to be a politician. However, when asked if they would vote for a target, the non-ambivalent target was not most likely to have participants' support. This might reflect differences between people's *general* expectations of politicians and their *personal* voting intentions. Whilst people expect politicians to be competent, voting intentions can be influenced by factors besides mere perceptions of candidates' competence. For example, voters emphasize attributes that

relate to social desirability (e.g., agreeableness) and attributes they value most in themselves (Koppensteiner & Stephan, 2014). In our research, evaluations of (non-) ambivalent targets are mixed, that is, they were perceived as high (low) on warmth and low (high) on competence. While competence might be enough to predict perceptions of the target's suitability for a politician, it may not be sufficient to predict an individual's voting intentions.

10.1. Recognizing others' attitudinal ambivalence

Across studies, information about a target's ambivalence was presented in different ways. Using both verbal descriptions and reverse correlation classification images, participants were able to link this information with the degree to which a target was perceived as having mixed views. The classification images are particularly noteworthy, as we found strong evidence that participants made important inferences about a target's ambivalence based upon a simple facial image, which influenced subsequent judgments. Of course, we are not stating that dispositional ambivalence is linked with different facial features per se, only that people have different mental representations of dispositionally ambivalent and non-ambivalent targets. Future research could consider additional ways in which participants might detect others' attitudinal ambivalence, such as through dynamic facial expressions (e.g., viewing a brief video of a target expressing an ambivalent attitude; see Ambady, 2010; Ambady, Krabbenhoft, & Hogan, 2006) or from properties of a speaker's voice (e.g., vocal confidence; see Vaughan-Johnston, Guyer, Fabrigar, & Shen, 2021). Moreover, in Experiment 2 (see supplemental analyses), the ambivalent and non-ambivalent faces were perceived as visually different mostly on the lower half of the face, therefore, future research could also examine in greater detail where people see ambivalence in a target's face (see Nohlen, Van Harreveld, Rotteveel, Barends, & Larsen, 2016).

10.2. Future research

Our experiments were conducted with participants based in the UK. This is important as evidence suggests that people from different cultural backgrounds might differentially perceive constructs related to ambivalence. For example, people from Eastern backgrounds tend to have more mixed evaluations on self-concepts (Spencer-Rodgers, Boucher, Mori, Wang, & Peng, 2009), self-evaluations (Spencer-Rodgers, Peng, Wang, & Hou, 2004) and the groups to which they belong (Ma-Kellams, Spencer-Rodgers, & Peng, 2011), compared to people from Western backgrounds. Cultural differences in dialectical thinking may lie at the heart of these differences (Hamamura, Heine, & Paulhus, 2008; Luttrell, Petty, Chang, & Togans, 2022). Future research could explore whether people from different cultural backgrounds visualize and perceive ambivalent others differently.

Moreover, there is evidence that individuals from different cultural backgrounds use different facial cues to express emotions. One line of work using Twitter data indicates that people from individualistic backgrounds favor mouth-oriented cues when expressing their emotions, whereas people from collectivistic backgrounds favor eye-oriented cues (Park, Baek, & Cha, 2014). Similarly, other work has found that Easterners use distinctive eye clues to represent their emotions (Jack, Garrod, Yu, Caldara, & Schyns, 2012). As applied to the present research, it might be the case that ambivalence is displayed differently across cultures, and perceivers might focus on different areas of the face when considering whether someone is ambivalent or not. Future research could examine whether Easterners would use more eye-oriented strategies when detecting ambivalence.

Overall, people from different cultural backgrounds might possess different levels of ambivalence, have different perceptions and mental representations for ambivalence and non-ambivalence, and might evaluate ambivalent and non-ambivalent individuals more or less favorably. Future research could examine the cross-cultural perception

of ambivalent and non-ambivalent targets. For example, eye-tracking could examine which areas of the face individuals from different cultural backgrounds focus on when viewing ambivalent and non-ambivalent faces, and whether there is an in-group advantage when detecting ambivalence.

Finally, future research could also explore the implications of understanding others' ambivalence in other contexts. For example, Tan, See, and Agnew (2015) found that the perception of a romantic partner's attitudinal meta-bases (e.g., the extent to which an individual perceives their partner's attitudes as guided by affective or cognitive information) was linked with greater relationship satisfaction. As applied to the present context, research might consider how differences in the ability to detect a partner's attitudinal ambivalence might influence perceptions of relationship satisfaction.

11. Conclusion

The study of ambivalence has long been at the forefront of attitudes research. The current research makes a novel contribution to the literature by considering how people mentally represent individuals with ambivalent and non-ambivalent attitudes and highlights several important consequences associated with being perceived as dispositionally ambivalent or non-ambivalent. Further, the research offers core future research questions to better understand the nature of attitudinal ambivalence.

12. Context

The project arose from discussions about the lack of research exploring how people evaluate others who are or are not dispositionally ambivalent. This was perceived as a major oversight, given the frequency with which people hold ambivalent attitudes. We also became focused on how people mentally represent others who are or not attitudinally ambivalent. This latter issue is particularly important, given the role of non-verbal cues in social interactions. As such, we sought to examine (a) the mental representations that people have of dispositionally ambivalent and non-ambivalent individuals and (b) the interpersonal implications of perceiving others' attitudinal ambivalence. Our results show that ambivalent and non-ambivalent people are evaluated differently and expected to behave differently.

Declaration of Competing Interest

None.

Data availability

The materials and data for all six experiments are available online at https://osf.io/xep4k/?view_only=eebb8ca6da094d4d87a25d4b4ba8d24f (with Experiments 5 and 6 being pre-registered).

Acknowledgements

The first author was funded by the China Scholarship Council (CSC). The CSC had no input into the research. We thank Iris Schneider for sharing her unpublished data. We also thank Marina Iosifyan for her technical support and the Cardiff Social Psychology Lab Group for their feedback.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jesp.2023.104518>.

References

- Abele, A., & Wojciszke, B. (Eds.). (2018). *Agency and communion in social psychology*. London: Routledge.
- Abele, A. E., Ellemers, N., Fiske, S. T., Koch, A., & Yzerbyt, V. (2021). Navigating the social world: Toward an integrated framework for evaluating self, individuals, and groups. *Psychological Review*, 128(2), 290–314.
- Abele, A. E., Hauke, N., Peters, K., Louvet, E., Szymkow, A., & Duan, Y. (2016). Facets of the fundamental content dimensions: Agency with competence and assertiveness—Communion with warmth and morality. *Frontiers in Psychology*, 7, 1810.
- Abele, A. E., & Wojciszke, B. (2007). Agency and communion from the perspective of self versus others. *Journal of Personality and Social Psychology*, 93(5), 751–763.
- Ambady, N. (2010). The perils of pondering: Intuition and thin slice judgments. *Psychological Inquiry*, 21(4), 271–278.
- Ambady, N., Krabbenhoft, M. A., & Hogan, D. (2006). The 30-sec sale: Using thin-slice judgments to evaluate sales effectiveness. *Journal of Consumer Psychology*, 16(1), 4–13.
- Anderson, C., & Kilduff, G. J. (2009). Why do dominant personalities attain influence in face-to-face groups? The competence-signaling effects of trait dominance. *Journal of Personality and Social Psychology*, 96(2), 491–503.
- Armitage, C. J., & Conner, M. (2000). Attitudinal ambivalence: A test of three key hypotheses. *Personality and Social Psychology Bulletin*, 26(11), 1421–1432.
- Brown-Iannuzzi, J. L., Dotsch, R., Cooley, E., & Payne, B. K. (2017). The relationship between mental representations of welfare recipients and attitudes toward welfare. *Psychological Science*, 28, 92–103.
- Brown-Iannuzzi, J. L., McKee, S., & Gervais, W. M. (2018). Atheist horns and religious halos: Mental representations of atheists and theists. *Journal of Experimental Psychology: General*, 147(2), 292–297.
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42(1), 116.
- Carrier, A., Louvet, E., Chauvin, B., & Rohmer, O. (2014). The primacy of agency over competence in status perception. *Social Psychology*, 45(4), 347–356.
- Chandler, J. (2018). Likeableness and meaningfulness ratings of 555 (+ 487) person-descriptive words. *Journal of Research in Personality*, 72, 50–57.
- Cheng, J. T., Tracy, J. L., Foulsham, T., Kingstone, A., & Henrich, J. (2013). Two ways to the top: Evidence that dominance and prestige are distinct yet viable avenues to social rank and influence. *Journal of Personality and Social Psychology*, 104(1), 103–125.
- Clark, J. K., Wegener, D. T., & Fabrigar, L. R. (2008). Attitudinal ambivalence and message-based persuasion: Motivated processing of proattitudinal information and avoidance of counterattitudinal information. *Personality and Social Psychology Bulletin*, 34(4), 565–577.
- Cuddy, A. J., Glick, P., & Beninger, A. (2011). The dynamics of warmth and competence judgments, and their outcomes in organizations. *Research in Organizational Behavior*, 31, 73–98.
- Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological and Personality Science*, 3(5), 562–571.
- Eaton, A. A., Visser, P. S., Krosnick, J. A., & Anand, S. (2009). Social power and attitude strength over the life course. *Personality and Social Psychology Bulletin*, 35(12), 1646–1660.
- Eisenbruch, A. B., & Krasnow, M. M. (2022). Why warmth matters more than competence: A new evolutionary approach. *Perspectives on Psychological Science*, 17(6), 1604–1623.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2017). *G* Power 3.1 manual*.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.
- Fiske, S. T. (2018). Stereotype content: Warmth and competence endure. *Current Directions in Psychological Science*, 27(2), 67–73.
- Fong, M., Zhao, K., & Smillie, L. D. (2021). Personality and competitiveness: Extraversion, agreeableness, and their aspects, predict self-reported competitiveness and competitive bidding in experimental auctions. *Personality and Individual Differences*, 169, Article 109907.
- Forsythe, R., Horowitz, J. L., Savin, N. E., & Sefton, M. (1994). Fairness in simple bargaining experiments. *Games and Economic Behavior*, 6, 347–369.
- Fragale, A. R., Overbeck, J. R., & Neale, M. A. (2011). Resources versus respect: Social judgments based on targets' power and status positions. *Journal of Experimental Social Psychology*, 47(4), 767–775.
- Haddock, G., Foad, C. M., & Thorne, S. (2022). How do people conceptualize mindfulness? *Royal Society Open Science*, 9, Article 211366.
- Halevy, N., Chou, E. Y., & Murnighan, J. K. (2012). Mind games: The mental representation of conflict. *Journal of Personality and Social Psychology*, 102(1), 132–148.
- Hamamura, T., Heine, S. J., & Paulhus, D. L. (2008). Cultural differences in response styles: The role of dialectical thinking. *Personality and Individual Differences*, 44(4), 932–942.
- van Harreveld, F., Nohlen, H. U., & Schneider, I. K. (2015). The ABC of ambivalence: Affective, behavioural, and cognitive consequences of attitudinal conflict. *Advances in Experimental Social Psychology*, 52, 285–324.
- van Harreveld, F., Rutjens, B. T., Rotteveel, M., Nordgren, L. F., & Van Der Pligt, J. (2009). Ambivalence and decisional conflict as a cause of psychological discomfort: Feeling tense before jumping off the fence. *Journal of Experimental Social Psychology*, 45(1), 167–173.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). New York: Guilford.
- Helman, E., Flake, J. K., & Freeman, J. B. (2015). Static and dynamic facial cues differentially affect the consistency of social evaluations. *Personality and Social Psychology Bulletin*, 41(8), 1123–1134.
- Heider, F. (1946). Attitudes and cognitive organization. *The Journal of Psychology: Interdisciplinary and Applied*, 21, 107–112.
- Hohnsbehn, J. M., Urschler, D. F., & Schneider, I. K. (2022). Torn but balanced: Trait ambivalence is negatively related to confirmation. *Personality and Individual Differences*, 196, Article 111736.
- Imhoff, R., Woelki, J., Hanke, S., & Dotsch, R. (2013). Warmth and competence in your face! Visual encoding of stereotype content. *Frontiers in Psychology*, 4, 386.
- Jack, R. E., Garrod, O. G., Yu, H., Caldara, R., & Schyns, P. G. (2012). Facial expressions of emotion are not culturally universal. *Proceedings of the National Academy of Sciences*, 109(19), 7241–7244.
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1986). Fairness and the assumptions of economics. *Journal of Business*, 59, 285–300.
- Klofstad, C. A., Anderson, R. C., & Nowicki, S. (2015). Perceptions of competence, strength, and age influence voters to select leaders with lower-pitched voices. *PLoS One*, 10(8), Article e0133779.
- Koppensteiner, M., & Stephan, P. (2014). Voting for a personality: Do first impressions and self-evaluations affect voting decisions? *Journal of Research in Personality*, 51, 62–68.
- Krosnick, J. A., Boninger, D. S., Chuang, Y. C., Berent, M. K., & Carnot, C. G. (1993). Attitude strength: One construct or many related constructs? *Journal of Personality and Social Psychology*, 65(6), 1132–1151.
- Kruglanski, A. W. (1989). *Basic processes in social cognition: A theory of lay epistemology*. New York: Plenum.
- Luttrell, A., Petty, R. E., Chang, J., & Togans, L. J. (2022). The role of dialecticism in objective and subjective attitudinal ambivalence. *British Journal of Social Psychology*. Advance online publication.
- Maio, G. R. (2017). *The psychology of human values*. London: Routledge.
- Maio, G. R., Bell, D. W., & Esses, V. M. (1996). Ambivalence and persuasion: The processing of messages about immigrant groups. *Journal of Experimental Social Psychology*, 32(6), 513–536.
- Maio, G. R., Haddock, G., & Verplanken, B. (2018). *The psychology of attitudes and attitude change*. London: Sage.
- Ma-Kellams, C., Spencer-Rodgers, J., & Peng, K. (2011). I am against us? Unpacking cultural differences in ingroup favoritism via dialecticism. *Personality and Social Psychology Bulletin*, 37(1), 15–27.
- Ng, A. H., & Hynie, M. (2016). Naïve dialecticism and indecisiveness: Mediating mechanism and downstream consequences. *Journal of Cross-Cultural Psychology*, 47(2), 263–276.
- Nohlen, H. U., Van Harreveld, F., Rotteveel, M., Barends, A. J., & Larsen, J. T. (2016). Affective responses to ambivalence are context-dependent: A facial EMG study on the role of inconsistency and evaluative context in shaping affective responses to ambivalence. *Journal of Experimental Social Psychology*, 65, 42–51.
- Oliveira, M., Garcia-Marques, T., Dotsch, R., & Garcia-Marques, L. (2019). Dominance and competence face to face: Dissociations obtained with a reverse correlation approach. *European Journal of Social Psychology*, 49(5), 888–902.
- Park, J., Baek, Y. M., & Cha, M. (2014). Cross-cultural comparison of nonverbal cues in emoticons on twitter: Evidence from big data analysis. *Journal of Communication*, 64(2), 333–354.
- Pillaud, V., Cavazza, N., & Butera, F. (2018). The social utility of ambivalence: Being ambivalent on controversial issues is recognized as competence. *Frontiers in Psychology*, 9, 961.
- Proulx, T., Costin, V., Magazin, E., Zarzeczna, N., & Haddock, G. (2023). The progressive values scale: Assessing the ideological schism on the left. *Personality and Social Psychology Bulletin*, 49(8), 1248–1272.
- Ruessmann, J. K., & Unkelbach, C. (2021). Rational dictators in the dictator game are seen as cold and agentic but not intelligent. *Personality and Social Psychology Bulletin*, 01461672211040686.
- Sawicki, V., Wegener, D. T., Clark, J. K., Fabrigar, L. R., Smith, S. M., & Durso, G. R. (2013). Feeling conflicted and seeking information: When ambivalence enhances and diminishes selective exposure to attitude-consistent information. *Personality and Social Psychology Bulletin*, 39(6), 735–747.
- Schneider, I. K. (2023). *Relationship between trait ambivalence and the Big 5*. Unpublished raw data.
- Schneider, I. K., Novin, S., & van Harreveld, F. (2022, May 3). *The ambivalent individual: Validation studies for the Trait Ambivalence Scale*.
- Schneider, I. K., Novin, S., van Harreveld, F., & Genschow, O. (2021). Benefits of being ambivalent: The relationship between trait ambivalence and attribution biases. *British Journal of Social Psychology*, 60, 570–586.
- Schneider, I. K., & Schwarz, N. (2017). Mixed feelings: The case of ambivalence. *Current Opinion in Behavioral Sciences*, 15, 39–45.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Vol. 25. Advances in experimental social psychology* (pp. 1–65). Academic Press.
- Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., & Konty, M. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology*, 103(4), 663–688.
- Silver, I., & Shaw, A. (2022). When and why “staying out of it” backfires in moral and political disagreements. *Journal of Experimental Psychology: General*, 151(10), 2542–2561.
- Simons, J. J. P., Schneider, I. K., & Sanchez-Burks, J. (2018). *Ambivalence, the person and the attitude object: Individual differences in the experience of ambivalence*.

- Spencer-Rodgers, J., Boucher, H. C., Mori, S. C., Wang, L., & Peng, K. (2009). The dialectical self-concept: Contradiction, change, and holism in East Asian cultures. *Personality and Social Psychology Bulletin*, 35(1), 29–44.
- Spencer-Rodgers, J., Peng, K., Wang, L., & Hou, Y. (2004). Dialectical self-esteem and east-west differences in psychological well-being. *Personality and Social Psychology Bulletin*, 30(11), 1416–1432.
- Stolier, R. M., Hehman, E., & Freeman, J. B. (2018). A dynamic structure of social trait space. *Trends in Cognitive Sciences*, 22(3), 197–200.
- Stolier, R. M., Hehman, E., & Freeman, J. B. (2020). Trait knowledge forms a common structure across social cognition. *Nature Human Behaviour*, 4(4), 361–371.
- Sutherland, C. A., & Young, A. W. (2022). Understanding trait impressions from faces. *British Journal of Psychology*, 113(4), 1056–1078.
- Tan, K., See, Y. H. M., & Agnew, C. R. (2015). Partner's understanding of affective-cognitive meta-bases predicts relationship quality. *Personal Relationships*, 22(3), 524–535.
- Teeny, J. D., & Petty, R. E. (2022). Attributions of emotion and reduced attitude openness prevent people from engaging others with opposing views. *Journal of Experimental Social Psychology*, 102, Article 104373.
- Thompson, M. M., & Zanna, M. P. (1995). The conflicted individual: Personality-based and domain specific antecedents of ambivalent social attitudes. *Journal of Personality*, 63(2), 259–288.
- Todorov, A., Olivola, C. Y., Dotsch, R., & Mende-Siedlecki, P. (2015). Social attributions from faces: Determinants, consequences, accuracy, and functional significance. *Annual Review of Psychology*, 66, 519–545.
- Todorov, A., Said, C. P., Engell, A. D., & Oosterhof, N. N. (2008). Understanding evaluation of faces on social dimensions. *Trends in Cognitive Science*, 12(12), 455–460.
- Vaughan-Johnston, T. I., Guyer, J. J., Fabrigar, L. R., & Shen, C. (2021). The role of vocal affect in persuasion: The CIVA model. *Journal of Nonverbal Behavior*, 45, 455–477.
- Walker, M., & Vetter, T. (2016). Changing the personality of a face: Perceived big two and big five personality factors modeled in real photographs. *Journal of Personality and Social Psychology*, 110(4), 609–624.